

Curtin University Sarawak, Malaysia

**A Conceptual Framework of a Novel Hybrid Methodology Between
Computational Fluid Dynamics and Data Mining Techniques for
Medical Dataset Application**

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Doctor of Philosophy
of
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Declaration

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Abstract

The variability of arterial geometries both within and across patients is inevitable. In order to allow cardiovascular flow prediction realistically, the need for effective numerical methodologies that could systematically consider geometric uncertainty is evident. Data mining technique based on the unsupervised machine learning algorithm is proposed for mining multi-dimensional medical dataset generated from computer simulations. The proposed methodology can be considered a novel hybrid between computational fluid dynamics (CFD) and data mining. This hybrid technique is applied to analyze the influence of geometric parameters on hemodynamics in the human abdominal aorta. Abdominal aortic aneurysm (AAA) is a cardiovascular disease that has 90% death rate, if ruptured. To-date, the decision of surgical intervention on AAAs varies from one clinician to another. To-date, no definite rupture index could help support this surgical intervention. A parametric model generated with CFD strategy is developed for generating a set of simulated data that consists wall shear stress (WSS) values for a range of probable arterial geometries. The corresponding WSS is converted to clinically relevant biomechanical factor definitions derived from these variations of geometries and is then mined via the un-supervised machine learning algorithm in order to explore these medical dataset visually via Self-Organizing Map (SOM) technique. Finally, potential diagnostic indicators were proposed that could be applied to support assessment of risk of rupture of AAAs. The benefit of this hybrid system not only allows a prediction model for a variety of AAA geometries but it also provides a visualization platform i.e. visual exploratory medical data analysis for medical analysts with regards to AAA disease initialization, development as well as rupture potentials.

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Finally this thesis is dedicated to my late father, Mr. Paramasivam a/l Periyasamy, (1938 – 2006) and my son, Master Rubendrajothi Vijayajothi, born on the 9th July 2011.

Vijayajothi Paramasivam
Malaysia
2017

This thesis is dedicated to,

My wife Ms. Chandra Vijayajothi and our son Master Rubendrajothi Vijayajothi

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Chapter 1 *Introduction*

Abdominal Aortic Aneurysm (AAA) rupture is currently the 13th leading cause of death in the United States of America claiming the lives of approximately 15,000 patients each year (Kleinstreuer et al., 2006). The lack of precise rupture risk index makes the decision for surgery complicated. Historical clinical studies indicate that the peak transverse diameter (PTD) is commonly applied (Myers et al., 2001). However, this indicator alone is not sufficient for surgical intervention. In order to further improve prevention of disease evolution, the pathogenesis of pathological as well as morphological evolution of the disease is often correlated to the hemodynamic conditions of the disease. However, AAAs are very patient-specific and its geometries vary from one individual to another. Generally, computational fluid dynamics (CFD) has been used to further aid in generating results of these hemodynamic conditions. However, CFD procedures are often cumbersome and time-consuming due to huge computation workload. Modern clinics and hospitals need accurate real-time prediction tools. Contemporary medical facilities and practices would greatly benefit from accurate real-time prediction tools. In order to make CFD analyses efficient and suitable for future everyday clinical practice, data mining techniques can be employed. The focus of this thesis is to present a conceptual framework of a novel hybrid methodology between CFD and data mining for the prediction of hemodynamic conditions in an AAA under varying geometries. Focus is made on Finite Element (FE) modelling for the CFD part and visual data mining technique for the data mining part. The benefit of this hybrid system not only allows a prediction model for a variety of AAA geometries but it also provides a visualization platform i.e. visual exploratory medical data analysis for medical analysts with regards to AAA disease initialization, development as well as rupture potentials.

1.1 RESEARCH BACKGROUND

In past years, there have been tremendous technological advances in medical imaging. These progresses enable an ever-increasing resolution and quality in acquired medical data of the human body. While the first computer tomography (CT) scanner developed by Hounsfield required several hours to acquire as single scan and it took days to process the raw data, modern CT scanner enable high-resolution acquisition of objects of larger volumes in a matter of seconds. The current state-of-the-art CT scanner facilitates the scanning of volumes up to 1750mm, in isotropic

resolution, using a 1mm slice, in just 38 seconds and delivering 1750 images ready for diagnostics in less than 3 minutes (Bull, 2013). At the same pace, we have also seen a rapid growth in volume and diversity of biological data. Since the first sequenced genome, which is the single-stranded bacteriophage Φ X174 containing approximately 5386 nucleotides, the advents of next-generation sequencing technologies can now yield hundreds of millions of short-read sequences (Mardis, 2008; Metzker, 2010). Over the past years, vast research efforts have been dedicated to the interpretation of the huge amount of obtained data. Visualization plays an important role in these interpretations by supporting analyses and providing insights.

The process of exploring data becomes valuable by incorporating human (Keim, 2001). The primary purpose of including human is to be able to visualize the data, obtain valuable perspective of the visualized data, conclude and communicate with the data. This process is referred as visual data exploration process. Visual data mining methods have shown tremendous ability in large scale data exploration. Visualized data provides a preliminary perspective about the data that can be subsequently used to derive new deduction. These deductions when verified are then used to fine-tune the primary objective of the explored data.

Visualizing important information within a volume of data can be performed by either visualizing its structure, content or object (Bertin, 1977). Visualizing the structure of information is commonly performed by visualizing its hierarchies (Shneiderman, 1992; Stasko et al., 2000). Visualizing the content of data (primarily multivariate data) focuses on the quantitative and qualitative attributes of the visualized information. Common methodologies of visualizing the content of data are parallel coordinates, panel matrices, pixel and icon based methods (Cleveland, 1993; Abello et al., 2002; Levkovitz, 1991). Lastly, object based information visualization (like DNA sequence visualization) is performed mainly to validate analysis and deduce relationships within the multivariate data.

Visual representations can help the user to get a better understanding of content of these datasets, since the human visual system is more inclined to process visual rather than textual information. Thus, visualization techniques may act as intelligence amplification tools for aiding and enhancing human intelligence, improving the perceptive, cognitive, and analytical abilities of people to allow them to solve complex problems.

1.1.1 Visualization in Medicine

Visualization in medicine, or often referred as medical visualization, is a research area within the broader field of scientific visualization. While scientific visualization deals with scientific data arising from measurements, or simulations of real-world phenomena, medical visualization focuses mostly on data obtained through medical imaging techniques. Recent advances in the area of flow field acquisition and modeling have provided an unprecedented quality of the output data. As a result, there have been several research efforts focusing on the visualization of data from simulation of blood flow patterns that helps to reveal the insights into the large amount of acquired data (Pelt et al., 2012).

As the initial focus of medical imaging has been the understanding of anatomical structures, vast research efforts have been dedicated to the acquisition and the interpretation of high-resolution static anatomical images. However, the later advances in medical imaging technologies led to a significant reduction of the acquisition times and thus, made time-varying acquisition possible. Advances of non-invasive imaging techniques such as CT and magnetic resonance images (MRI) have significantly improved detection abilities of unruptured aneurysms. The detection rate of aneurysms increased from 0.3 to 2 per 100,000 person/years from 1965 to 1995 (Menghini et al., 1998). These imaging techniques were used to screen patients with a family history of hemorrhages. Computerized tomography technique is an established modality in which rapid injection of an iodinated contrast agent is followed by thin-slice imaging during the material phase of contrast opacification. Three-dimensional reconstruction technique may be used to improve anatomical details. Although CT technique is effective in the detection of aneurysms, its specificity and sensitivity are dependent on lesion size and on institutional experience. Furthermore, the dense bone throughout the body limits the capabilities of CT technique for detection of very small aneurysms. The sensitivity for detecting an aneurysm larger than 5 mm in diameter is 95% to 100%. For lesions smaller than 5 mm, the sensitivity ranges from 64% to 83%. The specificity of CT technique is between 79% to 100% and the specificity for aneurysms larger than 5 mm is 97% to 100% (Van Gelder, 2003).

On the other hand, the sensitivity of MRI technique varies from 55% to 100%. This wide range is due to variation in aneurysm size and image reconstruction

techniques. As with CT technique, the critical aneurysm size below which the sensitivity decreases is 5 mm. The main shortcoming of CT and MRI techniques as screening tools is the reduced sensitivity for aneurysm smaller than 5 mm. Generally, MRI technique seems to be the most common initial imaging modality used in detecting an incidental aneurysm. This is likely due to wider availability and increased familiarity with the MRI technique compared with CT technique. Besides this, MRI technique is frequently used first and is conveniently followed with an MR angiogram when there is a suspicion of an aneurysm. CT technique on the other hand continues to be a supplementary study, requested by most neurosurgeons to aid surgical planning for complex aneurysms.

1.1.2 Visualization in Biology

Biological data visualization is a research branch of bioinformatics concerned with the application of computer graphics, scientific visualization, and information visualization to different areas of biological research. The emerging fields of computational biology and bioinformatics over the last two decades have led to significant progress in automated data generation and acquisition. Fast expansion in volume and diversity of biological data has presented an increasing challenge for biologists. With large and complex datasets, i.e. ‘omics’ data, it is difficult to identify in advance the information that biologists are looking for. Thus, it is not possible to solve problems by solely using the automated data analysis techniques (Pavlopoulos et al., 2008; Gehlenborg et al., 2010). Through interactive visualization, which enables data explorations, and analysis, biologists can form new hypotheses and make use of automated analysis algorithms to verify the findings.

Biological data are diverse, ranging from genomes, alignments, phylogenies, and macromolecular structures to data from systems biology as well as image-based data. Many visualization techniques have been developed to provide visual representations for each type of data. A full coverage of visualization techniques for biological data would be beyond the scope of this thesis. We refer to the survey of biological data visualization techniques by O’Donoghue and colleagues for further details (O’Donoghue et al., 2010).

1.2 CHALLENGES IN VISUALIZATION

Since the introduction of the discipline-defining report (McCormick et al., 1987), scientific visualization has become a mature research area. In past years, several efforts have been made to identify future research challenges in scientific visualization (Johnson et al., 2006). In addition, critical evaluations of usability and utility of visualization software were also brought to attention (Johnson et al., 2004; House et al., 2005).

1.2.1 Interdisciplinary Collaboration

The advances in visualization enable the advances in other fields, as visualization is the key to the understanding of complex phenomena. This interdisciplinary nature of scientific visualization makes it a fascinating and growing research area, but also makes it difficult because we need to know something, at least at a basic level, about all of the application domains involved. In order to achieve this, it is important for a visualization researcher to communicate with users and experts in other domains to understand the problems that need to be solved.

One of the difficulties in the collaboration between different domains is the difference in domain-specific terminology. In addition to the knowledge in scientific visualization, basic knowledge of other fields is required. This knowledge serves as a foundation for visualization researchers to understand the underlying data before generating meaningful depictions of the data. For instance, the basic understanding of the data acquisition process, signal processing stage, as well as the anatomy of the brain can help visualization researchers to understand the characteristics of the measured activities in the brain and, thus, to design a good visual representation of the data. As a result, meaningful information can be conveyed and insights can be gained through visualization. On the other hand, domain experts in other fields need to have basic knowledge about scientific visualization to understand the current limitations and possible approaches. This leads to the meaningful discussions and avoids misunderstandings arising during the collaboration.

Another challenge is the reluctance of domain experts to try out new visual representations. In the case of medical visualization, although DVR techniques allow us to present all information in a volumetric dataset at once and, thus, convey more information than the traditional 2D slice-by-slice representations, radiologists are

more familiar with the later representation. Consequently, it is difficult to integrate new and advanced visualization techniques into the diagnostic workflow and get feedback from domain experts for fine-tuning the visualizations. To overcome this challenge, new visual representations must be well designed in such a way that they help to efficiently convey the information inside the data, and at the same time, do not require a steep learning curve. Clear benefits from visualization are an important factor to encourage domain experts to get involved and not only try out but also incorporate new visualizations into the workflow.

1.2.2 Interactive Visual Analysis

Multi-disciplinary research has contributed to the complexity of the rapidly growing scientific data sources. Nowadays, data are often spatio-temporal and multivariate; they stem from different data sources, from multiple simulation runs, or from multi-physics simulations of interacting phenomena (Kehrer and Hauser, 2013). As a result, we are facing not only the expansion in size, but also the complexity of the input data.

As data are getting larger and more complex, a single visual depiction of the data through visualization might not be enough to support the scientific discovery process. Interactive visual analysis (IVA), which is a relatively new field of research, plays an important role in exploring, analyzing, and presenting the findings from these types of complex data. The foundation of IVA is the combination of analytic procedures with interactive visual methods, such as linking and brushing, to enable a powerful drill-down mechanism into the presented information.

1.2.3 Visual Analysis and Interactive Methods for Spatio-Temporal Data

Through the support of advanced computing, simulations of dynamic phenomena became possible. The output data are commonly high-resolution grids over large timescales and are called spatio-temporal data. When dealing with this type of data, a common goal is to identify the relation between time and space, thus, discover that spatio-temporal patterns, such as special events or repeated behavior.

One brute force approach to the visualization of such data is to generate a single rendered image of the whole phenomena. This is sometimes not possible due to the size of the input data, or as the amount of information condensed into a single visual representation is too much to be useful for analysis. Another approach is to

deploy automated analysis methods to abstract the time-related characteristics of the data i.e. to compute temporal data trends (Kehrer, et al., 2008), or statistical aggregates such as mean values or standard deviations (Andrienko, 2006). We refer to the survey on visual methods for analyzing time-oriented data conducted by Aigner and colleagues for more details (Aigner et al., 2008).

1.2.4 Visual Analysis and Interactive Techniques for Multivariate Data

In many scenarios, each time-space locations in spatio-temporal data can contain multiple attributes. This leads to not only the increase in size, but also the complexity of the data. Consequently, it is challenging to achieve an interactive visualization as well as visual exploration (Johnson, 2004). Several approaches have been proposed to facilitate the analysis of this type of data. A common approach is to reduce the amount of the data that needs to be visualized. Again, this can be achieved by applying statistical analytic, and dimensionality methods (Keim, 2002; Bertini et al., 2010). One solution to simultaneously represent data containing multiple attributes at the same time is to make use of “*pre-attentive visual stimuli*” such as position, width, size, orientation, curvature, color or intensity (Cleveland et al., 1984; Healey et al., 1996). As these features are rapidly processed by the human’s low-level visual system, they can be used for visualization of large data. It is worth noting that the combination of these stimuli might not be pre-attentive; thus, a new visual metaphor should be carefully designed.

Glyphs are a powerful visual representation to encode data attributes when dealing with this type of data. By using different visual stimuli, such as shape, size, and color, different attributes can be represented by glyphs. Consequently, relations between attributes can be directly perceived and compared (Fuchs et al., 2009). Focusing on medical visualization, perception-based glyph taxonomy was proposed (Ropinski et al., 2008). The authors classified glyphs into two categories; (a) pre-attentive stimuli, such as shape and color, and (b) attentive visual processing, which is mainly related to the interactive exploration process. In addition, the authors also propose guidelines for using glyphs in visualizations for multiple attributes medical data (Ropinski et al., 2011). For instance, glyphs should be perceivable unambiguously from a different viewing direction, and the mapping of data attributes to glyphs should focus users’ attention and emphasize important attributes.

Although glyphs are an effective visual representation, the rendered image might become cluttered as the number of data attributes increases. In addition, it is challenging to keep the visualization consistent between different view-points. One approach to solve these problems is to make use of multiple linked views, in which each view represents a subset of data attributes (Roberts, 2004). Nevertheless, well-designed visualization is required to achieve mental linking between views to facilitate the data exploration and analysis process.

1.2.5 Visual Analysis and Interactive Techniques for Multimodality Data

The abovementioned data type usually results from one data modality and represents different properties at the same time-space location, whereby multi-modal data stems from different data sources. As each modality has its own advantages as well as disadvantages, the fusion of different modalities can help to suppress the drawbacks of each modality. However, the fusion of different modalities poses many challenges.

Data from different sources can have different properties, i.e. storage structure, resolution, and SNR. For instance, while the ultrasound data are usually stored in an irregular grid, MRI data of the same scanned object are stored in a regular grid. The resolution and SNR of the captured data using MRI and fMRI are different. Consequently, efficient techniques and visual representations are required for the analysis and visualization of such multimodal data.

Another challenge is the data occlusion. This is not specific to multimodal data as it is also a challenge to the visualization of other types of data. However, it is more challenging in the case of multimodal data due to the increased complexity and the amount of combined information.

Viola and colleagues proposed an approach to identify the most expressive viewpoint for features of interest (Viola et al., 2005). By smoothly changing the current viewpoint to the most expressive computed viewpoint for the features of interest, a clear view on the features can be achieved through focus + context visualization (Viola et al., 2006). Particularly, the current view serves as the context, while the transition to the most expressive computed viewpoint is the focus of the visualization. Another approach to overcome the complexity and occlusion issues in the visualization of multimodal data is the deployment of a coordinated multiple-view setup. The concept of coordinated multiple views originates in the field of Information Visualization (InfoVis) (Roberts, 2007). In a coordinated multiple-view

setup, different data properties are shown, explored and analyzed in multiple linked views that are utilized side by side.

1.3 SCOPE OF PROBLEM

The primary aim of this research is to derive a conceptual framework of a hybrid methodology between (CFD) technique and data mining (DM) technique that can be applied for the purpose of exploratory data analysis of multi-dimensional medical dataset. A common clinical disease AAA models were used to validate this conceptual framework. The CFD phase employed the finite element (FE) methodology whereas the data mining (DM) phase employed the unsupervised learning algorithm i.e. Self-Organizing Map (SOM). Key hemodynamic variables leading to the potential of AAA initialization, development and subsequent rupture risks are extracted as a result from the FE analysis of 3,500 geometrically varying AAA models and imported to the SOM framework. The SOM framework is then used to perform clustering techniques to clinically relevant variables in order to find a correlation between these hemodynamic variables and potential rupture risks. The hybrid methodology can be seen as a prediction model for AAA disease that can be employed as substitute to the time-consuming and cumbersome FE prediction models.

To the best of my knowledge, application of visual data mining, specifically on pulsatile blood flow phenomena inside an AAA has only been carried by one author to date (Morizawa et al., 2011). Therefore, huge potential is seen in further exploring various visual data mining techniques in order for multi-dimensional data exploration analysis and information visualization on the disease. Furthermore, the coupling of visual data mining technique with computational modelling give rise to future novel hybrid systems that can prove beneficial for retrieving, exploring, interpreting and visualizing medical information methodologies.

Furthermore, the optimal clustering techniques for the application of visualizing key information in medical cases will prove beneficial for clinicians in interpreting medical disease for future evaluation. This information could also provide a platform for future decision-making process with regards to preventive as well as predictive medicine.

1.4 RESEARCH AIMS AND OBJECTIVES

Despite vast research attempts both *in vitro* and *in silico* have been conducted to understand and co-relate rupture potentials with respect to hemodynamic phenomenon, to-date, no definite rupture index have been agreed upon for surgical intervention. It is important to have an insight into the blood flow and shear stress distribution when AAA is formed, with the hope that this insight help co-relate the mechanical conditions with respect to the pathogenesis of pathological changes on the blood vessel. CFD methods are popular with regards to hemodynamic study relating to the AAA disease. However, its rigorous mathematical formulation and high workload during the post-processing phase makes it not user friendly to most clinical personnel. Furthermore, AAAs are very patient-specific because the variability of vessel geometries differs from one patient to another. Therefore, it is very difficult to find a “one size fits all” solution for AAA initialization, development and subsequent rupture prediction.

Based on these motivations, the objective of this thesis is to; (a) derive a conceptual framework that would allow the coupling of the CFD phase of understanding hemodynamic phenomenon in AAAs with other statistical techniques, namely data mining and (b) evaluate this proposed hybrid methodology with regards to prediction accuracy by applying it to a multi-dimensional medical dataset generated from the CFD phase.

1.5 OUTLINE OF THESIS

A brief overview of the thesis content is explained in this section. **Chapter 2** discusses the current medical state of the disease management. Various hemodynamic factors leading to disease initialization, development and rupture potential is also illustrated. **Chapter 3** explains the need for a methodological shift in predictive medicine. It further provides a comprehensive literature review on the current methodologies employed in hemodynamic prediction of AAA. **Chapter 4** provides a solution overview of the problem. This chapter derives the mathematical computational modelling framework as well as the data mining framework. **Chapter 5** focuses on the implementation of the modelling framework and **Chapter 6** focuses on the implementation of the data mining framework. Finally **Chapter 7** gives the conclusions of our research work.

Chapter 2 *Current State of
Abdominal Aortic
Aneurysm Disease*

This chapter discusses extensively the current state of abdominal aortic aneurysm disease management. It starts by providing the definition of an aneurysm and its characteristics. It is then followed by the definition of abdominal aortic aneurysm (AAA). Next, the various factors contributing to the disease initialization, development and subsequent rupture risks are discussed by focusing on a variety of researches and studies conducted by various researchers. Based on the literature review the present management of the disease is then explained. Finally this chapter sums up the clinical problem to-date with regards to this disease and how CFD has contributed partially to enhance understanding of the disease.

2.1 ANEURYSM

Aneurysm is a permanent abnormal bulge of a vessel. Although aneurysms can occur in any type of blood vessels, the great majority of them form in arteries, in only a few restricted localizations. Aneurysms commonly develop along the circle of Willis in the brain and in the thoracic and abdominal areas and of the aorta. Intracranial aneurysms tend to be saccular in shape or “berry-like”, whereas abdominal and thoracic ones are typically fusiform in shape, as shown in Figure 2.1. Such a difference in shape indicates that the pathogenesis is likely to be different for each type of aneurysm.

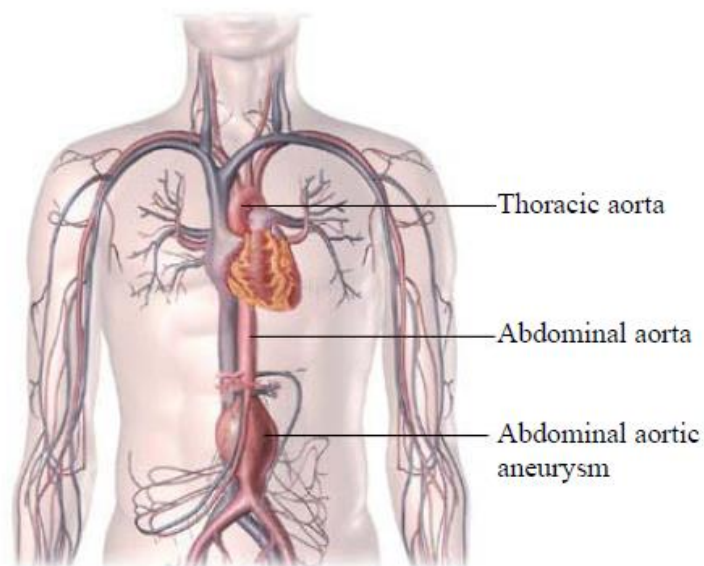


Figure 2.1 Abdominal and thoracic aorta aneurysms

An agreed definition of an aneurysm was established in 1991 by the Society of Vascular Surgery and the International Society for Cardiovascular Surgery as: “*a permanent localized dilatation of an artery having at least 50% increase in diameter compared with the expected normal diameter of the artery, or of the diameter of the segment proximal to the dilatation*”. In other words, this definition generally considers that an aorta with a diameter of 3cm and more is defined as aneurismal. This is because the maximum diameter of a typical normal human aorta is about 2cm.

Aneurysms are categorized as true and false. The difference between a true and false aneurysm is that the blood within a true aneurysm remains in the circulatory system, whereas a false aneurysm is an expanding haematoma¹ from a hole on the artery wall. Thus, in contrast to a true aneurysm the vessel wall of a false aneurysm is not expanded but ruptured. True aneurysms are subsequently categorized based to their shape; berry-like, saccular, fusiform, and dissecting aneurysms. Characteristics of the different classifications of aneurysms are illustrated in Table 2.1 and Figure 2.2, respectively.

Table 2.1 Aneurysm characteristics

| | Shape of dilatation | Diameter | Parts of vessel affected | Features |
|-------------------|-----------------------|------------|--|--|
| Berry-like | Small spherical | 1.0-1.5cm | Sidelong | Occurring in the brain arteries |
| Saccular | Spherical | 5.0-20.0cm | Sidelong | Often filled by thrombus |
| Fusiform | Gradual & progressive | Up to 20cm | Circumferential | Frequently occurring in all parts of aorta |
| Dissecting | No dilatation | - | Blood dissecting between the layers of the vessel wall | Blood filled channel within aortic wall |

¹Haematoma is a collection of blood outside the blood vessel generally the result of hemorrhage, or more specifically, internal bleeding. It is commonly called a bruise.

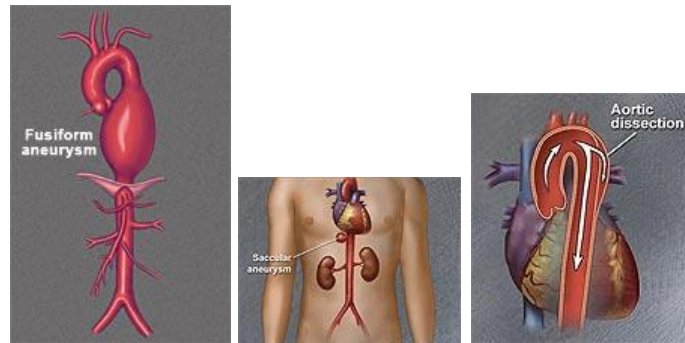
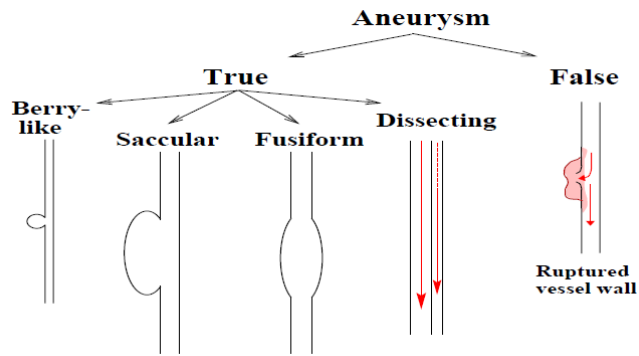


Figure 2.2 Various shapes of aneurysms

Aneurysms tend to grow asymptotically, which explains why they are rarely detected at early stages. Three out of four aneurysms show no symptoms at the time they are diagnosed. In some instances, large aneurysms may put pressure on the vertebral bodies, causing lumbar pain (Sterpetti et al., 1988). The presence of a blood clot inside the aneurysm, also called endoluminal thrombus, may lead to emboli², when fractions of it break-off and become lodged downstream in a smaller vessel. Otherwise, physicians must rely on noninvasive imaging techniques such as, computed tomography (CT), ultrasound or magnetic resonance imaging (MRI) to accurately determine the presence and extent of the aneurismal disease, as shown in Figure 2.3.

² In medicine, an embolism occurs when an object (the embolus, plural emboli; from the migrates from one part of the body (through circulation) and causes a blockage (occlusion) of a blood vessel in another part of the body.



Figure 2.3 Spiral computer tomography (CT) showing an aneurysm originating below the renal arteries

2.2 ABDOMINAL AORTIC ANEURYSM

AAA, is aneurysm occurring in the abdominal part of the aorta. The main causes of aneurysm are arteriosclerosis³ and cystic medial degeneration. Besides these, genetic disorder, malfunction of the aorta walls and mycotic infections or arthritis can also cause the initialization of aneurysm (Cotran et al., 1994). Another cause of aneurismal disorders mentioned by scientists is the loss of distensibility of the vessels. Loss of distensibility or increased stiffness of the vessel wall is due to the loss of elastin and increase in collagen content in the aortic wall. This loss is a general result of aging.

Gender is also a dominating factor in the loss of distensibility and development of aneurysms. The influence of gender on the compliance of the abdominal aorta was examined and results show that with human males the stiffness and pressure strain elastic module showed an exponential increase with age, as for females this increase turned out to be linear. About 5% of the men aged 60 and above develop an aneurysm. The ageing process decreases the elastin content and subsequently increases the vessel wall stiffness. When this happens, the aneurismal aortic wall can be seen as scar tissue of the aorta.

³Arteriosclerosis: Arteriosclerosis is a general term describing any hardening and loss of elasticity) of medium or large arteries (from the Greek *Arterio*, meaning artery, and *sclerosis*, meaning hardening)

There is a risk that the aorta may rupture at this aneurysm spot. The danger of rupture is directly related to the size of the aneurysm. The risk of rupture for small abdominal aortic aneurysms with a diameter less than 4cm, aneurysms with a maximum transverse diameter between 4cm and 5cm and aneurysms larger than 5cm is about 2%, 0.5% and 5% to 10% per year, respectively and is therefore the most dangerous (Thompson et al., 2000).

Aneurysm has to be repaired because the death rate from ruptured abdominal aortic aneurysms is almost 90%. About 80% of the patients will die before reaching the hospital and about 50% die during the rupture-repair surgery. Among those famous who died due to ruptured aneurysm are Albert Einstein and Lucille Ball (Vliet et al., 1997).

A number of risk factors have been associated with aneurysm such as genetic predisposition, hypertension, smoking and etc. The physiological processes associated with AAA development and progressions are not as yet fully understood. This pathologic condition has been found to affect 8.8% of the population over the age of 65 and if left untreated it may lead to rupture (Newman et al., 2001). Aneurysm size and its expansion rate are two variables that have been widely associated with its rupture risks (Kleinstreuer et al., 2006).

The decision for surgical intervention for patients with AAAs is complicated because of the lack of a sufficiently accurate rupture risk index. Based on the results from a number of clinical studies, the maximum/peak transverse diameter (PTD) is widely used. In cases where PTD exceeds 5cm – 6cm, surgical or endovascular treatment is advised. However, “small” (< 5cm) PTD aneurysms do rupture as well. Therefore, the decision for surgical intervention, associated with mortality rate of 4% – 5%, should not be based exclusively on the maximum transverse diameter and a new more reliable rupture risk index should be introduced.

2.3 HEMODYNAMIC VARIATION EVENTS LEADING TO AAA RUPTURE

Through physiological experiments, studies have proven that vascular diseases such as AAA are related with hemodynamic factors (Malek et al., 1999). The limited number of *in vitro* (experimental) measurement techniques reported to date has been compensated by the use of numerical simulations (*in vivo*) to achieve better understanding on the relationship between cardiovascular diseases and hemodynamic factors. Of course before one starts to look into the simulation of blood flow, one

has to be aware of the fluid flow principles of blood in a vessel and its relation to the wall stress. This is considered the fundamental principle that governs various cardiovascular disease simulations. ,

Hemodynamic, meaning literally “blood movement”, is the study of blood flow or blood circulation. The heart is the driver of the circulatory system generating cardiac output (CO) by rhythmically contracting and relaxing. This creates changes in regional pressures, and, combined with a complex vascular system in the heart and the veins, ensures that the blood moves around the circulatory system in one direction. The “beating” of the heart generates pulsatile blood flow which is conducted into the arteries, across the micro-circulation and eventually, back via the venous system to the heart.

From a biomechanical point of view, AAA rupture is seen as material failure of the AAA wall (Aslani et al., 2005). Therefore, the biomechanical aspects of rupture potential are based on the consideration of the state of stress within the AAA as a result of blood flow along the artery. (Peattie et al., 2004). The flow of blood through arteries induces internal stresses. Both normal and shear forces are exerted by the flow of blood onto the inner wall surface. As a result, the magnitude and distribution of these wall stresses are determined by AAA bulge shape and diameters (Deano et al., 2015).

One of the earliest papers ever published on the study of pulsatile blood flow was in 1955 (Wommersley, 1955) and pulsatile pressure in relation to blood flow in arteries (McDonald, 1955). These studies show the exact solution of flow equation of viscous fluid motion for the motion of a liquid in a circular tube under a pressure gradient, which is a periodic function of time. It also shows the calculation of the rate of flow from an observed pressure gradient. The relation of pulse-pressure curve and the blood flow generated has also been established in these studies. This enables us to further apply these concepts with regards to numerical simulations of blood flow in arteries. The relationship between blood pressure and blood flow is considered the “central problem in hemodynamics” (Burton, 1952).

However, over the years, as rapid progress have been made in computational physics, numerical simulations of flows via approximation methods proved to be a more favorite method amongst researchers. Many research papers have been also published with respect to cardiovascular diseases including AAA by using numerical simulations. Studies on AAA models were carried out during resting and exercise

conditions (Egelhoff et al., 1999). The model studies were conducted by experiments (flow visualization and laser Doppler velocimetry) and by numerical simulation using resting and exercise flow conditions. This study characterized the flow for two AAA model shapes and sizes emulating early AAA development through moderate AAA growth (i.e. mean and peak Reynolds numbers⁴ of $362 < Re_{\text{mean}} < 1053$ and $3308 < Re_{\text{peak}} < 5696$ with Womersley⁵ parameter $16.4 < \alpha < 21.2$). It was concluded that AAA flow was divided into three flow regimes: (i) attached flow over the entire cycle in small AAAs at resting conditions, (ii) vortex formation and translation in moderate size AAAs at resting conditions, and (iii) vortex formation, translation and bursting into turbulence in moderate size AAAs under exercise conditions. The second two regimes are classified as disturbed flow. It was also further stated that disturbed hemodynamics may be a contributing factor to AAA growth by acceleration and degeneration of the arterial wall. The pressure due to the blood flowing in the vessel lumen of the AAA produces a deformation of the complex structure composed of the vessel wall of the AAA, which in return alters the flow dynamics in the lumen of the AAA. This altered flow dynamics produces a shearing effect along the wall of the AAA and this creates the shear-thinning effect (i.e. wall shear force) of the AAA wall up to its ruptured point.

A study conducted concluded that hypertension affects the growth of an aneurysm and the damage in arterial tissues (Ryo Torii et al., 2006). It was shown that hypertension blood pressure causes significant changes in the wall shear stress (WSS) distribution on the aneurismal wall and in the stress distribution in the aneurismal wall. Blood pressure was concluded to play a vital influence on the AAA. Similar study indicates that the circumferential stress in an AAA wall is directly associated with blood pressure, hence, supporting the clinical importance of blood pressure control (Feng Gao et al., 2006), Furthermore, high stress in the aortic wall could be a risk factor for tearing in aortic dissections.

Systolic pressure is considered the maximum blood pressure within one full cardiac pulse. It is mainly the governing factor that causes the walls of AAA to deform (Kleinstreuer et al., 2006). The maximum wall stress is approximately exponential with respect to systolic pressure. However studies show that there is no distinct clinical variation of systolic pressure between ruptured and non-ruptured AAAs to exist (Hatakeyama et al., 2001). Therefore, despite systolic pressure being the driving factor that causes stress on the AAA wall, it is not seen as the sole

predicting factor for AAA rupture. On the contrary, the diastolic pressure has been considered to be significantly related to AAA rupture. In a study conducted, it was found that 72% of ruptured AAAs in patients are those suffering from diastolic hypertension (Muto, 2001). Studies also confirmed that diastolic hypertension is to be taken into consideration in order to study the accuracy level of rupture prediction in small AAAs (Cronenwett et al., 1985). Low, middle and high risk levels for AAA rupture occurrence was defined in accordance to diastolic pressure values of 75 mmHg, 90 mmHg and 105 mmHg, respectively.

It was also suggested that the ankle/branchial pressure index (ABPI) is a fairly crucial biomechanical factor index for AAA rupture. The highest mortality risks are with patients with an ABPI < 0.87 (Powell et al., 2001). It was also reported that the expansion rate of AAA is greatly related with the diastolic pressure (Schewe et al., 1994). A high diastolic pressure is a crucial risk factor that governs both AAA expansion and rupture. Studies made on the effect of diastolic pressure on AAA rupture showed that a high diastolic pressure could reduce the time to rupture significantly (Wilson et al., 2003). Presently, the correlation between diastolic hypertension and AAA rupture is accepted by most researchers.

2.4 GEOMETRICAL VARIATION EVENTS LEADING TO AAA RUPTURE

The shape of the AAA sample also plays an important role in determining its rupture potential. Clinical data shows that the rupture risk is greatly influenced by maximum AAA diameter (Kleinstreuer et al., 2006). In abdominal aortas diameters that ranges from $1.9\text{cm} \leq d_{AA} \leq 2.6\text{cm}$, the rupture chance for AAAs with maximum diameters less than 4.0cm, 4.0 – 4.9cm, 5.0 – 5.9cm, 6.0 – 6.9cm and above 7.0cm is 2%, 3.2%, 25%, 35%, and 75%, respectively (Myers et al., 2001). The maximum transverse diameter is considered a vital criterion for estimating the need for surgical intervention in asymptomatic AAAs. This is due to the fact that it is fairly easy to measure. However, there is no consensus for a deciding limit relating the suitable diameter for the decision for surgical intervention. However, some investigators regard 5.5cm as the critical value for elective repair. While it is obvious that a large AAA is more prone to rupture than smaller ones, there is clinical evidence that small aneurysms may rupture as well. It was reported that approximately 12% of AAAs with diameters of 4cm to 5cm ruptured in their clinical studies (Limet et al., 1991). Furthermore, it was also declared that 10% - 24% of ruptured AAAs was 5 cm or less

in maximum diameter (Fillinger et al., 2002). Clinically, the maximum AAA transversal diameters of 5cm for women and 6cm for men are commonly used to recommend for surgical intervention (Finol et al., 2003). Because of the well-known difference in aorta diameter (1.5cm – 2.5cm) for different patients, the simple criterion of AAA maximum diameter is not accurate to evaluate all patients.

As a case in point, the individual-independent parameter, i. e. diameter ratio, $\chi = \frac{d_{AAA}}{d_{AA}}$ seems better than the maximum AAA diameter alone. Clinical study, confirms that threshold values of $\chi = 2.2$ and $\chi = 3.3$ for elective repair and possible rupture prediction, respectively, may provide more reasonable recommendations than AAA size alone (Cappeller et al., 1997).

Besides the maximum transverse diameter, the expansion rate is another important indicator for AAA rupture. Clinically, a high expansion rate, i. e. from 0.5 cm per year and up, is often associated with a high risk of rupture (Thubrikar et al., 2000). If the expansion rate exceeds 0.5 cm/year, elective repair should be considered even if the maximum diameter, $d_{AAA} < 5$ cm (Wolf et al., 1994). More specifically, it was reported that AAA expansion averaged 0.2 – 0.4cm/year for AAAs smaller than 4cm, 0.2 – 0.5cm/year for AAAs of 4 – 5cm and 0.3 – 0.7 cm/year for those larger than 5cm, and the associated rupture risk at four years was 2%, 10% and 22%, respectively. In summary, most researchers also accept the fact that expansion rate is a critical factor for rupture prediction in AAAs.

Because of the local support provided by lumbar vertebrates, most AAAs are asymmetric. Generally, the anterior size of an AAA is greater than the posterior size with a larger wall thickness at the posterior size than at the anterior side. The shape factor has a substantial influence on the distribution of wall stress within the aneurysm, where the magnitude of the peak stress in the wall increased non-linearly with increasing asymmetry. It was stated that a simple symmetric model is unreliable in predicting the location and magnitude of peak stresses in most AAAs (Hua et al., 2001). Both AAA surface geometry and hence, stress distribution are highly complex and cannot be simulated via simple axisymmetric models. Thus, assessing rupture risk for typical (axisymmetric) AAAs may require detailed three-dimensional modeling.

The effect of asymmetry in AAAs under physiologically realistic flow conditions were studied (Finol et al., 2003). Peak wall shear stress and peak wall pressure as a function of aneurismal asymmetry were plotted. The effect of asymmetry increases the maximum wall shear stress at peak flow and induces the appearance of secondary flows during the late diastole. Furthermore, mechanical stress concentrations may be triggered by asymmetric and complicated AAA geometries.

Another study was carried out to study the effects of asymmetry and wall thickness on the wall stresses of AAAs (Scotti et al., 2006). Ten virtual models were created with five different asymmetry parameters ranging from 0.2 to 1.0. The AAA walls were designed to have a (i) uniform 1.5mm thickness or (ii) variable thickness ranging from 0.5 – 1.5mm extruded normally from the boundary surface of the lumen. It was concluded that asymmetry and wall thickness of AAAs affect the magnitude and distribution of Von Mises stress; varying wall thickness increases the maximum Von Mises stress by 4 times its uniform thickness counterpart.

Stresses in the aortic wall are dependent upon the thickness of the wall and the characteristics of the intraluminal thrombus (ILT), which appears to act as a cushion against the overpressure on the dilated and degenerated walls (Di Martino et al., 2001). As mentioned above and also from other similar studies, asymmetry and geometry irregularities do play a determinant role in influencing the risk of rupture in AAA (Vorp et al., 1998). In some instances, the maximum stress in the AAA occurred at the mid-section of the AAA bulge, and in others in occurred elsewhere i.e. proximal and distal area of the AAA bulge. The magnitude of the peak stress on the AAA increased nonlinearly with increasing maximum diameter or increasing asymmetry.

The saccular index, $\gamma = \frac{d_{AAA}}{L_{AAA}}$ i.e. the ratio of maximum AAA diameter to the

length of AAA region, is another novel system parameter to express AAA characteristics. Clinical observations indicate that the smaller the saccular index the higher is the possibility of AAA rupture. Longer aneurysms may be more dangerous than shorter ones, where the clinical thresholds of saccular indices for elective repair and rupture are 0.6 and 0.7, respectively. AAA wall stress vs. saccular index was plotted and illustrated that there are two critical points at $\gamma = 0.65$ and $\gamma = 0.72$ (Li Z, 2005). The Von Misses stress increases slowly when the saccular index changes from

0.72 – 0.65. However, once the saccular index is less than 0.65, the Von Misses stress increases quickly. It suggests that the saccular index is another possible predictor of AAA rupture.

2.5 BLOOD PROPERTY VARIATION EVENTS LEADING TO AAA RUPTURE

In order to provide a brief acquaintance with the complex field of blood rheology, some basic notions from fluid mechanics is recalled. Denotation of T , the stress tensor of the fluid and d , the strain rate tensor, defined as $d = \frac{1}{2}(\nabla v + \nabla v^T)$ which is obviously symmetric. Assessing the dependence law of T from d is the field of rheology. This relation is called the constitutive law and in many cases, it can be expressed as $T = -PI + S$, where I is the Kronecker tensor (identified by an identity matrix). In this case PI is called the isotropic tensor, P is the pressure of the fluid, while S is the so-called extra-stress tensor.

If S is a linear function of the rate-of-strain tensor i.e. $S = 2\mu d = \mu(\nabla v + \nabla v^T)$, the fluid is called Newtonian. The constant μ represents the dynamic viscosity of the fluid. This Newtonian law is the simplest one which can be encountered on the study of viscous flows. Other relations between the stress tensor and the rate-of-strain tensor are actually observed in the experiments, identified under the general definition on non-Newtonian fluids. Strictly speaking, blood is not Newtonian, due to its complex nature (Quarteroni et al., 2000).

There are several non-Newtonian models observed experimentally to-date. These models and its specific characteristics are explained as follows. Dilatant or shear thickening fluids show a convex strain rate-stress curve i.e. the ratio between shear stress and strain rate increases when the strain rate increases. Pseudo-plastic or shear thinning fluids show a concave strain rate-stress curve i.e. the ratio between shear stress and strain rate decreases when the strain rate increases. Bingham plastic fluids show a linear relationship between stress and strain, however, there is a threshold value of the stress beyond which there is deformation. Plastic show that the thinning effects are very strong.

While blood flow in large arteries, modeled as Newtonian flow, has been well researched, the non-Newtonian effects of blood have received less attention in the literature (Finol et al., 2003). This is because shear rates are predominantly high in

normal blood flow within large arteries and consequently, blood viscosity is assumed to be constant equal to high shear rate limit blood viscosity ($\mu=0.0035$ N.s/m²) (Humphrey et al., 2004). However, blood flow may be affected by non-Newtonian behavior of blood in pathologically altered configurations such as in aneurysms, where red blood cells and platelets can aggregate and thus change the blood viscosity (Vorp et al., 2005). Furthermore, studies show that the local flow patterns in large arteries were dependent on the shape of the flow domain (Leuprecht et al., 2001). It was also demonstrated that non-Newtonian model of blood yields higher shear stress than the Newtonian case in flow separation or recirculation regions (Cho et al., 1991). Velocity deviations due to non-Newtonian effects at the maximum cross-section expansion of the AAA have been observed to be between 4% - 48% of the conventional Newtonian model and deviations in reversed-flow velocities at these cross-sections can be high as 18% - 31% (Perktold et al., 1991). These authors demonstrated that totally different velocity distributions were found in non-Newtonian fluid compared to Newtonian fluid. Consequently, non-Newtonian flow behaviors cannot be neglected.

However, most CFD studies on aortic aneurysmal domains have adopted the Newtonian model of blood based on several factors: (i) effects of particles are neglected especially in larger artery (Tang et al., 2012; Cheng et al., 2008; Fung et al., 2008; Fan et al., 2010); (ii) high rate of shear in large arteries (Tse et al., 2005); (iii) in order to reduce computational workload (Gao et al., 2006). Furthermore, it was shown that non-Newtonian model exhibited minor deviations in the basic flow characteristics, wall shear stress as well as flow-induced pressure distributions (Cheng et al., 2010). Table 2.2 summarizes a list of numerical studies in the aortic aneurysmal domain that adopts various blood properties based on the above factors explained.

Table 2.2 Summary of numerical setting for aortic aneurysmal domains (Wan Naimah et al., 2014)

| Number | Blood Flow | Blood Property | Model Wall | References |
|---------------------------|-------------------|-----------------------|-----------------------------------|-------------------------|
| Ideal Geometry | | | | |
| 1 | Laminar | Newtonian | Rigid | Fan et al., 2010 |
| 2 | Laminar | Newtonian | Rigid | Rudenick et al., 2010 |
| 3 | Turbulent | Newtonian | Rigid | Tang et al., 2012 |
| 4 | Turbulent | Newtonian | Rigid | Hou et al., 2010 |
| 5 | Turbulent | Newtonian | Fluid-Structure Interaction (FSI) | Khanefer et al., 2009 |
| 6 | Turbulent | Newtonian | Rigid | Gao et al., 2006 |
| Realistic Geometry | | | | |
| 7 | Laminar | Newtonian | Rigid | Chen et al., 2013 |
| 8 | Transitional flow | Newtonian | Rigid | Karmonik et al., 2011 |
| 9 | Transitional flow | Non-Newtonian | Rigid | Cheng et al., 2010 |
| 10 | Laminar | Newtonian | Rigid | Tse et al., 2005 |
| 11 | Laminar | Newtonian | Rigid | Fung et al., 2008 |
| 12 | Laminar | Newtonian | Rigid | Cheng et al., 2008 |
| 13 | Laminar | Newtonian | Rigid | Lam et al., 2008 |
| 14 | Laminar | Newtonian | Rigid | Karmonik et al., 2010 |
| 15 | Laminar | Newtonian | Rigid | Karmonik et al., 2011 |
| 16 | Laminar | Newtonian | Rigid | Karmonik et al., 2011 |
| 17 | Laminar | Newtonian | Rigid | Karmonik et al., 2012 |
| 18 | Laminar | Newtonian | Fluid-Structure Interaction (FSI) | Wan Naimah et al., 2013 |

2.6 MECHANICAL STRESS VARIATION EVENTS LEADING TO AAA RUPTURE

The general consensus is that peak wall stress is the best indicator of AAA rupture, although the maximum AAA diameter and growth rate as well as aneurysm asymmetry are very important and much easier to measure (VanDamme et al., 2005). However, how to define the critical threshold value and yield stress in different patients is not clear. Because direct stress measurements in AAA patients are not available, software packages for structural analysis, such as ANSYS, ABAQUS, ADINA, and FIDAP are efficient tools.

A better method of determining risk of rupture would be to undertake a biomechanical analysis of the stress state within the arterial wall. Internal stresses exist in the walls due to the flow of blood. Blood exerts both normal and shear forces on the inner wall surface. From a mechanical engineering point of view, aneurysm rupture is analogous to a material failure, whereby the aneurysm ruptures when the stress within the aortic wall exceeds the material limits of the wall. Several stress related indices were proposed that could play vital role in assessing AAA initialization, growth and rupture (Deano et al., 2015). These stress indices are a result of the fluid dynamics of the blood flow in AAAs. A summary of these flow-induced stress indices are as shown in Table 2.2. In this thesis, the wall shear stress (WSS) is chosen as the flow-induced stress index to evaluate the co-relation between the various clinically relevant bio-mechanical factors adopted.

Table 2.3 Flow-induced stress indices (Deano et al., 2015)

| Stress Index | Definition |
|---|--|
| Wall Shear Stress (WSS) | $\tau(t) = -\mu \left[\frac{\partial u(t)}{\partial n} \right]_{wall}$ |
| Mean Wall Shear Stress (Mean WSS) | $\overline{\tau(t)} = \frac{1}{T} \int_0^T \tau(t) dt$ |
| Spatial Wall Shear Stress Gradient (SWSSG) | $G = \nabla \tau(t) $ |
| Oscillatory Shear Index (OSI) | $\frac{1}{2} \left\{ 1 - \left[\frac{T \overline{\tau(t)} }{\int_0^T \tau(t) dt} \right] \right\}$ |

| | | |
|---|--|--|
| Aneurysm Formation Indicator (AFI) | $\cos \theta = \left[\frac{\tau(t) \cdot \overline{\tau(t)}}{\ \tau(t) \cdot \overline{\tau(t)}\ } \right]$ | Quantifies the change in direction of WSS (Mantha et al., 2006) |
| Gradient Oscillatory Number (GON) | $1 - \left(\frac{\left \int_0^T G dt \right }{\int_0^T G dt} \right); (0 \leq GON \leq 1)$ | The integration is calculated over one pulse period T |
| Impingement Index (IMI) | $- \left(\frac{\frac{\partial \sigma}{\partial y}}{\frac{\bar{\tau}}{R}} \right)$ | $\bar{\tau}$ is the mean wall shear stress at the entrance of the artery, R the radius of the internal carotid artery, σ is the normal stress and y indicates the n direction |

2.7 CURRENT MANAGEMENT OF UNRUPTURED ANEURYSMS

The management of unruptured aneurysms has significantly changed in recent years and continues to evolve. Previously, the majority of these diseases were detected in patients either who had medical history of ruptured aneurysm or who had symptoms that referred to embolism from an unruptured aneurysm. These days, a majority of unruptured aneurysms being detected by neurosurgeons are truly incidental. This is because these asymptomatic diseases are being detected as a result of increased use of noninvasive neuroimaging. Often they are detected when doctors evaluate symptoms such a dizziness and headaches. Presently, almost one third of aneurysms treated fall into this latter category (Ramachandra et al., 2005). The three main factors that have influenced the management of unruptured aneurysms are as follows: (a) increased availability of noninvasive imaging technology, resulting in increased detection of incidental aneurysms; (b) improved understanding of the natural history of unruptured aneurysms; (c) the advent of neuro-endovascular therapy.

Advances of noninvasive imaging modalities such as CT and MRI have markedly improved ability to detect unruptured aneurysms. The detection rate of aneurysms increased from 0.3 to 2 per 100,000 person-years between 1965 and 1995 (Menghini et al., 1998). These imaging tools are applied to screen patients with a family history of hemorrhages. Computerized tomography technique is a relatively new technology in which rapid injection of an iodinated contrast agent is followed by thin-slice imaging during the material phase of contrast opacification. Three-dimensional reconstruction technique may be used to enhance anatomical details. Despite its effectiveness in the detection of aneurysms, CT techniques' specificities

and sensitivities are dependent on aneurysm size and on personal clinician experience. Furthermore, the capabilities of CT techniques in detecting very small aneurysms are limited due to the dense bone structure throughout the human body. The sensitivity for detecting an aneurysm larger than 5 mm in diameter is 95% to 100%. For aneurysms smaller than 5 mm, the sensitivity ranges from 64% to 83%. The specificity of CT technique is between 79% to 100% and the specificity for aneurysms larger than 5 mm is 97% to 100% (Van Gelder, 2003).

On the other hand, the sensitivity of MRI technique ranges from 55% to 100%. This big gap is due to the variety of aneurysm shape and size as well as the image reconstruction techniques itself. On the other hand, for CT technique, the critical aneurysm size below which the sensitivity decreases is 5 mm. The main drawback of CT and MRI techniques as screening tools is the reduced sensitivity for aneurysm smaller than 5 mm. Generally, MRI technique is commonly applied for initial imaging modality for detecting an incidental aneurysm. This is due to increased familiarity and wider availability with the MRI technique compared with CT technique. Besides this, MRI technique is frequently applied first and followed with an MR angiogram when there is a suspicion of an aneurysm. CT technique on the other hand provides supplementary study that most neurosurgeons request to aid surgical planning for complex aneurysms.

The general understanding of the natural history of unruptured aneurysms is limited but continues to evolve. So far, recent development of techniques as mentioned above only help us to detect an aneurysm but they do not tell us how to predict the growth of an aneurysm upon detection and its subsequently rupture. No accurate technique exists to date to either predict the expansion of an aneurysm or its critical size or shape at the point of rupture.

2.8 CLINICAL PROBLEM

No accurate technique exists to date to either predict the aneurismal expansion rate or its critical size or shape at the point of rupture. Treatment of AAA is decided on the basis of several factors, including size, expansion rate, natural history data and operative morbidity and mortality rates (Stringfellow et al, 1987). It is widely recognized that increase in size leads to a higher risk of rupture (Law et al., 1994). The average annual rupture rate of an aneurysm measuring < 4cm is 0%, 1% when 4.5cm, 11% when 5.5cm and 26% when 6.5cm (Green, 2002). Although the

likelihood for a small size aneurysm to rupture is very small, it was proven that rupture can happen (Darling, 1970). Treatment is currently recommended for AAAs exceeding 5cm in maximal diameter.

The main treatment option for AAA is to depressurize the aneurysm by excluding it from the blood circulation, either through conventional trans-abdominal surgery (i.e. open repair), or through the less invasive method of endovascular aneurysm repair (EVAR). In open repair, the wall is excluded by means of a regular vascular graft sutured to the healthy parts of the vessel. Due to significant morbidity rates associated with this procedure, open repair is mainly implemented for younger and healthy patients.

In EVAR, the exclusion is performed using a self-expandable stent-graft placed inside the AAA by means of a guide wire inserted in the femoral artery. As compared to open repair, EVAR is associated with reduced peri-operative mortality and shorter hospital stay. Therefore, in the case of elderly patients with comorbidities such as other types of cardiovascular disease, EVAR is the most suitable option. In the long term, however, the peri-operative survival advantage of EVAR is not sustained. Furthermore, because of a considerable risk of late complications, patients undergoing EVAR need extensive follow-up.

The decision for surgical intervention is made by weighing the cumulative risks associated with the surgery against the risk of rupture. In current clinical practice, the risk of rupture is assessed based on the maximal transverse diameter of the AAA as visualized on CT angiographic images, and surgery is considered necessary when the diameter of the AAA exceeds 5.5cm. Although rupture risk is highly related to increased aneurysm size, rupture can also occur in smaller AAAs. Therefore, to find more accurate rupture risk predictors than the diameter, geometric properties other than the diameter as well as non-geometric properties have to be considered.

The most prominent trend, however, is to study the flow dynamics and its related mechanical behavior of the AAA wall using computational models. As rupture is characterized by mechanical failure, it is generally believed that the risk of rupture can be assessed better based on the wall shear stresses distributions computed with these numerical models.

2.9 ROLE OF COMPUTATIONAL FLUID DYNAMICS (CFD) IN AAA MANAGEMENT

One important biomechanical force in vascular biology is the pressure-induced forces within the arterial wall. Endothelial cells that forms a lining on the artery walls experiences forces that result of blood flow. Shear forces significantly affects these endothelial cell and the vessel walls' behavior. Computer techniques help provide insight into these phenomenon by allowing researchers to solve governing blood flow equations in arterial geometries. The application of computers to solve these governing equations of fluid flow is known as computational fluid dynamics (CFD). (Vorp et al., 2001).

Major advances in computer technology during the past decades have enabled the analysis of various biomechanical aspects that could not be studied previously by numerical means. (Friedman et al., 1987). Advent facilities such as high-resolution medical imaging, state-of-the-art image-processing techniques and high-performance computers have enabled biomedical engineers and researchers to simulate complex pulsatile flow patterns in AAA models effortless to-date.

A commonly applied image-based CFD modeling approach uses magnetic resonance imaging (MRI) angiography. To-date, it is seen as an increasingly routine diagnostic imaging technique whereby the blood artery lumen is enhanced. Images from the MRI are then reconstructed into 3D models. Yun Xu's group at Imperial College (London) successfully applied this technique in order to compute local hemodynamics in rigid-walled models of the human carotid and aorto-iliac bifurcations (Long et al., 2000).

Despite its usefulness in elucidating complex nature of blood flow patterns in large arteries, conventional angiographic techniques impose a limitation in the study of vascular biology. However, the alternative to this that allows researchers to study a combination of hemodynamic and vascular disease is the ANGUS (ANGiography and intravascular UltraSound) method. (Krams et al., 1997). Detailed images of the anatomical and pathological vessel wall can be acquired by introducing high-resolution ultrasound transducers via a catheter into the artery. A proposal as an alternative to the ANGUS technique was based on a combination of CFD and black blood MRI (Milner et al., 1998). This approach allows researchers to see both vessel wall's inner and outer boundaries. Therefore, 3D maps of vessel walls and pulsatile

hemodynamic factors were able to be generated via image-based CFD modelling techniques.

Image-based CFD techniques are also equally important for disease treatment plans of vascular disease. CFD based techniques have been developed for computer-assisted planning of bypass surgery (Taylor et al., 1999). CFD models of patients' vasculature are reconstructed from angiograms in order to establish current blood flow distribution and local hemodynamic patterns. Once this is accomplished, surgeons are able to simulate the effects of various bypass strategies in order to identify optimized hemodynamics which in return could possibly improve the surgery's long-term success rates.

The feasibility of this technique has been studied for surgical planning of cerebrovascular therapies (Cebal et al., 2000). A detailed model of the Circle of Willis was constructed and computed its complex blood flow patterns. Surgical clipping (a treatment used for aneurysm) was simulated by re-computing the flow patterns with the vessel of interest sealed off in order to predict the re-distribution of flow and pressure in the cerebro-vasculature. Despite its many advantages, CFD do have limitations. Numerical errors occur during computations; therefore, there will be differences between the computed results and reality. Visualizing numerical solutions using vectors, contours, or animated movies of unsteady blood flow are the most effective ways to illustrate a computed result but they are worthless if they are not interpreted correctly. Extracting key information from these simulated visualizations cannot be performed without additional visualization tools and often these visualized results are not successfully quantitatively interpreted. Thus, numerical results must always be thoroughly examined before they are believed.

2.10 SUMMARY

Given the explanation on the current state of AAA disease management, merely detecting the existence of an un-ruptured aneurysm is not sufficient. The current paradigm for clinical diagnostic for the treatment of aneurysm relies exclusively on; (1) diagnostic imaging data to define the present state of the patient and (2) empirical data to evaluate the efficiency of prior treatments for similar patients. These techniques are insufficient to predict the outcome of a given treatment for an individual patient.

AAA is a complex chronic disease. Apart from its complexity in terms of its morphological characteristics, AAAs' pathological characteristics tend to be nonlinear as well. The wide range of variations between these two characteristics demands more accurate information for predicting its initialization, development and subsequent rupture potentials. The accuracy of decision making depends on the amount of information available. However, the drawback of having a large amount of information is that at one point of time it becomes apparent that extraction of these information, particularly, relevant information becomes a daunting task. As a result of this, the reliability of the clustering process becomes questionable.

Chapter 3 *Literature Review*

In Chapter 1, key challenges on visualization aspects in medicine, especially for multi-dimensional medical datasets was addressed. One key aspect is the role of visualization techniques being applied to exploratory medical data analysis. In Chapter 2, how a specific medical case, AAA disease, is currently managed was explained. Over the past decade, directors at the National Institutes of Health have argued that in order to save medical costs while improving health and healthcare, medicine must move away from its industrial-age roots in providing “one size fits all” therapies to become more predictive, pre-emptive, personalized, and participative over time (www.nih.gov/strategicvision.htm). Each of these attributes is an information-age concept, and depends on advances in networking and information technology to be realized. Needless to say, medical data within this new 21st Century system will become the new currency. Understanding how to best visualize these data to each community of participants, is a central challenge to improving healthcare.

3.1 THE NEED FOR METHODOLOGICAL SHIFT IN PREDICTIVE MEDICINE

Although computational modeling techniques are noninvasive, display results of high levels of accuracy and more informative, adaptive as well as interactive compared to *in vitro* techniques, they do have some drawbacks. It requires a tedious approach of mathematical formulation and followed by huge computational efforts. Besides that, model preparations also involve time consuming efforts. In order to minimize computational run-time, certain assumptions have to be made in order to simplify the governing equations and hence expose a certain uncertainty in the results generated. Today, in order to run simulation models faster, parallel computing is introduced but its cost of operation can be expensive.

AAA is a complex chronic disease. Apart from its complexity in terms of its morphological characteristics, AAAs’ pathological characteristics tend to be nonlinear as well. The wide range of variations between these two characteristics demands more accurate information for predicting its initialization, development and subsequent rupture potentials. The accuracy of decision making depends on the amount of information available. However, the drawback of having a large amount of information is that at one point of time it becomes apparent that extraction of these

information, particularly, relevant information becomes a daunting task. As a result of this, the reliability of the clustering process becomes questionable.

In view of the level of tediousness of the computational modeling process as well as the complexity of the AAA disease, a logical approach to further enhance the understanding of AAA formation, development and rupture potential, is by assessing the disease statistically. The fundamental principle of the statistical approach is logic that arises from theories relating to complex biological systems. If viewed from this point of view, computer science is taking over this role from physicists and mathematicians. The marriage between computer science and medicine will enable the invention of intelligent tools that are capable of adapting dynamically on its own to solve complex problems. This intelligent tool is data mining (Grossi, 2011).

3.2 DATA MINING PROCESS

Data mining is a process of pattern discovery from a potentially huge amount of data. It is a multi-disciplinary topic that is conceived based on logics in database systems. It can also be seen as a statistical method. Examples of data mining techniques are machine learning, visual data mining, neural networks, pattern recognitions, signal processing, etc. Data mining can also be seen as information technology evolving and subsequently branching off into sub-processes that consist of collecting data, creating database and management, analyzing data and finally interpreting data (Han et al., 2000).

This process involves six key steps: selecting the data, filtering unwanted data, adding value to the filtered data, programing, data mining and generating report (Adriaans et al., 1996). Once the data is collected and selected, it is filtered to remove noisy or irrelevant data. An important element of this process is data normalization to minimize redundancy and to produce a consistent dataset. The third step is the acquisition of additional information that can be integrated into the existing data. The fourth step involves programing where data transformation takes place into formats that are suitable for data mining. The fifth step is the phase of real discovery. It is the key process of applying intelligent methods to identify and discover patterns in data. The final step is generating appropriate reports. The mined knowledge is presented via visualization techniques and knowledge representation techniques with the aim of generating conclusions or prediction efforts. Figure 3.1 represents this data mining process.



Figure 3.1 Process of data mining

3.3 DATA MINING TECHNIQUES

The tasks of data mining can either be descriptive or predictive. The descriptive tasks commonly aim to derive interpretation and association forms by the end-user (human) upon developing and reviewing the data mining model. On the other hand, predictive tasks aim to predict a desired output of a particular variable of interest. At some point of time, there is a tendency for these two aims to overlap. These two tasks can be further classified based on its methodologies; (a) classification and regression, (b) association rule, (c) cluster analysis, (d) text mining, and (e) link analysis. The difference between classification and regression methodologies lies with the type of target variables. The target variables for classification methods involve smaller quantity of discrete values whereas regression methods involve target variables that are continuous. The association rule methodologies describe pattern recognition within a given dataset. Commonly, they are illustrated by rules. The process of grouping based on similarities of a given dataset refers to the cluster analysis. The primary objective of the cluster analysis is to cluster similar values in the same cluster. Although text mining methodologies can overlap between clustering, association rule and classification, sometimes it would be ideal to consider it independently especially with regards to unstructured text or data. This proves valuable for representing textual data. The element of connectivity between objects from various classifications plays a vital role in the link analysis. It focuses on tracking population via segmentation.

Data mining techniques can be further classified into two main groups; (a) unsupervised, and (b) supervised. The unsupervised learning techniques are independent to any pre-defined class or variable labels. The unsupervised learning does not depend on pre-constructed hypothesis or models. The learning algorithm is directly applied to the raw dataset and subsequently the generated results are analyzed. Based on the generated results, a hypothesis or model is then built. Therefore, unsupervised learning is often applied to defining classes from a raw

dataset without prior class definition. Clustering techniques are classic example of unsupervised learning techniques.

On the contrary, the supervised learning techniques are dependent on pre-constructed hypothesis or models. The main aim of developing these models is to predict an output of a particular case. Statistical regression and classification methodologies are examples of supervised learning techniques. Table 3.1 illustrates the comparison between the unsupervised and supervised learning methods in terms of its characteristics and techniques.

Table 3.1 Comparison between unsupervised and supervised learning methodologies

| | Characteristics | Techniques |
|------------------------------|-----------------------------|-----------------------------|
| Unsupervised Learning | ▪ No supervision | ▪ Association Rule |
| | ▪ Results defines the class | ▪ Clustering |
| | ▪ Less frequently applied | |
| Supervised Learning | ▪ With supervision | ▪ Artificial Neural Network |
| | ▪ Pre-defined class | ▪ Classification |
| | ▪ Commonly applied | ▪ Statistical Regression |

3.3.1 Predictive Techniques

Decision tree analysis is a typical and well established learning technique. Information is organized from a top-down fashion. It is a simple yet effective technique. Furthermore, it is also quite robust to irrelevant input data as well as to outliers. It can also perform with multi variables and missing data values. The derived rules are easy to understand despite its low accuracy compared to other techniques. Decision tree induction methodologies with modified pruning criteria have been explored intensively over the years. Despite its extensive studies, the accuracy of the method improved minimally (Witten et al., 2005). Examples of this group of methodology are ID3 and C4.5/5.0.

Naïve Bayes classifier determines the probability of a particular instance within a specific class. It operates under the assumption that all attributes contribute independently. Initially, it determines an initial probability for each class based on the training dataset and the occurrence of each attribute value. Next, this probability is then applied to the unknown case study. The product of the conditional

probabilities for each attribute value is the final probability value. Instances are assigned to the class with the highest probability.

Artificial neural network works similarly to the human brain. It consists of many connecting nodes. These connecting nodes are connected from the input to hidden and output layers within the neural network framework. Its connectivity can be either in one direction i.e. input to hidden to output layer (feedforward) or both directions (feedback). Weights and biases are updated incrementally upon training. This technique is quite robust in handling noisy dataset. Upon performing suitable training, its accuracy can be high as compared to other mining techniques.

Nearest neighbors determines the distance between every new case that is to be grouped. The case is grouped to the class to which most of its nearest neighbors belong. The K-nearest neighbors (kNN) is an example of this distance based methodology. It is a fairly simple method but it often performs well.

Logistic regression often exploits the implementation of Waikato Environment for Knowledge Analysis (WEKA). This implementation can either be *SimpleLogistic* or *Logistic*. The *SimpleLogistic* derives logistic regression models by exploiting the additive logistic regression algorithm from *LogiBoost*. *Logistic* on the other hand, is an alternate approach that is used for multi-nominal classes. It reduces the effect of variables that have large coefficients, thus, limiting over-fitting. However, the logistic regression models only derive probability estimates. It does not predict an outcome.

3.3.2 Descriptive Techniques

Clustering methods group similar data from the input dataset and subsequently reduce the number of data from the input dataset. Normally, prior to clustering, most methods assume a particular shape of the cluster before extracting a series of clusters in order to obtain optimal fitting of the input dataset. This similarity approach treats every map unit as an individual cluster. The generally accepted rule for optimised clustering is that grouping is performed by minimizing the distance within and maximizing the distance between clusters. It is an unsupervised learning approach. Examples of clustering methodologies are partitional, hierarchical, model-based, density based and grid-based.

3.4 BIO-DATA MINING TRENDS IN MEDICINE

Many techniques have been used in data mining especially in the medical and biomedical context. A popular data mining technique is decision tree induction. The dataset is recursively partitioned into discrete subcategories. These subcategories are based on the value of an attribute in the dataset. The criteria for selecting these attributes in the dataset are based on its predictability to a certain subcategory. As a result of this, the final outcome is a set of series of categories based on values of the attributes. Each of these series generates a classification value. There are many algorithms developed for decision tree induction (Breiman, 1984; Quinlan, 1992; Gehrke, 1999). Some examples that apply this approach are diagnosis of central nervous system, post-traumatic acute lung injury prediction, acute cardiac ischemia identification, neurobehavioral outcome in head-injury survivor predictions, myoinvasion diagnosis and many more (Lossos, 2000).

Bayesian classification is another popular technique. However, many Bayesian classifiers assume that for a given class, each attribute value does not affect the values of other attributes. Nevertheless, these Bayesian classifiers are able to perform quite accurately compared to decision tree and neural network classifiers. Genetic trait controlling maps, macromolecular crystallization screening, cNMP-binding proteins classifications, carboplatin exposure predictions, prostate cancer recurrence predictions, femoral neck fracture recovery prognosis and prediction of protein secondary structure prediction are some examples that apply the Bayesian classifiers (Ghosh, 2000; Hennessy, 2000; Huitema, 2000).

Another approach of data mining method is artificial neural network. Predicting protein secondary structures, predicting signal peptides, finding and predicting gene structure, recognizing protein translation initiation sites, predicting T-cell epitopes, predicting RNA secondary structures, predicting toxicities and predicting disease diagnosis are some successful applications of artificial neural network technique (Burden, 2000; Turton, 2000).

3.5 BIO-DATA MINING TECHNIQUES IN HEMODYNAMIC PREDICTION OF AAA

The fundamental idea in hemodynamic prediction of AAA is to find the relationship between parametric variation of an AAA model and its corresponding WSS distribution (Kolachalama et al., 2007). Since the blood flow reaches its peak

velocity during the systolic phase of the pulsatile flow, it is usually at this point of the pulsatile flow cycle the vessel wall experiences maximal WSS. In addition to this, the mean WSS along the full cardiac cycle is another indicator that can be used and plotted with respect to parametric variation of the AAA model. WSS is important because high value can cause damage of endothelium while small value can cause atherosclerosis initialization and development. Therefore, ideally the choice of data mining technique used for this purpose should be able to accurately draw a relation between geometric factors and hemodynamic variables such as blood velocity, density, dynamic viscosity, flow-induced pressure and WSS distribution.

A typical data mining technique that can be used to evaluate the WSS dataset generated from the modeling works is multilayer perceptron neural network (MLP). It consists of elements termed as neurons. Its fundamental structure involves one or several input and hidden layers together with an output layer. Its primary objective is to reduce the error generated between predicted and desired output. This is performed by identifying a set of biases and weights within the network architecture. The backpropagation learning algorithm can be used together with the MLP method. One drawback of this learning algorithm is that it converges slowly. This problem can be tackled by introducing momentum and adaptive learning rate that speeds up the adjustment of the weights and biases with momentum. The learning rate is inversely proportional to the performance of the system for each epoch. Increased learning rate means reduced performance towards the goal at every epoch. Learning stops can be used based on either, maximum number of epochs, maximum amount of time or performance goal (Radovic et al., 2011).

Neural network techniques have been adopted to train the simulated maximum WSS results generated from exploiting the finite element method by varying idealized aneurismal geometries and arterial pressure (Rodriguez et al., 2007). Four dimensionless parametric factors: (a) AAA diameter factor (b) AAA length factor (c) AAA thickness factor and (d) AAA asymmetric factor were used together with hemodynamic arterial pressure factor to generate the maximum WSS profiles experienced by the AAA wall. Two varying neural networks were developed and trained. The first neural network i.e. mesh neural network produces a mesh for a particular AAA shape whereby the second neural network i.e. tension neural network computes the primary output tensions on each individual node of the initially generated mesh from the first neural network for a defined arterial pressure. The

objective was to predict the three primary output tensions (x, y, and z) of an AAA for a specified geometry and arterial pressure.

MLP neural network with a sigmoid hidden layer and a linear output layer was used for both the neural networks whereby the sum of the number of elements in the MLP vector is equal to the sum of the number of nodes (Filipovic et al., 2011). Prediction of the coordinates of one node is computed by each neural network from the mesh neural network. Similarly, prediction of the primary output tensions of one node is computed by each neural network from the tension neural network. The parametric factors are the input to the neural network whereas the primary output tensions of the three nodes coordinate (x, y and z) from each neural network is the output. A total of twelve and six neurons were used in the hidden layer for the mesh neural network and tension neural network, respectively. An example of the neural network architecture used is shown in Figure 3.2 (Rodriguez et al., 2007).

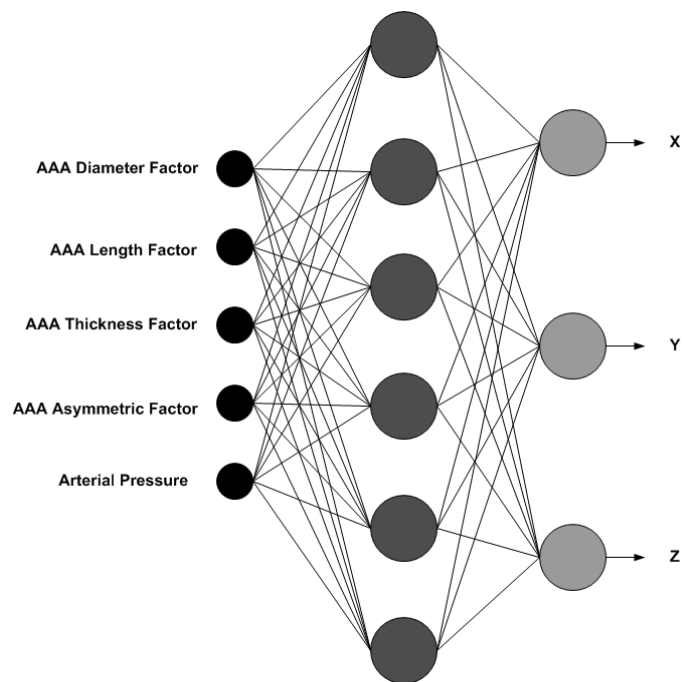


Figure 3.2 Neural network architecture for WSS prediction in AAA

The performance evaluation procedure adopted for both the neural networks was the mean square error being calculated between the outputs and the target data taken from Haykin (Haykin S, 1999). Training algorithm exploits the quasi-Newton method whereby training stops after 250 iterations. Validation of the predicted WSS via neural networks was performed by comparing the WSS values obtained by finite element computations. It was noted that the margin of error was negligible. On the

other hand, a significant reduction in processing time was observed compared to finite element computations.

Another form of data mining technique that can be used originates from a group of lazy learning methods, more specifically, the K-nearest neighbors algorithm (k-NN). Existing learning examples close to the newly introduced example is applied to make a prediction. This is performed based on the distance measurement within the existing predicted values that is the closest to the newly introduced example. Commonly, the Euclidean distance is applied for this purpose.

In line with parametric evaluation with regards to AAA rupture potential studies, a global and robust set of parametric indices were derived from anatomically realistic AAA shapes taken from clinical data and further mined using the decision tree algorithm (Shum et al., 2011). The data was divided into two major categories; non-ruptured and ruptured AAAs. These AAA models were obtained from Digital Imaging and Communications in Medicine (DICOM) images as a result of computer tomography (CT) scans from real patients who had AAA. Prior to building and defining the AAA models, these images went through the standard image segmentation and reconstruction procedures. As a result of these segmented and reconstructed images, twenty-five parametric indices were derived (Martufi et al., 2009). These parametric indices were categorized based on one-, two- and three-dimensional sizes and shapes.

WEKA was used to select features, train and evaluate the models' performance. It is a software tool for data mining application and machine learning. J48 decision tree algorithm was exploited to create a model. Selections of model features were performed statistically based on χ^2 -test. Ten-fold cross validation method was utilized for performance assessment. The primary objective was to take advantage of the large dataset available in today's modern hospitals and apply learning algorithms to identify potential trends within this dataset and ideally build models equally intelligent to predict AAA ruptures without the use of elaborate computational modeling.

Fuzzy hemodynamic modeling is another form of data mining technique that can be applied to hemodynamic prediction in abdominal aortic aneurysm (Milijkovic et al., 2008). The fundamental principle of fuzzy logic modeling is by applying a set of if-then rules in order to map the desired input domain to an output domain. The goal in this study was to develop an appropriate fuzzy engine to provide WSS values

at the entry and exit of AAA model as close as possible to computational modeling results. Mamdani type fuzzy inference mechanism was adopted for this purpose. The input and output values denote the numeric membership function whereby the Gaussian membership function was applied. Relative error analysis between WSS values from computational and fuzzy modeling was approximately 10%.

Visual data mining methods have shown tremendous ability in huge data exploration. The potential to explore huge databases is also high whereby it can be applied to initially unknown dataset and unclear preliminary objective for exploring these data. As the exploring process evolves, the objective of exploring these data can be adjusted automatically. The initially obtained visualized data provides a preliminary perspective about the data and subsequently a new deduction is derived. This preliminary deduction is further verified and its corresponding results from this verification are further used to fine-tune the primary objective of the explored data and this process repeats until a final conclusion is made about the data.

Self-Organizing Map (SOM) is widely accepted as a visualization tool that is able to extract patterns and visualize important information from high dimensional dataset. It allows data to be explored and analyzed by providing tools to effectively extract spatial indices similarity-driven patterns within the dataset. These patterns or features are extracted, visualized and interpreted by combining cluster analysis and projection methods. The results of the SOM can be visualized or represented graphically by applying variables such as color, value, shape, size, texture, orientation, etc. Enhancement of these graphically represented SOM results is further performed by introducing various visualization techniques. These include U-matrix, component view planes, mesh visualization, 3D surface plots, Principal Component Analysis (PCA) and Sammon's mapping.

In view of this, investigations on the relationship between AAA WSS features and its rupture were carried out via visual data mining (Morizawa et al., 2011) This method involves of four stages: (1) defining the time-series WSS data obtained from the finite element computation as input data, (2) extracting the temporal indices from these data for each grid point, (3) dividing these sets of grid points into several clusters by self-organizing map based on the similarities of these indices, and (4) mapping the clustered results onto a real space of the AAA model for visualization of the WSS characteristics of pulsatile driven blood flow of the AAA model. The summary of the visual data mining technique is as seen in Figure 3.3.

This attempt exhibited that there exist a correlation between unsteady hemodynamic characteristics and aneurysm rupture.

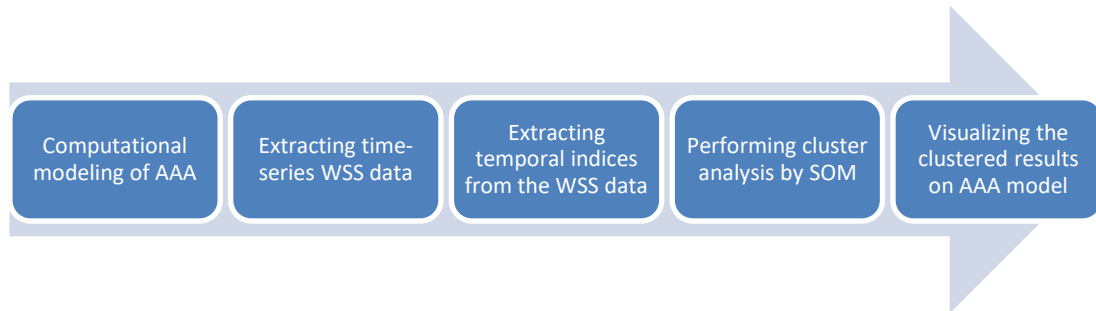


Figure 3.3 Process methodology of visual data mining

3.6 SURVEY ON SELF ORGANIZING MAP IN MEDICINE

It is impossible to list down all SOM related work done in the medical field, since this field covers so many aspects. However, the fundamental idea of this section is to essentially illustrate through a variety of medical related examples, the diverse capability of SOM.

The applicability of SOM as a clustering as well as an exploratory medical data analysis tool can be seen in studies on breast cancer (Markey et al., 2003). Specifically, SOM was used to identify and characterize subgroups (i.e. clusters) within a large heterogeneous computer-aided diagnosis mammographic database. The resulting clusters illustrated clear categorization of clinical breast cancer subtypes such as calcifications, architectural distortions as well as masses. Similarly, SOM was also employed to breast cancer dataset to identify possible relationships between variables (Eklund et al., 2005). The applicability of SOM as a visual exploration and hypothesis formulation tool on breast cancer dataset by searching for possible dependencies were explored based on initial efforts of correlation hunting using SOM (Simula et al., 1999; Vesanto, 2002). Visualization of dataset by using component planes is another type of visualization technique using the SOM grid (Marcos et al 2004; Miguel et al, 2007). Emerging patterns from data that is distributed on the SOM grid could be identified via the component planes (Kohonen, 2001). Through component planes, dataset is explored for possible representation of patterns in order to gain knowledge and insight about the explored dataset. In line with this, attempts were also made to utilize component planes of SOM grids to visualize breast cancer data (Venkatesan et al., 2014).

SOM was also applied as an exploratory medical data analysis tool for gene expression dataset measured with DNA microarrays (Nikkila et al., 2002). Biological hypotheses were successfully derived for a set of genes with known functional classes. The resultant SOM cluster structures of gene expression dataset were classified in terms of the properties of these genes' profile and visualized using the U-matrix. Further to this, SOM was used to visualize high-dimensional dataset of gene expression patterns on a graphical map display.

Apart from gene expression, the capability of SOM was illustrated by applying it to visualize complex gait patterns in the form of single curves (Barton et al., 2005). It converge gait input dataset to derive patterns that were organized on a relational map during the training phase of the SOM. Apart from identifying gait patterns, it also allows possibilities for identifying new gait patterns that are not easily identifiable in multi-dimensional datasets. From a gait analysis point of view, the SOM was used as a tool that minimizes the size of data with minimum loss of information content. The extraction rules from a SOM ideally must be comprehensible to gait analysts. Gait analysts often require simplified illustration of gait patterns to deduce fundamental decision making. Based on this underlying extraction rule the SOM was used to visualize gait patterns from gait dataset (Barton, 1999; Koehle et al., 1996; Lakany, 2001).

Similarly, the potential of SOM on classification was seen in osteoarthritis classification (Anifah et al., 2013). Localization is the initial phase in osteoarthritis classification. The SOM was used to classify the level of severity of knee osteoarthritis. The automated system generated as a result of classification via SOM served as a decision support system for medical doctors. The accuracy level of severity prediction by SOM was very encouraging and as close to human medical expert's prediction.

In line with predictive medical disease diagnosis, the applicability of SOM is gaining popularity amongst medical doctors, biomedical engineers as well as medical analysts. Its predictive capability in medical disease diagnosis can be seen in the case of kidney dysfunction prediction (Hussian, 2008). In this study, the SOM was applied as a classifier to predict whether the kidney was normal or will it have a dysfunction in the future based on the explored clinical and laboratory dataset. The accuracy, sensitivity and specificity were calculated to evaluate its effectiveness. The resultant work illustrated a prediction accuracy of 98%. Similarly, the SOM was also

applied in prediction of mental disorder from classification of speech samples (Mabruk et al., 2012). Its prediction accuracy at classification phase was reported to be 97%. The ability of SOM to predict disease occurrences is further underlined in conventional hepatitis B diagnosis (Uttreshwar et al., 2008). In this study, SOM was applied to hepatitis dataset for predicting if hepatitis B occurs or not in patients based on severity levels. The symptoms of typical hepatitis B disease levels were used as an input to the SOM classifier. Subsequently, the SOM was applied as a classifier to predict the accuracy level of the occurrence of this disease in a patient. The prediction model generated provided faster and more accurate prediction of hepatitis B occurrence and further supported the need for predictive medical disease diagnosis. In similar fashion, SOM was also used to derive a prediction of treatment outcome model on visual field defects of the human visual system caused by brain injury (Guenther et al., 2007). The SOM was applied for hypothesis selection during perimetric visual field assessment exploration. Its result showed a robust classification performance. It was also able to predict regions of highest visual recovery potentials after intense visual stimulation medical procedures of the damaged visual field in clinical environment.

Apart from predictive medical disease diagnosis, SOM has also been applied to edge detection procedures in biomedical images. Examples of SOM utilization in edge detection are texture edge detection, edge detection by contours, hybrid methodologies between SOM-based edge detection and conventional edge detector and image de-noising methods (Venkatesh et al., 2006; Liu et al., 1999; Sampaziotis et al., 2005; Jerhotova et al., 2011). SOM was applied to detect expression forms of the *granulomatosis with polyangiitis* (GPA) disease from high-resolution CT images (Grafova et al., 2013). The primary objective of the SOM was to distinguish specific expression forms from each other, namely, *granulomatosis*, *mass* and *ground-glass*, which often occur together. Upon training the SOM using test images, the edge detection of the validating images was carried out based on the weighted results from the SOM training process. Similarly, SOM was also applied to image classification of rheumatoid arthritis (RA) from diffuse optical tomography (Montejo et al., 2013). Diffuse optical tomography images of the proximal interphalangeal joints of patients with and without RA were classified using SOM. Its sensitivity and specificity was 97% and 91.7%, respectively. SOM was also employed on automatic segmentation and tissue classification of brain tumors from magnetic resonance imaging (MRI)

(Busch et al., 1993). Texture feature extraction and visualization of brain tumor tissues via topological mappings were performed using SOM. The technique proved to be useful in automatic extraction and quick reconstruction of brain tumors that aid surgical and therapy planning.

A summary of the usefulness of SOM based on its purpose is classified and tabulated in Table 3.2

Table 3.2 Application of SOM in medicine

| No. | Medical Informatics | References |
|--|---|--------------------------|
| (A) Medical Imaging Process & Medical Visualization | | |
| 1 | Edge detection techniques in biomedical images. Disease: Granulomatosis with polyangiitis | Grafova et al., 2013 |
| 2 | Visualization of feature extraction of tissue classification of brain tumors from MRI scans | Busch et al., 1993 |
| 3 | Classification of multimodal retinal images | Matsopoulos et al., 2004 |
| 4 | New drug discovery research | Balakin et al., 2005 |
| 5 | Feature extraction of healthy maxillary and ethmoid sinuses for sinus diagnosis | Igbinosa et al., 2014 |
| 6 | Detection of brain tumor from MRI | Yadav et al., 2013 |
| 7 | Image classification of rheumatoid arthritis from optical tomography | Montejo et al., 2013 |
| (B) Exploratory Medical Data Analysis & Medical Information Visualization | | |
| 1 | Cluster analysis based on mammographic results and patient age in breast cancer domain | Markey et al., 2003 |
| 2 | Cluster analysis and medical information visualization in gene expression data | Nikkila et al., 2002 |
| 3 | Medical information visualization (IV) on gait data | Barton et al., 2005 |
| 4 | Medical information visualization (IV) on breast cancer data | Eklund et al., 2005 |
| 5 | Medical information visualization (IV) on breast cancer data | Venkatesan et al., 2014 |
| 6 | Osteoarthritis classification | Anifah et al., 2013 |
| (C) Spatio-Temporal Data Mining | | |
| 1 | Similarity of diffusion patterns of diseases | Augustijn et al., 2013 |
| 2 | Classification of Body Surface Potential Mapping (BSPM) data in the cardiac domain | Simelius et al., 2003 |

| (D) Predictive Medical Disease Diagnosis | | |
|---|---|-------------------------|
| 1 | Prediction of kidney dysfunction | Ali Hussian Ali, 2008 |
| 2 | Prediction of mental disorder from classification of speech samples | Mabruk et al., 2012 |
| 3 | Prediction of Hepatitis B | Uttreshwar et al., 2008 |
| 4 | Prediction of breast cancer diagnosis | Chen et al., 1999 |
| 5 | Prediction of treatment outcome on visual field defects | Guenther et al., 2008 |
| 6 | Medical diagnosis of heart diseases | Velu et al., 2011 |

3.7 PROBLEM STATEMENT

Chapter 2 outlined the current management of unruptured AAAs and the role of existing CFD techniques to further understand the hemodynamic phenomena of this disease. Despite its many advantages, researchers must consider the inherent limitations of applying CFD. Numerical errors occur during computations; therefore, there will be differences between the computed results and reality. Visualizing numerical solutions using vectors, contours, or animated movies of unsteady flow are the most effective ways to interpret the huge amount of data generated from CFD modelling. Wonderfully, bright pictures may provide a sense of realism to the actual fluid mechanics inside a flow system, but they are worthless if they are not quantitatively correct. Thus, CFD results must always be thoroughly examined before they are believed; therefore, a CFD user needs to learn how to properly analyze and make critical judgments about the computed results (Lee, 2011).

Flow visualization using isosurfaces, volume rendering, etc. should help us to understand the flow fields from CFD simulation data. However, even through the flow visualization, it is still difficult to understand the phenomena latent in the unsteady flow fields. This is because unsteady CFD simulations provide huge amount of data, which consist of various fluid properties such as fluid density, flow velocity, flow-induced pressure, etc. given at each grid point at every time step. Therefore, most of the data users usually narrow down the data to limit size, which is acceptable for manual data processing based on their experience and/or intuition. Such data processing approach may lead to the overlooking of universal information about unsteady flow fields (Morizawa et al., 2011).

Chapter 3 provided a comprehensive literature review on various types of data mining techniques employed to study on disease initialization, development and potential rupture of AAAs. It reviewed currently applied, and potential, data mining frameworks for hemodynamic predictions in AAA. One framework applies various data mining techniques to existing medical datasets of a real-patient and combines the results with a typical computational modeling simulation. Another framework takes a visual data mining approach to available computed results of hemodynamic features within AAA models. Both of these approaches allow the rupture potentials of AAAs to be statistically predicted which provides an advantageous alternative to tedious and time-consuming computational modeling.

In this research, a conceptual working framework that has the element of CFD modelling tool as well as the element of data mining tool to gain insight on potential rupture risks of AAAs is to be developed. This hybrid methodology should efficiently perform hemodynamic predictions that can systematically account for geometric variability of AAAs.

3.8 CHOICE OF SOLUTION METHODOLOGY

In an effort to predict the AAA rupture potential, patient-specific studies have demonstrated that maximum stress within the vessel wall was more appropriate criterion than maximum diameter (Fillinger et al., 2003). On the other hand, it was found that the shear stress on the aneurysm wall, as a frictional force produced by blood flow, affects biology and structure of the wall (Dobrin, 1999). The shear stress distribution can be obtained by CFD simulations, which require very time-consuming model preparations to incorporate precisely defined arterial geometry and also severe computational efforts (Taylor et al., 1994; Finol et al., 2001; Kumar et al., 2001).

Accurate geometry specification is particularly challenging because geometric uncertainty using a small number of recorded parameters. To resolve this difficulty, a statistical assessment to identify the relationship between flow patterns and geometric attributes would be beneficial. An idea could be to construct probabilistic models for the input parameter uncertainties that give a reliable output of interest very quickly without classical CFD calculations. An example of this idea is reported by Kolachalama who used Bayesian-Gaussian process emulator to generate a relationship between geometric parameters and maximal wall shear stress

(MWSS) and to identify geometries having maximum and minimum of the wall shear stress (WSS) (Kolachalama et al., 2007).

The chosen methodology for our work is data mining. The focus is to combine the CFD and data mining technique for the estimation of the wall shear stress in AAA models with varying geometries. This approach can be viewed as a computer-based data mining strategy which extracts useful information and synthesizes interesting relationships from datasets generated by performing computer modeling on selected cases. Secondly, this hybrid methodology addresses the motivation for prediction tool in hospitals and clinics which can be run in real time.

3.9 RESEARCH METHODOLOGY TO PROBLEM SOLVING

In order to address the stated problem and chosen methodology, this thesis focuses on the development and subsequent testing and validation of a methodology for hemodynamic prediction of AAAs based on geometric variability. This thesis deals with the development of a new methodology and paradigm for medical information system development. Therefore, this research falls into the science and engineering research domain. In this thesis, a science and engineering-based research approach is chosen as a research method for the proposed solution development. Figure 3.4 illustrates the flow of our research approach.

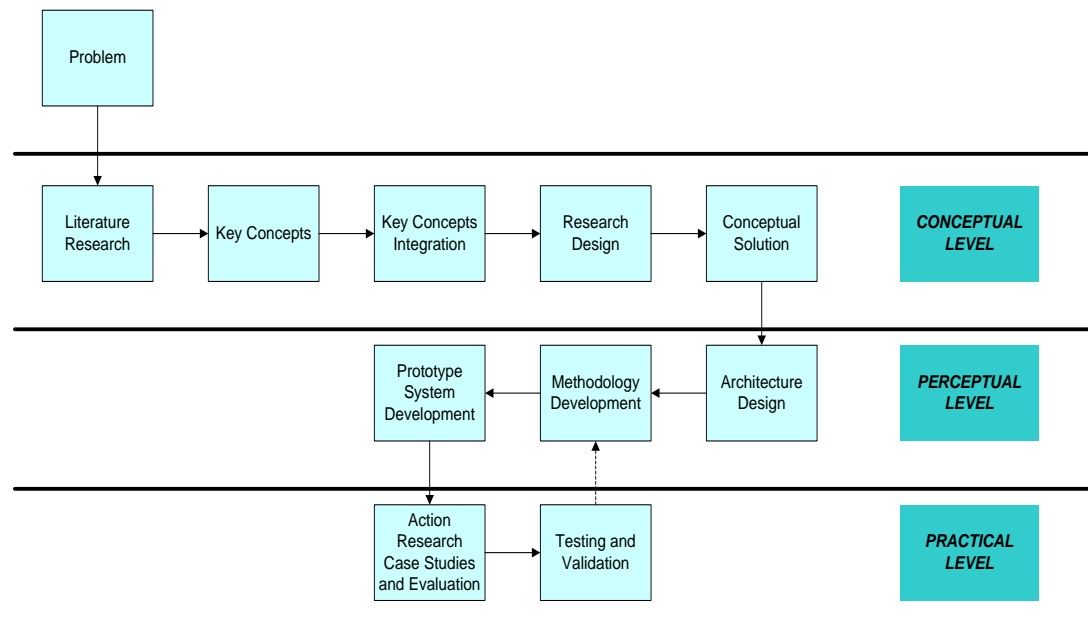


Figure 3.4 Flow of research methodology

Based on Figure 3.4 and as the title of this thesis suggests, a conceptual framework that could help reduce the burden of CFD in multi-dimensional medical dataset analysis is presented. In this scope, AAA disease hemodynamics and its correlation to geometrical uncertainties were identified as a key “problem” in understanding and assessing AAA disease initialization, development and subsequent rupture. The identification of this key problem was a result of an extensive literature review/research carried out on the disease itself and how it is currently management.

Several “key concepts” were identified as literature review was performed. One of the key concepts identified was how CFD contributed to the overall role in assessing hemodynamic variables within a vast library of AAA datasets and its drawbacks. The second key concept identified was the need for a shift away from the rigorous methodological procedure of CFD to a much more statistical approach that would ideally help extract correlations within a vast library of geometrical variations of AAA shapes and sizes by clinicians and surgeons who may not be familiar with CFD techniques. The third key concept involved requirements of modern clinics and hospitals whereby accurate, fast and real-time information from potentially many AAA database that could support clinical decision making for AAA patients.

As a result of these key concepts, the “research design” phase subsequently followed by firstly finding the solution to derive an “intelligent tools” that would probably combine CFD with other statistical techniques. One idea conceived was data mining. This was in-line with the idea that a typical medical database of a particular disease stored in hospitals and clinics can be voluminous and huge. The choice of data mining was governed by the fact that the intelligent tool should be able to cluster/categorize huge datasets without prior pre-conditioning criteria and that would mean an unsupervised machine learning algorithm that would best fit the uncertainty aspect of patient-specific AAA geometries.

Secondly, AAA geometries from a morphological point of view needed to be defined and designed. However, these geometrical definitions alone would not be sufficient to clearly correlate with clinically or medically relevant factors. Hence, in order to be able categorize AAA geometries by keeping in mind clinical relevance, bio-mechanical parameter factors were derived from these geometrical definitions.

Finally, the “conceptual solution” point of view, emphasis was made on how to run several CFD model simulations under physiologically realistic hemodynamic conditions in order to produce close to real case blood flow simulations within the

AAA models. At the same, the conceptual solution was also designed to run on parallel grid platform due to the fact of voluminous AAA model simulation in order to cater for real time medical database.

3.10 SUMMARY

In this chapter, after explaining the need for a methodological shift in predictive medicine, we introduced the data mining technique as an intelligent tool that can replace typical CFD works. Detailed description on data mining process and its key components were also illustrated. Key examples of bio-data mining applications were also introduced. A concise illustration of literature review relating to various types of data mining techniques employed to study various hemodynamic related phenomenon of the abdominal aortic aneurysm disease was described. In view of this, we then summed up our discussion by stating our problem statement, choice of solution methodology and finally the problem-solving approach to our research methodology.

Chapter 4 *Solution Overview*

In this chapter, the proposed solution methodology is discussed extensively. Firstly, the governing equations for pulsatile blood flow modelling and its relevant boundary conditions are explained. Next, the geometrical definitions of the Abdominal Aortic Aneurysm (AAA) models are defined. With these defined parametric ranges, a total of 3,500 AAA models with varying geometries can be generated. The idea of 3,500 models reflects the fact that a typical hospital would consist of a vast library of AAA cases stored in their database. The value of 3,500 is just analogues to “voluminous” dataset that would justify the need for data mining (Kolachalama et al., 2007). Furthermore, large dataset is also required to justify the data mining procedure in order to accurately approximate the statistical moment of mean wall shear stress. This can be seen in other statistical method such as the Monte Carlo simulation technique (Filipovic et al., 2010) Finally, the complete CFD and data mining formulations are formulated. The CFD method employs the Finite Element Method (FEM) whereas the data mining method employs the unsupervised machine learning algorithm of the Kohonen’s Self Organizing Map (SOM).

4.1 GOVERNING EQUATIONS OF BLOOD FLOW MODELING

The complexity of the cardiovascular system features a tremendous variety of districts (i.e. domains) such as large arteries, vases of medium caliber as well as capillaries. Their sizes range from few centimeters in diameter down to few micrometers. Except for the very tiny capillaries, the blood flow can be assumed to behave as a continuum, as well as incompressible, apart from severe pathological situations (Cokelet, 1987). As such, its macroscopical behavior can be described by its velocity and pressure fields, related by the mass and momentum conservation laws (Humphrey et al., 2004). In view of this, the blood behavior in the heart and large arteries are often fairly assumed to be Newtonian (Deano et al., 2015). For the sake of completeness, both Newtonian and non-Newtonian models are explained in the following section.

4.1.1 Incompressible Newtonian Viscous Fluid Flow – Newtonian Model

The continuity and momentum equations in their integral index notation form with respect to a Cartesian coordinates are;

$$\frac{Dm}{Dt} = \frac{D}{Dt} \int_V \rho dV = \int_V \left(\frac{D\rho}{Dt} + \rho \frac{\partial v_i}{\partial x_i} \right) dV = 0 \quad (1)$$

$$\int_V \rho \frac{Dv_i}{Dt} dV = \int_V f_i^B dV + \int_V \frac{\partial \sigma_{ij}}{\partial x_j} dV \quad (2)$$

where ρ is the density of the fluid, f_i^B is the body force and σ_{ij} is the stress tensor.

For an incompressible case, Equation (1) becomes $\frac{\partial v_i}{\partial x_i} = 0$. Next, we introduce a constitutive equation for Newtonian fluid case as;

$$\sigma_{ij} = -p\delta_{ij} + 2\mu\dot{e}_{ij} \quad (3)$$

where, p is the fluid pressure, μ is dynamic viscosity, \dot{e}_{ij} is the tensor of velocity

deformation, $\dot{e}_{ij} = \frac{1}{2} \left(\frac{\partial v_i}{\partial x_j} + \frac{\partial v_j}{\partial x_i} \right)$ and δ_{ij} is the Kronecker delta. Substituting the

tensor of velocity deformation into Equation (2) yields;

$$\int_V \rho \frac{Dv_i}{Dt} dV = \int_V f_i^B dV + \int_V \left(-\frac{\partial p}{\partial x_i} + \mu \left(\frac{\partial^2 v_i}{\partial x_j \partial x_j} + \frac{\partial^2 v_j}{\partial x_j \partial x_i} \right) \right) dV \quad (4)$$

Finally integrating Equation (4) over its volume gives rise to the final form of the Navier Stokes equation;

$$\rho \left(\frac{\partial v_i}{\partial t} + v_j \frac{\partial v_i}{\partial x_j} \right) = -\frac{\partial p}{\partial x_i} + \mu \left(\frac{\partial^2 v_i}{\partial x_j \partial x_j} + \frac{\partial^2 v_j}{\partial x_j \partial x_i} \right) + f_i^B \quad (5)$$

$$\frac{\partial v_i}{\partial x_i} = 0 \quad (6)$$

Therefore, together with the incompressibility condition, Equations (5) and (6) represents the three-dimensional flow of a viscous incompressible Newtonian fluid, where v_i is velocity of blood flow in direction x_i and summation is assumed on the repeated (dummy) indices, $i, j = 1, 2, 3$.

4.1.2 Incompressible Non-Newtonian Fluid Flow – Casson Model

Due to complex behavior of blood as a fluid, there are several blood models, which are related to real flow in arteries. The models can be divided on the Newtonian and non-Newtonian fluids. The Newtonian fluid has constant dynamic viscosity and their

corresponding governing equation is as explained in the previous section. On the other hand, the complex rheological properties of blood can be approximated by some of the nonlinear non-Newtonian relations. The numerical simulation of hemodynamic flow needs the relationship between viscosity and shear rate. If one considers only the shear-rate-dependent viscosity of blood, then various constitutive equations developed to relate the shear stress tensor and the rate of deformation tensor could be utilized. The non-Newtonian viscosity of normal blood as a function of the shear rate is shown in Figure 4.1 (Cho et al., 1991).

In blood flow where the shear rates are not too low, the Casson's relation, based on the dynamic viscosity measurements is employed. The dominant factor affecting the behavior of blood as a suspension having the aggregatable particles corresponds to the shear thinning effect at increased shear rate. The blood viscosity is derived as a function of the volume rate of particles-hematocrits, and of the shear strain rate.

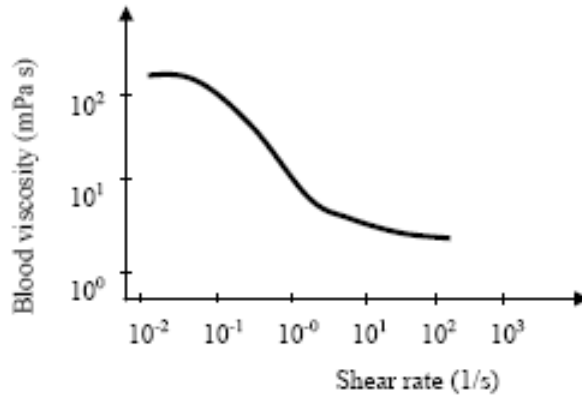


Figure 4.1 Blood viscosity vs. Shear rate

The generalized Casson relation is (Perktold et al., 1991);

$$\sqrt{\tau} = k_0(c_h) + k_1(c_h)\sqrt{2\sqrt{D_{II}}} \quad (7)$$

where k_0 and k_1 are parameters depending on the volume fraction of particles in the suspension c_h and D_{II} is the second invariant of the strain rate tensor;

$$D_{II} = \frac{1}{2} d_{ij}d_{ij} \quad (8)$$

with the strain rate components d_{ij} given as;

$$d_{ij} = \frac{1}{2} \left(\frac{\partial v_i}{\partial x_j} + \frac{\partial v_j}{\partial x_i} \right), \quad i, j = 1, 2, 3 \quad (9)$$

Finally, the dynamic viscosity μ is expressed as;

$$\mu = \frac{1}{2\sqrt{D_{II}}} \left(k_0(c) + k_1(c) \sqrt{2\sqrt{D_{II}}} \right)^2 \quad (10)$$

CFD modelling techniques commonly apply the continuum approach (Deano et al., 2015; Morrison, 2001). Blood flow was modeled as an incompressible Newtonian fluid (Castro et al., 2006; Shojima et al., 2004). Constant blood viscosity of 0.0004Pa.s was assumed. Other CFD studies also adopted the Newtonian model by applying a constant blood viscosity of 0.0035Pa.s (Marzo et al., 2009; Omodaka et al., 2012.). Since AAA models are located along larger arteries, especially at out-coming aorta branch with diameter approximately 20mm, it would be fair to assume the Newtonian model whereby blood is simulated as viscous, incompressible Newtonian fluid.

4.1.3 Pulsatile Flow and Boundary Conditions

The motion of blood in arteries is induced by the periodic contraction of the heart muscles which pump the fluid down to the arterial system from the aorta up to the capillaries. More precisely, a heartbeat has two phases. The first phase is referred to as systolic phase and the second is referred to as diastolic phase. This periodic unsteadiness of blood flow is called pulsatile flow or often referred as the pulsatility of blood flow. This term refers properly to the feature of the first rapid increase and decrease of the flow rate phase (systolic phase) and followed by a longer phase when the flow rate becomes small and almost constant (diastolic phase). A typical flow rate during one cardiac cycle (i. e. heart beat) at the entrance of an aorta is illustrated in Figure 4.2.

The computational analysis is performed under physiological realistic pulsatile conditions. Typical flow waveform in the aorta is shown in Figure 4.2. This pulsatile flow is imposed at the inlet of the non-dilated aorta entry. The mean

Reynolds number, $Re_{mean} = \frac{4Q_{mean}}{\pi \nu d}$ and peak Reynolds Number, $Re_{peak} = \frac{4Q_{peak}}{\pi \nu d}$ of

the pulsatile flow is 525 and 2325, respectively. The mean Reynolds number is based on the mean flow rate, Q_{mean} of a full cardiac cycle whereas the peak Reynolds number is based on the peak systolic flow rate, Q_{peak} of the pulsatile flow. The pulsatile flow consists of a pulse frequency, ω of 75-80 beats/min, so that the Womersley number $\alpha = \frac{d}{2} \sqrt{\frac{\omega}{\nu}} \approx 12$, where d is the non-dilated aorta diameter and ν is the kinematic viscosity of blood which was taken to be $3.5\text{mm}^2/\text{s}$. At the inflow boundaries, a fully developed flow in a long circular duct model with given volume flux is prescribed. At the fixed walls all velocity components are prescribed as zero i.e. no-slip conditions at the inner artery wall was adopted. Along the symmetric plane of the model, the velocity components normal to this plane and tangential stresses are imposed to be zero. At the outlet of the aorta, the normal and tangential stresses are set to be zero as well, respectively (i.e stress-free condition). Therefore, near the outlet of the aorta the solution differs from the solution in an infinitely long straight cylindrical tube model (Vijayajothi et al., 2010).

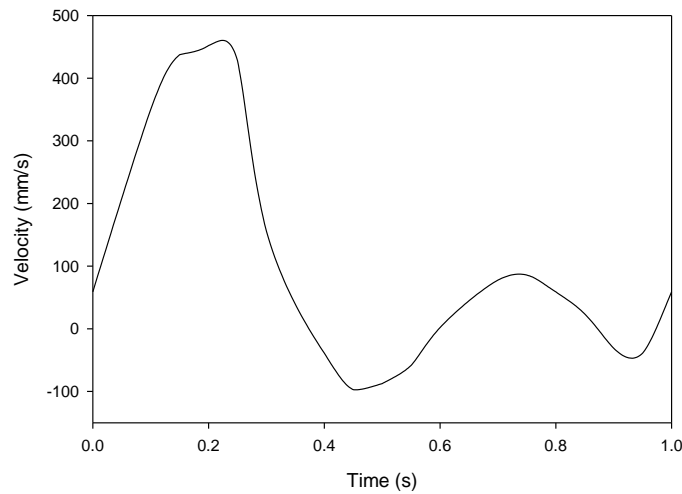


Figure 4.2 Pulsatile flow waveforms at the entry of the aorta

The periodic pulsatility influences in a decisive way the actual velocity profiles of the blood in the arteries. When the morphology of the fluid domain is simple (such as a straight cylindrical tube representing an artery), analytical solutions (i.e. exact solutions) of Equations (5) and (6) are available either for the steady and unsteady flows (Wommersley, 1955).

4.2 ABDOMINAL AORTIC ANEURYSM MODEL GEOMETRIES

The shape of the AAA model is defined by two splines with half-circle extrusions between them, as shown in Figure 4.3. The geometric parameters of the rigid-wall AAA models are divided into three groups; (a) *aneurysm length, A, B, C*, (b) *upleft, up, upright, downleft, down, downright* - quantifying the curvature parameters in the Bezier description manner and (c) *length, aorta diameter*. These geometrical characterizations give rise to ten independent parameters that can be varied within typical ranges as illustrated in Table 4.1 (Vijayajothi et al., 2013).

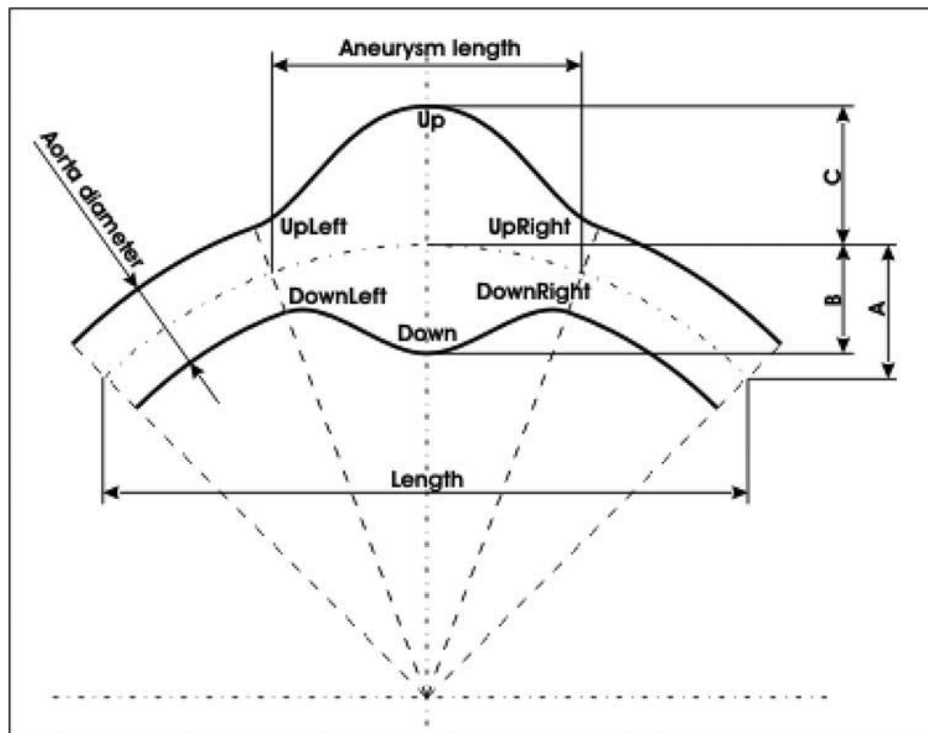


Figure 4.3 Parametric model of the AAA geometry

Table 4.1 AAA geometrical parameter ranges

| AAA Parameters | Parameter Ranges |
|----------------------|------------------|
| Aneurysm length (cm) | 6 to 15 |
| A (cm) | 0 to 3 |
| B (cm) | 1.4 to 3 |
| C (cm) | 1.4 to 3 |
| Curvature parameters | 0.15 to 0.4 |

4.3 COMPUTATIONAL FINITE ELEMENT METHOD MODELLING

The mixed velocity-pressure (v-p) and the penalty finite element formulations were used to solve the nonlinear Navier Stokes equations. The advantage of the first formulation is that the pressure, velocity, velocity gradient and stress boundary conditions can be directly incorporated into the finite element matrix equations. The procedure of deriving the element equations relies on the Galerkin method, where the velocity and pressure fields are interpolated over the finite element. The Galerkin method is an orthogonal projection of the residual to a set of linearly independent complete function (Galerkin, 1915). In this method the weight function which is the test function is made equal to the trial function. By maintaining the orthogonality requirements of the residual expression, the Galerkin method provides very close approximation to the true solution. It is called the best approximation (Chung, 1978). For all engineering problems for which the variational functional exists, the Galerkin integral gives results identical to those one would obtain using the Rayleigh-Ritz method (Chung, 1978). The penalty finite element formulation on the other hand has a better conditioning of the discretized system and also reduced number of degrees of freedom, since now only the velocities are the unknown variable. The pressure is eliminated at the element level through the static condensation.

Three-dimensional (3D) AAA geometries to demonstrate that AAA bulge shape, not diameter alone is a vital determinant of wall shear stress magnitude (Sacks et al., 1999). Actual AAAs are complex in nature whereby regions where the signs and magnitudes of the principal surface curvatures can potentially change rapidly. Thus, simplified geometries fail to demonstrate the importance of these abrupt, local changes in the surface curvature on the distribution of stresses (Vorp et al., 1998). Furthermore, AAA dilation progression may not be of uniform in nature but vary spatially. This in return would subsequently alter aortic geometry that eventually results in complex wall stress distribution. Hence, 3D geometrical assessment of AAA would prove benefit in order to understand the above complex wall stresses distributions.

In this study, 3D AAA geometry modelling is adopted. A 21/8 node three-dimensional brick element (i. e. rectangular element) was used for this three-dimensional analysis. 21 nodes were employed to interpolate the velocities and 8 nodes were employed to interpolate the pressure, hence, providing stable elements

expressed by the inf-sup condition of Brezzi-Babuska (Vijayajothi et al., 2010). The finite element mesh of the model consists of 7,200 elements and 8,450 nodes.

4.3.1 Mixed Velocity-Pressure (v/p) Formulation

Applying the Galerkin method in Equations (5) and (6) yields;

$$\int_V G_\delta v_{i,i} dV = 0 \quad (11)$$

$$\rho \int_V H_\alpha \frac{\partial v_i}{\partial t} dV + \rho \int_V H_\alpha v_j v_{i,j} dV = - \int_V H_\alpha p_{,i} dV + \int_V \mu H_\alpha v_{i,jj} dV + \int_V H_\alpha f_i^B dV \quad (12)$$

Integrating by parts and transforming the volume to surface integral of Eq. (12) yields;

$$\rho \int_V H_\alpha \frac{\partial v_i}{\partial t} dV + \rho \int_V H_\alpha v_j v_{i,j} dV - \int_V H_{\alpha,i} p dV + \int_V \mu H_{\alpha,j} v_{i,j} dV = \int_V H_\alpha f_i^B dV + \int_S H_\alpha (-pn_i + \mu v_{i,j} n_j) dS \quad (13)$$

The chosen interpolation functions for the velocity and pressure are, respectively;

$$v_i = H_\alpha v_{i\alpha} \quad (14)$$

$$p = G_\delta p_\delta \quad (15)$$

Next, Equations (14) and (15) are substituted into Equations (13) and (11) to arrive at;

$$\left[\rho \int_V H_\alpha H_\beta dV \right] \dot{v}_{\beta i} + \left[\rho \int_V H_\alpha H_\gamma v_{j\gamma} H_{\beta,j} dV \right] v_{\beta i} + \left[\int_V \mu H_{\alpha,j} H_{\beta,j} dV \right] v_{\beta i} - \left[\int_V H_{\alpha,i} G_\delta dV \right] p_\delta = \int_V H_\alpha f_i^B dV + \int_S H_\alpha (-pn_i + v_{i,j} n_j) dS \quad (16)$$

$$\left[\int_V G_\delta H_{\alpha,i} dV \right] v_{\alpha i} = 0 \quad (17)$$

Finally, the finite element matrix equation takes the form of;

$$\begin{bmatrix} \mathbf{M}_v & \mathbf{0} \\ \mathbf{0} & \mathbf{0} \end{bmatrix} \begin{Bmatrix} \dot{\mathbf{v}} \\ \dot{\mathbf{p}} \end{Bmatrix} + \begin{bmatrix} \mathbf{K}_{vv} + \mathbf{K}_{\mu v} & \mathbf{K}_{vp} \\ \mathbf{K}_{vp}^T & \mathbf{0} \end{bmatrix} \begin{Bmatrix} \mathbf{v} \\ \mathbf{p} \end{Bmatrix} = \begin{Bmatrix} \mathbf{R}_B + \mathbf{R}_S \\ \mathbf{0} \end{Bmatrix} \quad (18)$$

where, the mass, convective, viscosity, pressure gradient, volume force and surface force terms are, respectively;

$$\begin{aligned} (\mathbf{M}_v)_{i\alpha\beta} &= \rho \int_V H_\alpha H_\beta dV = \rho \int_V \mathbf{H}^T \mathbf{H} dV \\ (\mathbf{K}_{vv})_{i\alpha\beta} &= \rho \int_V H_\alpha H_\gamma v_{j\gamma} H_{\beta,j} dV = \rho \int_V \mathbf{H}^T (\mathbf{H}v_1 \mathbf{H}_{,x_1} + \mathbf{H}v_2 \mathbf{H}_{,x_2} + \mathbf{H}v_3 \mathbf{H}_{,x_3}) dV \end{aligned}$$

$$\begin{aligned}
(\mathbf{K}_{\mu\nu})_{i\alpha\beta} &= \int_V \mu H_{\alpha,j} H_{\beta,j} dV = \int_V \mu (\mathbf{H}_{,x_1}^T \mathbf{H}_{,x_1} + \mathbf{H}_{,x_2}^T \mathbf{H}_{,x_2} + \mathbf{H}_{,x_3}^T \mathbf{H}_{,x_3}) dV \\
(\mathbf{K}_{\nu\mathbf{p}})_{i\alpha\delta} &= -\int_V H_{\alpha,i} G_{\delta} dV = -\int_V \mathbf{H}_{,x}^T \mathbf{G} dV \\
(\mathbf{R}_{\mathbf{B}})_{i\alpha} &= \int_V H_{\alpha} f_i^B dV = \int_V \mathbf{H}^T \mathbf{f}^B dV \\
(\mathbf{R}_{\mathbf{S}})_{i\alpha} &= \int_S H_{\alpha} (-pn_i + v_{i,j} n_j) dS = \int_S \mathbf{H}^T (-p\mathbf{n} + \mathbf{v}_{,x} \cdot \mathbf{n}) dS
\end{aligned} \tag{19}$$

Next, in order to implement the incremental-iterative procedure, the velocity and pressure at the end of each time step is defined, respectively;

$${}^{t+\Delta t} v_{i\alpha} = {}^{t+\Delta t} v_{i\alpha}^{(m-1)} + \Delta v_{i\alpha}^{(m)} \tag{20}$$

$${}^{t+\Delta t} p_{\delta} = {}^{t+\Delta t} p_{\delta}^{(m-1)} + \Delta p_{\delta}^{(m)} \tag{21}$$

where (m) is iteration. Next, by substituting Equations (20) and (21) into Equations (16) and (17) and subsequently the incremental-iterative equation becomes;

$$\begin{aligned}
&\left[\rho \frac{1}{\Delta t} \int_V H_{\alpha} H_{\beta} dV \right] (\Delta v_{\beta i}^{(m)}) + \left[\rho \int_V H_{\alpha} H_{\gamma} {}^{t+\Delta t} v_{\gamma}^{(m-1)} H_{\beta,j} dV \right] (\Delta v_{\beta i}^{(m)}) + \left[\rho \int_V H_{\alpha} H_{\gamma,j} {}^{t+\Delta t} v_{\gamma}^{(m-1)} H_{\beta} dV \right] (\Delta v_{\beta i}^{(m)}) \\
&\left[\int_V \mu H_{\alpha,j} H_{\beta,j} dV \right] (\Delta v_{\beta i}^{(m)}) - \left[\int_V H_{\alpha,i} G_{\delta} dV \right] (\Delta p_{\delta}^{(m)}) = \int_V H_{\alpha} f_i^B dV + \int_S H_{\alpha} (-pn_i + v_{i,j} n_j) dS - \\
&\left[\rho \frac{1}{\Delta t} \int_V H_{\alpha} H_{\beta} dV \right] ({}^{t+\Delta t} v_{\beta i}^{(m-1)} - {}^t v_{\beta i}) - \left[\rho \int_V H_{\alpha} H_{\gamma} {}^{t+\Delta t} v_{\gamma}^{(m-1)} H_{\beta,j} dV \right] ({}^{t+\Delta t} v_{\beta i}^{(m-1)}) - \left[\int_V \mu H_{\alpha,j} H_{\beta,j} dV \right] ({}^{t+\Delta t} v_{\beta i}^{(m-1)}) - \\
&\left[\int_V H_{\alpha,i} G_{\delta} dV \right] ({}^{t+\Delta t} p_{\delta}^{(m-1)})
\end{aligned} \tag{22}$$

$$\left[\int_V G_{\delta} H_{\alpha,i} dV \right] (\Delta v_{\alpha i}^{(m)}) = - \left[\int_V G_{\delta} H_{\alpha,i} dV \right] ({}^{t+\Delta t} v_{\alpha i}^{(m-1)}) \tag{23}$$

Now Equation (18) becomes;

$$\begin{bmatrix} \frac{1}{\Delta t} \mathbf{M}_{\mathbf{v}} + {}^{t+\Delta t} \mathbf{K}_{\mathbf{v}\mathbf{v}}^{(m-1)} + {}^{t+\Delta t} \mathbf{K}_{\mu\nu}^{(m-1)} + {}^{t+\Delta t} \mathbf{J}_{\mathbf{v}\mathbf{v}}^{(m-1)} & \mathbf{K}_{\mathbf{v}\mathbf{p}} \\ \mathbf{K}_{\mathbf{v}\mathbf{p}}^T & \mathbf{0} \end{bmatrix} \begin{Bmatrix} \Delta \mathbf{v}^{(m)} \\ \Delta \mathbf{p}^{(m)} \end{Bmatrix} = \begin{Bmatrix} {}^{t+\Delta t} \mathbf{F}_{\mathbf{v}}^{(m-1)} \\ {}^{t+\Delta t} \mathbf{F}_{\mathbf{p}}^{(m-1)} \end{Bmatrix} \tag{24}$$

where the matrices and vectors are;

$$\begin{aligned}
(\mathbf{M}_{\mathbf{v}})_{i\alpha\beta} &= \rho \int_V H_{\alpha} H_{\beta} dV = \rho \int_V \mathbf{H}^T \mathbf{H} dV \\
{}^{t+\Delta t} (\mathbf{K}_{\mathbf{v}\mathbf{v}})_{i\alpha\beta}^{(m-1)} &= \rho \int_V H_{\alpha} H_{\gamma} {}^{t+\Delta t} v_{\gamma}^{(m-1)} H_{\beta,j} dV = \rho \int_V \mathbf{H}^T (\mathbf{H} {}^{t+\Delta t} \mathbf{v}^{(m-1)}) \nabla^T \mathbf{H} dV
\end{aligned}$$

$$\begin{aligned}
{}^{t+\Delta t}(\mathbf{K}_{\mu\nu})_{i\alpha\beta}^{(m-1)} &= \int_V \mu H_{\alpha,j} H_{\beta,j} dV = \int_V \mu \nabla \mathbf{H}^T \nabla^T \mathbf{H} dV \\
{}^{t+\Delta t}(\mathbf{J}_{\mathbf{v}\mathbf{v}})_{j\alpha\beta}^{(m-1)} &= \rho \int_V H_{\alpha} H_{\gamma,j} {}^{t+\Delta t}v_{i\gamma}^{(m-1)} H_{\beta} dV = \rho \int_V \mathbf{H}^T (\nabla \mathbf{H} {}^{t+\Delta t} \mathbf{v}^{(m-1)}) \mathbf{H} dV \\
(\mathbf{K}_{\mathbf{v}\mathbf{p}})_{i\alpha\delta} &= - \int_V H_{\alpha,i} G_{\delta} dV = - \int_V \nabla \mathbf{H}^T \mathbf{G} dV \\
{}^{t+\Delta t} \mathbf{F}_{\mathbf{v}}^{(m-1)} &= {}^{t+\Delta t} \mathbf{R}_{\mathbf{B}} + {}^{t+\Delta t} \mathbf{R}_{\mathbf{S}}^{(m-1)} - ({}^{t+\Delta t} \mathbf{K}_{\mathbf{v}\mathbf{v}}^{(m-1)} + {}^{t+\Delta t} \mathbf{K}_{\mu\nu}^{(m-1)}) {}^{t+\Delta t} \mathbf{v}^{(m-1)} - \mathbf{K}_{\mathbf{v}\mathbf{p}} {}^{t+\Delta t} \mathbf{p}^{(m-1)} \\
{}^{t+\Delta t} \mathbf{F}_{\mathbf{p}}^{(m-1)} &= -\mathbf{K}_{\mathbf{v}\mathbf{p}}^T {}^{t+\Delta t} \mathbf{v}^{(m-1)} \\
{}^{t+\Delta t}(\mathbf{R}_{\mathbf{B}})_{i\alpha} &= \int_V H_{\alpha} {}^{t+\Delta t} f_i^B dV = \int_V \mathbf{H}^T {}^{t+\Delta t} \mathbf{f}^B dV \\
{}^{t+\Delta t}(\mathbf{R}_{\mathbf{S}})_{i\alpha}^{(m-1)} &= \int_S H_{\alpha} ({}^{t+\Delta t} p^{(m-1)} n_i + {}^{t+\Delta t} v_{i,j}^{(m-1)} n_j) dS = \int_S \mathbf{H}^T ({}^{t+\Delta t} p^{(m-1)} \mathbf{n} + \nabla {}^{t+\Delta t} \mathbf{v}^{(m-1)} \cdot \mathbf{n}) dS \quad (25)
\end{aligned}$$

The left upper index $t + \Delta t$ denotes that the quantities are evaluated at the end of time step. V and S are the volume and the surface of the finite element, respectively. The matrix \mathbf{H} and \mathbf{G} contains the interpolation functions for the velocities and the pressure, respectively. The matrix $\mathbf{M}_{\mathbf{v}}$ is mass matrix, $\mathbf{K}_{\mathbf{v}\mathbf{v}}$ and $\mathbf{J}_{\mathbf{v}\mathbf{v}}$ are convective matrices, $\mathbf{K}_{\mu\nu}$ is viscous matrix, $\mathbf{K}_{\mathbf{v}\mathbf{p}}$ is pressure matrix and $\mathbf{F}_{\mathbf{v}}$ and $\mathbf{F}_{\mathbf{p}}$ are forcing vectors.

4.3.2 PENALTY Formulation

In the penalty formulation the incompressibility condition is used;

$$v_{i,i} + \frac{p}{\lambda} = 0 \quad (26)$$

where λ is a very large positive scalar so that $\frac{p}{\lambda}$ is numerically zero for practical purposes. The pressure is calculated as;

$$p = -\lambda v_{i,i} \quad (27)$$

If we substitute it in Equation (5) we arrive at;

$$\rho \left(\frac{\partial v_i}{\partial t} + v_j v_{i,j} \right) = \lambda v_{i,i} + \mu (v_{i,j} + v_{ji})_j + f_i^B \quad (26)$$

Only the velocities are used in the final finite element matrix equation;

$$\left(\frac{1}{\Delta t} \mathbf{M}_{\mathbf{v}} + {}^{t+\Delta t} \mathbf{K}_{\mathbf{v}\mathbf{v}}^{(m-1)} + {}^{t+\Delta t} \mathbf{K}_{\mu\nu}^{(m-1)} + {}^{t+\Delta t} \hat{\mathbf{K}}_{\mu\nu}^{(m-1)} + {}^{t+\Delta t} \mathbf{J}_{\mathbf{v}\mathbf{v}}^{(m-1)} + \mathbf{K}_{\lambda\nu} \right) \Delta \mathbf{v}^{(m)} = {}^{t+\Delta t} \hat{\mathbf{F}}_{\mathbf{v}}^{(m-1)} \quad (27)$$

where the matrices are:

$$\begin{aligned}
{}^{t+\Delta t}(\hat{\mathbf{K}}_{\mu\nu})_{j\alpha\beta}^{(m-1)} &= \int_V \mu H_{\alpha,j} H_{\beta,i} dV \\
(\mathbf{K}_{\lambda\nu})_{j\alpha\beta} &= \lambda \int_V H_{\alpha,i} H_{\beta,j} dV \\
{}^{t+\Delta t}\hat{\mathbf{F}}_{\mathbf{v}}^{(m-1)} &= {}^{t+\Delta t}\mathbf{R}_{\mathbf{B}} + {}^{t+\Delta t}\hat{\mathbf{R}}_{\mathbf{S}}^{(m-1)} - \left({}^{t+\Delta t}\mathbf{K}_{\mathbf{v}\mathbf{v}}^{(m-1)} + {}^{t+\Delta t}\mathbf{K}_{\mu\nu}^{(m-1)} + {}^{t+\Delta t}\hat{\mathbf{K}}_{\mu\nu}^{(m-1)} + \mathbf{K}_{\lambda\nu} \right) {}^{t+\Delta t}\mathbf{v}^{(m-1)} \\
{}^{t+\Delta t}(\hat{\mathbf{R}}_{\mathbf{S}})_{j\alpha}^{(m-1)} &= \int_S H_{\alpha} \left[\lambda {}^{t+\Delta t}\mathbf{v}^{(m-1)}_{ji} n_i + \left({}^{t+\Delta t}\mathbf{v}^{(m-1)}_{i,j} + {}^{t+\Delta t}\mathbf{v}^{(m-1)}_{ji} \right) n_j \right] dS
\end{aligned} \tag{28}$$

4.4 DATA MINING METHODOLOGY

For many years, data mining techniques have been studied and used to model information processing systems. They not only can provide solutions with improved performances when compared with traditional problem-solving methods but also provide deeper understanding of human cognitive abilities. Among various existing data mining methodologies and learning algorithms, Kohonen's self-organizing map (SOM) is one of the most popular models (Koua, 2003). It is an unsupervised learning algorithm developed for an associative memory model that is of simple structure and computational form. Its working principle is motivated by the retina-cortex mapping principles. The SOM can provide topologically preserved mapping from input to output spaces.

The Self-Organizing Map (SOM) is a form of artificial neural network. As indicative of its name, the learning process of SOM is via unsupervised competitive learning. The weights are mapped in conformance to the provided input dataset. The nodal points of the SOM network organize itself similar to the input dataset. An important characteristic of the SOM is that it preserves key features of the input dataset. Topology preservation of the input dataset during the mapping of the SOM network is a vital characteristic that allows the SOM methodology to be considered a valuable artificial neural network technique in complex data exploration. Another important characteristic of the SOM is that its ability to compress multi-dimensional data via vector quantization. These multi-dimensional input data are compressed and illustrated in a lower dimensional space such as one- or two-dimensional form. This further helps in visualizing information from a given multi-dimensional input dataset.

The SOM network usually is in the form of two-dimensional grid whereby at each nodal grid point consist of map units. Vector v_{ij} represents each unit i within the two-dimensional nodal grid point of the SOM;

$$v_{ij} = [v_{i1}, v_{i2}, \dots, v_{if}] \quad \text{where } j = 1, 2, \dots, f \quad (29)$$

where f represents the input vector dimension. Iterative training is performed on the SOM. From the input dataset, a sample vector x is chosen randomly at individual training step. Once the distance between x and all vectors v_{ij} are calculated, the best-matching unit (BMU) y is then calculated;

$$\|x - v_y\| = \min_i \{\|x - v_{ij}\|\} \quad (30)$$

Next, the vectors v_{ij} are updated based on;

$$v_{ij}(t + 1) = v_{ij}(t) + \alpha(t)h_{yi}(t)[x - v_{ij}(t)] \quad (31)$$

where, t is time, $\alpha(t)$ is the adaptation coefficient and $h_{yi}(t)$ is the neighbours surrounding the winning unit expressed as;

$$h_{yi}(t) = \exp\left(-\frac{\|z_x - z_y\|^2}{2\beta^2(t)}\right) \quad (32)$$

where z_x and z_y are the positions x and y of the neurons on the mapped grid of the SOM.

4.4.1 Clustering of Self-Organizing Map

In comparison to conventional data analysis methodologies, the SOM is similar in terms of clustering and dimensionality reduction methods. The clustering methods group similar data from the input dataset and subsequently reduce the number of data from the input dataset. Normally, prior to clustering, most methods assume a particular shape of the cluster before extracting a series of clusters in order to obtain optimal fitting of the input dataset. This similar approach is often applied to SOM as well whereby it treats every map unit as an individual cluster.

The generally accepted rule for optimised clustering is that grouping is performed by minimizing the distance within and maximizing the distance between clusters (Vesanto, 1999). There are several definitions of within cluster distances and

between cluster distances. In this thesis the hierarchical clustering algorithm was exploited whereby the between-cluster distance with complete linkage method was applied for optimized clustering and the centroid distance was used to minimize the distance within clusters. Prior to clustering, the dataset is normalized. The WSS at peak systolic phase of the full pulsatile cycle at each nodal element was extracted. These values were imported into the SOM Viscovery software and cluster analysis was performed (Vesanto, 1999).

4.4.2 Visual Data Mining Methodology

The method employed consists of four steps: (1) defining the time-series data obtained from the finite element computation as input data, (2) extracting the temporal indices from the time-series data for each grid point, (3) dividing of sets of grip points into several clusters by self-organizing map, and (4) mapping the clustering results onto a real space for visualization of the wall shear stress characteristics of pulsatile driven flow of the fusiform abdominal aortic aneurysm model (Morizawa, 2011).

(A) Input data

The input data was obtained from the three-dimensional finite element computation (Vijayajothi et al., 2012). In this simulation, a specialized finite element software developed by the Centre of Supercomputing, University of Kragujevac, Serbia for aneurysm modeling was used (MilijkoVIC et al., 2008). These data contain the time-series data of WSS vectors in a three-dimensional Cartesian coordinate system. The WSS data are given at each of the 8,450 nodal element points on the aneurysm surface during a pulsatile cycle of 1.0s (50 time steps with a step size of 0.02s).

(B) Extraction of temporal indices

At each grid points, 2 temporal index values are extracted from the WSS time-series data. They are; (a) $\tau_{systolic}$ maximum WSS at the systolic phase, and (b) τ_{max} maximum WSS for the entire cycle domain.

(C) Cluster analysis via self-organizing map

The main purpose of cluster analysis is to group the dataset into several subsets (i.e. clusters) so that data points in the same clusters are similar in terms of data dimension values. In this study, cluster analysis for a set of 8,450 grid points by

SOM, based on the similarity of five index values; 2 temporal indices ($\tau_{systolic}$ and τ_{max}) and three spatial indices ($x, y,$ and z coordinates) assigned to each grid point.

SOM is a feed-forward type neural network model with an unsupervised learning algorithm. Neurons in the input layer of SOM are associated with the input data vectors as:

$$f^i = [f_1^i, f_2^i, \dots, f_m^i]^T \quad (i = 1, 2, \dots, N) \quad (33)$$

Neurons in the output layer are arranged with two-dimensional rectangular or hexagonal mesh topology, and are associated with the weight vectors as:

$$w^j = [w_1^j, w_2^j, \dots, w_m^j]^T \quad (j = 1, 2, \dots, L) \quad (34)$$

where m is the number of input vector dimensions, N is the number of neurons in the input layer (equivalent to the number of input data points), and L is the number of neurons in the output layer. The weight vectors have the same m dimensions as the input vectors and are randomly assigned before the learning process. The learning algorithm of SOM starts with finding the best-matching unit w^{c_i} , which is the closest weight vector to each input vector f^i as follows:

$$\|f^i - w^{c_i}\| = \min \|f^i - w^j\| \quad (j = 1, 2, \dots, L) \quad (35)$$

Once the best-matching units are determined for all input vectors the weight adjustments are performed not only for the best-matching units but also for the neighbours. The adjustments depend on the distance (similarity) between input vectors and weight vectors. The weight vector w^j is adjusted to w_{adj}^j as follows:

$$w_{adj}^j = \sum_{i=1}^N h_{j c_i} f^i / \sum_{i=1}^N h_{j c_i} \quad (j = 1, 2, \dots, L) \quad (36)$$

where $h_{j c_i}$ is defined by the following Gaussian-like function:

$$h_{j c_i} = \exp\left(-\frac{\mathbf{d}_{j c_i}^2}{r_t^2}\right) \quad (37)$$

where $\mathbf{d}_{j c_i}^2$ denotes the Euclidean distance between the neuron w^j and the best-matching unit w^{c_i} on the two-dimensional map in the output layer, and r_t denotes the neighbourhood radius which decreases with iteration of the learning processes. These weight vector distributions will eventually become smooth not only locally but also

globally on the two-dimensional map upon repetition of this learning process. A complete process methodology is illustrated in Figure 4.4

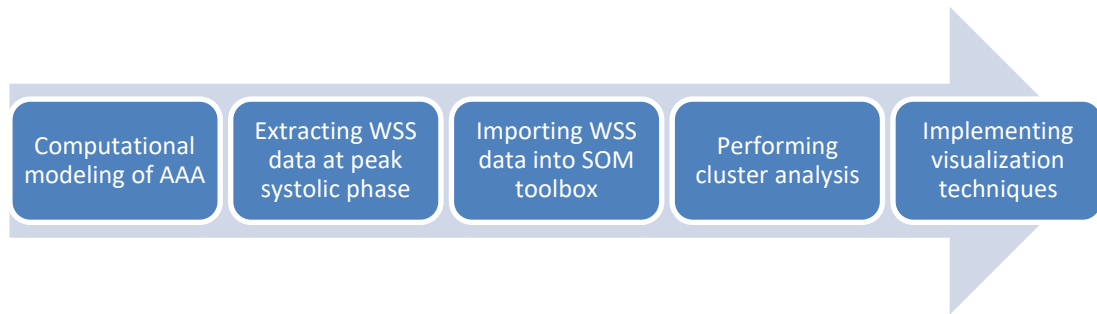


Figure 4.4 Process methodology of visual data mining

4.5 SUMMARY

In this chapter a complete derivation of the proposed hybrid methodology between CFD and data mining has been illustrated that serves as a working platform to study the wall shear stress distributions for varying geometries of AAA and its relation to rupture predictions. The blood flow modelling assumes the pulsatility nature of the human blood. The AAA models are assumed to be in three-dimensional form; hence, the corresponding three-dimensional finite element equations are derived. The resultant finite element computation of hemodynamic variables, specifically, the wall shear stress distribution will then be imported into the data mining phase. The data mining technique employed would be the unsupervised machine learning algorithm, namely, the Kohonen's Self Organizing Map (SOM).

Chapter 5 *Implementation of Finite
Element Modelling*

In this chapter, implementation of the CFD modeling scope via the Finite Element Method (FEM) for the given AAA models defined based on Table 4.1 is discussed. From these parametric variables, a total of 3,500 AAA models were generated. In doing so, not only is it possible to explore the impact of alternative definitions on the flow and its associated wall shear stress parameters but also, more importantly, the relationships between hemodynamics and a wide range of geometric parameters can be investigated in detail (Kolachalama et al., 2007). The power of parametric geometry representation lies in its ability to simply generate a range of alternative geometries using the baseline shape as a template that is then reconfigured according to new values of the variable parameters. Note that it is also possible to morph the parametric model in order to reproduce a patient-specific geometry obtained from MRI (Milner et al., 1998; Steinman et al., 2002; Marshall et al., 2004) or contrast-enhanced X-ray CT (Taylor et al., 1996).

5.1 AAA PARAMETRIC SET-UP

The FEM simulates the blood flow dynamics inside the AAA model during the cardiac cycle. For the simulation of the fluid dynamics, the initial and boundary conditions are always the same. The simulation is based on the assumption of an incompressible fluid with constant viscosity. The model is not scalable because the fluid dynamics implies the absolute dimension of the viscosity.

In typical models, the FEM wire mesh consists of about 7200 elements. The distance between two cells (elements) in the wire mesh is typically 7.6mm along the aorta and around 2.25mm in circular direction around the aorta. Thus, the aorta length is divided into 12 sections and the aorta circle is divided into 30 sections (12° each) i.e. 10 sections (9mm each) along the aorta and 24 (15° each) or even less sections around the aorta. The time step duration is 0.155sec (6 steps per cycle) (Filipovic et al., 2011).

As shown in Figure 5.1, the simulation is calculated in a Cartesian coordinate system, with its origin placed in the entry of the aorta. For the analysis, the locations of the occurring wall shear stresses (WSS) are recalculated in a polar coordinate system that has its origin in the focus of the curvature radius. The z-values perpendicular to the (x, y)-plane, remain unchanged.

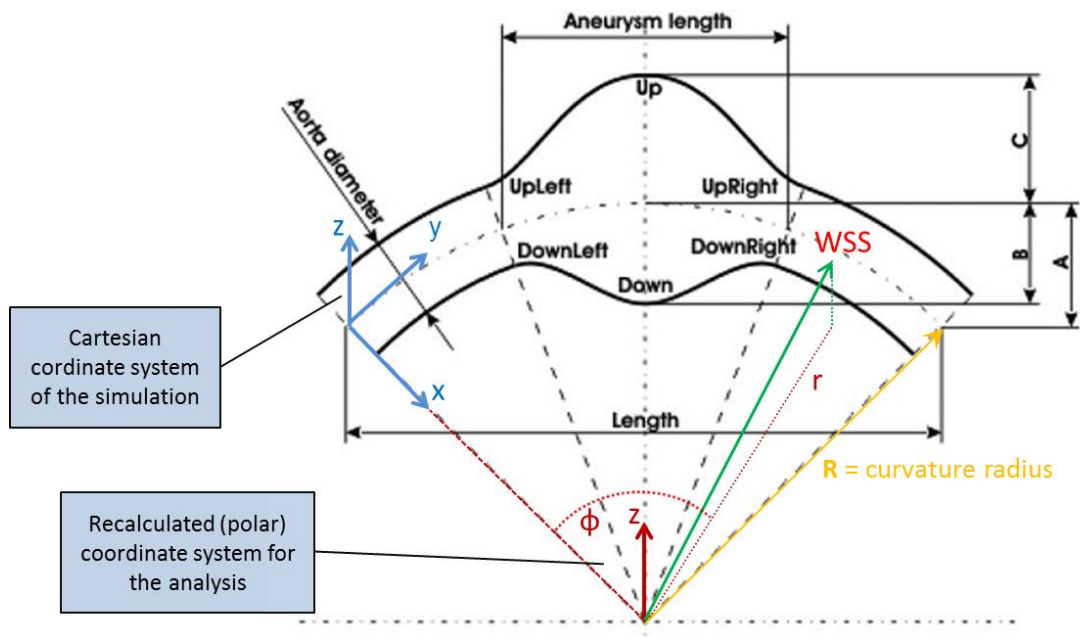


Figure 5.1 Geometrical parameters of the AAA geometry

In the simulation, the six geometric parameters are randomly varied within the following ranges as shown in Table 4.1. With regard to medical relevance, these geometric parameters A, B, C are not used directly but rather the following biomechanical factors in Table 5.1 are derived from them.

Table 5.1 Biomechanical factors relating to AAA geometries

| Biomechanical Factors | Definition |
|-----------------------|---|
| Diameter Ratio | $(B+C) / \text{Aorta Diameter}$ |
| Saccular Index | $(B+C) / \text{Aneurysm Length}$ |
| Asymmetry Index | B / C |
| Curvature | $1 / R$, with $R = (\text{Aorta length})^2 / 8A + A/2$ |

5.2 MODELLING IMPLEMENTATION

After initializing input parameters and creating FE mesh, a specialized FE analysis module performs hemodynamic simulation and lists result values of various hemodynamic quantities at specified mesh points (Filipovic et al., 2004). They are namely, velocity, wall shear stress, and flow-induced pressure. The process of simulation via this CFD software is explained in Appendix B. A total number of

models (and therefore FE meshes) constructed using random parameter values and automatic mesh generator was 3,500. The complete FE results for the 3,500 AAA models and the description of the three-dimensional FE software are shown in Appendix 1 and Appendix 2, respectively. Since a huge number of FE analyses had to be executed (for 3,500 different geometries based on 10 variable parameters), computations on a grid platform for distributed computing were the logical choice (Filipovic et al., 2003). The grid computing scheme is shown in Figure 5.2.

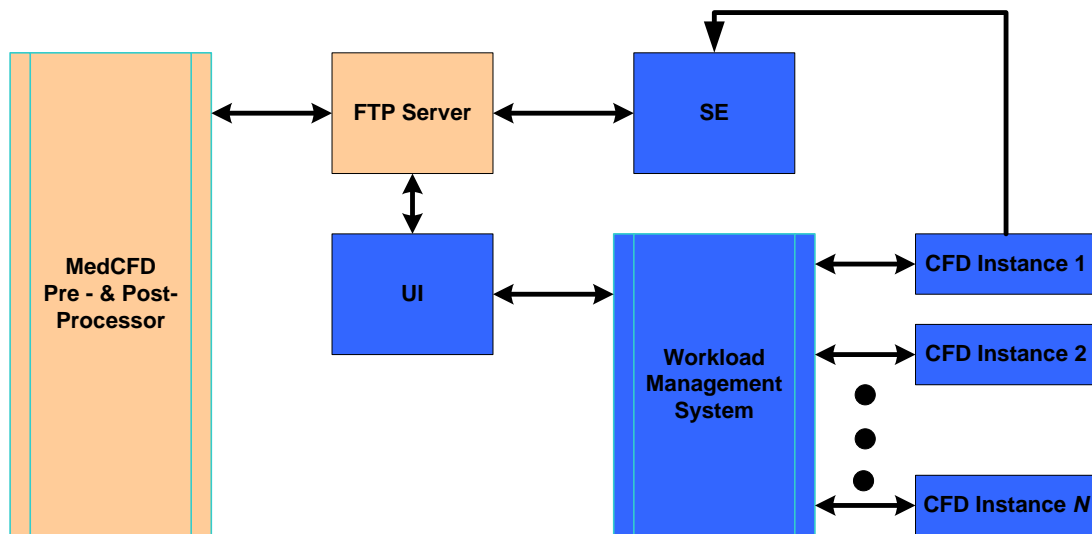


Figure 5.2 Grid computing scheme

The infrastructure employed was *gLite* middleware (Radovic et al., 2011). Since each FE run takes around 20 minutes on a typical personal computer, simple computational time estimation gives around 80 days to run on a single CPU. Equivalent run on a grid platform took only 5 hours, while the infrastructure utilization peak during that run was around 600 CPUs at time (Filipovic et al., 2011).

The CFD phase runs the FE simulation and generates velocity flow fields within the fluid domain mesh points within the AAA models. At the inner wall of the AAA model, the velocities at these points are converted into wall shear stress (WSS) values by using the surface traction function. Since velocities at peak systolic phase exhibit the highest values, the corresponding WSS at this peak systolic is chosen and fed into the DM module for further mining purposes.

As an illustration of the finite element modeling solution, the WSS at peak systole, $t/T=0.16$ of an AAA with $D/d=2.75$ (where D is aneurysm diameter, d is aorta diameter=12.7mm) is shown in Figure 5.3. The blood-flow direction is from

left to right as indicated by the arrow in Figure 5.3. WSS is the stress acting on the wall in the direction of blood flow. The unit for the WSS is dynes/cm².

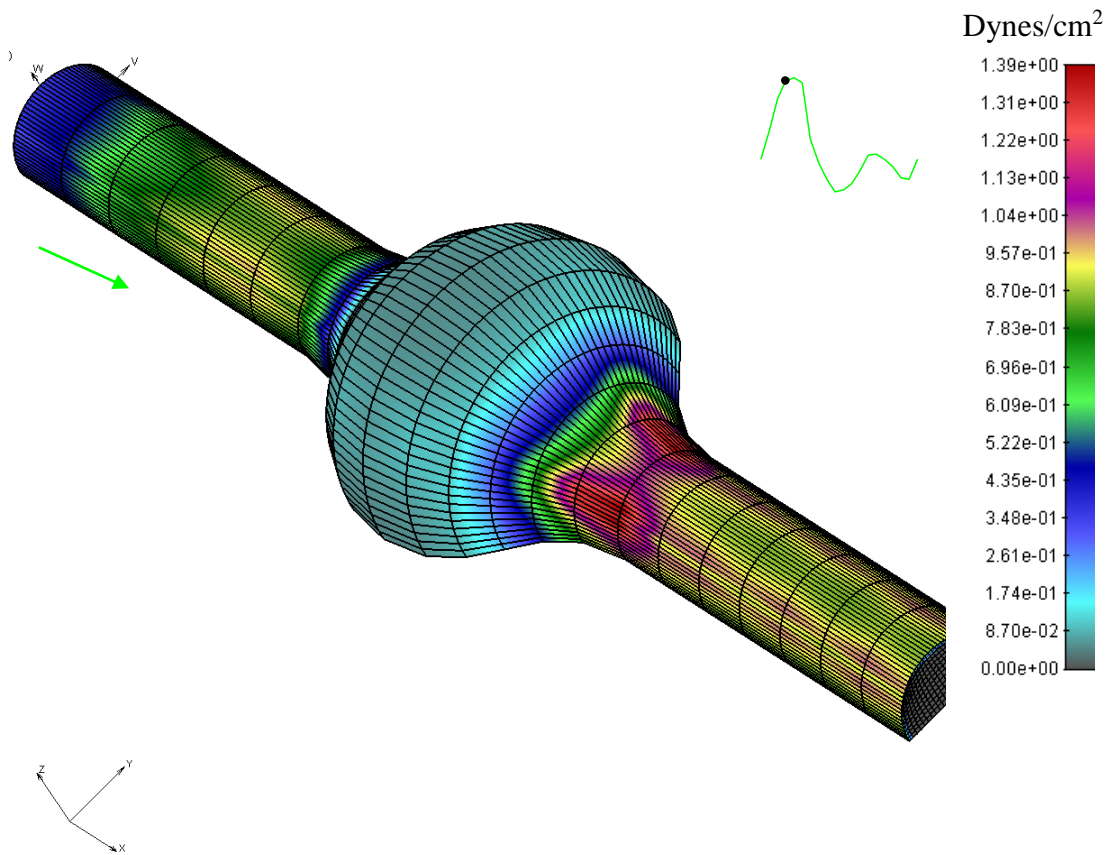


Figure 5.3 Wall shear stress of an AAA model ($D/d=2.75$)

5.3 OBSERVATION OF SIMULATED DATA

5.3.1 Hemodynamic Observation 1: A Typical AAA Model Case Study ($A=0$)

(A) Flow dynamics

Before analyzing the effect of the aneurismal parametric variation on the wall shear stress topology, we will first discuss the important spatial and temporal features, which characterize the typical flow field in an abdominal aortic aneurysm. For this purpose, an aneurysm with a medically relevant parameter were selected, i.e. diameter ratio, $D/d=2.75$. Since the decision for surgical intervention is when the AAA reaches 5.5 cm, this model has a maximum diameter of 3.5 cm, which falls within the central phase of the progressive enlargement, and hence, was chosen to

illustrate the hemodynamic changes occurring within the aneurysm. It is important to understand how the flow evolves over time inside the aneurysm, since the changes in the wall shear stresses are directly related to them. This model geometry was used via experimental works (*in-vitro*) to study the flow conditions (Peattie et al., 2004). Our CFD re-simulation using the same model had an error of <1% as compared to Peattie's experimental values (Vijayajothi et al., 2012).

Figures 5.4 illustrates the two-dimensional velocity flow field contours and vectors within the fusiform AAA model, respectively at six different phases of the pulsatile flow: (i) acceleration to systole, $t/T=0.035$ (ii) peak systole, $t/T=0.16$ (iii) deceleration into retrograde flow, $t/T=0.35$ (iv) peak retrograde flow, $t/T=0.55$ (v) early diastole, $t/T=0.77$ and (vi) late diastole, $t/T=0.87$.

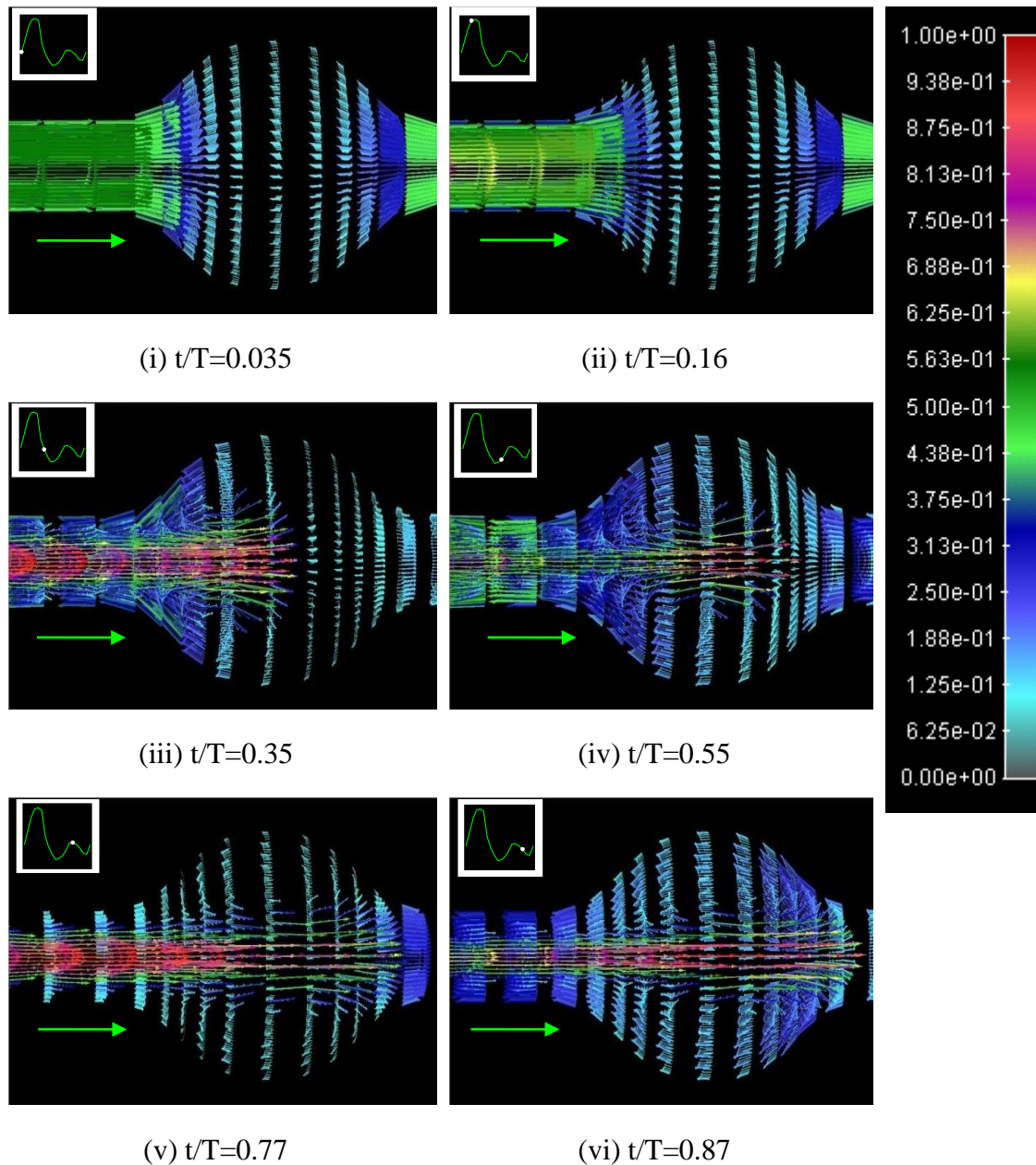


Figure 5.4 Velocity flow field contours and vectors at six phases of the pulsatile flow cycle in a typical fusiform abdominal aortic aneurysm model

Although velocities were higher at peak systole compared to the velocities during flow acceleration, the flow moved forward uniformly (i.e. attached flow that followed the contour of the wall) throughout the model bulge. There were no vortex formations within the model bulge during acceleration to systole and at peak systole. This is because all vortices that occurred at the end of the diastolic phase from the previous pulsatile cycle are pushed out of the aneurysm model and subsequently the flow reattaches to the wall as seen in Figures 5.4 (i) and (ii). However, there is a difference observed in the uniformity of the flows between the flow entering into the proximal zone of the model bulge (i.e. entrance of the AAA model bulge) and the

flow exiting from the distal zone of the model bulge (i.e. exit of the AAA model bulge). The uniformity of the flow at the exit of the model bulge was higher compared to the flow at the entrance of the model bulge because as the fluid flowed towards the distal zone of the model bulge, re-constriction at the model exit led to rapid changes in the velocity near the wall.

The decelerating flow from the peak systolic flow into retrograde flow region is illustrated in Figure 5.4 (iii). During this phase of the pulsatile flow, a much more rounded velocity profile is observed at the entrance of the model. At the proximal zone of the model bulge, the first appearance of separation or recirculation in the flow cycle was evident. This initial development of recirculation vortex was caused by the reversed velocities (i.e. in the opposite direction of flow) that were observed along the wall at the proximal zone of the model bulge. However, this vortex formation was only limited to the proximal half of the model bulge.

At the peak retrograde flow region, the length of the recirculation vortex increased up to the central region of the model bulge, as shown in Figure 5.4 (iv). However, as the peak retrograde flow developed, the fluid flow reversed its direction and the flow travelled from the distal zone of the model towards the proximal zone of the model bulge along the wall of the model bulge and also along the non-dilated vessel wall which was located before the entrance to the model bulge. These reversed flow eventually converged at the proximal zone of the model bulge along the wall. On the contrary, the velocity and the flow in the core region of the model i. e. along the central symmetric plane of the model, still exhibit a forward movement.

As the flow comes out from the retrograde flow region into the early diastolic flow region, the net flow decelerated back to zero. During early diastolic flow, the velocity at the proximal zone of the model bulge reduced. The velocity at the proximal zone closer to the bulge wall became nearly zero. In contrast to the velocity magnitude at the proximal zone of the model bulge, the momentum of the flow at the distal zone of the model bulge did not fully reduce. Although flow in the core region along the central symmetric plane of the model still travelled in the forward direction, an outer region in retrograde motion surrounded the core region. This contributes to the presence of double recirculation vortices at the distal zone of the model bulge, as shown in Figure 5.4 (v). During late diastolic flow, these double recirculation vortices dissipates and a nearly irrotational weak forward moving flow

field is observed until the next systolic acceleration began. Figure 5.5 shows the flow evolution from a streamline plot point of view that illustrates the flow description.

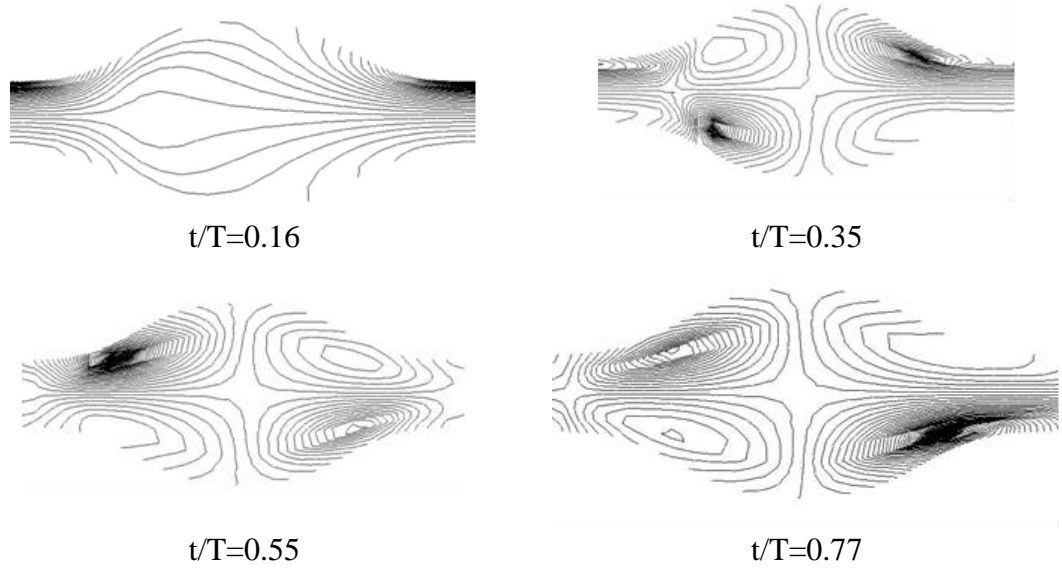


Figure 5.5 Streamline for the symmetry plane of AAA for $D/d=2.75$ at different stages of the pulsatile flow

(B) Flow-induced wall shear stress

The evolution of the wall shear stresses (WSS) was calculated over time from the numerically computed velocity. In the case of a laminar, axisymmetric flow, the WSS is simply given by;

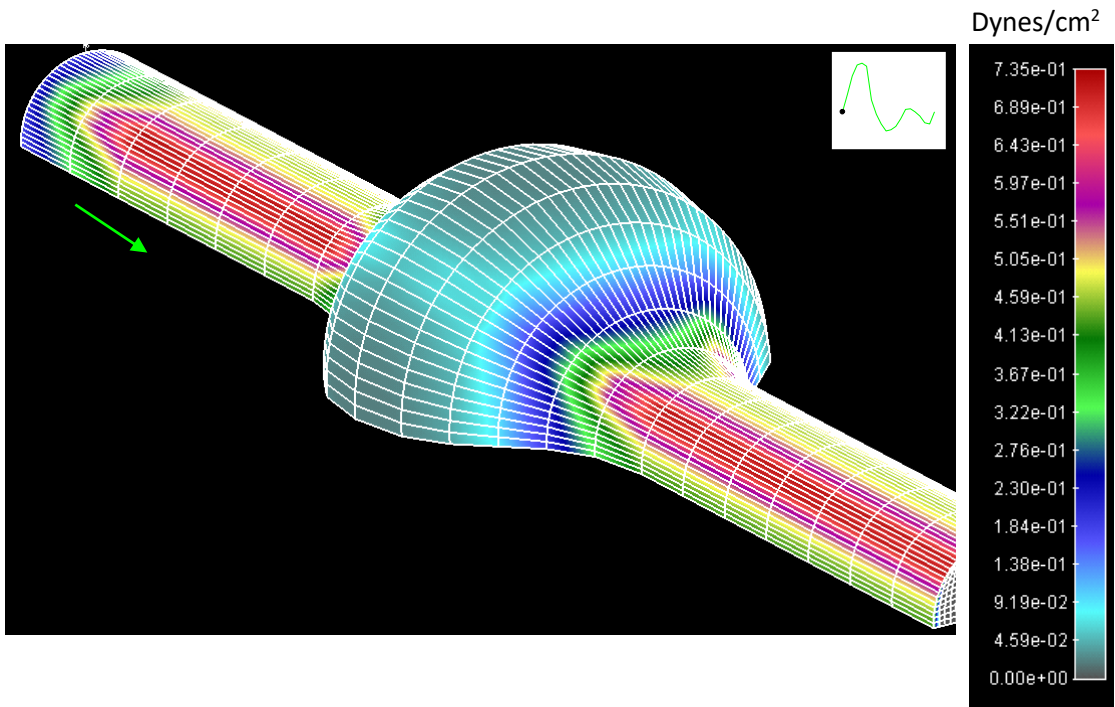
$$\tau_{mean} = \left| \frac{1}{T} \int_0^T t_s dt \right| \quad (38)$$

The WSS have been calculated using a linear interpolation between the velocity values closest to the wall and the null velocity at the wall. A linear interpolation was used in the vicinity to the wall, similarly to what is commonly used for turbulent boundary layers.

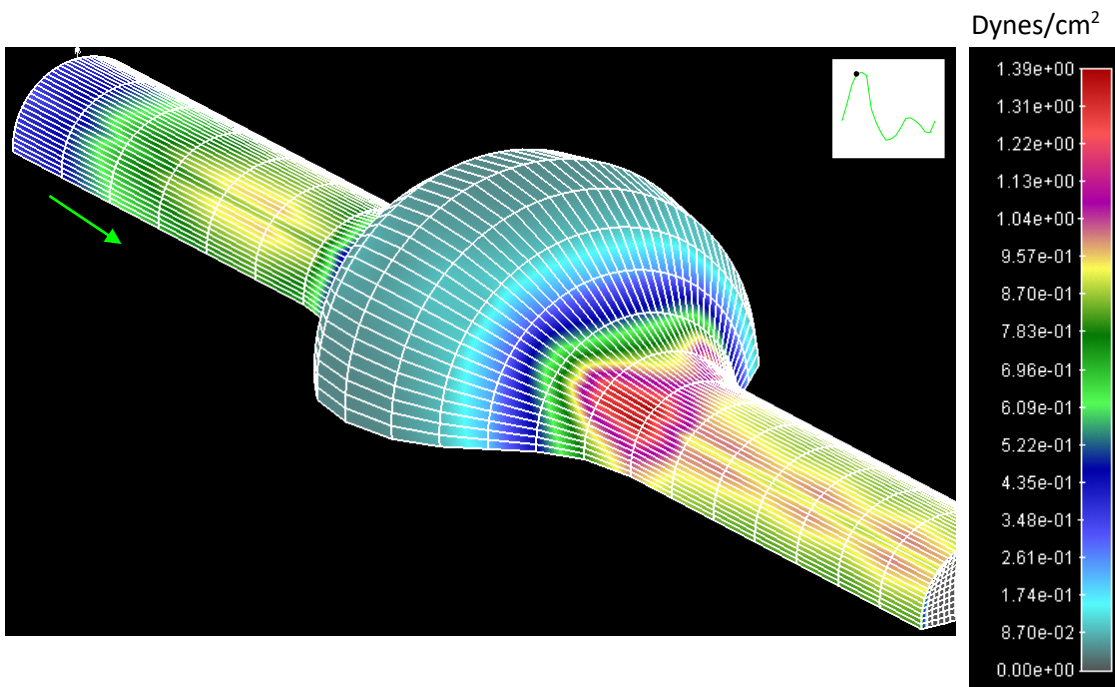
The flow-induced wall shear stress (WSS) distribution throughout the aneurismal model corresponding to the six different pulsatile phases is shown in Figure 5.6. The effective wall shear stress (WSS) is calculated using Equation (38), where t_s is the surface traction vector. Figure 5.7 illustrates the shear stress distribution along the aneurysm model, where $-0.28 < x/D < 0.28$ refers to the area along the model bulge. During flow acceleration to peak systole, the wall shear stress along the model entrance was the highest. This is because during this phase, all the

flow was forward directed and subsequently the flow exerts force on the wall in the forward direction that is from proximal to distal. The maximum values of wall shear stress were achieved during flow acceleration to peak systole.

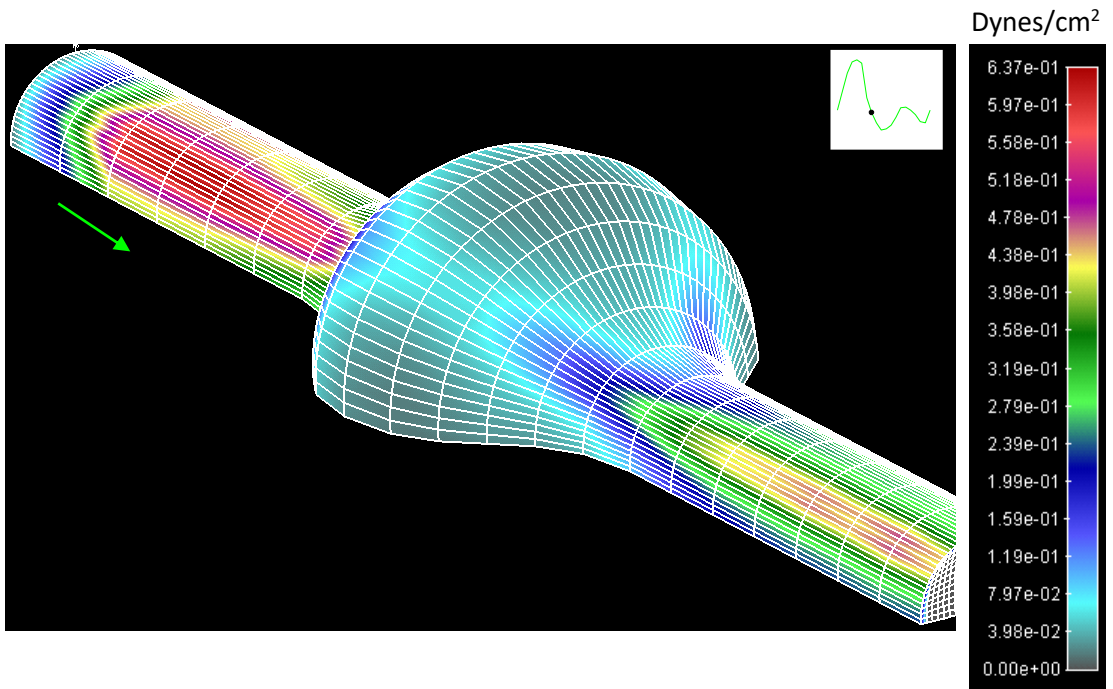
At peak systole, there was significant high concentration of wall shear stress being evident at the distal zone of the model bulge. However, the magnitude of the wall shear stress in this region is far lower compared to the magnitude of wall shear stress observed during flow acceleration to peak systole. During flow deceleration from peak systole into retrograde flow region, as the recirculation vortex developed in the model bulge, the magnitude of the wall shear stress reduces i.e. almost zero. Although there were high concentrations of wall shear stresses being evident at the distal and proximal zones of the model bulge during early diastole and late diastole, respectively, its magnitudes were very low. Throughout the flow cycle, there were no peak wall shear stresses found inside the model bulge, whereby most peak stresses were evident either at the proximal or distal zones of the model bulge.



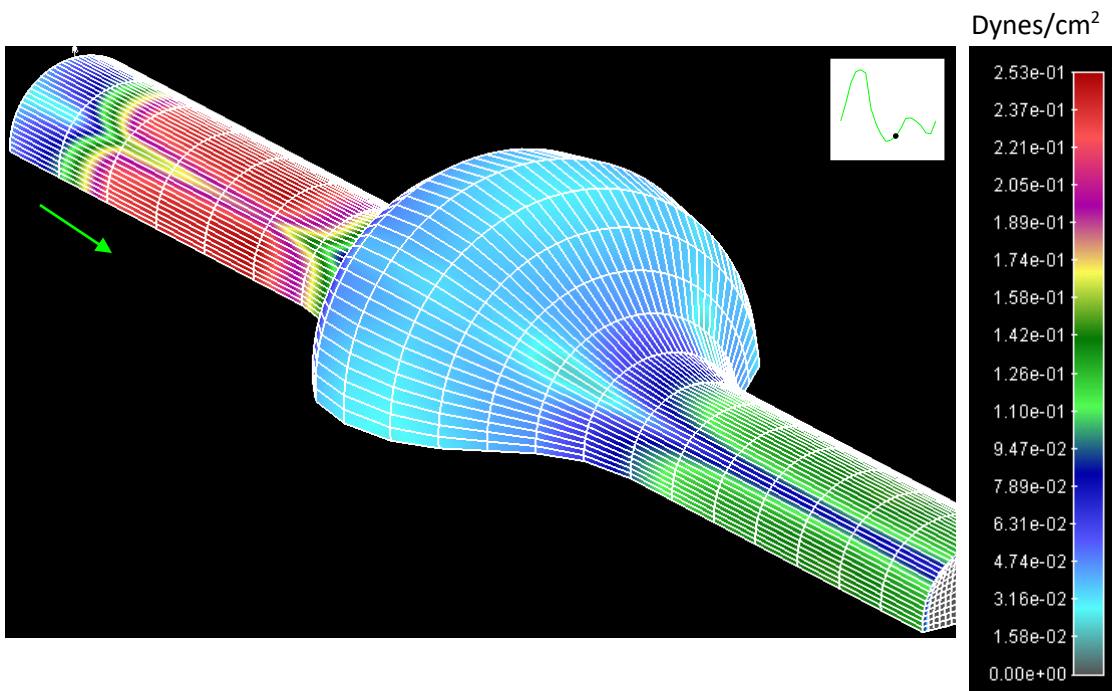
(i) $t/T=0.035$



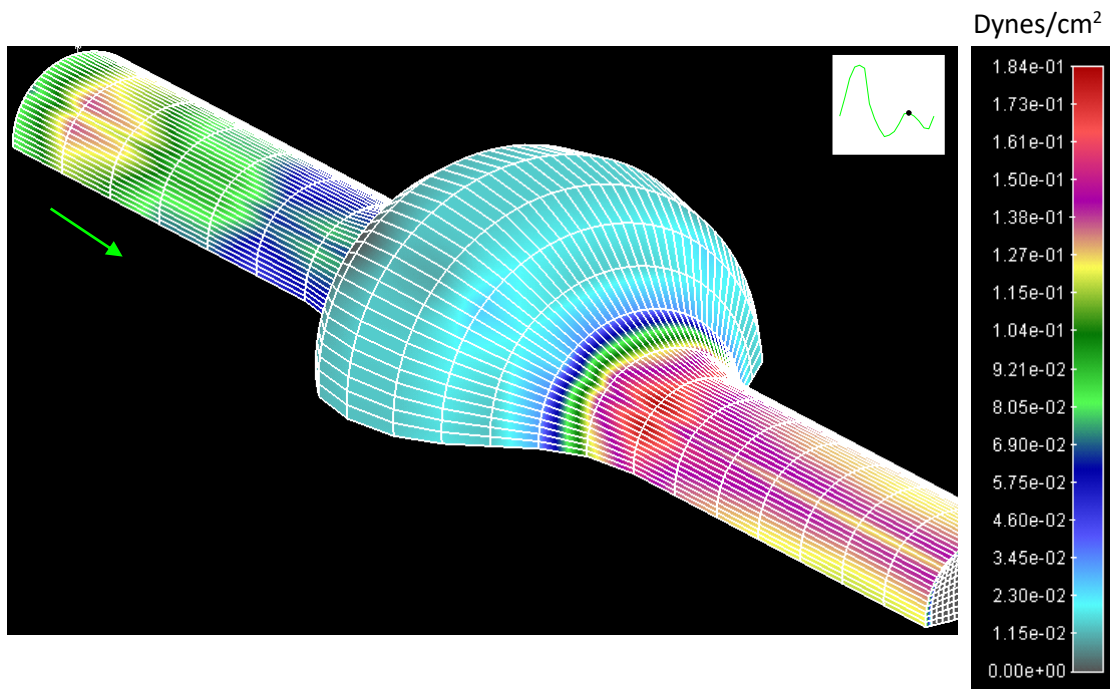
(ii) $t/T=0.16$



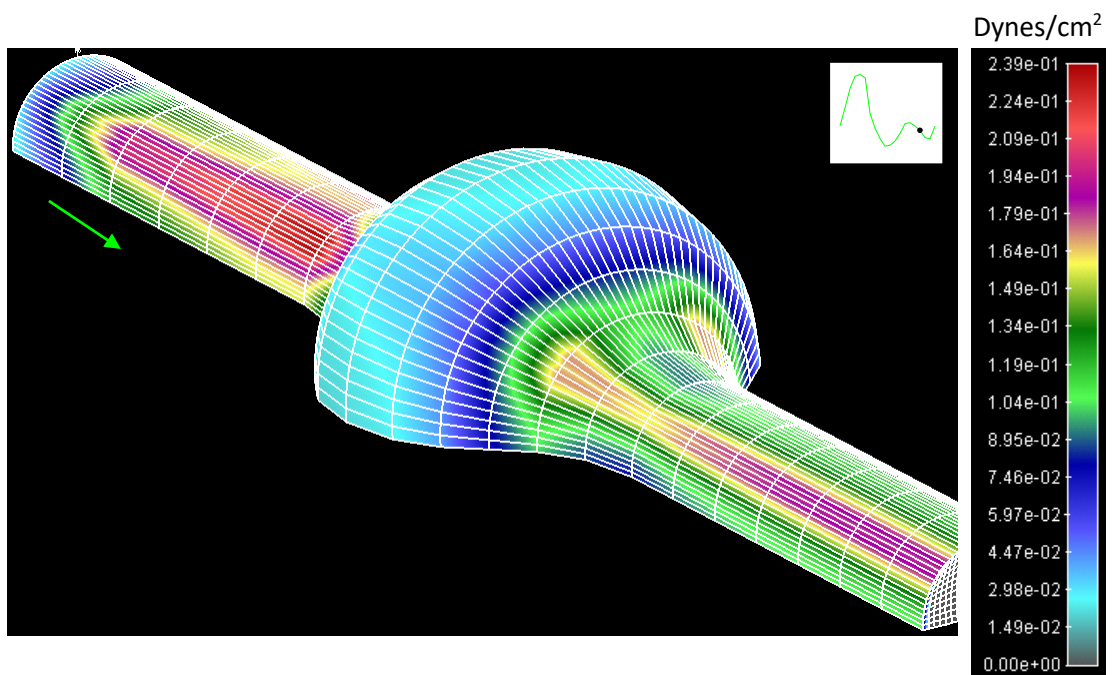
(iii) $t/T=0.35$



(iv) $t/T=0.55$



(v) $t/T=0.77$



(vi) $t/T=0.87$

Figure 5.6 Flow-induced wall shear stress (WSS) distribution at six phases of the pulsatile flow cycle in a typical fusiform abdominal aortic aneurysm

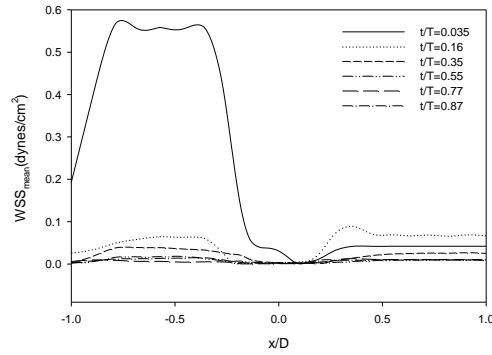
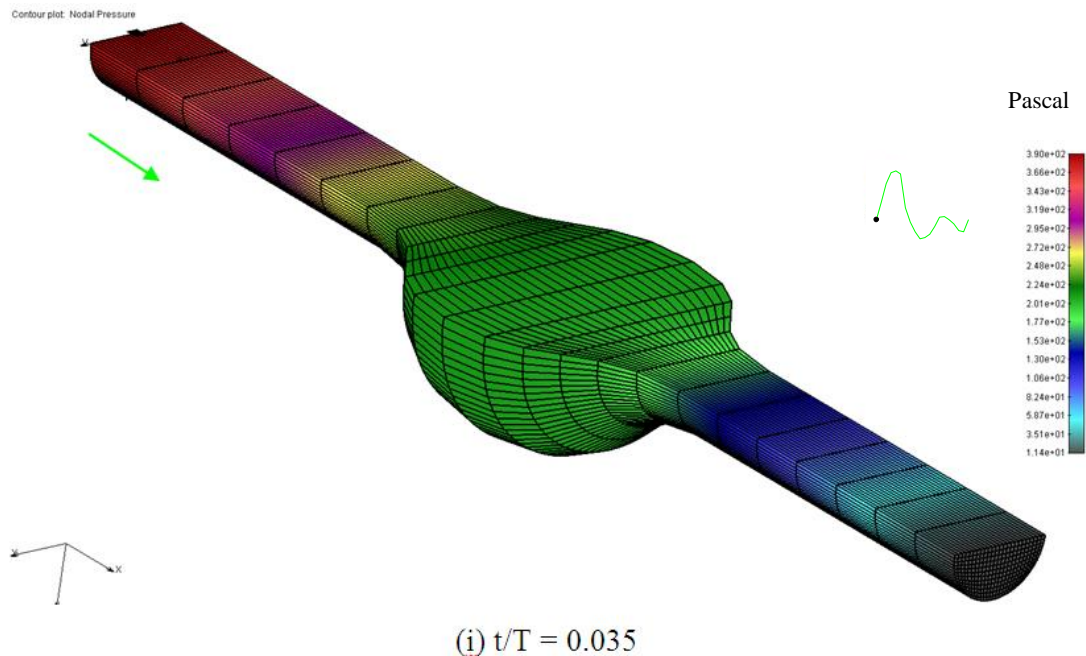
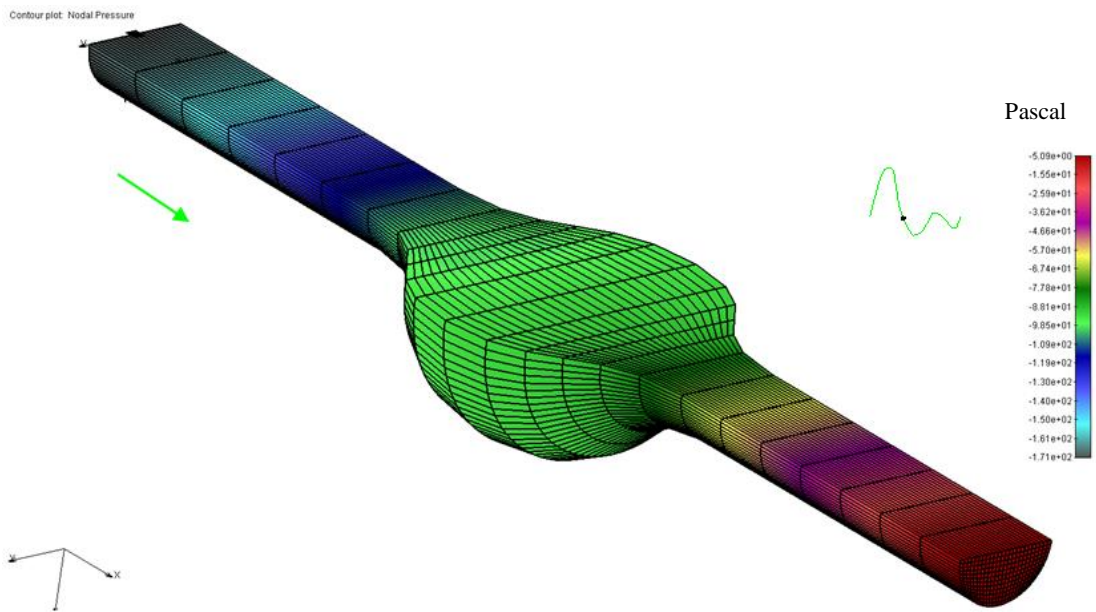
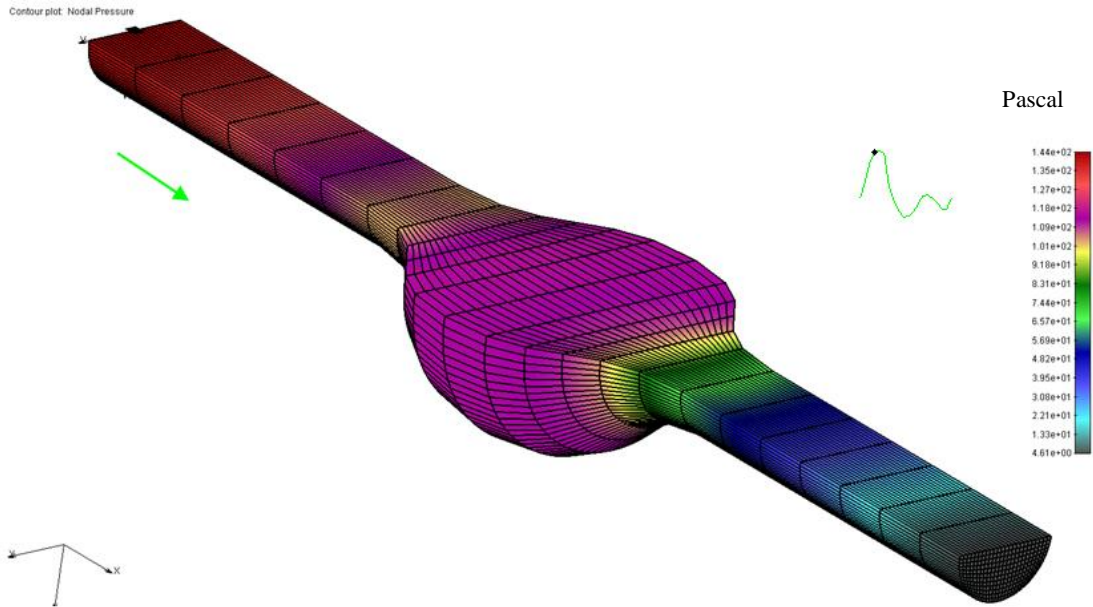


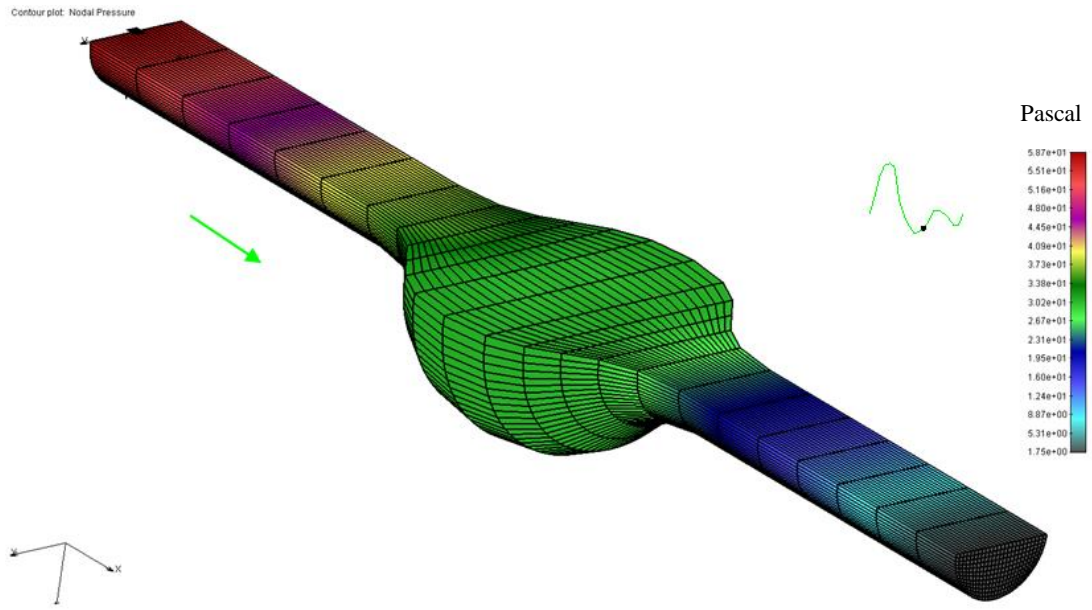
Figure 5.7 Effective wall shear stress across the model

(C) Flow-induced pressure

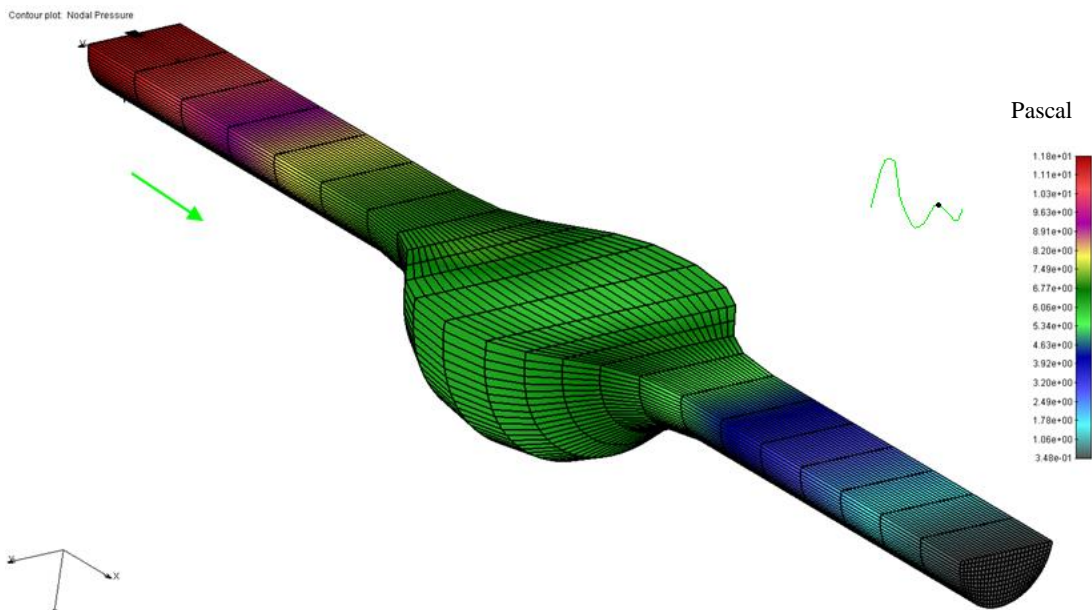
The flow-induced pressure for the model at six different pulsatile flow phases is shown in Figure 5.8. One key feature observed is that the magnitudes of flow-induced pressure tend to vary in a descending manner from the proximal zone to the distal zone. The pressure along the entrance of the model bulge is always higher than the pressure along the model bulge. This trend was almost consistent throughout the flow cycle, regardless of the net flow direction. It appears that the presence or absence of recirculation vortices did not influence these pressure trends.



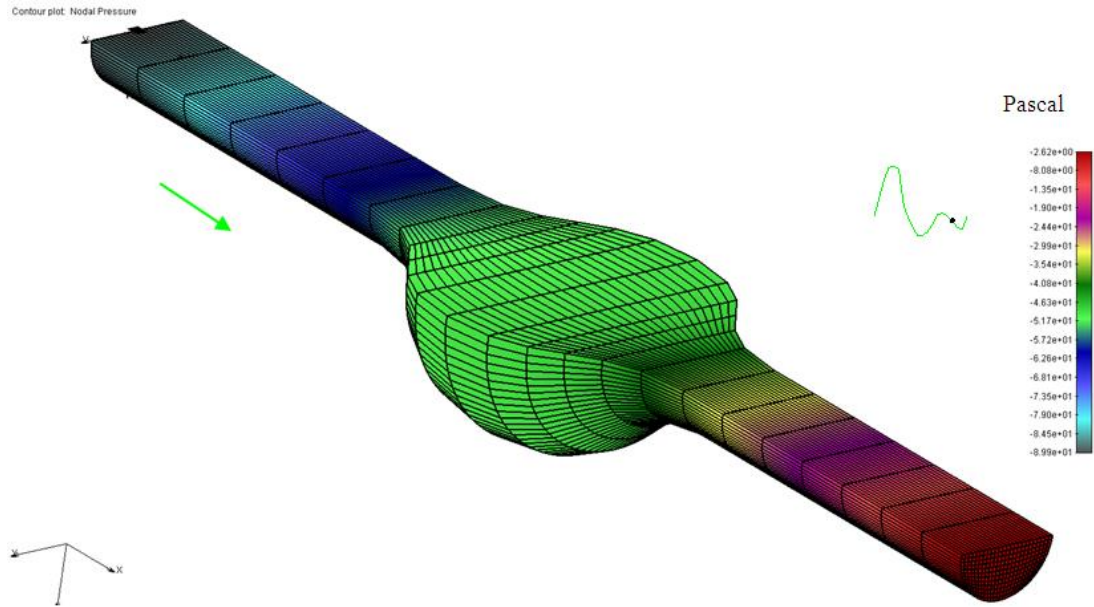




(iv) $t/T = 0.55$



(v) $t/T = 0.77$



(vi) $t/T = 0.87$

Figure 5.8 Flow-induced pressure distributions at six phases of the pulsatile flow cycle in a typical fusiform abdominal aortic aneurysm

5.3.2 Hemodynamic Observation 2: Parametric Variation of Symmetrical Models

In the following, we will discuss the results of parametric study, in which the flow characteristics were studied inside symmetric aneurysms, while varying systematically the geometric parameters of the models, as illustrated in Table 5.2 (Peattie et al., 2004). The purpose of this study is to show the effects symmetrically progressive enlargement of AAA on its hemodynamic variables.

Table 5.2 Summary of axis-symmetrical AAA geometries

| Parameters | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|---------------|---------|---------|---------|---------|---------|---------|---------|
| d (cm) | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| D (cm) | 1.73 | 2.29 | 3.02 | 3.15 | 3.69 | 3.98 | 4.48 |
| D/d | 1.41 | 1.88 | 2.27 | 2.56 | 2.75 | 2.97 | 3.27 |

(A) Parametric study of flow dynamics

Flow field development followed the same basic sequence in all the models, although the most complex fields were found in the largest models. The velocity field that developed in the bulge was all in one direction, with no recirculation or separation, during the acceleration and peak systolic phases of the flow cycle for all models.

Figure 5.9 shows the full developed forward direction of blood flow into the aneurysm bulge for all models at peak systole.

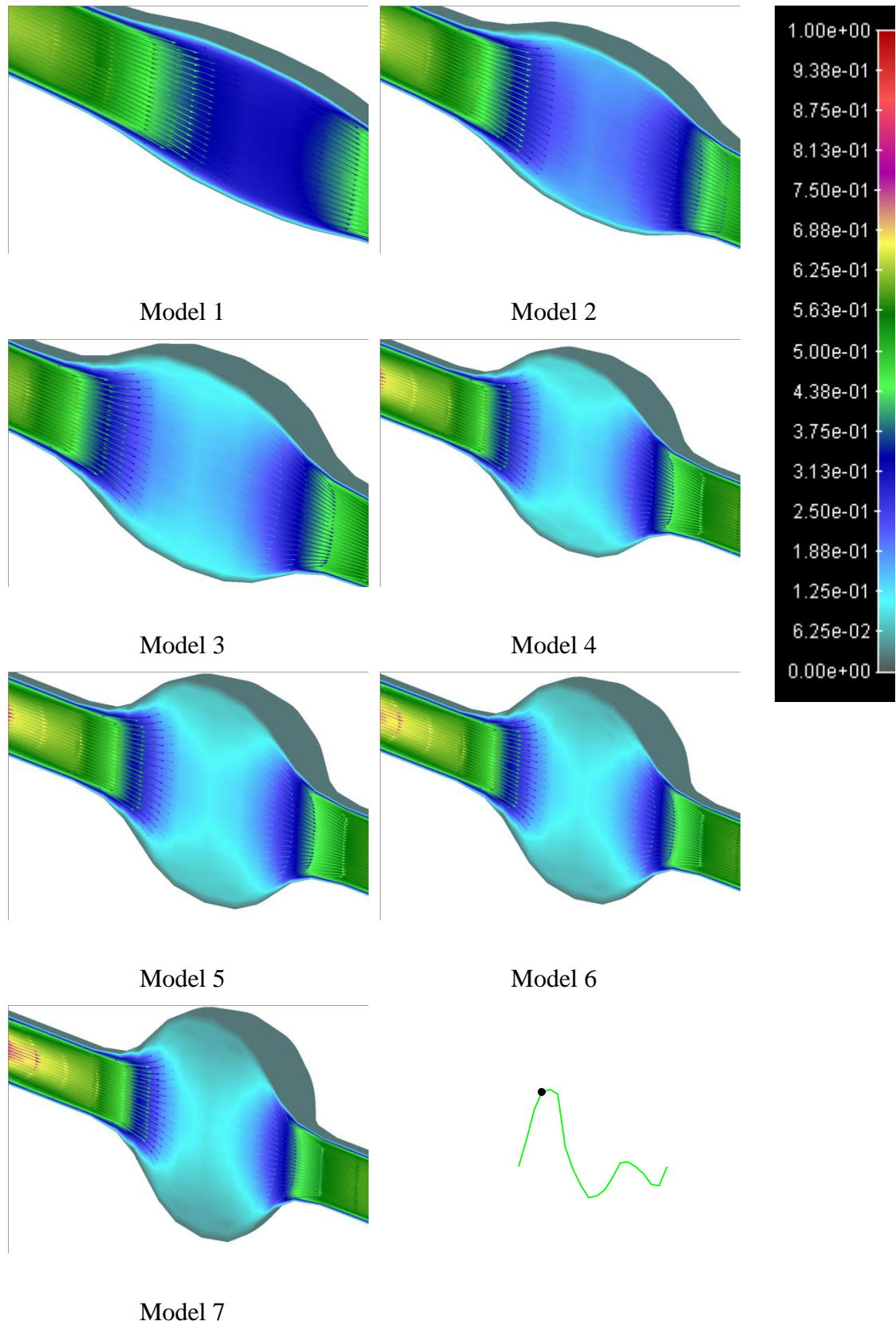


Figure 5.9 Flow field at peak systole in all AAA models

It is remarkable that the clinically relevant features of aneurismal flows i.e. detachment of the flow and impingement on the distal neck, occur even for a dilatation ratio as low as $D/d=1.41$. Even an incipient aneurysm is characterized by the formation of recirculation zones close to the wall. We can notice that the flow separation begins to occur as the flow decelerates into peak retrograde point in all of the models, as shown in Figure 5.10. The time, at which flow separation occurs, does not seem to depend on the dilatation ratio. As the aneurysm grows in size, the point of flow separation gets closer to the proximal neck. The size of the detached flow region also increases as the dilatation ratio is increased. When D/d increases, the detachment becomes more massive and a larger vortex ring is generated during peak retrograde as shown in Figure 5.11.

The greatest velocity in the smallest model was 25% larger than that in the largest model. In addition, during peak retrograde flow, $t/T=0.55$, in the smallest models the flow field was fully directed in the retrograde direction. In the largest models, there remained a core region of forward directed fluid. The other principal difference between flow in the smallest models and that in the largest was that the smallest models lacked a diastolic double vortex, with only a single vortex appearing in the distal bulge during diastole, $t/T=0.77$. Both primary vortex and the diastolic double vortex were the weakest in the smallest bulges. The presence of vortices in the aneurysm bulge indicates energy losses inside the aneurysm. These energy losses may be transferred on the energy pressure and stresses that load on pathological aneurysm surface which the surface frequently shrinks and expands.

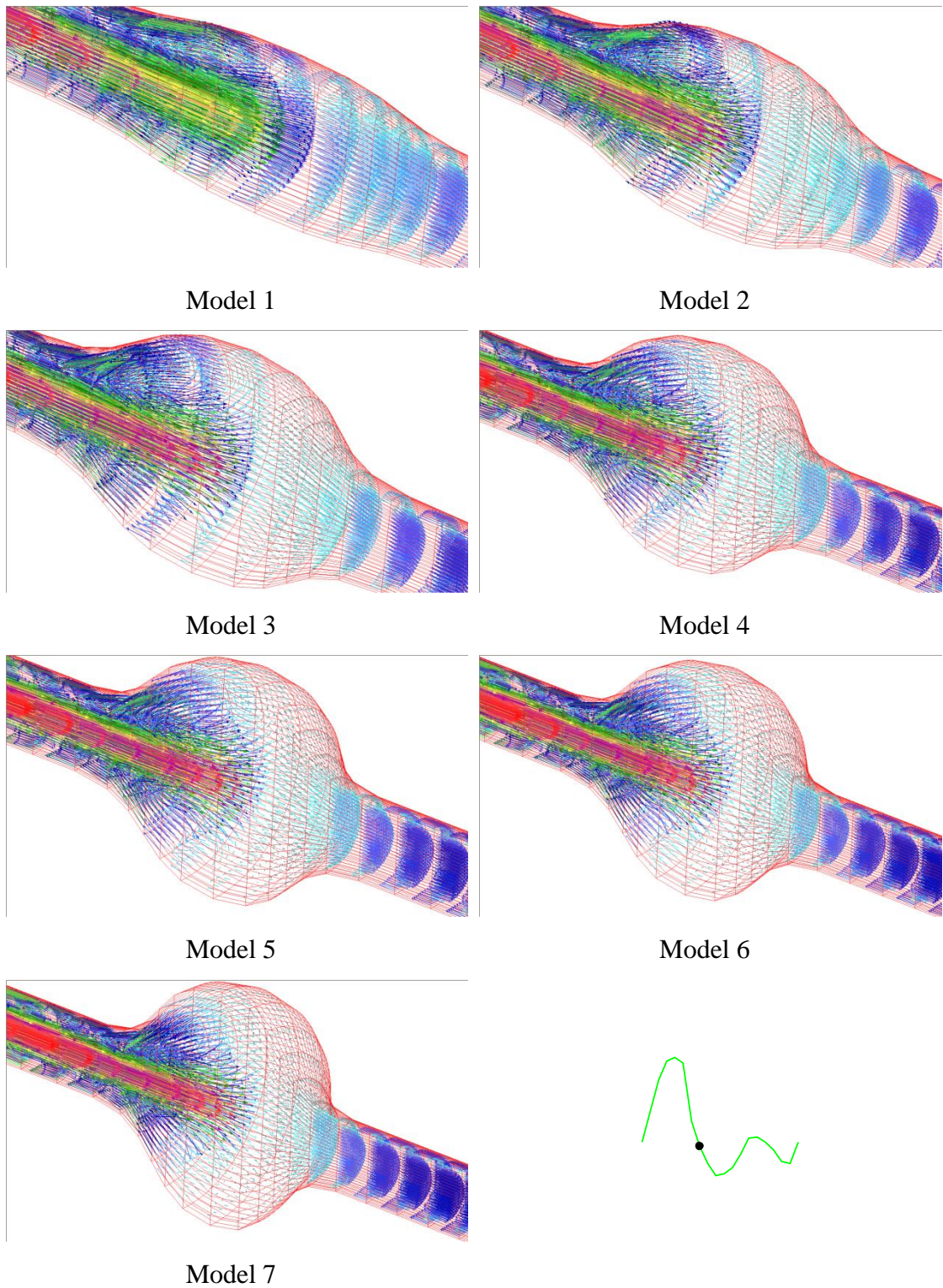


Figure 5.10 Vortex emergence during flow deceleration, $t/T=0.35$ for all models

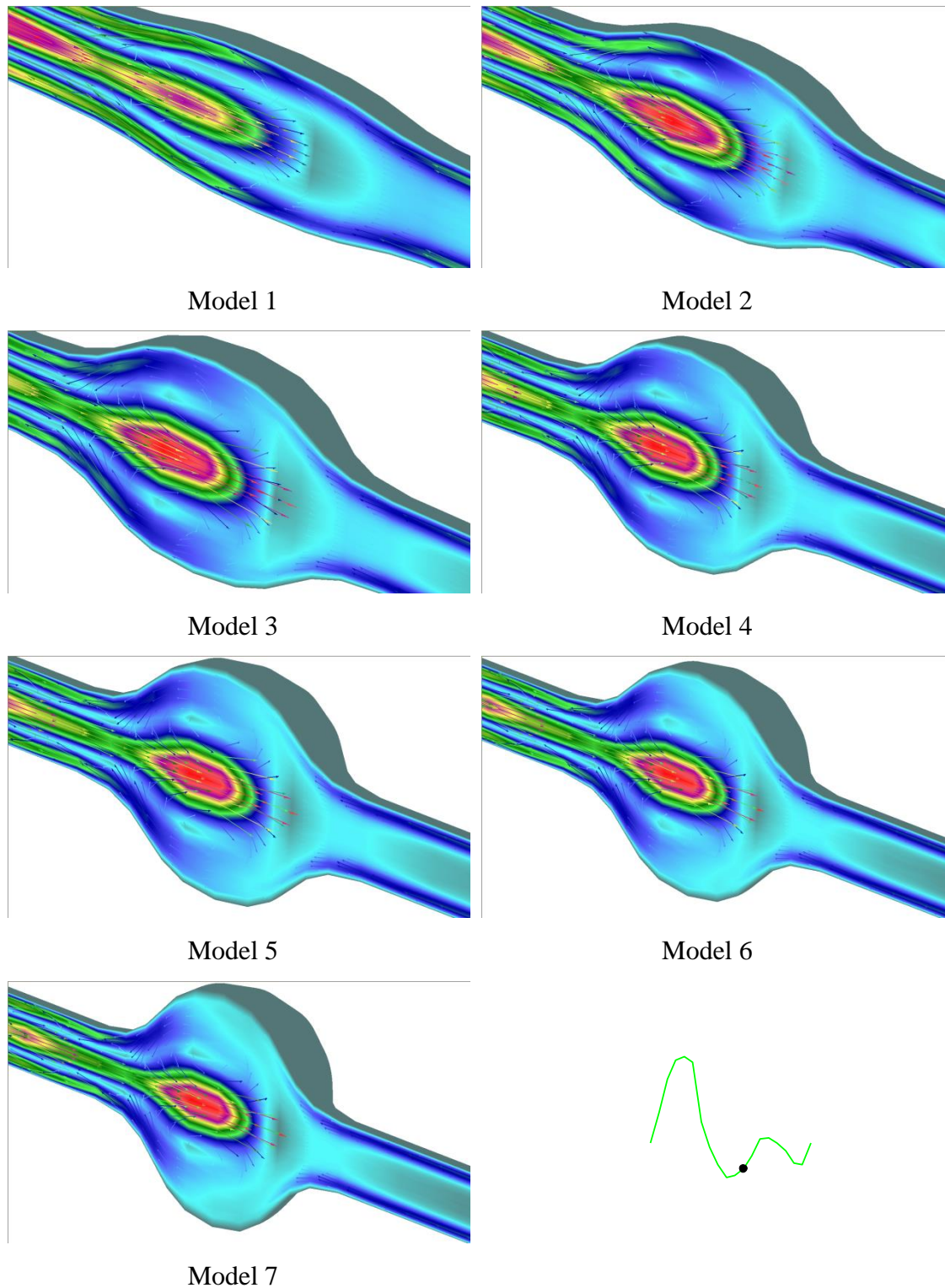


Figure 5.11 Vortex intensity during peak retrograde, $t/T=0.55$ for all models

(B) Parametric study of wall shear stress

In correspondence with the velocity fields, during systole the wall shear stress was forward-directed at all positions, with approximately the same value at the proximal end of each model, 7-9 dynes/cm². Shear stress decreased in the bulge due to

conservation of mass, then increased again at the distal end of each model, where reconstruction of the flow caused sharp velocity gradient to form. As a result of those gradients, the largest shear stresses observed in the models occurred at the distal bulge end during peak systole with 1.5 to 2 times the magnitude of those at the proximal end.

Figure 5.12 (i) and (ii) shows the maximum systolic wall shear stress on bulge diameter. Since the development of large distal wall shears is dependent on flow spreading into the bulge, the maximum shear stress may be expected to be influenced by the bulge diameter. In fact, the maximum systolic shear stress at the distal bulge end of the model 2 was the highest, 19 dynes/cm², twice the stress of both smaller and larger models. This sharp peak can be explained as follows. Let λ be the difference between the bulge radius and the non-dilated tube radius, i.e.

$$\lambda = \frac{D-d}{2} .$$

Then the time for vorticity diffusion through the bulge scales as $\frac{\lambda^2}{\nu}$.

This time normalized by the flow period is $\frac{\lambda^2}{\nu T} = \frac{\lambda^2 \omega}{\nu}$. If the bulge diameter is too

small i.e. < 4 cm, then, radial spreading is minimal and does not alter the wall shear. Conversely, if the diameter is too large i.e. > 5 cm, there is insufficient time available in the flow cycle for radial spreading to influence the flow near the wall. Hence, intermediate models, corresponding to 4 – 5 cm AAAs in vivo, are susceptible to elevated maximal shear stress, but very small or very large models are not (Peattie et al., 2004).

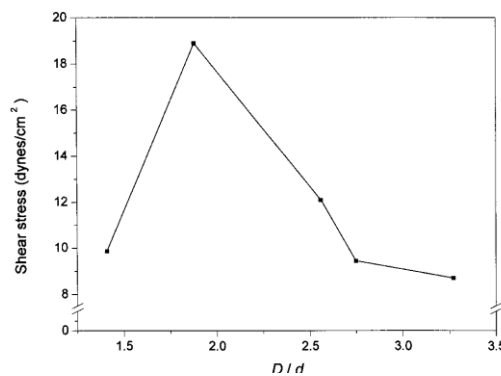


Figure 5.12 (i) Dependence of maximum systolic shear stress on bulge diameter

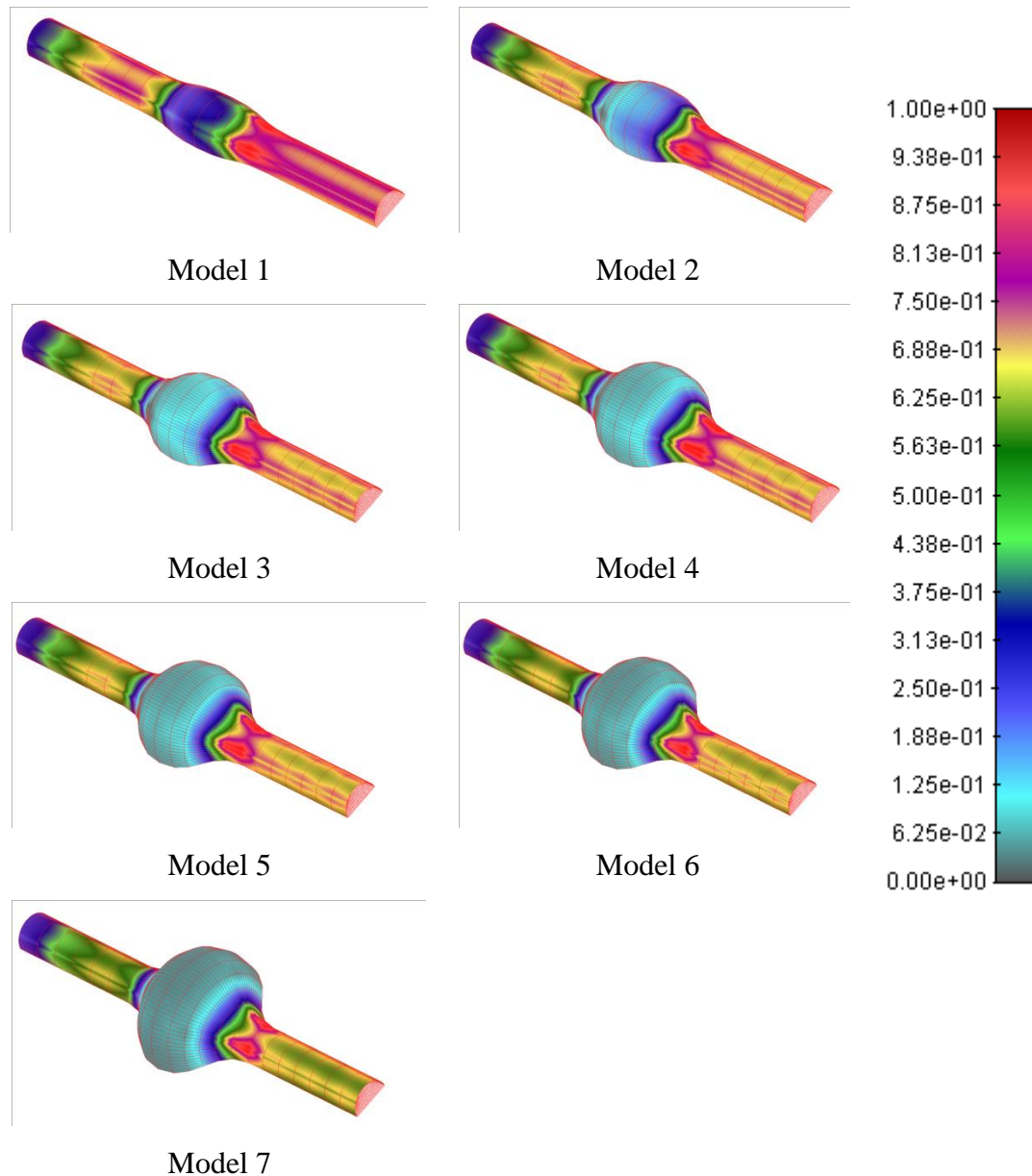


Figure 5.12 (ii) Maximum systolic peak shear stress for all models

(C) Parametric study of flow-induced pressure

The magnitude of variations in pressure along the model bulge at any instant of time, 5-10 dynes/cm², was small compared to the magnitude of the variation of pressure at any point over the entire flow cycle, 130 dynes/cm². The influence of bulge size on the flow-induced pressure distribution was minor and differed < 1% of the normal pressures. Such small variations are to be expected from an Ohm's Law standpoint, since the resistance of the bulge is only a small part of the total resistance to flow of the entire model. Figure 5.13 shows the flow-induced pressure distribution for all models at peak systole, $t/T=0.16$.

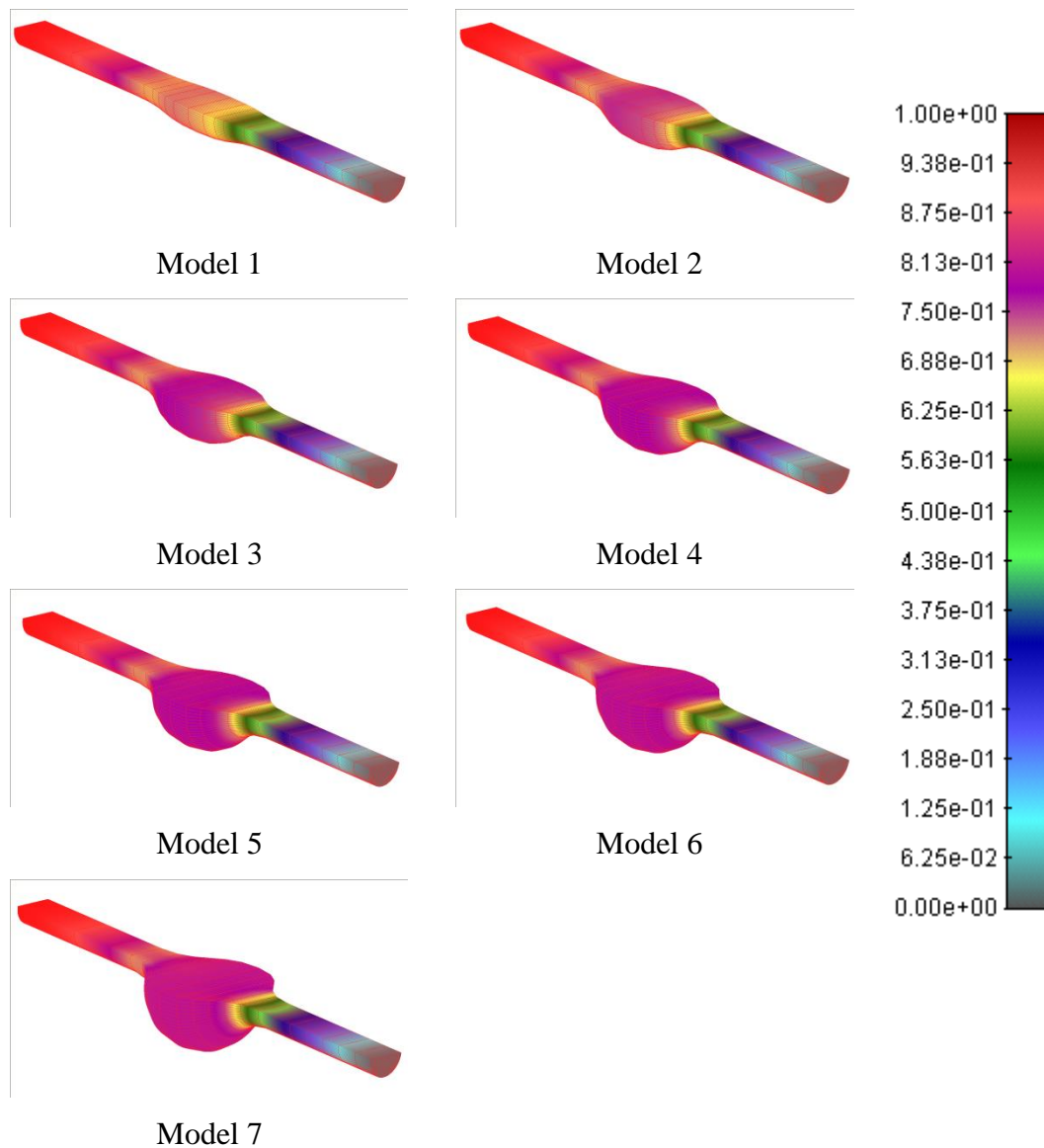


Figure 5.13 Flow-induced pressure distribution for all models at peak systole

5.3.3 Hemodynamic Observation 3: A Typical AAA Model Case Study ($A \neq 0$)

In this section, an AAA corresponding to $A \neq 0$ is simulated and studied. As compared to Figure 4.3, parameter A is chosen as 3cm (as the maximum value seen in Table 4.1). Figure 5.14 and Figure 5.15 show the flow evolution and WSS distribution within one cardiac pulsatile flow, respectively. At $t/T=0.035$ (early systolic phase), the flow region within the AAA bulge remains smooth and the WSS distribution exhibits lower WSS magnitude. No localized peak WSS was observed within the model. The arrow in Figures 5.14 and 5.15 shows the blood flow direction.

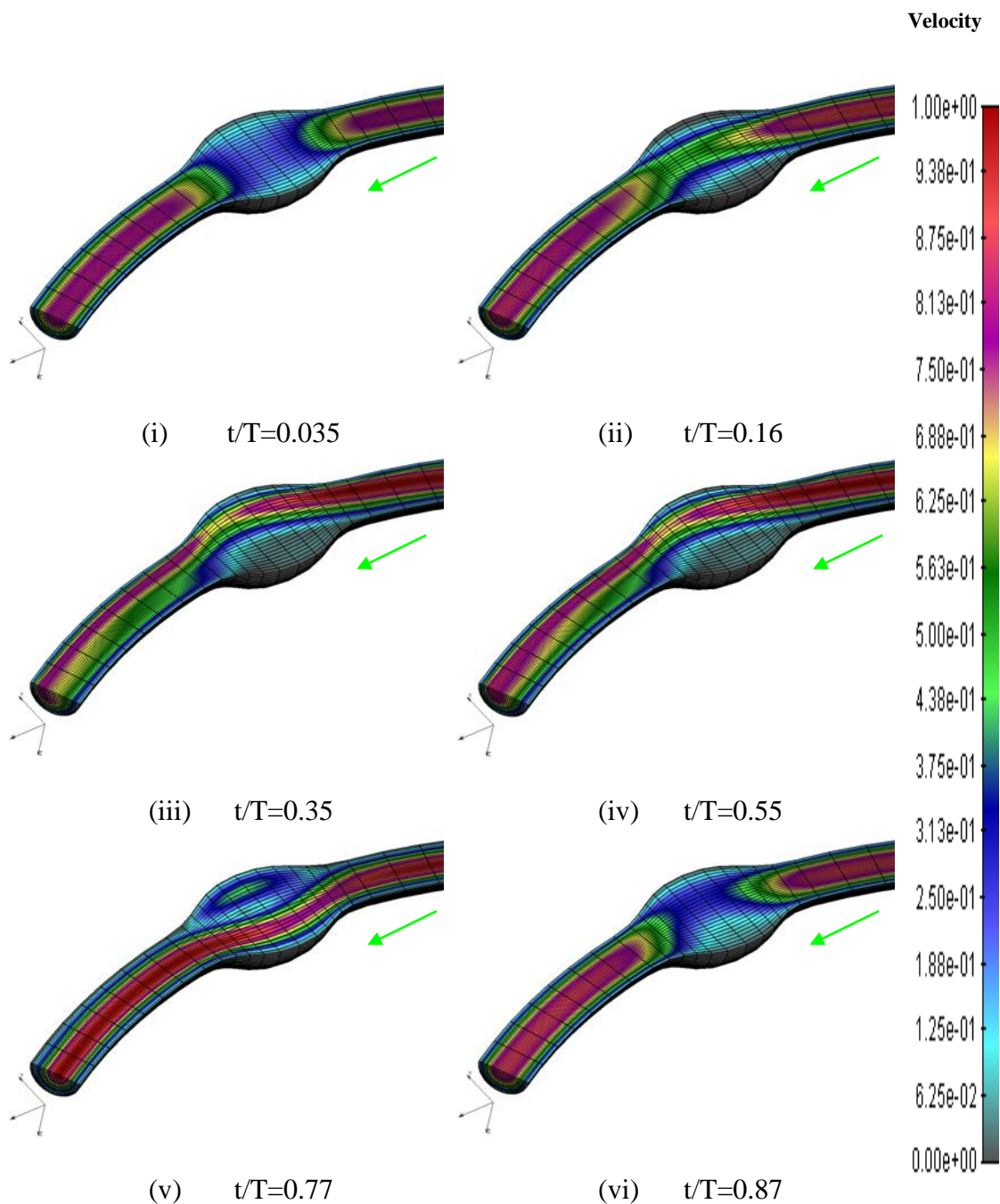


Figure 5.14 Flow evolution in AAA model (A≠0)

As the velocity reached $t/T=0.16$ (peak systolic phase) the flow begins to constrict within the AAA bulge along the central axis of the model. This sharp constriction is a result of initial vortex emergence at the sides of the AAA bulge. However, the location of the vortex seems to appear more on side of the bulge, hence pushing the majority of the blood flow volume slightly towards the upper part of the central axis within the AAA bulge. A sharp localized area of high WSS magnitude is

observed at the proximal end of the AAA bulge (i.e. model entrance area) as seen in Figure 5.15 (ii). The magnitude of the WSS is at its highest as compared to the WSS magnitude observed at other phases within the pulsatile flow cycle. As the flow leaves the peak systolic phase and moves towards the deceleration systolic phase (i.e. $t/T=0.35$ and early diastolic phase (i.e. $t/T=0.55$), the vortex observed intensifies and pushes the bulk volume of flow away from the central axis of the AAA bulge, as seen in Figure 5.14 (iii) and (iv). The bulk volume of blood tends to be concentrated at the upper area of the bulge towards the model exit i.e. distal zone. Both these phases exhibit a low magnitude WSS localization at the proximal zone (i.e. model entrance) towards the upper part of the bulge as seen in Figure 5.15 (iii) and (iv). Finally as the blood enters late diastolic phase (i.e. $t/T=0.77$), a reverse in blood flow direction is observed towards the model entrance moving away from the model exit. This reverse flow created two significant localized areas of WSS concentration, one at model entrance and another at model exit as seen in Figure 5.15 (v). However, the overall magnitude of these 2 localized WSS magnitudes are significantly low as compared to the magnitude of WSS observed during the peak systolic flow. One cannot disregard these localized WSS zones because it indicates blood flow shear thinning effect onto the inner surface of the aortic wall.

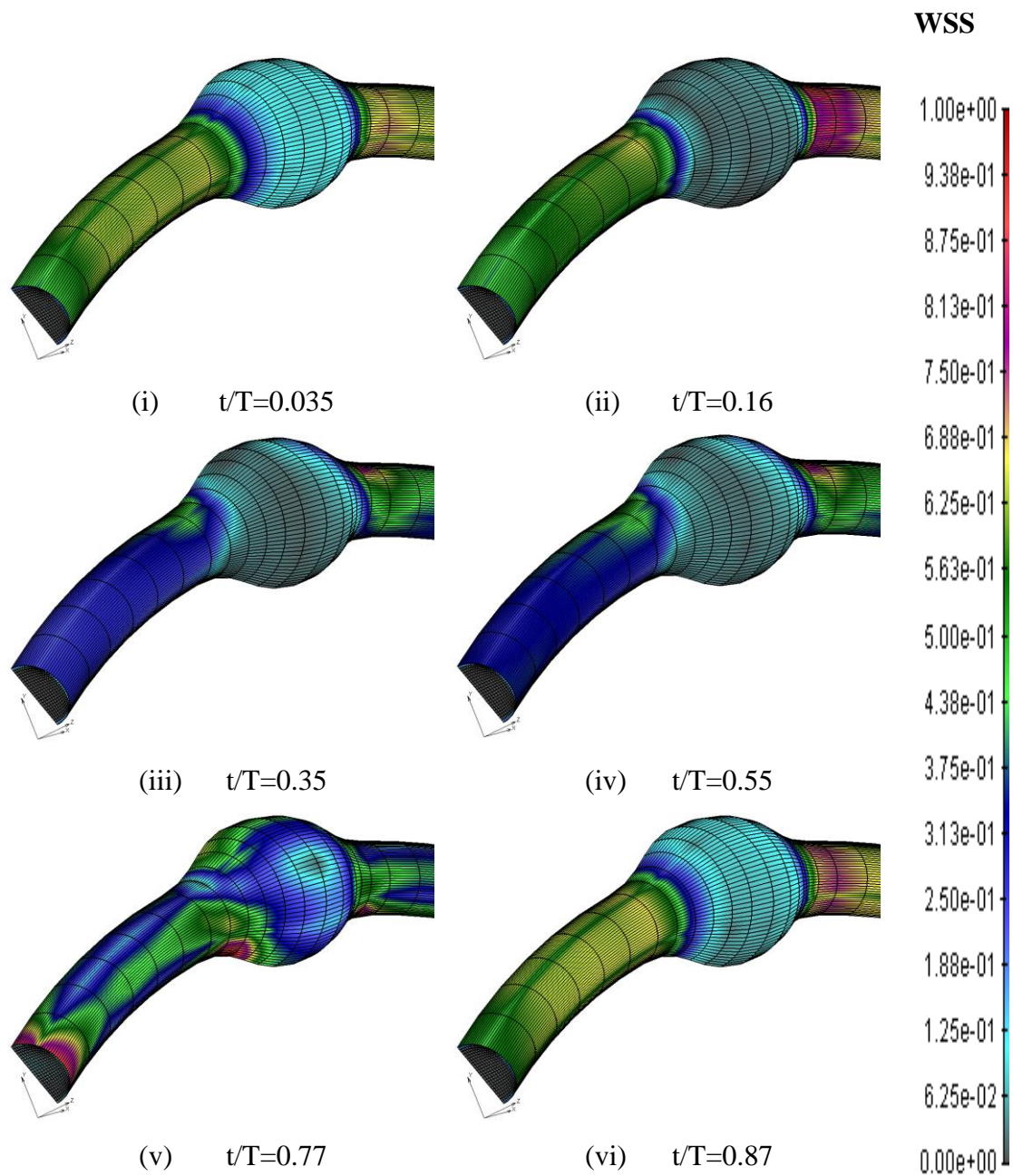


Figure 5.15 Wall Shear Stress distribution at six phase within one cardiac cycle

5.3.4 Hemodynamic Observation 4: Random Parametric Variation

The complete FE result for 3,500 AAA models is tabulated in Appendix 1. Our observation of these simulated is based on this tabulated results. The values for the peak systolic phase are identical with the values for the overall cardiac cycle. This implies that WSS_max always occurs during the peak systolic phase. Thus, further analysis can be focused on the peak systolic phase only. To better comprehend

existing relationships, we firstly derive a number of auxiliary variables from the simulation results.

From the z values of WSS locations, we derive the lateral angle for the occurring WSS, relative to the top of the aorta. We observe that this angle is exactly 15° in all cases, meaning that WSS always occurs at an angle of 15° either on the anterior or on the posterior side from the top of the aorta. This exact value is certainly an artefact which is due to the crisp nature of the simulation wire mesh. It does not allow substantial insight in the real occurrence of WSS; even WSS locations very close to the top of the aorta will be assigned to one and the same mesh segment corresponding to 15° .

The binary variables that show if WSS is contained in the posterior or in the anterior side of the aorta are denoted as Posterior1 ... 3. For example, Posterior1 = 1 if the global radius R is greater than the polar coordinate $r1$ of the WSS_max, and -1 otherwise. The differences $r1-R$, $r2-R$, $r3-R$ have a relation of +1 or -1 among each other, corresponding to the unique lateral angle of 15° . In order to allow for a significant analysis of the lateral position of WSS, a much finer wire mesh would be required, at least 3-5 times finer around the aorta.

The longitudinal positions of the WSS locations are re-calculated as angles in the polar coordinate system, in clockwise direction from the aorta entry (i.e. angle PHI in Figure 5.1). Moreover, for the end of the aneurysm (in flux direction) the corresponding angle is calculated. Thereby, we can measure the arc distance of the WSS locations from the aneurysm end, denoted as D1, D2 and D3. A simple inspection of the resulting values (i.e. Appendix1) exhibits that the arc distance of WSS_max () is $D1 \geq 0$. This means that WSS_max always occurs at or after the end of the aneurysm. More precisely, it's in the mesh segment containing the aneurysm end or in the following segment.

Further inspection shows that WSS_2 and WSS_3 can occur in one of the first three segments from the aneurysm end (the membership variables denoted C1 ... C3). It can also be seen that at least one of C1, C2, and C3 is always in Segment 1 and, less relevant, if C3 is in Segment 3, it has always the same lateral position as C1. This indicates that the maximum WSS is localized in the region closely following the aneurysm end and that the occurrence of the maximum is stable (this means, there is no other region on the aorta with a local maximum very close to

WSS_max). From this we can conclude that (in our geometry) the location of a possible aorta rupture is unique.

5.4 SUMMARY

The CFD modelling implementation exploits the finite element methodology. A complete three-dimensional computational modeling framework was derived to study the hemodynamic conditions in abdominal aortic aneurysm (AAA) models. Two finite element methodologies were derived, namely; the mixed velocity-pressure method and the penalty method. These methodologies exploited the Galerkin method. An implicit incremental-iterative procedure was employed as the numerical scheme that solved the nonlinear Navier Stokes equations. The presented computational technique was used to analyze the flow dynamics in AAA models under a physiologically realistic pulsatile flow at rest. It was also shown that the flow separates from the wall after peak systole, which leads to the formation of a vortex structure and of a separated flow region along the walls. These changes in the topology modified the hemodynamic forces acting on the wall. The study of very incipient aneurysms proved that even a small change in the vessel geometry drastically changes the flow structures and stresses. We can hypothesize that a healthy aorta would readjust its shape to avoid the presence of flow separation but the changes in the wall properties due to aging, hypertension or any other risk factor might prevent the natural healing processes. These changes in the flow characteristics result in very large changes in the wall shear stress and flow-induced pressure distributions acting on the model walls that would ultimately contribute to aorta enlargement and subsequent rupture.

Chapter 6 *Implementation of Data
Mining Methodology*

In this chapter, implementation of the data mining scope of our 3,500 simulated AAA models is discussed extensively. The scope of data mining is split into two categories. First, we employ data mining from a visualization of simulated medical images point of view. This first part of data mining can also be considered as a visual data mining scope. The second part of the data mining scope provides the framework for classification of critical WSS zones of the simulated AAA models. In both cases, the Self-Organizing Map (SOM) is employed. The Matlab SOMtoolbox was employed for the first phase of the visual data mining scope whereas the Viscovery SOMine software was used for the second phase of the data mining.

6.1 THE NEED FOR MEDICAL VISUALIZATION

Present computer technology enables huge data volume storage. A significant volume of this data is digitized. In order to become competitive, it is strongly believed that extracting important information from data produced becomes advantageous. However, what may become a daunting task is that trying to extract this important information that is hidden within the huge volume of data. Failure to interpret and deduce key information within this volume of data defies the primary purpose of collecting data and hence, this volume of collected data eventually becomes useless.

The process of exploring data becomes valuable by in-cooperating human (Keim, 2001). The primary purpose of including human is to be able to visualize the data, obtain valuable perspective of the visualized data, conclude and communicate with the data. This process is referred as visual data exploration. Visual data mining methods have shown tremendous ability in huge data exploration. The potential to explore huge databases is also high whereby it can be applied to initially unknown dataset and unclear preliminary objective for exploring these data. As the exploration process evolves, the objective of exploring these data can be adjusted automatically. The initially obtained visualized data provides a preliminary perspective about the data and subsequently a new deduction is derived. This preliminary deduction is further verified and its corresponding results from this verification are further used to fine-tune the primary objective of the explored data and this process repeats until a final conclusion is made about the data.

Visualizing important information within a volume of data can be performed by either visualizing its structure, content or object (Bertin, 1977). Visualizing the structure of information is commonly performed by visualizing its hierarchies (Shneiderman, 1992; Stasko et al., 2000). Visualizing the content of data on the other hand, focuses on the quantitative and qualitative attributes of the visualized information. This is primarily applicable to a class of multivariate data. Common methodologies of visualizing the content of data are parallel coordinates, panel matrices, pixel and icon based methods (Cleveland, 1993; Abello et al., 2000; Levkovitz, 1991). Lastly, object-orientated information visualization is performed mainly to validate analysis and deduce relationships within the multivariate data. Popular application of this method is DNA sequencing visualization.

Visualizing information from medical data is gaining popularity within the biomedical and medical community. Medical information often involves interpretation of high-dimensional data. Furthermore, the heterogeneity of medical data becomes a catalyst for the need for visual data mining (Krzysztof et al., 2002). A classic example is the ability to provide visualization of genome summaries (Helt, 1998; Pook, 1998). Besides this, complex 3D structures from *in vitro* results can be further represented in the form of 3D virtual images to aid better understanding (Can, 2003).

6.2 ROLES OF MEDICAL VISUALIZATION SYSTEMS

Visualization involves the application of computer graphic techniques that aids in creating an interactive visual illustration of dataset. It aims to amplify human cognition. Scientific visualization fundamentally involves visualization, exploration and analysis of datasets that originate from any real-world incidents. These datasets are either measured or simulated from these incidents. Datasets needed for efficient scientific visualization are often voluminous. This gives rise to the need for efficient visualization algorithms. Key goals of scientific visualizations are to explore datasets, validate a hypothesis and represent the findings visually. Medical visualization on the other hand involves visualization of medical datasets. It is a special branch of scientific visualization because most medical datasets consist of spatial embedding. Medical visualization involves the application of computer graphic techniques that use algorithms for efficient data rendering. It is often

supported by image processing techniques and medical image analysis methodologies.

Medical visualization is considered as a process of understanding medical datasets. The ultimate goal for medical visualization systems users is to understand the type of “insight” that they wish to achieve. Therefore, the primary objectives of medical visualization systems are to provide detailed comprehension of diagnostic processes, decision-making processes for surgical interventions, medical treatment planning and pre- and post-operative information demands. Apart from these objectives, medical visualization systems also provide insight on organizational and technical limitations, such as sterility and space constraints in an operating room.

Medical visualization systems are also developed by keeping in mind on the need for interaction between the users and the datasets. These interaction features are aimed to support the users to navigate the examined medical datasets, to explore specific datasets within the master datasets, to compare several clusters of datasets and to fine-tune the parameters to be visualized. This entire exploratory medical data analysis process ultimately supports the interpretation and classification of the examined medical datasets. From an analytical process point of view, medical visualization systems do not only limit itself to generating image and exploring data visually. Data analysis tools are also in-cooperated into these systems to classify the distributed numerical values in certain areas of the datasets. Quantitative information relating to the examined medical datasets can also be derived by including radiological workstations and therapy planning software systems into the medical visualization systems as add-on functions. A summary of the purpose of medical visualization systems and some examples of its applicability in medical care is illustrated in Figure 6.1.

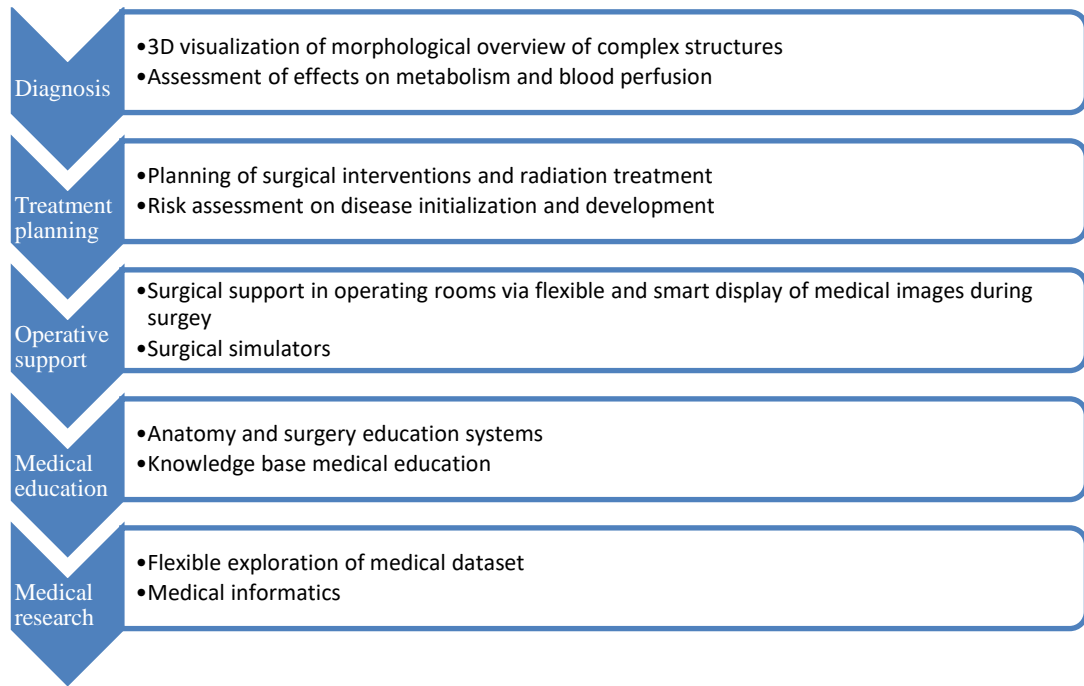


Figure 6.1 Roles of medical visualization systems

6.4 DATA MINING IMPLEMENTATION

6.4.1 Cluster Algorithm Using Self-Organizing Map

The classical cluster method of Ward is employed. This method belongs to the hierarchical agglomerative cluster algorithms which are characterized as follows. Starting with a clustering, where each single node forms a cluster by itself, in each step of the algorithm the two clusters with minimal distance (according to a distance measure characterizing the specific algorithm) are merged. This minimal distance is called *distance niveau* of the step (Vesanto, 2002).

The distance measure characterizing Ward's method is based on the variance criterion (i.e. small variance within each cluster and large variance between the clusters). In each step, the two clusters are merged whose merging contributes least to the variance criterion which is increasing in each step. This distance measure is called the Ward distance and is defined as;

$$d_{rs} := \frac{n_r \cdot n_s}{n_r + n_s} \cdot \|\bar{X}_r - \bar{X}_s\|^2 \quad (39)$$

where r and s denote two specific clusters, n_r and n_s denote the number of data points in the two clusters, and \bar{X}_r and \bar{X}_s denote the centers of gravity of the clusters

and $\| \cdot \|$ is the Euclidean norm. Starting from the full distance matrix (lower triangle matrix as the distance measure is commutative), at every step a row and a column is stripped (and a different row and column is updated) until the matrix is completely cleared and only one cluster remains. The mean and cardinality of the new cluster built as product of the merge step is computed as follow;

$$\bar{X}_r^{(new)} := \frac{1}{n_r + n_s} \cdot (n_r \cdot \bar{X}_r + n_s \cdot \bar{X}_s), \quad (40)$$

$$n_r^{(new)} := n_r + n_s \quad (41)$$

6.4.2 Self-Organizing Map Procedure Using Matlab SOMToolbox

As explained in Section 5.3.3, the WSS_max always occur at peak systole. Therefore, the WSS_max data is used as an input data for the SOM procedure. Figure 6.2 illustrates a fraction of the WSS_max data, indicating the WSS of three coordinates, τ_x , τ_y , and τ_z , representing three Cartesian directions, x, y, z , respectively. The complete list of WSS data is attached in Appendix 1.

| 1 | 3 | | | | |
|----|--------------|--------------|--------------|---|----|
| 2 | #n | x | y | z | |
| 3 | 3.63620E-01 | 1.01157E-04 | -6.36093E-06 | | 1 |
| 4 | -1.03666E-08 | 5.18539E-04 | 1.30836E-05 | | 2 |
| 5 | -2.63379E-08 | 1.31717E-03 | 3.03394E-05 | | 3 |
| 6 | -3.83413E-08 | 1.91697E-03 | 4.62179E-05 | | 4 |
| 7 | -4.43019E-08 | 2.21438E-03 | 5.92905E-05 | | 5 |
| 8 | -4.54250E-08 | 2.27100E-03 | 6.99112E-05 | | 6 |
| 9 | -4.31190E-08 | 2.15627E-03 | 7.83647E-05 | | 7 |
| 10 | -3.84711E-08 | 1.92356E-03 | 8.49399E-05 | | 8 |
| 11 | -3.22308E-08 | 1.61154E-03 | 8.99471E-05 | | 9 |
| 12 | -2.49394E-08 | 1.24705E-03 | 9.36921E-05 | | 10 |
| 13 | -1.69714E-08 | 8.48551E-04 | 9.62586E-05 | | 11 |
| 14 | -8.57951E-09 | 4.28918E-04 | 9.77642E-05 | | 12 |
| 15 | 5.02886E-12 | -2.51429E-07 | 9.82357E-05 | | 13 |
| 16 | 8.58267E-09 | -4.29076E-04 | 9.77533E-05 | | 14 |
| 17 | 1.69675E-08 | -8.48359E-04 | 9.62669E-05 | | 15 |
| 18 | 2.49507E-08 | -1.24761E-03 | 9.37132E-05 | | 16 |
| 19 | 3.22507E-08 | -1.61254E-03 | 8.99878E-05 | | 17 |

Figure 6.2 WSS_max input data

Because the dimensionality of the input space (i.e.3D) is larger than the dimensionality of the SOM (i.e. 2D), the map will try to balance the competing errors in how well it maps the data points against how well it maps the topology (i.e. imagine trying to bend a sheet of paper to fill the interior of an empty cube). We use

the `som_make()` function to determine the best size for the map (i.e. it does this by calculating the two largest eigenvalues of the dataset (i.e. `sD`) and uses those values as the dimensions). If the data range were particularly skewed in one dimension (i.e. those value were much larger than the other values), we would need to normalize the data to prevent that component from dominating the map topology (<http://www.cs.unm.edu/~aaron/creative/soms.htm>). The Matlab command for the SOM procedure for a normalized `WSS_max` dataset is as follows;

```
>>sD = som_read_data ('WSS.data')
>>sD = som_normalize (sD,'var')
>>sM = som_make (sD)
>>somvis_gui(sM,sD)
>> class = cluster(linkage(pdist(sM.codebook),'complete'),11);
>> C = som_clustercolor(sM, class, 'rgb1');
>> som_show(sM,'color',C);
>> bmus = som_bmus(sM, sD);
>> bmu_colors=som_bmucolor(bmus, sM, C);
```

6.4.3 Self-Organizing Map Procedure Using Viscovery SOMine

As a specialty, the distance matrix is initialized in a manner that takes into account the number of data records matching to the nodes of the map. Nodes with many matching data records are weighted stronger than nodes with fewer matching records. As distance measure, a modified Ward distance is used because it is likely that the SOM contains *empty* nodes.

Let further be n_r , n_s the number of data records that match the nodes r and s^1 and \bar{X}_r and \bar{X}_s their node vectors, respectively. Then, the distance d_{rs} is defined as follows;

$$d_{rs} := 0, \text{ if } n_r = n_s = 0 \quad (42)$$

$$d_{rs} := \frac{n_r \cdot n_s}{n_r + n_s} \cdot \|\bar{X}_r - \bar{X}_s\|^2, \text{ otherwise} \quad (43)$$

This definition ensures that during the first merge steps only nodes (and in the sequel clusters) with $n_r = 0$, *empty clusters* are merged until only cluster with $n_r > 0$ remains. Note that if there is at least one empty cluster, there exist many entries in the distance matrix with $d_{rs} = 0$, which are all candidates for the next merge step (since all these Ward distances 0 are minimal). Our implementation chooses among them those (empty or non-empty) clusters which are Euclidean-nearest.

6.5 OBSERVATION OF MINED DATA

6.5.1 Observation 1: Visual Data Exploration

We choose the same model as chosen in Section 5.3.1 for a typical AAA model case study. Visual data explorations from the computed results were performed following the SOM algorithm via the SOMtoolbox from Matlab. These are visualization of component planes (x, y, and z), U-matrix, hits histogram, principal component analysis (PCA) and Sammon's projection. From 8,450 nodal points of the AAA finite element model, 1,544 nodal points that represent the outer wall of the AAA surface was extracted. These were divided into clusters by the SOM algorithm. Figure 6.3 illustrates the component values of the WSS at peak systole.

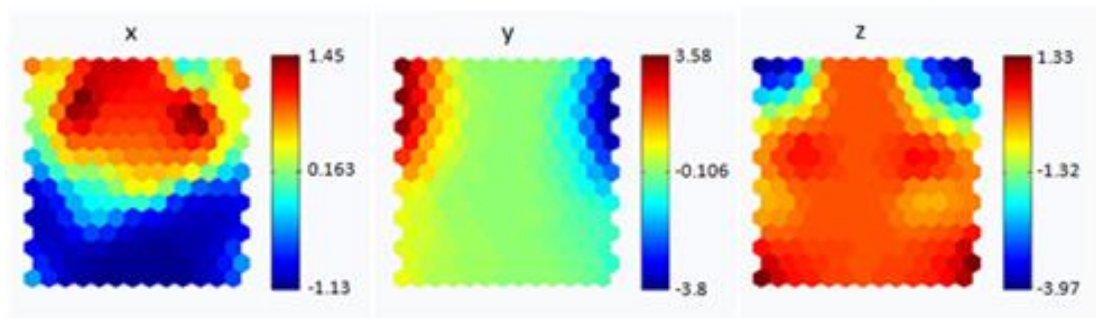
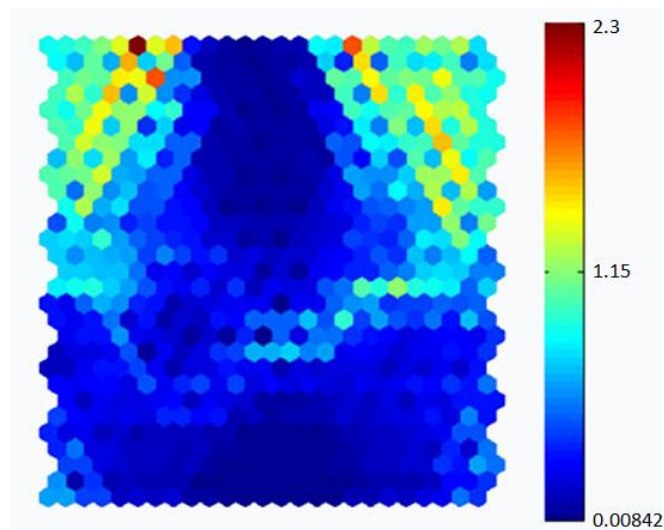


Figure 6.3 Visualization of the component planes of WSS at peak systole

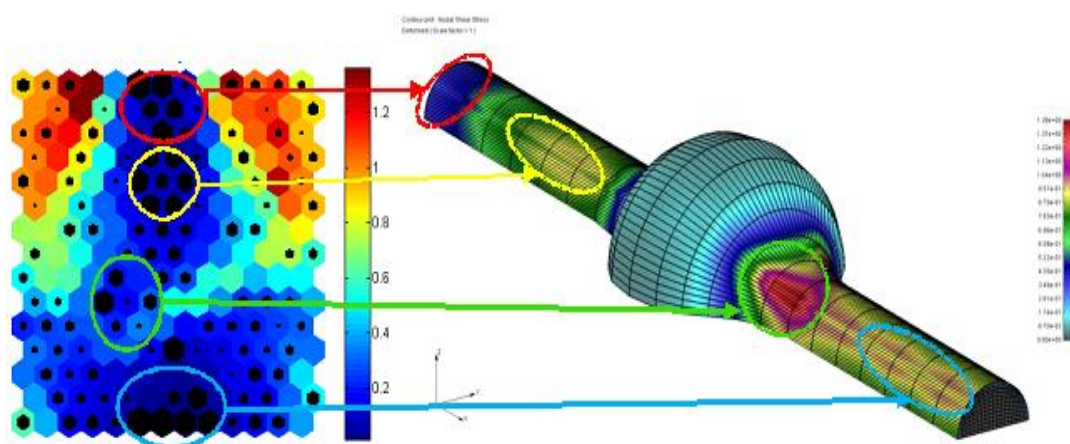
Component planes are usually used to examine and determine the actual prototype vectors. A component plane visualizes a single attribute for all the map units in the SOM. In the component plane, all nodes or components will have the same position no matter which attribute is being visualized. Hence, comparison can be made easily between the different attributes. By inspecting the component planes, the distribution of the values in that component can easily be seen. From this visualization, it is also possible to see if the values are grouped into different clusters. Correlations between components in the data can also be found by looking at the component planes. Patterns that appear at similar locations from various component planes are applied to show the correlations since the nodes keep the same position in the different planes. If the patterns look alike they are probably correlated. This method can be used to decide which components to examine further.

U-Matrix (Unified Distance Matrix) is the most commonly used method for the visualization of SOM's patterns. It indicates the clarity and quality of the clusters.

U-matrix is composed of the distances from the map units to its nearest neighbours. It contains twice as many cells as the SOM and is defined by similarity measurements between each cell and neighbouring cells. U-Matrix can be visualized in many different ways. However, a colour map is always used for the visualization of the distance values. Figure 6.4(a) shows the U-matrix of the WSS at peak systole. Low values in a colour map indicate that the distance between the prototype vectors are small and hence the regions can be thought as the clusters. While for the high values, it conveys the cluster borders. As shown in the figure above, it can be seen that the dark blue regions form the clusters. The clusters are actually separated by the light colour's boundary.



(a)



(b)

Figure 6.4(a) U-matrix visualization; (b) hit histogram visualization corresponding to the finite element computational model

Hit histogram is another visualization method of SOM. It displays the hits' number in every unit map. The SOM is trained by positioning the interpolated unit maps in-between the clusters. This leads to unclear definition of cluster borders. The resulting Voronoi sets of these interpolated unit maps eventually exhibits less hits or empty. Such information is used to cluster the SOM by adopting zero-hit units in order to define cluster borders. Figure 6.4(b) shows that the hits' numbers in each of the unit maps are represented by a black hexagon. The hexagon is dimensioned according to the number of input patterns associated to each BMU that the unit map represents. The quantity of data points mapped to every unit map is calculated and plotted onto grid map.

Principal Component Analysis (PCA) is a straightforward linear projection technique for dimensionality reduction. In order to make analysis computationally tractable, or to facilitate visualisation, it is always necessary to reduce the dimensionality of a dataset. In information visualization, when dealing with multivariate data which are difficult to visualize, projection methods are often used. Projection methods place data items in an abstract space with a chosen number of dimensions in such a way that the distances between the positions reflect the differences (dissimilarities) between the data items. It enables the exploration of similarities and dissimilarities among data items. When the dataset contains groups of similar data items, they will appear in the projection as clusters of close points. Hence, projection helps the user to discover clusters and to find outliers, i.e. data items that are very distinct from the others. Figure 6.5 illustrates the PCA image of the WSS at peak systole.

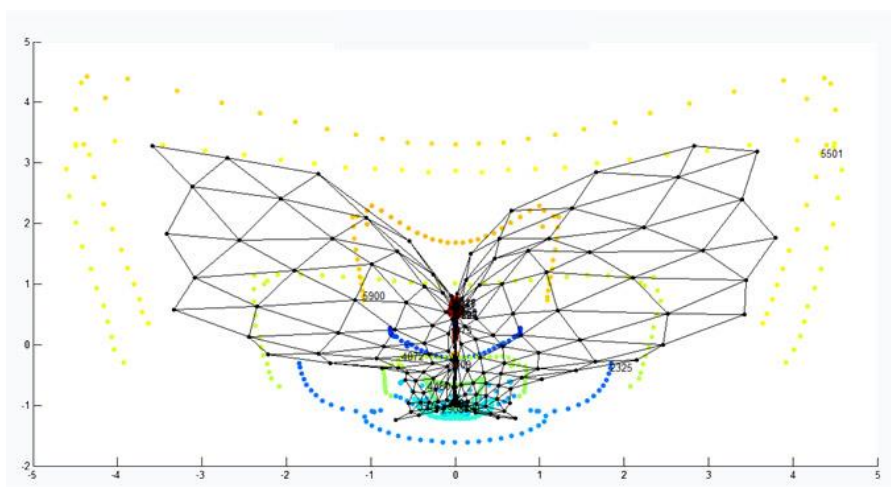


Figure 6.5 PCA visualization of WSS at peak systole

Sammon's projection visualises algorithm that maps the high dimensional data to a lower dimension. The mapping is carried out in such a way that the distances between the objects from the original space are preserved in the projected space. For the visualization of a SOM, Sammon's projection is used to map the codebook vectors' values on a plane. Besides that, lines between the neighbouring neurons which represent the topological relations have been drawn to improve the image. Although Sammon's mapping can be exploited directly to datasets, it is a tedious and intensive computational process. Hence, in order to reduce the computational burden, the input data are quantized by the SOM to smaller codebook vectors. The reduction in dimensionality by Sammon's mapping enables users to view the data in 3-dimensions or even in two dimensions. Figure 6.6 illustrates the Sammon's projection of the WSS at peak systole.

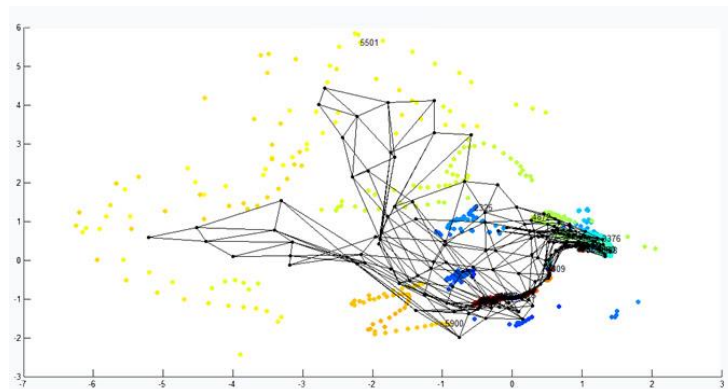


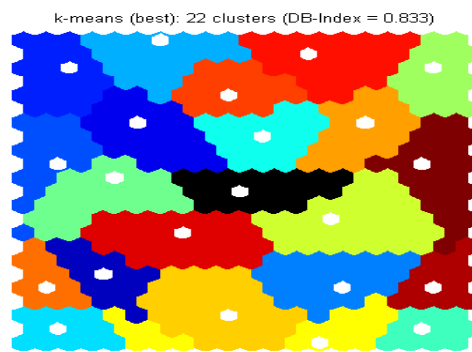
Figure 6.6 Sammon's projection of WSS at peak systole

6.5.2 Observation 2: Spatio-Temporal Pattern Visualization

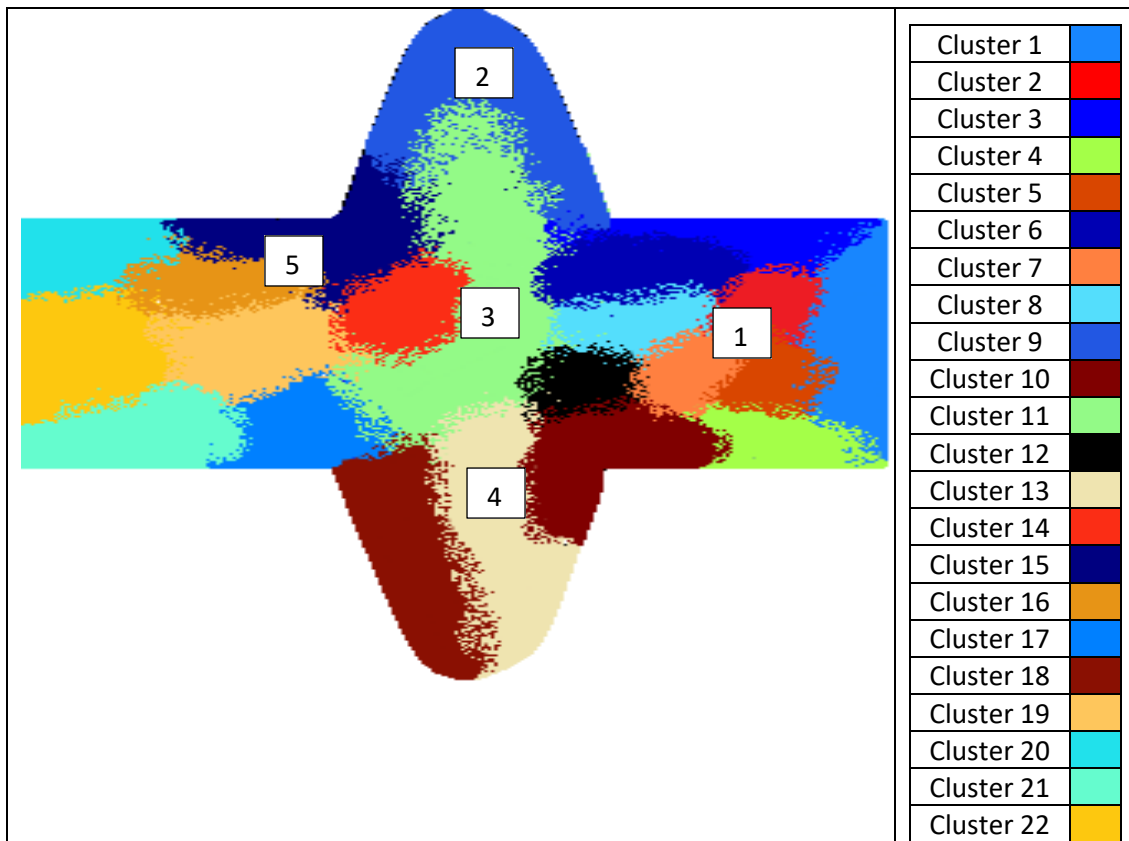
Figure 6.7 shows the visual data mining results of the set of 1,544 nodal points that represent the outer wall of the AAA surface. It is divided into 22 clusters by the SOM based on the similarity of spatial values (x, y and z) and temporal index values (WSS_max). Figure 6.7(a) shows the SOM image divided into clusters and Figure 6.7(b) shows the contour plots of the SOM cluster IDs indicated by colors, which are mapped onto the real space of the aortic abdominal aneurysm surface. Clusters ID numbers are assigned to the clusters. In order to divide regions of the AAA, 5 regions introduced i.e. 1, representing all clusters at the anterior region of the AAA, 2,3 and 4, representing at the AAA bulge and 5, representing the proximal region of the AAA as shown in Figure 6.7(b).

Comparison of the cluster color ID patterns of the SOM images with the FE simulated results indicates that WSS_max shows similar tendency, such that the index values changes between the areas corresponding to the aneurysm. This means the WSS temporal characteristics changes between the aneurysm and its surroundings.

Secondly, the low WSS concept for aneurysm rupture applies to clusters in the regions of 2, 3 and 4 that are corresponding to the location inside the aneurysm i.e. AAA bulge. On the other hand, high WSS concept for aneurysm rupture applies to clusters in region 5 because they exhibit high WSS values. It was also noted from the FE simulated results that WSS_max occurs at the proximal region of the AAA similar to region representing 5.



(a)



(b)

Figure 6.7 (a) SOM clusters of WSS_max; (b) SOM mapping on real space of AAA surface

6.5.3 Observation 3: Predictive Analysis for 3,500 Geometric Parameters

The 3,500 simulated AAA data have been modeled in Viscovery SOMine to analyze further dependences in the data. In order to explore and derive useful information on the shape of the WSS region, we thus calculate D_center as the weighted mean and the *Spread* as the weighted deviation for the 3 WSS locations, the *Spread* giving us an indication for the oblongness of the WSS region. Interesting variables that are medically relevant such as saccular index, asymmetrical index, and diameter ratio, are explored in the SOM analysis.

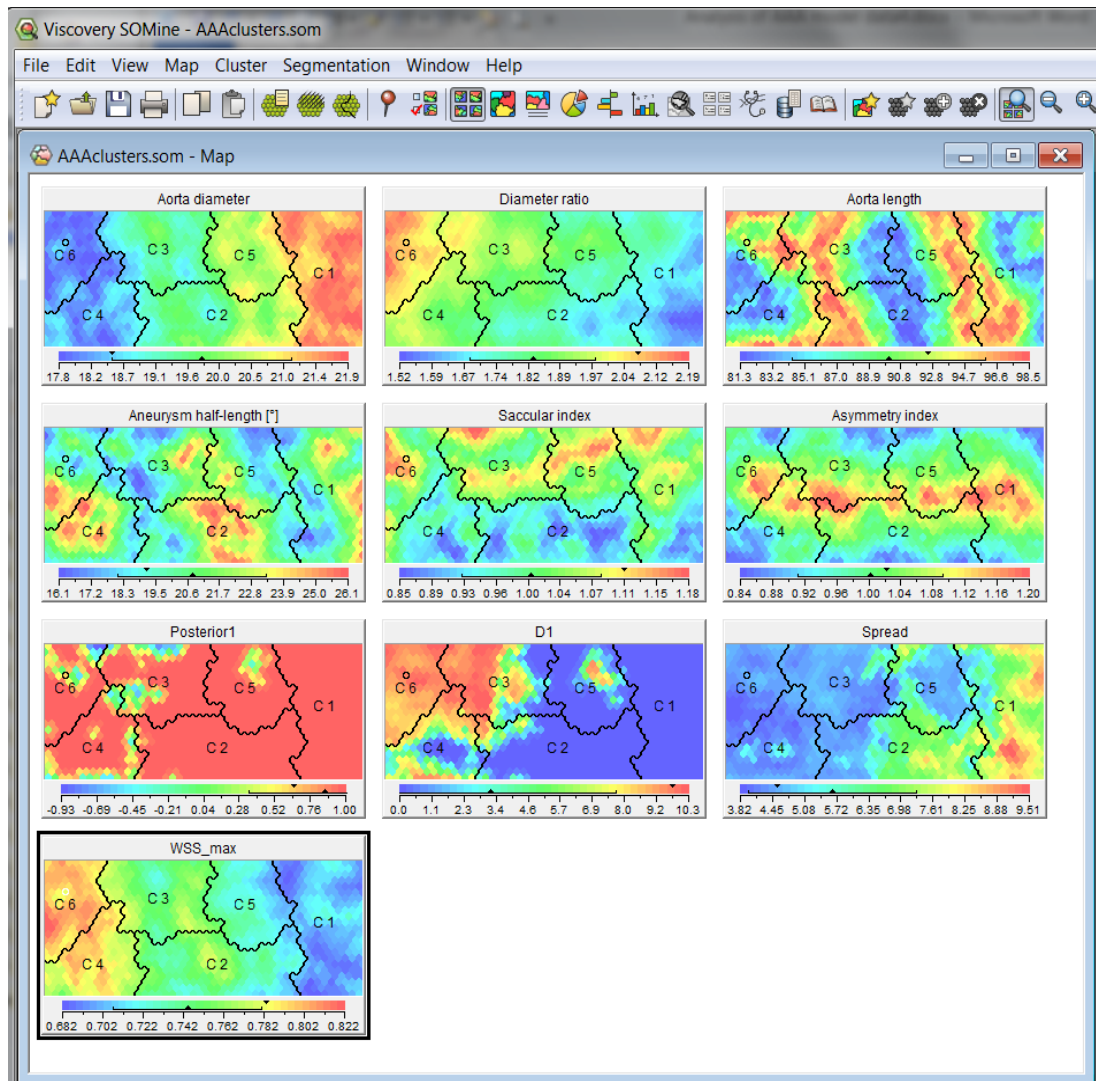


Figure 6.8 SOM representations of geometric parameters and WSS_max

The Viscovery map in Figure 6.8 shows that a strong dependency between WSS_max and the aorta diameter as well as a correlation with the diameter ratio. The other geometric parameters only have a very small dependence with WSS_max. The distance of the WSS_max location from the aneurysm end is also positively correlated with the value of WSS_max itself, while the *Spread* is anti-correlated. This means that oblongated WSS regions have a lower WSS_max, compared to more compact WSS regions. The partitioning of the map into 6 clusters visually shows the dependences mentioned before, as well as the independence of WSS_max from other variables, such as the asymmetry index and the saccular index, at least at a global level. As an example, the cluster profile in Figure 6.9 shows the significant deviations of all variables from their respective means within cluster C6. Furthermore, the value of WSS_max was predicted from the Viscovery SOMine. A

standard (global) regression yields a Determination of 97.5% as shown in Figure 6.10.

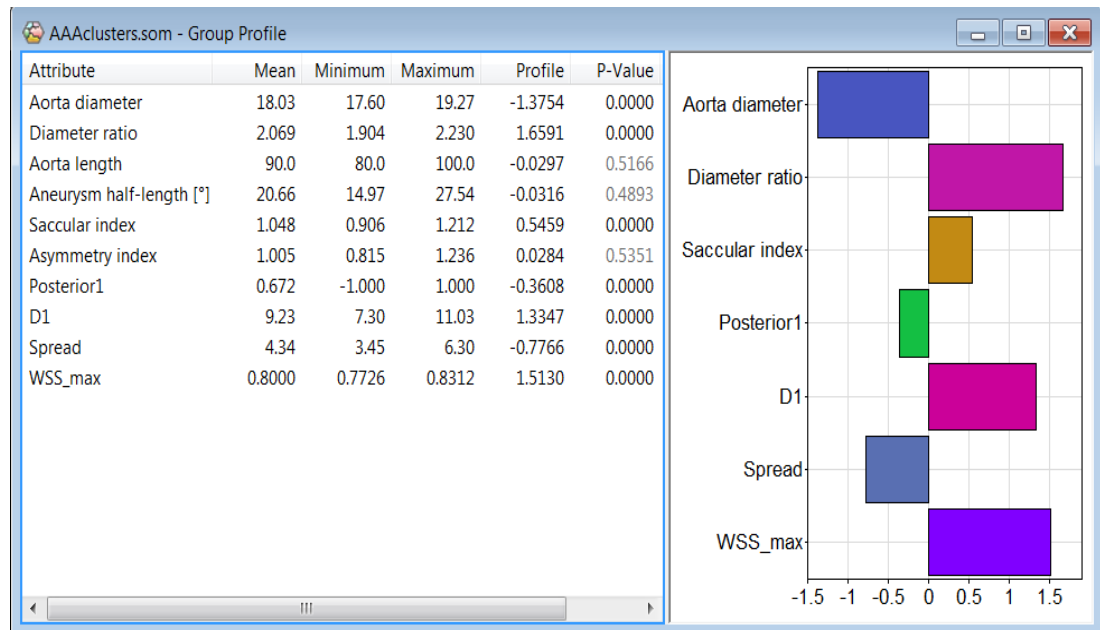


Figure 6.9 Statistical profiles for Cluster 6

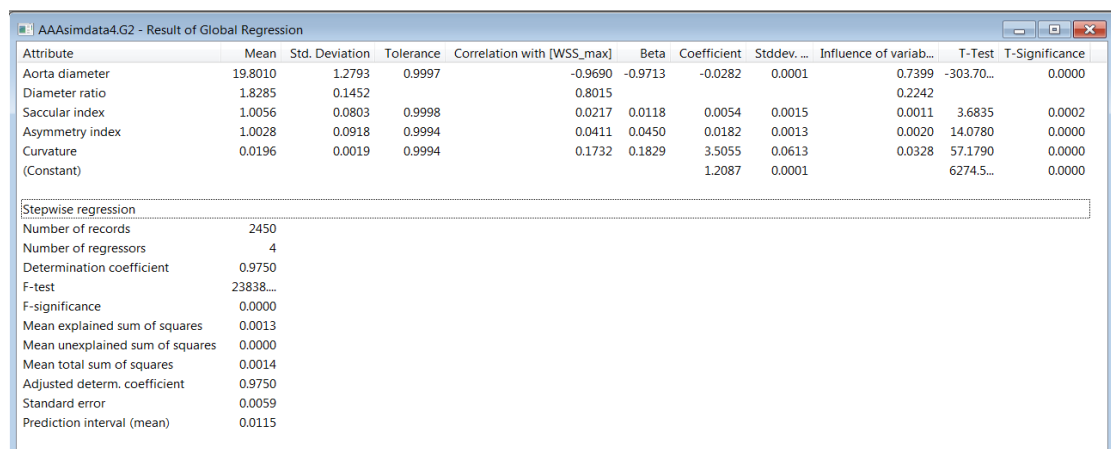


Figure 6.10 Prediction of WSS_max from geometric parameters

6.6 SUMMARY

We implement the data mining scope on our 3,500 simulated AAA models. The scope of data mining is split into two categories. First, we employ data mining from a visualization of simulated medical images point of view. This first part of data mining can also be considered as a visual data mining scope. The second part of the data mining scope provides the framework for classification of critical WSS zones of the simulated AAA models. In this study critical zones of the WSS were observed at

both proximal and distal zones of the AAA model i.e. entry and exit sides of the model bulge. In both cases, the Self-Organizing Map (SOM) is employed. The Matlab SOMtoolbox was employed for the first phase of the visual data mining scope whereas the Viscovery SOMine software was used for the second phase of the data mining.

Chapter 7 *Recapitulation and
Future Work*

Contemporary medical facilities and practices would greatly benefit from accurate real-time prediction tools. This thesis covers the necessity of using data mining methodologies in predictive medicine especially when applied to hemodynamic predictions in abdominal aortic aneurysms (AAA). It also reviews currently applied, and potential, data mining frameworks for hemodynamic predictions in AAA. One framework applies various data mining techniques to existing medical datasets of a real-patient and combines the results with a typical computational modeling simulation. Another framework takes a visual data mining approach to available computed results of hemodynamic features within AAA models. Both of these approaches allow the rupture potentials of AAAs to be statistically predicted which provides an advantageous alternative to tedious and time-consuming computational modeling. Using prediction trends via mining medical data available for patient-specific aneurismal conditions also allows faster decision-making in real life medical procedures.

7.1 RECAPITULATION

This thesis is a result of answering several key questions that arise from several fundamental motivations of a specific clinical problem. AAA is a cardiovascular disease that has a high death rate, if ruptured. Vast research attempts both *in vitro* and *in silico* have been conducted in order to predict AAA growth and rupture. To date, no definite rupture index has been agreed upon. Hence, the decision for surgical intervention varies from clinician to another.

An important criterion in trying to understand disease initialization, development and subsequent rupture is blood flow dynamics and its corresponding shear stress distribution within the arterial wall. This important insight would enable clinicians and biomedical engineers co-relate its mechanical conditions to the pathogenesis of pathological changes on the artery. CFD methods are popular among researchers with regards to hemodynamic study relating to AAA disease. However, AAA is very patient-specific because of the variability of arterial geometries that differs from one patient to another.

In view of these fundamental motivations, several questions arise. Namely; (a) how to study the blood flow and wall shear stress distributions in AAA models, especially from a hemodynamic point of view?, (b) how to consider all possible

geometrical variability of AAA models with respect to hemodynamic variables?, (c) how can CFD analysis be performed efficiently so that they are suitable for clinical practice? and (d) how can we co-relate AAA disease rupture possibilities with regards to AAA geometries accurately?

Based on the above questions, the objectives of this thesis were outlined. A conceptual framework that coupled CFD and data mining techniques was derived. A multi-dimensional medical dataset that consist of various AAA geometries and its corresponding WSS distribution at peak systolic phase was applied to this conceptual framework in order to deduce rupture prediction accuracy. This hybrid methodology is seen as a “marriage” between computer science and medicine with the goal of introducing “intelligent” tools that would be capable of adapting dynamically on its own to solve complex clinically related problems.

Prior to deriving such a framework, extensive literature reviews both from clinical and current solution methodology point of views were carried out. The purposes were: (a) to identify current knowledge relating to AAA disease, (b) to identify current management of unruptured AAA disease, (c) to identify current trends on AAA prediction efforts and (d) to identify the gap between existing library of AAA prediction efforts. These purposes were illustrated in both Chapters 2 and Chapters 3. The proposed solution methodology was discussed extensively In Chapter 4. Firstly, the governing equations for pulsatile blood flow modelling and its relevant boundary conditions were explained. Next, the geometrical definitions of the AAA models were defined. With these defined parametric ranges, a total of 3,500 AAA models with varying geometries were generated. Finally, the complete CFD and data mining formulations were formulated. The CFD method employed the FEM whereas the data mining method employed the unsupervised machine learning algorithm of the Kohonen’s Self Organizing Map (SOM). The CFD implementation and the data mining strategy were implemented in Chapters 5 and 6, respectively, whereby the resultant of the CFD generated WSS on varying AAA geometries were imported into the unsupervised machine learning platform. A summary of the overall conceptual framework and its solution methodology is illustrated in Figure 7.1.

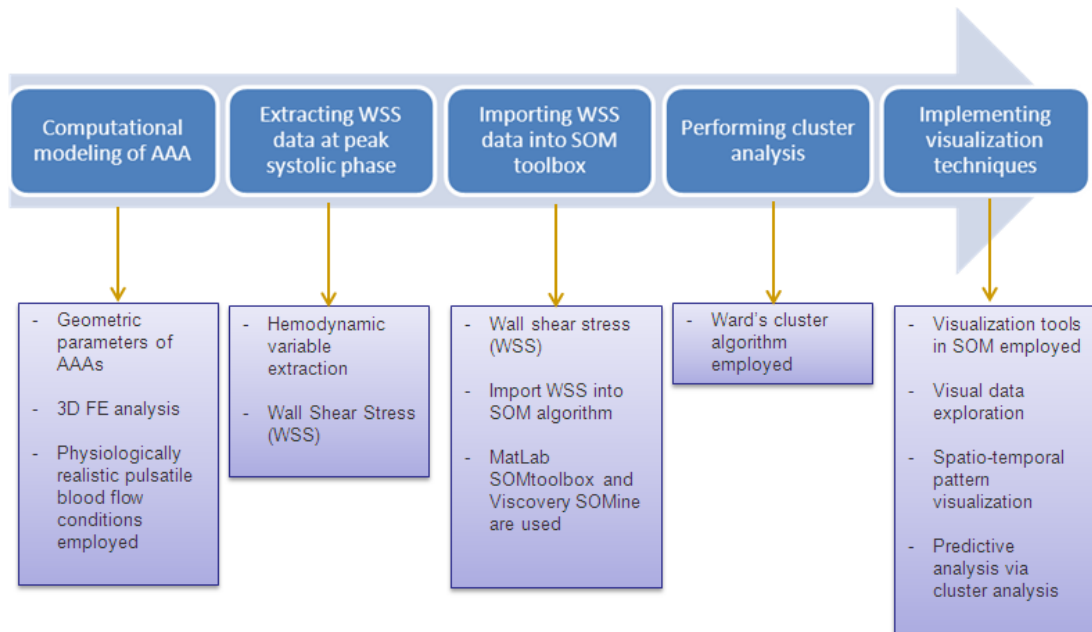


Figure 7.1 A hybrid methodology of CFD and data mining technique procedure

7.2 CAPABILITY OF DATA MINING IN PREDICTIVE MEDICINE

Over the past years, the word “data mining” has been actively associated in the medical field. Its application to the medical field has been focused on the management of large volume of data. Despite its association with the medical field, the use of data mining techniques especially in analyzing medical data is still in its infancy stage. The exploitation of specific data mining methodologies applied to practical clinical applications can generate predictive models, use the knowledge from the medical domain and derive actions to support clinical decision-making. Having said that, the aim of bio-data mining in predictive medicine is to design models that exploit specific medical information from patient-specific cases that predict a particular problem of interest and subsequently support in the clinical decision-making process.

Computational modeling can provide noninvasive *in vivo* results. These tools are highly image-based. However, computational modeling demands high level of mathematical knowledge requires tedious mathematical formulations and most importantly involves time-consuming computations followed by rigorous post-processing steps. The solution for a fast clinical decision based on a huge dataset of AAA details and variables is data mining. The data mining process is able to reduce computing time in order to analyze hemodynamic predictions relating to AAA progress and enlargement. A typical parametric computational modeling takes hours

depending on the type of software used, density of the computational model mesh, multi-dimensional model and choice of numerical iteration involved as compared to applying data mining technique that can be performed in minutes. This further suggests a new approach in patient-specific AAA modeling.

Furthermore, in order to improve AAA rupture prediction, hundreds and even perhaps thousands of computational modeling works for various AAA geometries need to be simulated and its corresponding hemodynamic variables need to be extracted from a highly dense model mesh. In order to further reduce the complexity of AAA computing, grid computing can be introduced. Taking into consideration the total amount of data needed from many different types of geometric models, these modeling tasks can be further performed parallelly and independently by linking the modeling works to a grid platform.

The ultimate goal of in-cooperating data mining in predictive medicine is to lower the level of subjectivity while deciding on surgical interventions. The decision-making process is further aided by developing new vital medical knowledge via data mining. Predictive models produce excellent knowledge support functions to medical doctors and biomedical engineers. Predictive modeling via data mining is also able to illustrate growing trends of disease developments. The above-mentioned benefits are due to the capability of data mining techniques as summed-up in Figure 7.2.

7.3 THE ROLE OF INFORMATION VISUALIZATION IN MEDICINE

Visualization is seen as “an action of visual interpretation” (<http://www.m-w.com>). Information visualization (IV) on the other hand, is perceived as “an action of transforming the knowledge gained visually by exploiting humans’ natural visual abilities” (Gershon et al., 1998). More explicitly, it is seen as processing information visually that is aided by the use of computers in order to enhance understanding of the visualized dataset (Card et al., 1997).

The primary objective of IV is that it helps ease the process of analyzing and comprehending information for humans. This is performed by carefully developing suitable techniques for visual representation of dataset. These developed techniques serve to ultimately achieve several goals. They are: (1) to allow user to analyze dataset at varying stages of

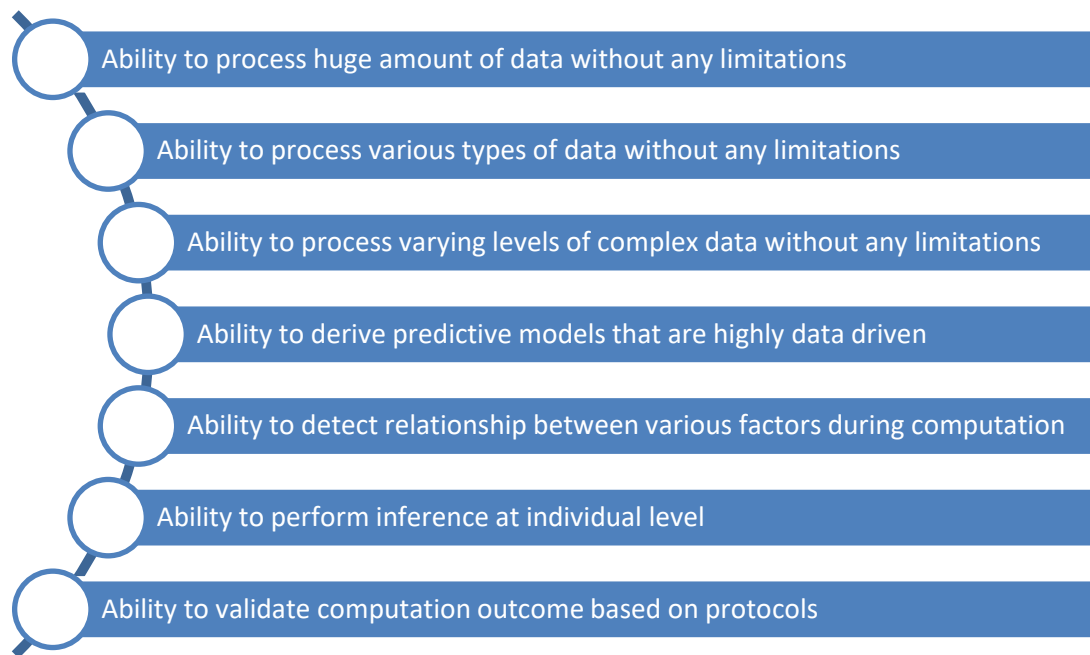


Figure 7.2 Capabilities of data mining technique in predictive medicine

abstraction, (2) to allow user to engage with dataset with a higher level of involvement, (3) to allow user to have a deeper level of comprehension of the dataset, (4) to allow user to discover knowledge via discovering informational relationships within the dataset, and (5) to allow the user to support their findings via their visual abilities.

In line with these goals, a variety of approaches were developed. Attempts also have been made to introduce taxonomies for this variety of approaches. One of the most popular approaches illustrated the classification of IV approaches via data type and task (Shneiderman, 1996). Seven data types were identified. They are one-dimensional, two-dimensional, three-dimensional, temporal, multi-dimensional, tree and network. Seven tasks were also identified such as overview, zoom, filter, details-on-demand, relate, history and extract.

The items within a dataset often tend to have multiple attributes. Therefore the distinction between various categories of data type is not normally clear. For example, an instance of multi-dimensional data can be viewed as temporal data. However, this distinction would be beneficial in determining the selection of IV techniques, if the temporal criteria are dominant for that particular dataset of interest. This consideration is also applicable between pairs of data types, whereby a data type becomes a specialized of the other data type i.e. three-dimensional and multi-dimensional, tree and network, etc.

7.4 MEDICAL IMAGING TO INFORMATION VISUALIZATION IN MEDICINE: A PARADIGM SHIFT

The discovery of X-rays and the invention of the microscope have guided surgeons and physicians to use images in the diagnosis and treatment of diseases. Images have also aided them to further improve their level of understanding of fundamental biology and physiology. Basically, the scientific and medical motivation to generate medical images often determines the value of these images. In clinical practice, visualizations serve in detecting and treating diseases. These visualizations are obtained either directly, via biopsy or surgery, or indirectly, via rigorous mental reconstruction (Robb, 1999).

The introduction and intensive exploration of 3D and 4D medical imaging for the last decade as well as the emergence of high-end computer capabilities have minimized the decision for the need for physical dissection in order to gain insight of a particular medical problem, to a certain extent. These computational abilities enable effective reconstruction and rendering of multi-dimensional medical data. This in return has provided significant new platforms for medical diagnostic and treatment plans. Furthermore, the inclusion of computer science in the medical field has enabled the applications of noninvasive methodologies to be minimal. Thus, guiding surgeons and physicians to arrest and cure diseases effectively. Apart from increasing effective interventions by surgeons and physicians, these effective interventions significantly reduce risk on surgical complications and disease reoccurrences. This in return reduces healthcare expenses.

However, from a medical imagining point of view, visualization is often referred to challenges on acquiring images and focuses on processing requirements to visualize these acquired images (Chittaro, 2001). Examples of image acquisition techniques are computer tomography (CT) scanning, magnetic resonance imagining (MRI) and X-rays, whereas processing techniques ranges from anti-aliasing to volume rendering. Over the last decade, there seem to be a shift on the perception of visualization in the medical field. The rapid development and proven outcomes of IV techniques have shown that it is capable of being incorporated in various fields of study. IV has played a vital component in the medical field for further developing and fine-tuning the objective of medical visualization. They are; (a) intuitively representing data visually in order for the viewer to easily understand, learn,

recognize, navigate and manage them (b) effectively magnifying subtle diagnostic scopes as well as patient management scopes visually and (c) efficiently managing large volume of information by preventing information overload. Generally, this paradigm shift can be viewed as IV being an extension of medical imaging.

7.5 CONCLUDING REMARKS

This attempt seeks to introduce a new and novel hybrid methodology that couples computational fluid dynamic and data mining techniques seen as a potential conceptual framework that can be employed in predicting the outcome of a medical case. The well-known Finite Element Method (FEM) and the unsupervised machine learning algorithm of the Self-Organizing Map (SOM) were employed to a clinically relevant medical condition i.e. abdominal aortic aneurysm. We define geometrically AAA models and vary these geometrical parameters to obtain various shapes and sizes of AAA. We performed three dimensional finite element modelling on these AAA under physiologically realistic conditions to obtain the corresponding wall shear stress distribution. The obtained results are then imported into Self-Organizing Map to execute an unsupervised machine learning algorithm to determine prediction outcomes of possible rupture of AAAs.

It has been noted that this work do have some limitations from a clinical point of view. Although this work focuses on geometric variability of the blood vessel and variation in biomechanical factors, the assumption employed for blood vessel and AAA modelling was that the model is rigid in nature. However, in real life, the human blood vessel is indeed not rigid. We cannot ignore the fact that the vessel walls tend to expand and contract as a result of pulsatile flow effects in real life. Hence, the need to also consider the vessel wall deformation that interplays with the moving fluid. Therefore, studies of fluid-structure interaction between fluid flow and vessel wall and its impact to AAA biomechanical factors and rupture potentials would be advisable for future works.

Secondly, the effect of intra-luminal thrombus (ILT) is a potential scope of research for future works as well. ILT is an accumulation of fibrin, blood cells, platelets, blood proteins and cellular debris adhering to the AAA inner walls. Some investigators think ILT may reduce the stress in the AAA walls.

Thirdly, patient-specific CT images of real AAA modeling would end up to be the ideal scope of study in order to add more depth and to bring us closer to reality

in hemodynamic investigations and rupture risks in AAAs. In order to test and validate the DM approach, a vast library of patient-specific AAAs modeling and feeding it into our DM approach would proof beneficial.

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Appendices

Appendix A

| Model- Nr | Aorta length | Aorta diameter | Aneurysm length | A | B | C | WSS_max | Diameter ratio | Saccular index | Asymmetry index | Curvature | Posterior 1 | D_center | Spread |
|--------------|-----------------|-------------------|--------------------|--------|--------|--------|---------|-------------------|-------------------|--------------------|-----------|-------------|----------|--------|
| 1 | 82.946 | 21.950 | 33.327 | 26.674 | 16.476 | 16.019 | 0.694 | 1.480 | 0.975 | 1.029 | 0.022 | 1 | 5.841 | 8.260 |
| 2 | 83.325 | 19.583 | 37.304 | 26.113 | 16.228 | 18.431 | 0.754 | 1.770 | 0.929 | 0.880 | 0.022 | 1 | 8.044 | 6.685 |
| 3 | 99.118 | 19.973 | 39.406 | 24.854 | 17.848 | 16.941 | 0.720 | 1.742 | 0.883 | 1.054 | 0.016 | 1 | 6.184 | 4.431 |
| 4 | 92.230 | 18.771 | 35.140 | 25.784 | 19.361 | 16.095 | 0.767 | 1.889 | 1.009 | 1.203 | 0.018 | 1 | 6.216 | 4.396 |
| 5 | 85.518 | 20.187 | 34.183 | 28.147 | 19.350 | 18.906 | 0.730 | 1.895 | 1.119 | 1.024 | 0.021 | 1 | 6.076 | 4.339 |
| 6 | 94.889 | 20.236 | 32.866 | 26.311 | 18.940 | 18.436 | 0.714 | 1.847 | 1.137 | 1.027 | 0.018 | -1 | 6.661 | 4.709 |
| 7 | 90.342 | 20.907 | 39.920 | 26.073 | 16.676 | 18.629 | 0.705 | 1.689 | 0.884 | 0.895 | 0.019 | 1 | 8.417 | 7.001 |
| 8 | 82.832 | 20.649 | 39.241 | 25.818 | 17.706 | 16.282 | 0.726 | 1.646 | 0.866 | 1.088 | 0.022 | 1 | 7.676 | 6.382 |
| 9 | 83.827 | 21.196 | 33.423 | 26.852 | 16.622 | 18.016 | 0.715 | 1.634 | 1.036 | 0.923 | 0.022 | 1 | 5.864 | 8.344 |
| 10 | 94.438 | 18.141 | 35.802 | 26.207 | 19.339 | 16.140 | 0.790 | 1.956 | 0.991 | 1.198 | 0.018 | 1 | 6.402 | 4.482 |
| 11 | 90.991 | 19.676 | 34.768 | 26.250 | 19.388 | 17.267 | 0.739 | 1.863 | 1.054 | 1.123 | 0.019 | 1 | 6.193 | 4.401 |
| 12 | 83.920 | 21.294 | 38.091 | 26.386 | 18.004 | 19.561 | 0.707 | 1.764 | 0.986 | 0.920 | 0.021 | 1 | 8.061 | 6.680 |
| 13 | 96.861 | 20.493 | 37.014 | 25.187 | 19.369 | 16.493 | 0.712 | 1.750 | 0.969 | 1.174 | 0.017 | 1 | 6.256 | 4.490 |
| 14 | 82.805 | 21.272 | 37.865 | 28.248 | 18.401 | 18.989 | 0.713 | 1.758 | 0.987 | 0.969 | 0.022 | 1 | 8.306 | 6.897 |
| 15 | 84.212 | 20.034 | 32.925 | 24.086 | 16.455 | 17.818 | 0.743 | 1.711 | 1.041 | 0.924 | 0.020 | 1 | 5.557 | 7.969 |
| 16 | 93.924 | 19.521 | 34.323 | 25.395 | 18.311 | 18.130 | 0.737 | 1.867 | 1.062 | 1.010 | 0.018 | 1 | 6.366 | 4.502 |
| 17 | 83.799 | 18.385 | 34.688 | 29.971 | 17.830 | 19.992 | 0.784 | 2.057 | 1.090 | 0.892 | 0.023 | 1 | 6.198 | 4.378 |
| 18 | 97.892 | 18.600 | 34.320 | 28.614 | 17.643 | 16.808 | 0.767 | 1.852 | 1.004 | 1.050 | 0.018 | -1 | 7.008 | 4.945 |
| 19 | 97.096 | 20.349 | 38.630 | 28.325 | 18.263 | 17.501 | 0.718 | 1.758 | 0.926 | 1.044 | 0.018 | 1 | 6.449 | 4.646 |
| 20 | 92.094 | 20.172 | 37.588 | 26.108 | 17.978 | 16.322 | 0.731 | 1.700 | 0.913 | 1.101 | 0.019 | 1 | 8.832 | 7.385 |
| 21 | 91.521 | 21.611 | 38.942 | 27.688 | 18.911 | 16.173 | 0.699 | 1.623 | 0.901 | 1.169 | 0.019 | 1 | 8.875 | 7.434 |
| 22 | 82.171 | 21.345 | 38.952 | 28.466 | 16.620 | 17.308 | 0.705 | 1.589 | 0.871 | 0.960 | 0.023 | 1 | 5.528 | 7.788 |
| 23 | 88.180 | 19.648 | 34.390 | 27.007 | 16.611 | 17.292 | 0.754 | 1.725 | 0.986 | 0.961 | 0.020 | 1 | 9.035 | 7.549 |
| 24 | 86.001 | 18.160 | 39.552 | 24.394 | 19.140 | 18.098 | 0.806 | 2.051 | 0.942 | 1.058 | 0.020 | 1 | 5.221 | 3.700 |
| 25 | 82.096 | 18.599 | 36.040 | 25.742 | 19.680 | 18.205 | 0.792 | 2.037 | 1.051 | 1.081 | 0.022 | 1 | 5.410 | 3.842 |
| 26 | 90.185 | 20.628 | 35.059 | 27.193 | 18.425 | 17.581 | 0.722 | 1.745 | 1.027 | 1.048 | 0.020 | 1 | 6.140 | 4.446 |
| 27 | 94.947 | 19.272 | 35.975 | 28.712 | 18.211 | 17.428 | 0.744 | 1.849 | 0.991 | 1.045 | 0.019 | 1 | 6.640 | 4.718 |
| 28 | 99.034 | 17.722 | 36.896 | 25.979 | 16.224 | 18.557 | 0.793 | 1.963 | 0.943 | 0.874 | 0.017 | -1 | 6.616 | 4.626 |

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|----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 29 | 80.294 | 20.715 | 33.012 | 27.703 | 16.870 | 16.264 | 0.743 | 1.600 | 1.004 | 1.037 | 0.023 | 1 | 5.765 | 8.213 |
| 30 | 96.048 | 19.917 | 38.455 | 27.667 | 19.193 | 19.602 | 0.733 | 1.948 | 1.009 | 0.979 | 0.018 | 1 | 6.410 | 4.521 |
| 31 | 81.323 | 20.123 | 35.422 | 25.814 | 18.192 | 16.902 | 0.748 | 1.744 | 0.991 | 1.076 | 0.022 | 1 | 8.000 | 6.666 |
| 32 | 97.905 | 20.873 | 38.317 | 27.691 | 17.445 | 19.427 | 0.702 | 1.766 | 0.962 | 0.898 | 0.018 | 1 | 6.455 | 4.658 |
| 33 | 81.076 | 19.909 | 32.651 | 26.561 | 16.379 | 17.035 | 0.759 | 1.678 | 1.023 | 0.961 | 0.023 | 1 | 5.664 | 8.113 |
| 34 | 80.942 | 19.080 | 32.470 | 29.488 | 17.594 | 17.731 | 0.774 | 1.851 | 1.088 | 0.992 | 0.024 | 1 | 6.080 | 4.370 |
| 35 | 85.183 | 19.913 | 32.035 | 29.729 | 17.595 | 16.964 | 0.754 | 1.736 | 1.079 | 1.037 | 0.022 | 1 | 3.186 | 4.567 |
| 36 | 80.143 | 20.247 | 39.528 | 28.717 | 18.307 | 16.570 | 0.745 | 1.723 | 0.882 | 1.105 | 0.024 | 1 | 7.884 | 6.557 |
| 37 | 97.102 | 21.169 | 32.519 | 27.972 | 18.766 | 19.211 | 0.693 | 1.794 | 1.168 | 0.977 | 0.018 | 1 | 6.993 | 4.982 |
| 38 | 80.621 | 20.436 | 38.949 | 28.239 | 16.342 | 18.208 | 0.732 | 1.691 | 0.887 | 0.898 | 0.023 | 1 | 7.970 | 6.621 |
| 39 | 85.845 | 19.217 | 39.380 | 28.167 | 16.875 | 16.624 | 0.765 | 1.743 | 0.851 | 1.015 | 0.021 | 1 | 8.341 | 6.957 |
| 40 | 81.602 | 18.356 | 38.257 | 29.846 | 19.103 | 19.482 | 0.800 | 2.102 | 1.009 | 0.981 | 0.023 | 1 | 5.694 | 4.041 |
| 41 | 86.223 | 17.770 | 39.941 | 25.512 | 16.757 | 16.991 | 0.804 | 1.899 | 0.845 | 0.986 | 0.020 | 1 | 5.293 | 3.785 |
| 42 | 92.911 | 21.600 | 37.254 | 26.733 | 19.685 | 18.657 | 0.690 | 1.775 | 1.029 | 1.055 | 0.019 | 1 | 6.101 | 4.399 |
| 43 | 91.571 | 18.723 | 36.292 | 26.382 | 17.401 | 16.146 | 0.770 | 1.792 | 0.924 | 1.078 | 0.019 | 1 | 6.075 | 4.358 |
| 44 | 83.953 | 20.435 | 33.247 | 26.726 | 18.417 | 18.789 | 0.731 | 1.821 | 1.119 | 0.980 | 0.022 | 1 | 5.848 | 4.213 |
| 45 | 98.989 | 19.324 | 39.008 | 29.925 | 16.741 | 19.583 | 0.739 | 1.880 | 0.931 | 0.855 | 0.018 | 1 | 6.772 | 4.830 |
| 46 | 85.204 | 21.539 | 35.261 | 28.261 | 18.914 | 19.584 | 0.704 | 1.787 | 1.092 | 0.966 | 0.022 | 1 | 8.877 | 7.383 |
| 47 | 87.071 | 20.880 | 37.870 | 28.418 | 18.958 | 16.557 | 0.723 | 1.701 | 0.938 | 1.145 | 0.021 | 1 | 8.695 | 7.267 |
| 48 | 82.188 | 18.494 | 39.259 | 27.108 | 18.619 | 17.754 | 0.793 | 1.967 | 0.926 | 1.049 | 0.022 | 1 | 5.257 | 3.765 |
| 49 | 86.145 | 18.228 | 37.578 | 26.369 | 16.271 | 18.703 | 0.787 | 1.919 | 0.931 | 0.870 | 0.021 | 1 | 5.594 | 4.004 |
| 50 | 81.966 | 17.818 | 36.363 | 29.847 | 17.856 | 19.880 | 0.811 | 2.118 | 1.038 | 0.898 | 0.023 | 1 | 5.908 | 4.176 |
| 51 | 80.999 | 18.346 | 38.478 | 24.365 | 17.242 | 19.138 | 0.796 | 1.983 | 0.945 | 0.901 | 0.022 | 1 | 7.319 | 6.046 |
| 52 | 92.119 | 19.365 | 38.068 | 26.099 | 19.371 | 19.769 | 0.758 | 2.021 | 1.028 | 0.980 | 0.019 | 1 | 6.001 | 4.225 |
| 53 | 86.128 | 17.717 | 34.274 | 27.675 | 17.565 | 16.074 | 0.804 | 1.899 | 0.981 | 1.093 | 0.021 | 1 | 6.068 | 4.316 |
| 54 | 92.232 | 21.452 | 38.467 | 27.496 | 18.380 | 16.316 | 0.701 | 1.617 | 0.902 | 1.127 | 0.019 | 1 | 8.982 | 7.529 |
| 55 | 93.455 | 17.645 | 34.749 | 25.604 | 17.366 | 16.928 | 0.800 | 1.944 | 0.987 | 1.026 | 0.018 | -1 | 6.358 | 4.453 |
| 56 | 97.879 | 19.957 | 33.464 | 29.412 | 19.120 | 19.861 | 0.728 | 1.953 | 1.165 | 0.963 | 0.018 | -1 | 7.234 | 5.041 |
| 57 | 92.574 | 20.314 | 33.484 | 25.590 | 17.003 | 18.929 | 0.723 | 1.769 | 1.073 | 0.898 | 0.018 | 1 | 3.185 | 4.502 |

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|----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 58 | 97.107 | 18.953 | 32.997 | 27.440 | 17.892 | 19.048 | 0.763 | 1.949 | 1.119 | 0.939 | 0.018 | -1 | 7.000 | 4.873 |
| 59 | 83.483 | 18.810 | 32.577 | 28.060 | 19.356 | 18.227 | 0.774 | 1.998 | 1.154 | 1.062 | 0.022 | 1 | 6.131 | 4.318 |
| 60 | 99.421 | 17.701 | 34.254 | 28.615 | 16.607 | 16.188 | 0.803 | 1.853 | 0.957 | 1.026 | 0.017 | -1 | 7.124 | 5.023 |
| 61 | 81.813 | 20.677 | 36.361 | 26.028 | 18.630 | 19.505 | 0.728 | 1.844 | 1.049 | 0.955 | 0.022 | 1 | 7.988 | 6.622 |
| 62 | 97.267 | 17.985 | 35.893 | 27.395 | 18.838 | 19.114 | 0.798 | 2.110 | 1.057 | 0.986 | 0.018 | 1 | 6.804 | 4.679 |
| 63 | 96.573 | 21.436 | 38.125 | 29.450 | 19.650 | 18.088 | 0.692 | 1.760 | 0.990 | 1.086 | 0.018 | 1 | 6.577 | 4.747 |
| 64 | 80.017 | 21.004 | 37.260 | 24.382 | 16.359 | 17.543 | 0.708 | 1.614 | 0.910 | 0.933 | 0.022 | 1 | 5.021 | 7.091 |
| 65 | 80.371 | 20.450 | 39.827 | 24.322 | 19.657 | 18.550 | 0.735 | 1.868 | 0.959 | 1.060 | 0.022 | 1 | 7.066 | 5.844 |
| 66 | 80.457 | 18.209 | 38.608 | 27.806 | 18.202 | 19.934 | 0.806 | 2.094 | 0.988 | 0.913 | 0.023 | 1 | 5.303 | 3.781 |
| 67 | 92.160 | 21.932 | 32.820 | 28.535 | 16.604 | 17.826 | 0.690 | 1.570 | 1.049 | 0.931 | 0.019 | 1 | 6.661 | 9.493 |
| 68 | 93.763 | 20.095 | 34.318 | 25.742 | 18.193 | 18.849 | 0.722 | 1.843 | 1.079 | 0.965 | 0.018 | 1 | 6.370 | 4.528 |
| 69 | 92.467 | 21.115 | 35.566 | 28.473 | 19.956 | 16.819 | 0.707 | 1.742 | 1.034 | 1.187 | 0.019 | 1 | 6.392 | 4.634 |
| 70 | 88.994 | 21.738 | 39.115 | 25.098 | 17.008 | 16.812 | 0.684 | 1.556 | 0.865 | 1.012 | 0.019 | 1 | 5.542 | 7.855 |
| 71 | 91.127 | 19.564 | 36.356 | 24.368 | 19.984 | 16.511 | 0.746 | 1.865 | 1.004 | 1.210 | 0.018 | 1 | 5.853 | 4.167 |
| 72 | 93.072 | 19.481 | 35.284 | 25.330 | 18.714 | 16.666 | 0.741 | 1.816 | 1.003 | 1.123 | 0.018 | 1 | 6.182 | 4.406 |
| 73 | 87.518 | 21.240 | 33.029 | 28.400 | 19.565 | 18.573 | 0.706 | 1.796 | 1.155 | 1.053 | 0.021 | 1 | 6.306 | 4.541 |
| 74 | 87.265 | 21.581 | 32.897 | 28.927 | 17.819 | 16.435 | 0.714 | 1.587 | 1.041 | 1.084 | 0.021 | 1 | 6.372 | 9.088 |
| 75 | 83.297 | 18.114 | 33.690 | 27.547 | 16.473 | 18.473 | 0.794 | 1.929 | 1.037 | 0.892 | 0.022 | 1 | 5.904 | 4.211 |
| 76 | 96.177 | 21.989 | 35.025 | 28.635 | 16.818 | 16.682 | 0.688 | 1.523 | 0.956 | 1.008 | 0.018 | 1 | 6.740 | 9.617 |
| 77 | 87.635 | 18.132 | 34.432 | 25.189 | 16.185 | 19.085 | 0.783 | 1.945 | 1.024 | 0.848 | 0.020 | 1 | 5.874 | 4.171 |
| 78 | 89.227 | 20.897 | 35.959 | 25.431 | 18.238 | 16.371 | 0.717 | 1.656 | 0.962 | 1.114 | 0.019 | 1 | 8.657 | 7.243 |
| 79 | 94.944 | 18.725 | 38.049 | 29.459 | 19.168 | 16.798 | 0.767 | 1.921 | 0.945 | 1.141 | 0.019 | 1 | 6.576 | 4.638 |
| 80 | 94.635 | 21.623 | 36.427 | 29.253 | 19.188 | 17.222 | 0.696 | 1.684 | 1.000 | 1.114 | 0.019 | 1 | 9.776 | 8.189 |
| 81 | 95.124 | 18.281 | 33.758 | 24.345 | 18.682 | 16.131 | 0.779 | 1.904 | 1.031 | 1.158 | 0.017 | 1 | 6.430 | 4.507 |
| 82 | 85.906 | 21.447 | 35.816 | 24.476 | 16.404 | 16.573 | 0.695 | 1.538 | 0.921 | 0.990 | 0.020 | 1 | 5.533 | 7.861 |
| 83 | 96.284 | 21.551 | 33.920 | 25.539 | 17.077 | 16.832 | 0.692 | 1.573 | 1.000 | 1.015 | 0.017 | 1 | 6.472 | 9.272 |
| 84 | 80.818 | 18.409 | 33.388 | 26.135 | 17.797 | 16.740 | 0.793 | 1.876 | 1.034 | 1.063 | 0.023 | 1 | 5.578 | 3.995 |
| 85 | 99.987 | 21.417 | 39.755 | 29.041 | 16.587 | 17.498 | 0.694 | 1.591 | 0.857 | 0.948 | 0.017 | 1 | 6.643 | 9.469 |
| 86 | 92.901 | 20.838 | 38.502 | 28.909 | 16.499 | 18.876 | 0.713 | 1.698 | 0.919 | 0.874 | 0.019 | 1 | 9.332 | 7.801 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 87 | 88.977 | 18.606 | 32.061 | 26.511 | 16.626 | 19.676 | 0.772 | 1.951 | 1.132 | 0.845 | 0.020 | -1 | 6.354 | 4.481 |
| 88 | 95.423 | 20.049 | 33.826 | 28.838 | 19.408 | 17.326 | 0.720 | 1.832 | 1.086 | 1.120 | 0.019 | 1 | 6.883 | 4.883 |
| 89 | 87.421 | 17.754 | 34.935 | 27.368 | 17.591 | 16.479 | 0.800 | 1.919 | 0.975 | 1.067 | 0.021 | 1 | 6.072 | 4.305 |
| 90 | 97.879 | 18.577 | 35.565 | 27.809 | 18.240 | 18.496 | 0.770 | 1.977 | 1.033 | 0.986 | 0.018 | 1 | 6.870 | 4.781 |
| 91 | 93.633 | 21.819 | 36.492 | 27.643 | 19.153 | 17.691 | 0.689 | 1.689 | 1.010 | 1.083 | 0.019 | 1 | 9.408 | 7.862 |
| 92 | 94.966 | 21.569 | 34.671 | 26.774 | 19.072 | 16.202 | 0.698 | 1.635 | 1.017 | 1.177 | 0.018 | 1 | 9.604 | 8.064 |
| 93 | 85.319 | 20.445 | 38.579 | 27.583 | 17.054 | 19.377 | 0.728 | 1.782 | 0.944 | 0.880 | 0.021 | 1 | 8.342 | 6.924 |
| 94 | 88.078 | 17.722 | 35.069 | 25.733 | 18.387 | 19.536 | 0.811 | 2.140 | 1.081 | 0.941 | 0.020 | 1 | 5.984 | 4.169 |
| 95 | 97.304 | 20.678 | 35.499 | 25.998 | 18.409 | 17.994 | 0.707 | 1.760 | 1.025 | 1.023 | 0.017 | 1 | 6.510 | 4.664 |
| 96 | 99.282 | 20.169 | 36.871 | 24.459 | 17.628 | 17.221 | 0.716 | 1.728 | 0.945 | 1.024 | 0.016 | 1 | 6.373 | 4.571 |
| 97 | 91.769 | 18.829 | 33.730 | 27.364 | 19.498 | 17.000 | 0.767 | 1.938 | 1.082 | 1.147 | 0.019 | 1 | 6.516 | 4.575 |
| 98 | 97.807 | 17.727 | 36.595 | 29.971 | 16.237 | 18.477 | 0.796 | 1.958 | 0.949 | 0.879 | 0.018 | -1 | 6.980 | 4.903 |
| 99 | 80.986 | 19.086 | 32.637 | 25.678 | 18.062 | 17.962 | 0.769 | 1.888 | 1.104 | 1.006 | 0.022 | 1 | 5.610 | 4.008 |
| 100 | 99.026 | 21.274 | 36.387 | 28.767 | 19.207 | 18.371 | 0.691 | 1.766 | 1.033 | 1.045 | 0.018 | 1 | 6.845 | 4.912 |
| 101 | 82.553 | 19.681 | 38.199 | 25.055 | 16.107 | 16.167 | 0.750 | 1.640 | 0.845 | 0.996 | 0.021 | 1 | 7.661 | 6.380 |
| 102 | 95.944 | 20.497 | 38.237 | 25.792 | 19.126 | 19.686 | 0.714 | 1.893 | 1.015 | 0.972 | 0.017 | 1 | 6.196 | 4.394 |
| 103 | 87.124 | 19.403 | 37.723 | 25.083 | 17.192 | 16.728 | 0.755 | 1.748 | 0.899 | 1.028 | 0.020 | 1 | 8.156 | 6.793 |
| 104 | 83.176 | 18.180 | 39.199 | 24.175 | 16.726 | 19.272 | 0.797 | 1.980 | 0.918 | 0.868 | 0.021 | 1 | 7.420 | 6.127 |
| 105 | 98.650 | 18.063 | 39.562 | 24.919 | 18.232 | 19.201 | 0.795 | 2.072 | 0.946 | 0.950 | 0.016 | 1 | 6.275 | 4.355 |
| 106 | 93.439 | 18.838 | 35.608 | 29.697 | 19.929 | 18.912 | 0.773 | 2.062 | 1.091 | 1.054 | 0.019 | 1 | 6.791 | 4.714 |
| 107 | 87.107 | 19.705 | 33.839 | 28.151 | 19.793 | 18.685 | 0.744 | 1.953 | 1.137 | 1.059 | 0.021 | 1 | 6.254 | 4.422 |
| 108 | 86.529 | 20.111 | 36.300 | 26.019 | 17.393 | 16.677 | 0.741 | 1.694 | 0.939 | 1.043 | 0.020 | 1 | 8.446 | 7.056 |
| 109 | 93.734 | 20.974 | 34.161 | 24.387 | 18.887 | 19.436 | 0.699 | 1.827 | 1.122 | 0.972 | 0.017 | 1 | 6.231 | 4.438 |
| 110 | 90.811 | 20.102 | 36.832 | 28.664 | 18.560 | 18.787 | 0.728 | 1.858 | 1.014 | 0.988 | 0.020 | 1 | 6.245 | 4.472 |
| 111 | 88.767 | 19.828 | 32.337 | 25.616 | 16.273 | 16.979 | 0.748 | 1.677 | 1.028 | 0.958 | 0.020 | 1 | 3.049 | 4.367 |
| 112 | 97.201 | 18.664 | 34.700 | 25.737 | 16.204 | 19.971 | 0.761 | 1.938 | 1.043 | 0.811 | 0.017 | -1 | 6.612 | 4.666 |
| 113 | 81.674 | 18.201 | 34.102 | 25.305 | 18.250 | 16.713 | 0.795 | 1.921 | 1.025 | 1.092 | 0.022 | 1 | 5.489 | 3.914 |
| 114 | 85.650 | 21.442 | 37.554 | 27.406 | 19.474 | 16.325 | 0.712 | 1.670 | 0.953 | 1.193 | 0.021 | 1 | 8.420 | 7.035 |
| 115 | 83.885 | 18.619 | 39.831 | 24.254 | 16.956 | 17.021 | 0.778 | 1.825 | 0.853 | 0.996 | 0.021 | 1 | 7.414 | 6.143 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 116 | 84.130 | 20.260 | 32.424 | 26.124 | 17.445 | 18.672 | 0.737 | 1.783 | 1.114 | 0.934 | 0.021 | 1 | 2.927 | 4.182 |
| 117 | 84.033 | 19.164 | 34.259 | 27.192 | 17.164 | 16.880 | 0.772 | 1.776 | 0.994 | 1.017 | 0.022 | 1 | 5.796 | 4.200 |
| 118 | 80.115 | 20.260 | 35.931 | 29.612 | 17.163 | 18.423 | 0.749 | 1.756 | 0.990 | 0.932 | 0.024 | 1 | 8.569 | 7.147 |
| 119 | 95.685 | 19.988 | 33.201 | 28.134 | 17.579 | 19.973 | 0.725 | 1.879 | 1.131 | 0.880 | 0.018 | -1 | 6.877 | 4.876 |
| 120 | 84.573 | 21.394 | 33.512 | 28.580 | 16.190 | 17.933 | 0.712 | 1.595 | 1.018 | 0.903 | 0.022 | 1 | 6.133 | 8.712 |
| 121 | 97.573 | 19.374 | 35.270 | 26.481 | 18.634 | 19.293 | 0.746 | 1.958 | 1.075 | 0.966 | 0.017 | 1 | 6.711 | 4.689 |
| 122 | 88.439 | 20.257 | 39.636 | 25.205 | 17.658 | 17.362 | 0.727 | 1.729 | 0.884 | 1.017 | 0.019 | 1 | 8.079 | 6.714 |
| 123 | 86.336 | 21.355 | 38.594 | 25.869 | 16.791 | 18.259 | 0.697 | 1.641 | 0.908 | 0.920 | 0.020 | 1 | 8.163 | 6.789 |
| 124 | 91.609 | 19.085 | 39.022 | 26.360 | 19.804 | 18.037 | 0.768 | 1.983 | 0.970 | 1.098 | 0.019 | 1 | 5.898 | 4.163 |
| 125 | 81.747 | 19.676 | 34.538 | 27.775 | 17.331 | 16.317 | 0.766 | 1.710 | 0.974 | 1.062 | 0.023 | 1 | 8.510 | 7.124 |
| 126 | 84.419 | 19.884 | 32.859 | 25.588 | 16.029 | 18.305 | 0.749 | 1.727 | 1.045 | 0.876 | 0.021 | 1 | 5.756 | 8.242 |
| 127 | 84.453 | 19.705 | 34.421 | 25.864 | 17.658 | 19.059 | 0.749 | 1.863 | 1.067 | 0.926 | 0.021 | 1 | 5.688 | 4.085 |
| 128 | 81.635 | 21.327 | 38.025 | 27.827 | 17.439 | 17.900 | 0.710 | 1.657 | 0.929 | 0.974 | 0.023 | 1 | 8.112 | 6.747 |
| 129 | 86.206 | 19.103 | 33.234 | 25.094 | 17.089 | 16.824 | 0.767 | 1.775 | 1.020 | 1.016 | 0.020 | 1 | 5.815 | 4.187 |
| 130 | 88.929 | 18.389 | 39.304 | 26.892 | 17.888 | 18.797 | 0.787 | 1.995 | 0.933 | 0.952 | 0.020 | 1 | 5.729 | 4.060 |
| 131 | 92.598 | 17.632 | 38.361 | 25.566 | 17.158 | 19.812 | 0.809 | 2.097 | 0.964 | 0.866 | 0.018 | 1 | 5.976 | 4.181 |
| 132 | 81.871 | 17.937 | 38.608 | 25.696 | 17.535 | 18.573 | 0.811 | 2.013 | 0.935 | 0.944 | 0.022 | 1 | 5.139 | 3.667 |
| 133 | 98.296 | 20.923 | 35.293 | 25.126 | 16.407 | 17.693 | 0.703 | 1.630 | 0.966 | 0.927 | 0.016 | 1 | 9.676 | 8.071 |
| 134 | 97.409 | 21.871 | 33.192 | 27.230 | 16.883 | 16.267 | 0.688 | 1.516 | 0.999 | 1.038 | 0.017 | 1 | 6.795 | 9.730 |
| 135 | 94.776 | 20.591 | 34.355 | 28.717 | 19.685 | 19.714 | 0.710 | 1.913 | 1.147 | 0.999 | 0.019 | 1 | 6.807 | 4.799 |
| 136 | 97.855 | 21.809 | 34.875 | 26.289 | 17.326 | 18.738 | 0.681 | 1.654 | 1.034 | 0.925 | 0.017 | 1 | 9.880 | 8.227 |
| 137 | 90.557 | 21.094 | 38.416 | 28.478 | 17.947 | 19.311 | 0.706 | 1.766 | 0.970 | 0.929 | 0.020 | 1 | 9.028 | 7.511 |
| 138 | 87.370 | 18.529 | 34.259 | 25.947 | 16.201 | 19.526 | 0.774 | 1.928 | 1.043 | 0.830 | 0.020 | 1 | 5.937 | 4.236 |
| 139 | 83.937 | 20.952 | 35.614 | 26.600 | 18.546 | 19.218 | 0.719 | 1.802 | 1.060 | 0.965 | 0.022 | 1 | 8.400 | 6.978 |
| 140 | 80.946 | 17.759 | 37.946 | 24.785 | 16.329 | 18.211 | 0.810 | 1.945 | 0.910 | 0.897 | 0.022 | 1 | 7.451 | 6.166 |
| 141 | 88.225 | 18.707 | 33.070 | 28.924 | 18.035 | 17.075 | 0.768 | 1.877 | 1.062 | 1.056 | 0.021 | 1 | 6.474 | 4.597 |
| 142 | 85.895 | 19.910 | 34.757 | 28.867 | 18.069 | 16.269 | 0.753 | 1.725 | 0.988 | 1.111 | 0.022 | 1 | 9.059 | 7.592 |
| 143 | 89.478 | 21.643 | 35.610 | 27.293 | 17.461 | 19.537 | 0.695 | 1.709 | 1.039 | 0.894 | 0.020 | 1 | 6.126 | 8.693 |
| 144 | 95.826 | 21.376 | 34.953 | 28.466 | 17.855 | 17.439 | 0.701 | 1.651 | 1.010 | 1.024 | 0.018 | 1 | 9.976 | 8.360 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 145 | 96.733 | 17.643 | 33.486 | 24.656 | 16.162 | 16.887 | 0.806 | 1.873 | 0.987 | 0.957 | 0.017 | -1 | 6.593 | 4.631 |
| 146 | 97.136 | 18.560 | 38.453 | 29.543 | 17.253 | 16.573 | 0.766 | 1.823 | 0.880 | 1.041 | 0.018 | 1 | 6.645 | 4.745 |
| 147 | 84.741 | 20.207 | 39.086 | 24.916 | 16.066 | 18.141 | 0.727 | 1.693 | 0.875 | 0.886 | 0.021 | 1 | 7.767 | 6.444 |
| 148 | 87.992 | 19.075 | 36.049 | 25.970 | 18.502 | 17.003 | 0.760 | 1.861 | 0.985 | 1.088 | 0.020 | 1 | 5.821 | 4.157 |
| 149 | 89.207 | 19.416 | 36.662 | 29.534 | 16.484 | 18.659 | 0.757 | 1.810 | 0.959 | 0.883 | 0.021 | 1 | 6.204 | 4.500 |
| 150 | 89.815 | 20.475 | 35.630 | 26.511 | 18.560 | 16.397 | 0.728 | 1.707 | 0.981 | 1.132 | 0.019 | 1 | 8.916 | 7.459 |
| 151 | 94.514 | 19.246 | 37.045 | 28.880 | 19.410 | 16.256 | 0.746 | 1.853 | 0.963 | 1.194 | 0.019 | 1 | 6.532 | 4.645 |
| 152 | 91.264 | 18.147 | 33.398 | 28.543 | 17.655 | 17.118 | 0.786 | 1.916 | 1.041 | 1.031 | 0.020 | -1 | 6.640 | 4.673 |
| 153 | 93.968 | 20.431 | 37.362 | 24.336 | 17.318 | 19.809 | 0.713 | 1.817 | 0.994 | 0.874 | 0.017 | 1 | 5.938 | 4.256 |
| 154 | 84.724 | 20.349 | 34.086 | 28.536 | 18.331 | 17.084 | 0.741 | 1.740 | 1.039 | 1.073 | 0.022 | 1 | 8.992 | 7.519 |
| 155 | 82.528 | 19.276 | 37.759 | 27.144 | 19.457 | 18.368 | 0.767 | 1.962 | 1.002 | 1.059 | 0.022 | 1 | 5.423 | 3.882 |
| 156 | 95.286 | 17.603 | 32.181 | 27.282 | 18.992 | 17.129 | 0.814 | 2.052 | 1.122 | 1.109 | 0.018 | -1 | 6.989 | 4.798 |
| 157 | 82.036 | 18.026 | 35.115 | 28.009 | 16.647 | 18.764 | 0.798 | 1.964 | 1.008 | 0.887 | 0.023 | 1 | 5.745 | 4.105 |
| 158 | 82.229 | 20.827 | 34.137 | 29.865 | 17.952 | 16.860 | 0.738 | 1.671 | 1.020 | 1.065 | 0.023 | 1 | 6.067 | 8.646 |
| 159 | 98.960 | 20.373 | 33.765 | 27.454 | 16.582 | 19.720 | 0.717 | 1.782 | 1.075 | 0.841 | 0.017 | 1 | 10.322 | 8.542 |
| 160 | 93.015 | 18.631 | 33.597 | 28.393 | 19.978 | 19.016 | 0.779 | 2.093 | 1.161 | 1.051 | 0.019 | 1 | 6.812 | 4.699 |
| 161 | 94.621 | 20.927 | 33.215 | 24.917 | 17.619 | 18.458 | 0.704 | 1.724 | 1.086 | 0.955 | 0.017 | 1 | 6.380 | 4.598 |
| 162 | 89.762 | 20.952 | 35.611 | 27.473 | 17.343 | 18.332 | 0.715 | 1.703 | 1.002 | 0.946 | 0.020 | 1 | 9.140 | 7.638 |
| 163 | 87.934 | 19.426 | 32.866 | 26.603 | 17.079 | 17.812 | 0.755 | 1.796 | 1.062 | 0.959 | 0.020 | 1 | 6.144 | 4.415 |
| 164 | 88.234 | 21.843 | 33.857 | 28.436 | 17.367 | 18.892 | 0.696 | 1.660 | 1.071 | 0.919 | 0.021 | 1 | 6.323 | 8.984 |
| 165 | 90.633 | 20.099 | 37.724 | 24.091 | 18.044 | 17.834 | 0.728 | 1.785 | 0.951 | 1.012 | 0.018 | 1 | 5.633 | 4.047 |
| 166 | 89.326 | 17.816 | 36.854 | 26.317 | 16.467 | 19.993 | 0.797 | 2.046 | 0.989 | 0.824 | 0.020 | 1 | 5.925 | 4.184 |
| 167 | 95.018 | 20.584 | 33.129 | 27.677 | 18.652 | 19.904 | 0.705 | 1.873 | 1.164 | 0.937 | 0.018 | -1 | 6.794 | 4.808 |
| 168 | 83.044 | 20.125 | 39.189 | 25.578 | 16.702 | 18.501 | 0.734 | 1.749 | 0.898 | 0.903 | 0.022 | 1 | 7.684 | 6.363 |
| 169 | 94.175 | 21.190 | 32.466 | 28.481 | 19.897 | 19.341 | 0.690 | 1.852 | 1.209 | 1.029 | 0.019 | 1 | 6.885 | 4.875 |
| 170 | 84.995 | 21.411 | 33.727 | 26.585 | 16.823 | 19.715 | 0.705 | 1.706 | 1.083 | 0.853 | 0.021 | 1 | 5.896 | 8.377 |
| 171 | 94.725 | 19.310 | 37.888 | 27.301 | 19.921 | 18.512 | 0.758 | 1.990 | 1.014 | 1.076 | 0.018 | 1 | 6.351 | 4.454 |
| 172 | 85.367 | 17.887 | 32.838 | 24.839 | 17.816 | 16.721 | 0.799 | 1.931 | 1.052 | 1.065 | 0.020 | 1 | 5.837 | 4.124 |
| 173 | 82.045 | 19.787 | 34.034 | 28.207 | 18.816 | 16.438 | 0.758 | 1.782 | 1.036 | 1.145 | 0.023 | 1 | 8.654 | 7.232 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 174 | 90.415 | 21.078 | 34.608 | 28.945 | 18.951 | 18.256 | 0.710 | 1.765 | 1.075 | 1.038 | 0.020 | 1 | 6.404 | 4.633 |
| 175 | 98.015 | 21.628 | 38.744 | 26.898 | 17.919 | 18.910 | 0.683 | 1.703 | 0.951 | 0.948 | 0.017 | 1 | 9.475 | 7.901 |
| 176 | 96.445 | 19.513 | 38.063 | 25.346 | 16.330 | 17.063 | 0.740 | 1.711 | 0.877 | 0.957 | 0.017 | 1 | 6.120 | 4.425 |
| 177 | 91.239 | 20.664 | 34.783 | 29.803 | 17.607 | 17.091 | 0.728 | 1.679 | 0.998 | 1.030 | 0.020 | 1 | 9.770 | 8.200 |
| 178 | 96.300 | 17.958 | 35.387 | 27.794 | 19.930 | 18.755 | 0.803 | 2.154 | 1.093 | 1.063 | 0.018 | 1 | 6.845 | 4.686 |
| 179 | 99.791 | 19.371 | 38.560 | 25.930 | 17.595 | 18.630 | 0.735 | 1.870 | 0.939 | 0.944 | 0.016 | 1 | 6.476 | 4.574 |
| 180 | 98.340 | 17.811 | 37.140 | 25.581 | 17.155 | 19.170 | 0.795 | 2.039 | 0.978 | 0.895 | 0.017 | 1 | 6.534 | 4.536 |
| 181 | 86.443 | 21.829 | 33.839 | 25.473 | 19.734 | 19.272 | 0.693 | 1.787 | 1.153 | 1.024 | 0.020 | 1 | 8.673 | 7.212 |
| 182 | 97.935 | 17.838 | 34.474 | 28.512 | 18.877 | 18.234 | 0.802 | 2.080 | 1.076 | 1.035 | 0.018 | -1 | 7.122 | 4.879 |
| 183 | 86.403 | 18.238 | 34.467 | 27.156 | 17.309 | 18.963 | 0.785 | 1.989 | 1.052 | 0.913 | 0.021 | 1 | 6.032 | 4.263 |
| 184 | 81.436 | 17.664 | 34.358 | 28.633 | 19.990 | 18.318 | 0.824 | 2.169 | 1.115 | 1.091 | 0.023 | 1 | 5.938 | 4.153 |
| 185 | 87.545 | 20.580 | 36.088 | 28.340 | 18.831 | 18.463 | 0.724 | 1.812 | 1.033 | 1.020 | 0.021 | 1 | 6.020 | 4.346 |
| 186 | 82.673 | 19.609 | 39.791 | 28.708 | 18.449 | 19.099 | 0.753 | 1.915 | 0.944 | 0.966 | 0.023 | 1 | 8.090 | 6.692 |
| 187 | 83.146 | 21.837 | 32.862 | 29.873 | 18.338 | 16.455 | 0.717 | 1.593 | 1.059 | 1.114 | 0.023 | 1 | 6.261 | 8.899 |
| 188 | 91.934 | 20.080 | 39.025 | 29.444 | 16.824 | 16.917 | 0.737 | 1.680 | 0.865 | 0.994 | 0.020 | 1 | 9.218 | 7.733 |
| 189 | 97.123 | 19.550 | 35.184 | 29.693 | 16.191 | 19.154 | 0.745 | 1.808 | 1.005 | 0.845 | 0.018 | 1 | 10.307 | 8.552 |
| 190 | 97.444 | 21.308 | 35.779 | 29.471 | 18.341 | 16.637 | 0.704 | 1.642 | 0.978 | 1.102 | 0.018 | 1 | 10.171 | 8.560 |
| 191 | 81.760 | 20.138 | 32.406 | 29.175 | 18.371 | 18.413 | 0.743 | 1.827 | 1.135 | 0.998 | 0.023 | 1 | 6.085 | 4.385 |
| 192 | 99.359 | 19.439 | 32.462 | 26.063 | 17.434 | 16.008 | 0.741 | 1.720 | 1.030 | 1.089 | 0.017 | 1 | 6.916 | 4.963 |
| 193 | 87.952 | 19.559 | 36.549 | 28.239 | 18.274 | 18.340 | 0.747 | 1.872 | 1.002 | 0.996 | 0.021 | 1 | 6.027 | 4.316 |
| 194 | 96.242 | 21.772 | 38.391 | 28.621 | 16.788 | 18.520 | 0.686 | 1.622 | 0.920 | 0.907 | 0.018 | 1 | 6.487 | 9.215 |
| 195 | 87.931 | 21.924 | 39.027 | 27.197 | 17.012 | 18.400 | 0.683 | 1.615 | 0.907 | 0.925 | 0.020 | 1 | 5.732 | 8.103 |
| 196 | 84.053 | 18.347 | 39.008 | 24.894 | 18.888 | 18.766 | 0.801 | 2.052 | 0.965 | 1.007 | 0.021 | 1 | 5.177 | 3.679 |
| 197 | 90.504 | 21.264 | 32.365 | 29.356 | 18.204 | 17.028 | 0.714 | 1.657 | 1.089 | 1.069 | 0.020 | 1 | 6.640 | 9.515 |
| 198 | 87.632 | 17.887 | 38.099 | 25.959 | 16.065 | 16.300 | 0.801 | 1.809 | 0.850 | 0.986 | 0.020 | 1 | 5.583 | 4.018 |
| 199 | 88.788 | 21.239 | 32.918 | 26.369 | 17.279 | 19.737 | 0.705 | 1.743 | 1.125 | 0.875 | 0.020 | 1 | 9.236 | 7.665 |
| 200 | 84.682 | 20.484 | 37.014 | 27.947 | 19.042 | 17.998 | 0.731 | 1.808 | 1.001 | 1.058 | 0.022 | 1 | 8.499 | 7.069 |
| 201 | 80.443 | 18.007 | 32.586 | 26.336 | 17.269 | 19.729 | 0.796 | 2.055 | 1.135 | 0.875 | 0.023 | 1 | 5.705 | 4.026 |
| 202 | 82.252 | 19.439 | 38.888 | 28.517 | 19.983 | 16.915 | 0.761 | 1.898 | 0.949 | 1.181 | 0.023 | 1 | 8.078 | 6.716 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 203 | 80.408 | 21.037 | 39.538 | 28.660 | 19.105 | 19.003 | 0.721 | 1.811 | 0.964 | 1.005 | 0.024 | 1 | 7.917 | 6.554 |
| 204 | 85.728 | 19.052 | 37.851 | 26.086 | 18.039 | 19.646 | 0.767 | 1.978 | 0.996 | 0.918 | 0.021 | 1 | 5.522 | 3.938 |
| 205 | 86.133 | 19.471 | 39.927 | 29.642 | 18.419 | 17.964 | 0.753 | 1.869 | 0.911 | 1.025 | 0.022 | 1 | 8.562 | 7.106 |
| 206 | 80.309 | 19.962 | 33.259 | 25.805 | 19.395 | 18.184 | 0.747 | 1.883 | 1.130 | 1.067 | 0.023 | 1 | 5.507 | 3.953 |
| 207 | 95.314 | 21.637 | 32.611 | 28.836 | 16.835 | 17.534 | 0.698 | 1.588 | 1.054 | 0.960 | 0.019 | 1 | 6.901 | 9.861 |
| 208 | 84.997 | 20.431 | 36.903 | 28.283 | 19.815 | 18.281 | 0.729 | 1.865 | 1.032 | 1.084 | 0.022 | 1 | 8.591 | 7.138 |
| 209 | 96.128 | 18.120 | 32.870 | 24.152 | 19.770 | 17.761 | 0.792 | 2.071 | 1.142 | 1.113 | 0.017 | 1 | 6.641 | 4.569 |
| 210 | 99.080 | 20.390 | 33.232 | 25.066 | 17.691 | 16.308 | 0.717 | 1.667 | 1.023 | 1.085 | 0.016 | 1 | 6.686 | 4.843 |
| 211 | 89.970 | 17.968 | 37.127 | 25.705 | 16.729 | 16.927 | 0.790 | 1.873 | 0.906 | 0.988 | 0.019 | 1 | 5.845 | 4.162 |
| 212 | 81.114 | 19.423 | 36.570 | 24.863 | 17.591 | 16.610 | 0.765 | 1.761 | 0.935 | 1.059 | 0.022 | 1 | 7.662 | 6.374 |
| 213 | 86.681 | 21.659 | 36.664 | 28.416 | 16.102 | 19.157 | 0.695 | 1.628 | 0.962 | 0.841 | 0.021 | 1 | 5.998 | 8.489 |
| 214 | 80.412 | 21.907 | 37.338 | 26.522 | 16.303 | 17.372 | 0.683 | 1.537 | 0.902 | 0.938 | 0.023 | 1 | 5.328 | 7.491 |
| 215 | 92.289 | 18.819 | 32.342 | 27.366 | 18.462 | 18.531 | 0.767 | 1.966 | 1.144 | 0.996 | 0.019 | -1 | 6.706 | 4.675 |
| 216 | 81.024 | 18.503 | 37.267 | 28.757 | 19.381 | 16.972 | 0.792 | 1.965 | 0.975 | 1.142 | 0.023 | 1 | 5.572 | 3.988 |
| 217 | 89.239 | 19.479 | 34.321 | 27.897 | 16.359 | 19.694 | 0.752 | 1.851 | 1.050 | 0.831 | 0.020 | 1 | 6.240 | 4.500 |
| 218 | 98.224 | 18.794 | 37.625 | 28.626 | 16.198 | 16.844 | 0.764 | 1.758 | 0.878 | 0.962 | 0.018 | 1 | 6.643 | 4.791 |
| 219 | 89.129 | 17.694 | 38.777 | 26.463 | 16.622 | 18.959 | 0.805 | 2.011 | 0.918 | 0.877 | 0.020 | 1 | 5.746 | 4.067 |
| 220 | 87.492 | 20.673 | 36.427 | 26.754 | 17.486 | 16.838 | 0.726 | 1.660 | 0.942 | 1.038 | 0.020 | 1 | 8.662 | 7.246 |
| 221 | 97.945 | 19.506 | 37.621 | 28.231 | 17.149 | 17.924 | 0.738 | 1.798 | 0.932 | 0.957 | 0.018 | 1 | 6.612 | 4.735 |
| 222 | 86.002 | 17.683 | 34.659 | 27.312 | 19.386 | 19.075 | 0.818 | 2.175 | 1.110 | 1.016 | 0.021 | 1 | 6.071 | 4.221 |
| 223 | 93.793 | 20.857 | 37.219 | 29.433 | 18.211 | 17.578 | 0.714 | 1.716 | 0.962 | 1.036 | 0.019 | 1 | 9.634 | 8.060 |
| 224 | 86.604 | 17.908 | 35.496 | 26.744 | 17.995 | 16.312 | 0.798 | 1.916 | 0.966 | 1.103 | 0.021 | 1 | 5.884 | 4.180 |
| 225 | 97.136 | 19.054 | 38.109 | 24.468 | 16.243 | 16.908 | 0.750 | 1.740 | 0.870 | 0.961 | 0.017 | 1 | 6.106 | 4.385 |
| 226 | 84.307 | 21.606 | 36.519 | 27.243 | 18.412 | 16.798 | 0.708 | 1.630 | 0.964 | 1.096 | 0.022 | 1 | 8.433 | 7.045 |
| 227 | 93.526 | 18.183 | 39.720 | 25.754 | 16.145 | 16.014 | 0.782 | 1.769 | 0.810 | 1.008 | 0.018 | 1 | 5.834 | 4.194 |
| 228 | 95.267 | 19.206 | 38.936 | 26.976 | 18.287 | 17.632 | 0.748 | 1.870 | 0.923 | 1.037 | 0.018 | 1 | 6.210 | 4.407 |
| 229 | 88.844 | 19.673 | 38.093 | 24.328 | 18.077 | 19.713 | 0.742 | 1.921 | 0.992 | 0.917 | 0.019 | 1 | 5.525 | 3.941 |
| 230 | 88.266 | 18.441 | 33.800 | 29.063 | 17.865 | 18.628 | 0.777 | 1.979 | 1.080 | 0.959 | 0.021 | 1 | 6.470 | 4.551 |
| 231 | 97.024 | 20.011 | 32.598 | 29.199 | 18.755 | 17.650 | 0.722 | 1.819 | 1.117 | 1.063 | 0.018 | -1 | 7.149 | 5.063 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 232 | 88.705 | 21.441 | 37.227 | 27.303 | 16.532 | 16.668 | 0.700 | 1.548 | 0.892 | 0.992 | 0.020 | 1 | 5.922 | 8.412 |
| 233 | 80.298 | 20.002 | 33.652 | 29.449 | 19.251 | 16.912 | 0.752 | 1.808 | 1.075 | 1.138 | 0.024 | 1 | 8.785 | 7.335 |
| 234 | 95.079 | 17.769 | 38.614 | 28.648 | 19.868 | 16.565 | 0.808 | 2.050 | 0.944 | 1.199 | 0.019 | 1 | 6.499 | 4.520 |
| 235 | 81.925 | 19.189 | 39.438 | 29.083 | 19.286 | 19.129 | 0.772 | 2.002 | 0.974 | 1.008 | 0.023 | 1 | 8.118 | 6.709 |
| 236 | 87.967 | 19.811 | 37.861 | 28.434 | 17.187 | 18.422 | 0.745 | 1.797 | 0.941 | 0.933 | 0.021 | 1 | 8.819 | 7.342 |
| 237 | 91.424 | 21.813 | 37.626 | 28.635 | 18.030 | 18.090 | 0.692 | 1.656 | 0.960 | 0.997 | 0.020 | 1 | 9.242 | 7.732 |
| 238 | 91.515 | 21.718 | 35.587 | 28.353 | 17.587 | 17.491 | 0.697 | 1.615 | 0.986 | 1.005 | 0.020 | 1 | 6.369 | 9.061 |
| 239 | 82.313 | 19.129 | 32.088 | 25.515 | 17.396 | 17.849 | 0.768 | 1.842 | 1.098 | 0.975 | 0.022 | 1 | 5.720 | 4.096 |
| 240 | 87.420 | 18.288 | 32.349 | 25.184 | 16.497 | 16.531 | 0.788 | 1.806 | 1.021 | 0.998 | 0.020 | 1 | 6.013 | 4.300 |
| 241 | 82.339 | 18.468 | 38.622 | 27.111 | 19.841 | 19.336 | 0.801 | 2.121 | 1.014 | 1.026 | 0.022 | 1 | 5.360 | 3.802 |
| 242 | 81.414 | 17.814 | 36.862 | 24.264 | 16.725 | 18.669 | 0.810 | 1.987 | 0.960 | 0.896 | 0.022 | 1 | 5.100 | 3.641 |
| 243 | 96.217 | 17.853 | 33.664 | 28.645 | 16.657 | 19.467 | 0.800 | 2.023 | 1.073 | 0.856 | 0.018 | -1 | 7.034 | 4.878 |
| 244 | 82.250 | 18.067 | 35.216 | 29.721 | 20.000 | 16.761 | 0.805 | 2.035 | 1.044 | 1.193 | 0.023 | 1 | 6.014 | 4.251 |
| 245 | 80.858 | 18.563 | 32.013 | 27.768 | 18.776 | 18.750 | 0.782 | 2.022 | 1.172 | 1.001 | 0.023 | 1 | 5.973 | 4.207 |
| 246 | 93.186 | 20.236 | 33.096 | 29.446 | 17.024 | 19.248 | 0.729 | 1.792 | 1.096 | 0.884 | 0.019 | 1 | 10.155 | 8.421 |
| 247 | 93.110 | 18.446 | 37.546 | 27.918 | 18.057 | 17.399 | 0.775 | 1.922 | 0.944 | 1.038 | 0.019 | 1 | 6.307 | 4.457 |
| 248 | 95.967 | 19.219 | 35.002 | 28.822 | 16.018 | 16.516 | 0.763 | 1.693 | 0.930 | 0.970 | 0.018 | 1 | 10.017 | 8.377 |
| 249 | 89.989 | 21.183 | 34.938 | 24.416 | 19.092 | 19.938 | 0.700 | 1.843 | 1.117 | 0.958 | 0.019 | 1 | 5.878 | 4.210 |
| 250 | 87.312 | 18.659 | 32.463 | 25.197 | 17.766 | 19.758 | 0.770 | 2.011 | 1.156 | 0.899 | 0.020 | 1 | 6.074 | 4.262 |
| 251 | 81.414 | 21.904 | 38.381 | 27.321 | 17.496 | 16.317 | 0.693 | 1.544 | 0.881 | 1.072 | 0.023 | 1 | 7.961 | 6.629 |
| 252 | 87.896 | 17.937 | 33.263 | 25.116 | 17.166 | 16.329 | 0.793 | 1.867 | 1.007 | 1.051 | 0.020 | 1 | 5.989 | 4.251 |
| 253 | 95.440 | 21.949 | 37.300 | 25.031 | 16.709 | 19.514 | 0.673 | 1.650 | 0.971 | 0.856 | 0.017 | 1 | 6.129 | 8.717 |
| 254 | 83.840 | 19.509 | 35.653 | 26.294 | 19.272 | 17.611 | 0.754 | 1.891 | 1.035 | 1.094 | 0.021 | 1 | 5.597 | 4.009 |
| 255 | 95.994 | 19.985 | 39.079 | 26.633 | 19.289 | 19.651 | 0.733 | 1.948 | 0.996 | 0.982 | 0.018 | 1 | 6.235 | 4.400 |
| 256 | 80.688 | 21.392 | 35.573 | 24.341 | 17.847 | 19.366 | 0.708 | 1.740 | 1.046 | 0.922 | 0.022 | 1 | 7.724 | 6.402 |
| 257 | 93.108 | 19.068 | 32.770 | 27.009 | 16.712 | 18.600 | 0.756 | 1.852 | 1.078 | 0.899 | 0.019 | -1 | 6.600 | 4.690 |
| 258 | 89.895 | 21.209 | 34.870 | 26.244 | 16.402 | 18.603 | 0.704 | 1.650 | 1.004 | 0.882 | 0.019 | 1 | 6.072 | 8.646 |
| 259 | 85.658 | 18.859 | 33.819 | 26.679 | 17.665 | 17.091 | 0.772 | 1.843 | 1.028 | 1.034 | 0.021 | 1 | 5.931 | 4.246 |
| 260 | 87.810 | 18.575 | 34.518 | 28.587 | 19.751 | 18.928 | 0.784 | 2.082 | 1.121 | 1.043 | 0.021 | 1 | 6.348 | 4.431 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 261 | 96.591 | 19.385 | 33.783 | 28.413 | 18.848 | 18.325 | 0.743 | 1.918 | 1.100 | 1.029 | 0.018 | -1 | 6.981 | 4.885 |
| 262 | 87.165 | 20.235 | 36.834 | 26.535 | 16.054 | 16.413 | 0.735 | 1.604 | 0.881 | 0.978 | 0.020 | 1 | 5.734 | 8.175 |
| 263 | 80.664 | 18.757 | 39.045 | 28.574 | 18.267 | 16.081 | 0.787 | 1.831 | 0.880 | 1.136 | 0.023 | 1 | 7.928 | 6.600 |
| 264 | 81.052 | 21.554 | 32.701 | 29.552 | 17.361 | 17.947 | 0.719 | 1.638 | 1.080 | 0.967 | 0.023 | 1 | 6.103 | 8.673 |
| 265 | 84.678 | 18.030 | 38.539 | 27.225 | 19.031 | 19.327 | 0.811 | 2.127 | 0.995 | 0.985 | 0.021 | 1 | 5.559 | 3.924 |
| 266 | 99.413 | 21.558 | 37.782 | 29.886 | 18.666 | 16.102 | 0.697 | 1.613 | 0.920 | 1.159 | 0.018 | 1 | 10.165 | 8.567 |
| 267 | 80.212 | 20.021 | 36.463 | 26.977 | 19.651 | 17.327 | 0.750 | 1.847 | 1.014 | 1.134 | 0.023 | 1 | 7.936 | 6.602 |
| 268 | 98.022 | 18.720 | 33.742 | 25.789 | 19.447 | 16.488 | 0.766 | 1.920 | 1.065 | 1.179 | 0.017 | 1 | 6.812 | 4.751 |
| 269 | 88.858 | 17.671 | 38.004 | 26.593 | 18.836 | 17.252 | 0.816 | 2.042 | 0.950 | 1.092 | 0.020 | 1 | 5.839 | 4.104 |
| 270 | 99.971 | 18.301 | 38.466 | 27.496 | 19.715 | 17.614 | 0.787 | 2.040 | 0.970 | 1.119 | 0.017 | 1 | 6.756 | 4.670 |
| 271 | 99.951 | 20.358 | 36.050 | 27.339 | 18.789 | 18.290 | 0.707 | 1.821 | 1.029 | 1.027 | 0.017 | 1 | 6.838 | 4.848 |
| 272 | 89.651 | 20.439 | 33.276 | 27.954 | 18.566 | 19.249 | 0.720 | 1.850 | 1.136 | 0.964 | 0.020 | 1 | 6.409 | 4.576 |
| 273 | 80.809 | 21.363 | 38.913 | 28.086 | 19.005 | 18.253 | 0.713 | 1.744 | 0.957 | 1.041 | 0.023 | 1 | 7.933 | 6.581 |
| 274 | 99.240 | 19.786 | 35.152 | 28.295 | 19.218 | 19.277 | 0.733 | 1.946 | 1.095 | 0.997 | 0.017 | 1 | 7.045 | 4.916 |
| 275 | 99.468 | 20.883 | 35.045 | 27.157 | 16.567 | 16.689 | 0.711 | 1.592 | 0.949 | 0.993 | 0.017 | 1 | 6.759 | 9.691 |
| 276 | 87.687 | 21.100 | 33.951 | 28.063 | 16.566 | 19.061 | 0.715 | 1.689 | 1.049 | 0.869 | 0.021 | 1 | 6.227 | 8.854 |
| 277 | 99.911 | 20.996 | 38.761 | 24.937 | 16.942 | 18.491 | 0.694 | 1.688 | 0.914 | 0.916 | 0.016 | 1 | 6.260 | 4.534 |
| 278 | 92.194 | 17.983 | 34.624 | 28.192 | 19.228 | 17.301 | 0.798 | 2.031 | 1.055 | 1.111 | 0.019 | 1 | 6.605 | 4.593 |
| 279 | 89.803 | 18.975 | 32.953 | 27.217 | 19.282 | 18.003 | 0.764 | 1.965 | 1.131 | 1.071 | 0.020 | 1 | 6.439 | 4.514 |
| 280 | 92.202 | 18.368 | 36.435 | 28.733 | 18.087 | 16.389 | 0.774 | 1.877 | 0.946 | 1.104 | 0.019 | 1 | 6.417 | 4.558 |
| 281 | 80.733 | 20.949 | 32.813 | 25.301 | 16.216 | 19.634 | 0.720 | 1.711 | 1.093 | 0.826 | 0.022 | 1 | 5.526 | 7.863 |
| 282 | 85.875 | 19.961 | 37.181 | 27.328 | 17.341 | 17.277 | 0.745 | 1.734 | 0.931 | 1.004 | 0.021 | 1 | 8.497 | 7.088 |
| 283 | 80.938 | 18.723 | 38.547 | 24.852 | 16.149 | 18.965 | 0.779 | 1.875 | 0.911 | 0.851 | 0.022 | 1 | 7.413 | 6.128 |
| 284 | 99.086 | 19.230 | 38.408 | 24.439 | 16.052 | 18.828 | 0.739 | 1.814 | 0.908 | 0.853 | 0.016 | 1 | 6.249 | 4.456 |
| 285 | 80.545 | 17.736 | 37.097 | 27.498 | 16.059 | 16.359 | 0.820 | 1.828 | 0.874 | 0.982 | 0.023 | 1 | 7.990 | 6.661 |
| 286 | 86.897 | 18.740 | 35.635 | 29.324 | 16.189 | 17.681 | 0.782 | 1.807 | 0.950 | 0.916 | 0.021 | 1 | 6.120 | 4.438 |
| 287 | 89.301 | 19.379 | 36.861 | 25.183 | 16.794 | 19.070 | 0.749 | 1.851 | 0.973 | 0.881 | 0.019 | 1 | 5.737 | 4.114 |
| 288 | 87.549 | 19.649 | 33.568 | 24.761 | 17.178 | 16.608 | 0.751 | 1.719 | 1.006 | 1.034 | 0.020 | 1 | 5.815 | 4.215 |
| 289 | 86.809 | 19.259 | 39.409 | 25.268 | 16.869 | 19.851 | 0.753 | 1.907 | 0.932 | 0.850 | 0.020 | 1 | 7.967 | 6.584 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 290 | 88.943 | 21.339 | 38.319 | 28.531 | 16.945 | 17.373 | 0.705 | 1.608 | 0.896 | 0.975 | 0.020 | 1 | 6.000 | 8.508 |
| 291 | 85.264 | 21.408 | 36.200 | 28.379 | 16.760 | 16.068 | 0.712 | 1.533 | 0.907 | 1.043 | 0.022 | 1 | 5.932 | 8.405 |
| 292 | 87.623 | 19.411 | 34.627 | 29.635 | 19.468 | 18.091 | 0.750 | 1.935 | 1.085 | 1.076 | 0.021 | 1 | 6.395 | 4.530 |
| 293 | 84.683 | 20.054 | 38.308 | 25.017 | 17.706 | 17.303 | 0.739 | 1.746 | 0.914 | 1.023 | 0.021 | 1 | 7.836 | 6.510 |
| 294 | 80.266 | 19.624 | 36.076 | 27.281 | 16.820 | 19.092 | 0.761 | 1.830 | 0.995 | 0.881 | 0.023 | 1 | 8.114 | 6.739 |
| 295 | 80.645 | 19.332 | 35.131 | 28.900 | 19.002 | 17.467 | 0.766 | 1.886 | 1.038 | 1.088 | 0.023 | 1 | 5.741 | 4.130 |
| 296 | 87.660 | 19.379 | 32.313 | 28.601 | 17.717 | 17.273 | 0.756 | 1.806 | 1.083 | 1.026 | 0.021 | 1 | 6.420 | 4.605 |
| 297 | 84.520 | 20.548 | 34.120 | 27.071 | 17.796 | 19.413 | 0.729 | 1.811 | 1.091 | 0.917 | 0.021 | 1 | 8.744 | 7.274 |
| 298 | 91.191 | 18.362 | 33.267 | 29.136 | 18.564 | 16.963 | 0.777 | 1.935 | 1.068 | 1.094 | 0.020 | -1 | 6.731 | 4.724 |
| 299 | 96.208 | 20.991 | 37.489 | 26.747 | 19.388 | 16.035 | 0.706 | 1.688 | 0.945 | 1.209 | 0.018 | 1 | 9.343 | 7.824 |
| 300 | 81.829 | 18.735 | 34.370 | 24.056 | 17.006 | 17.280 | 0.782 | 1.830 | 0.998 | 0.984 | 0.021 | 1 | 5.302 | 3.813 |
| 301 | 89.370 | 19.901 | 35.938 | 24.922 | 18.026 | 19.890 | 0.732 | 1.905 | 1.055 | 0.906 | 0.019 | 1 | 5.816 | 4.148 |
| 302 | 81.612 | 19.270 | 38.771 | 26.139 | 19.967 | 19.992 | 0.775 | 2.074 | 1.031 | 0.999 | 0.022 | 1 | 7.627 | 6.299 |
| 303 | 89.163 | 18.382 | 35.372 | 26.716 | 16.203 | 17.296 | 0.784 | 1.822 | 0.947 | 0.937 | 0.020 | 1 | 6.025 | 4.325 |
| 304 | 97.626 | 21.041 | 32.558 | 24.501 | 18.206 | 17.874 | 0.697 | 1.715 | 1.108 | 1.019 | 0.016 | 1 | 6.626 | 4.756 |
| 305 | 82.475 | 17.662 | 36.618 | 28.481 | 18.452 | 18.949 | 0.821 | 2.118 | 1.021 | 0.974 | 0.023 | 1 | 5.748 | 4.053 |
| 306 | 88.495 | 18.262 | 32.978 | 28.065 | 19.358 | 19.569 | 0.792 | 2.132 | 1.180 | 0.989 | 0.020 | 1 | 6.507 | 4.500 |
| 307 | 80.662 | 20.114 | 32.145 | 25.647 | 19.645 | 19.031 | 0.737 | 1.923 | 1.203 | 1.032 | 0.022 | 1 | 5.633 | 4.020 |
| 308 | 83.361 | 18.279 | 33.652 | 25.793 | 19.480 | 18.948 | 0.797 | 2.102 | 1.142 | 1.028 | 0.021 | 1 | 5.761 | 4.044 |
| 309 | 94.776 | 19.816 | 35.782 | 27.328 | 19.789 | 18.815 | 0.738 | 1.948 | 1.079 | 1.052 | 0.018 | 1 | 6.538 | 4.592 |
| 310 | 93.373 | 20.303 | 38.797 | 25.664 | 17.103 | 16.966 | 0.722 | 1.678 | 0.878 | 1.008 | 0.018 | 1 | 8.766 | 7.323 |
| 311 | 83.306 | 17.862 | 33.439 | 29.671 | 17.324 | 18.780 | 0.798 | 2.021 | 1.080 | 0.922 | 0.023 | 1 | 6.249 | 4.404 |
| 312 | 95.667 | 18.906 | 34.443 | 28.396 | 17.775 | 16.027 | 0.759 | 1.788 | 0.981 | 1.109 | 0.018 | 1 | 6.759 | 4.833 |
| 313 | 92.408 | 18.433 | 38.821 | 25.959 | 16.918 | 19.218 | 0.775 | 1.960 | 0.931 | 0.880 | 0.018 | 1 | 5.917 | 4.189 |
| 314 | 89.852 | 19.056 | 32.652 | 25.924 | 17.109 | 18.839 | 0.754 | 1.886 | 1.101 | 0.908 | 0.019 | -1 | 6.274 | 4.447 |
| 315 | 88.640 | 18.807 | 38.150 | 29.463 | 19.767 | 17.342 | 0.775 | 1.973 | 0.973 | 1.140 | 0.021 | 1 | 6.124 | 4.337 |
| 316 | 86.996 | 18.706 | 36.737 | 24.627 | 18.331 | 19.773 | 0.779 | 2.037 | 1.037 | 0.927 | 0.020 | 1 | 5.577 | 3.945 |
| 317 | 84.199 | 19.723 | 39.886 | 25.039 | 16.386 | 16.898 | 0.743 | 1.688 | 0.834 | 0.970 | 0.021 | 1 | 7.603 | 6.311 |
| 318 | 91.109 | 20.535 | 39.481 | 27.307 | 16.323 | 16.725 | 0.720 | 1.609 | 0.837 | 0.976 | 0.019 | 1 | 5.869 | 8.355 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|--------|-------|
| 319 | 94.653 | 20.896 | 37.441 | 29.489 | 17.914 | 18.272 | 0.711 | 1.732 | 0.966 | 0.980 | 0.019 | 1 | 9.715 | 8.120 |
| 320 | 93.124 | 20.034 | 38.356 | 27.911 | 16.175 | 19.475 | 0.731 | 1.779 | 0.929 | 0.831 | 0.019 | 1 | 9.201 | 7.665 |
| 321 | 89.175 | 19.281 | 36.899 | 26.652 | 17.902 | 17.101 | 0.756 | 1.815 | 0.949 | 1.047 | 0.020 | 1 | 5.882 | 4.224 |
| 322 | 97.388 | 18.350 | 35.740 | 25.009 | 18.229 | 18.545 | 0.781 | 2.004 | 1.029 | 0.983 | 0.017 | 1 | 6.527 | 4.534 |
| 323 | 93.281 | 18.886 | 37.738 | 29.261 | 16.618 | 19.383 | 0.758 | 1.906 | 0.954 | 0.857 | 0.019 | 1 | 6.414 | 4.580 |
| 324 | 80.642 | 20.271 | 32.138 | 24.025 | 17.625 | 18.560 | 0.740 | 1.785 | 1.126 | 0.950 | 0.022 | 1 | 2.697 | 3.857 |
| 325 | 84.058 | 21.338 | 38.544 | 27.546 | 19.838 | 17.083 | 0.714 | 1.730 | 0.958 | 1.161 | 0.022 | 1 | 8.161 | 6.796 |
| 326 | 83.507 | 21.765 | 36.399 | 28.207 | 18.350 | 16.103 | 0.709 | 1.583 | 0.947 | 1.140 | 0.022 | 1 | 8.547 | 7.159 |
| 327 | 97.905 | 19.195 | 35.734 | 28.583 | 16.147 | 16.246 | 0.760 | 1.688 | 0.907 | 0.994 | 0.018 | 1 | 10.065 | 8.425 |
| 328 | 94.466 | 17.871 | 36.936 | 24.356 | 17.785 | 18.083 | 0.799 | 2.007 | 0.971 | 0.984 | 0.017 | 1 | 6.118 | 4.273 |
| 329 | 90.762 | 18.412 | 39.273 | 24.393 | 16.733 | 17.606 | 0.773 | 1.865 | 0.874 | 0.950 | 0.018 | 1 | 5.568 | 3.968 |
| 330 | 86.351 | 17.738 | 37.944 | 29.305 | 17.750 | 16.585 | 0.803 | 1.936 | 0.905 | 1.070 | 0.022 | 1 | 5.945 | 4.238 |
| 331 | 90.850 | 19.554 | 33.390 | 26.800 | 17.684 | 17.691 | 0.745 | 1.809 | 1.059 | 1.000 | 0.019 | 1 | 6.340 | 4.533 |
| 332 | 85.328 | 18.412 | 32.619 | 29.142 | 18.052 | 16.236 | 0.784 | 1.862 | 1.051 | 1.112 | 0.022 | 1 | 6.331 | 4.518 |
| 333 | 83.899 | 19.359 | 34.301 | 25.027 | 16.787 | 18.439 | 0.761 | 1.820 | 1.027 | 0.910 | 0.021 | 1 | 5.551 | 4.002 |
| 334 | 92.378 | 20.979 | 33.377 | 27.190 | 16.530 | 18.061 | 0.713 | 1.649 | 1.036 | 0.915 | 0.019 | 1 | 6.450 | 9.216 |
| 335 | 90.888 | 19.455 | 36.928 | 28.052 | 16.824 | 17.304 | 0.754 | 1.754 | 0.924 | 0.972 | 0.020 | 1 | 6.115 | 4.436 |
| 336 | 97.284 | 18.649 | 39.071 | 26.730 | 19.608 | 19.842 | 0.781 | 2.115 | 1.010 | 0.988 | 0.017 | 1 | 6.412 | 4.446 |
| 337 | 98.276 | 20.221 | 34.612 | 29.705 | 19.368 | 17.862 | 0.711 | 1.841 | 1.076 | 1.084 | 0.018 | 1 | 7.123 | 5.039 |
| 338 | 85.115 | 18.398 | 35.214 | 26.479 | 19.332 | 16.982 | 0.791 | 1.974 | 1.031 | 1.138 | 0.021 | 1 | 5.789 | 4.100 |
| 339 | 80.736 | 21.803 | 39.839 | 28.522 | 17.078 | 16.929 | 0.691 | 1.560 | 0.854 | 1.009 | 0.023 | 1 | 7.935 | 6.593 |
| 340 | 95.210 | 21.358 | 35.193 | 28.820 | 16.927 | 19.857 | 0.699 | 1.722 | 1.045 | 0.852 | 0.019 | 1 | 9.999 | 8.314 |
| 341 | 96.394 | 19.077 | 33.952 | 24.348 | 16.503 | 16.161 | 0.755 | 1.712 | 0.962 | 1.021 | 0.017 | 1 | 6.389 | 4.600 |
| 342 | 92.660 | 19.153 | 34.490 | 24.771 | 16.835 | 19.683 | 0.746 | 1.907 | 1.059 | 0.855 | 0.018 | 1 | 6.182 | 4.386 |
| 343 | 94.557 | 21.363 | 37.878 | 27.685 | 19.370 | 18.170 | 0.695 | 1.757 | 0.991 | 1.066 | 0.018 | 1 | 6.259 | 4.520 |
| 344 | 92.298 | 19.391 | 37.901 | 27.718 | 19.271 | 18.869 | 0.754 | 1.967 | 1.006 | 1.021 | 0.019 | 1 | 6.200 | 4.377 |
| 345 | 95.951 | 17.691 | 39.836 | 27.797 | 18.387 | 19.129 | 0.811 | 2.121 | 0.942 | 0.961 | 0.018 | 1 | 6.361 | 4.415 |
| 346 | 95.180 | 21.101 | 39.753 | 29.892 | 19.259 | 17.882 | 0.702 | 1.760 | 0.934 | 1.077 | 0.019 | 1 | 9.512 | 7.927 |
| 347 | 85.455 | 19.613 | 36.067 | 27.559 | 19.538 | 17.886 | 0.749 | 1.908 | 1.038 | 1.092 | 0.021 | 1 | 5.830 | 4.166 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 348 | 97.567 | 19.323 | 37.125 | 25.588 | 16.191 | 18.600 | 0.742 | 1.800 | 0.937 | 0.870 | 0.017 | 1 | 6.348 | 4.545 |
| 349 | 97.338 | 18.766 | 32.542 | 25.061 | 18.878 | 17.568 | 0.766 | 1.942 | 1.120 | 1.075 | 0.017 | -1 | 6.811 | 4.730 |
| 350 | 92.413 | 21.248 | 36.066 | 29.151 | 17.862 | 16.179 | 0.713 | 1.602 | 0.944 | 1.104 | 0.020 | 1 | 6.460 | 9.213 |
| 351 | 92.986 | 21.991 | 39.692 | 25.956 | 17.834 | 19.695 | 0.676 | 1.707 | 0.946 | 0.905 | 0.018 | 1 | 8.707 | 7.232 |
| 352 | 83.350 | 21.105 | 34.813 | 27.696 | 19.027 | 19.405 | 0.716 | 1.821 | 1.104 | 0.981 | 0.022 | 1 | 8.640 | 7.180 |
| 353 | 91.144 | 18.791 | 36.116 | 26.566 | 16.998 | 18.787 | 0.761 | 1.904 | 0.991 | 0.905 | 0.019 | 1 | 6.119 | 4.350 |
| 354 | 91.169 | 21.801 | 32.010 | 24.587 | 18.441 | 19.558 | 0.684 | 1.743 | 1.187 | 0.943 | 0.018 | 1 | 3.127 | 4.440 |
| 355 | 90.646 | 21.949 | 37.307 | 27.731 | 16.425 | 17.474 | 0.684 | 1.544 | 0.909 | 0.940 | 0.020 | 1 | 6.099 | 8.662 |
| 356 | 92.805 | 19.710 | 35.927 | 29.665 | 18.409 | 19.770 | 0.733 | 1.937 | 1.063 | 0.931 | 0.020 | 1 | 6.627 | 4.693 |
| 357 | 85.652 | 18.491 | 37.367 | 25.408 | 18.432 | 18.104 | 0.788 | 1.976 | 0.978 | 1.018 | 0.020 | 1 | 5.497 | 3.905 |
| 358 | 92.824 | 18.613 | 34.680 | 26.219 | 18.832 | 16.884 | 0.772 | 1.919 | 1.030 | 1.115 | 0.018 | 1 | 6.369 | 4.480 |
| 359 | 93.379 | 20.200 | 39.728 | 26.029 | 16.891 | 18.855 | 0.721 | 1.770 | 0.900 | 0.896 | 0.018 | 1 | 8.728 | 7.252 |
| 360 | 87.407 | 19.987 | 39.446 | 28.722 | 17.755 | 19.816 | 0.736 | 1.880 | 0.952 | 0.896 | 0.021 | 1 | 8.618 | 7.138 |
| 361 | 94.341 | 20.078 | 32.871 | 26.598 | 17.030 | 18.344 | 0.729 | 1.762 | 1.076 | 0.928 | 0.018 | 1 | 3.348 | 4.712 |
| 362 | 80.830 | 20.441 | 32.687 | 27.298 | 18.411 | 16.407 | 0.747 | 1.703 | 1.065 | 1.122 | 0.023 | 1 | 8.572 | 7.175 |
| 363 | 85.074 | 21.966 | 39.041 | 25.542 | 17.727 | 16.731 | 0.685 | 1.569 | 0.883 | 1.059 | 0.021 | 1 | 7.915 | 6.584 |
| 364 | 94.454 | 20.708 | 37.364 | 28.954 | 18.772 | 16.794 | 0.716 | 1.718 | 0.952 | 1.118 | 0.019 | 1 | 9.570 | 8.008 |
| 365 | 83.382 | 20.102 | 35.970 | 28.316 | 16.307 | 17.339 | 0.749 | 1.674 | 0.935 | 0.940 | 0.022 | 1 | 5.792 | 8.237 |
| 366 | 88.206 | 19.786 | 35.158 | 27.553 | 19.592 | 17.259 | 0.740 | 1.863 | 1.048 | 1.135 | 0.020 | 1 | 6.096 | 4.355 |
| 367 | 86.063 | 21.036 | 39.593 | 29.753 | 19.841 | 16.751 | 0.719 | 1.740 | 0.924 | 1.184 | 0.022 | 1 | 8.608 | 7.180 |
| 368 | 94.563 | 20.621 | 37.690 | 28.547 | 18.957 | 16.592 | 0.718 | 1.724 | 0.943 | 1.143 | 0.019 | 1 | 6.350 | 4.610 |
| 369 | 99.148 | 19.897 | 35.771 | 27.163 | 18.940 | 19.430 | 0.728 | 1.928 | 1.073 | 0.975 | 0.017 | 1 | 6.841 | 4.792 |
| 370 | 85.040 | 20.952 | 38.736 | 26.446 | 17.329 | 16.953 | 0.715 | 1.636 | 0.885 | 1.022 | 0.021 | 1 | 8.084 | 6.735 |
| 371 | 80.627 | 19.006 | 33.001 | 28.188 | 16.056 | 16.822 | 0.789 | 1.730 | 0.996 | 0.954 | 0.023 | 1 | 5.788 | 8.311 |
| 372 | 89.170 | 20.096 | 39.449 | 25.048 | 17.095 | 17.228 | 0.730 | 1.708 | 0.870 | 0.992 | 0.019 | 1 | 8.158 | 6.788 |
| 373 | 95.700 | 18.437 | 36.146 | 29.402 | 16.272 | 18.966 | 0.767 | 1.911 | 0.975 | 0.858 | 0.019 | -1 | 6.761 | 4.800 |
| 374 | 85.993 | 19.690 | 34.577 | 28.417 | 16.614 | 18.888 | 0.754 | 1.803 | 1.027 | 0.880 | 0.021 | 1 | 9.069 | 7.557 |
| 375 | 84.491 | 18.135 | 37.145 | 25.665 | 16.608 | 18.608 | 0.791 | 1.942 | 0.948 | 0.893 | 0.021 | 1 | 5.444 | 3.890 |
| 376 | 88.034 | 18.378 | 39.683 | 26.606 | 18.761 | 16.352 | 0.788 | 1.911 | 0.885 | 1.147 | 0.020 | 1 | 5.574 | 3.977 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 377 | 82.299 | 18.380 | 38.735 | 26.220 | 17.810 | 19.804 | 0.796 | 2.046 | 0.971 | 0.899 | 0.022 | 1 | 5.218 | 3.724 |
| 378 | 97.796 | 18.051 | 39.357 | 24.138 | 17.979 | 19.843 | 0.795 | 2.095 | 0.961 | 0.906 | 0.016 | 1 | 6.148 | 4.271 |
| 379 | 92.323 | 18.596 | 39.171 | 29.548 | 18.649 | 19.033 | 0.779 | 2.026 | 0.962 | 0.980 | 0.020 | 1 | 6.319 | 4.445 |
| 380 | 96.734 | 19.637 | 32.446 | 27.227 | 17.819 | 18.748 | 0.741 | 1.862 | 1.127 | 0.950 | 0.018 | -1 | 6.944 | 4.891 |
| 381 | 90.900 | 18.922 | 33.941 | 28.969 | 16.722 | 18.806 | 0.761 | 1.878 | 1.047 | 0.889 | 0.020 | 1 | 6.560 | 4.679 |
| 382 | 86.748 | 21.637 | 38.264 | 25.761 | 18.994 | 17.481 | 0.699 | 1.686 | 0.953 | 1.087 | 0.020 | 1 | 8.182 | 6.809 |
| 383 | 85.238 | 20.121 | 34.491 | 24.992 | 19.743 | 17.776 | 0.735 | 1.865 | 1.088 | 1.111 | 0.020 | 1 | 5.647 | 4.045 |
| 384 | 84.165 | 21.417 | 39.812 | 24.022 | 17.921 | 19.835 | 0.696 | 1.763 | 0.948 | 0.903 | 0.020 | 1 | 7.469 | 6.165 |
| 385 | 83.653 | 21.846 | 39.935 | 26.419 | 19.344 | 17.346 | 0.697 | 1.679 | 0.919 | 1.115 | 0.022 | 1 | 7.769 | 6.449 |
| 386 | 86.222 | 19.245 | 32.002 | 24.169 | 19.769 | 17.848 | 0.758 | 1.955 | 1.175 | 1.108 | 0.020 | 1 | 5.902 | 4.164 |
| 387 | 98.298 | 19.255 | 33.782 | 28.194 | 19.369 | 16.777 | 0.744 | 1.877 | 1.070 | 1.154 | 0.018 | 1 | 7.064 | 4.955 |
| 388 | 90.049 | 20.685 | 38.869 | 28.458 | 18.008 | 17.160 | 0.721 | 1.700 | 0.905 | 1.049 | 0.020 | 1 | 8.882 | 7.419 |
| 389 | 80.403 | 19.971 | 37.651 | 26.007 | 18.674 | 16.803 | 0.752 | 1.776 | 0.942 | 1.111 | 0.023 | 1 | 7.642 | 6.353 |
| 390 | 84.157 | 19.726 | 35.793 | 24.225 | 16.454 | 18.873 | 0.748 | 1.791 | 0.987 | 0.872 | 0.021 | 1 | 8.008 | 6.651 |
| 391 | 88.008 | 19.803 | 37.988 | 25.645 | 16.421 | 19.732 | 0.739 | 1.826 | 0.952 | 0.832 | 0.020 | 1 | 8.353 | 6.929 |
| 392 | 92.423 | 19.883 | 32.718 | 29.607 | 17.813 | 17.907 | 0.736 | 1.797 | 1.092 | 0.995 | 0.020 | 1 | 6.825 | 4.890 |
| 393 | 86.193 | 20.803 | 33.789 | 29.091 | 19.875 | 18.064 | 0.718 | 1.824 | 1.123 | 1.100 | 0.022 | 1 | 6.242 | 4.491 |
| 394 | 90.567 | 18.427 | 38.372 | 26.023 | 18.735 | 17.867 | 0.787 | 1.986 | 0.954 | 1.049 | 0.019 | 1 | 5.848 | 4.125 |
| 395 | 99.819 | 21.285 | 37.317 | 27.379 | 18.704 | 19.594 | 0.687 | 1.799 | 1.026 | 0.955 | 0.017 | 1 | 6.685 | 4.779 |
| 396 | 95.146 | 19.779 | 33.481 | 29.397 | 19.354 | 18.392 | 0.731 | 1.908 | 1.127 | 1.052 | 0.019 | 1 | 7.011 | 4.920 |
| 397 | 98.758 | 21.785 | 35.818 | 24.195 | 17.772 | 17.025 | 0.680 | 1.597 | 0.972 | 1.044 | 0.016 | 1 | 6.356 | 9.101 |
| 398 | 85.033 | 20.845 | 32.991 | 24.136 | 19.340 | 19.024 | 0.716 | 1.840 | 1.163 | 1.017 | 0.020 | 1 | 5.666 | 4.062 |
| 399 | 95.627 | 20.579 | 34.244 | 24.224 | 16.440 | 18.076 | 0.712 | 1.677 | 1.008 | 0.909 | 0.017 | 1 | 3.169 | 4.501 |
| 400 | 95.400 | 21.112 | 37.289 | 29.860 | 16.442 | 19.561 | 0.707 | 1.705 | 0.965 | 0.841 | 0.019 | 1 | 9.915 | 8.270 |
| 401 | 96.028 | 20.746 | 34.968 | 28.260 | 18.357 | 16.090 | 0.718 | 1.660 | 0.985 | 1.141 | 0.018 | 1 | 9.909 | 8.332 |
| 402 | 84.205 | 17.877 | 32.418 | 24.870 | 19.535 | 16.921 | 0.807 | 2.039 | 1.125 | 1.154 | 0.021 | 1 | 5.821 | 4.088 |
| 403 | 81.274 | 17.978 | 34.508 | 29.050 | 19.764 | 17.146 | 0.809 | 2.053 | 1.070 | 1.153 | 0.023 | 1 | 5.933 | 4.188 |
| 404 | 91.181 | 21.847 | 39.295 | 26.384 | 16.172 | 18.497 | 0.677 | 1.587 | 0.882 | 0.874 | 0.019 | 1 | 5.811 | 8.248 |
| 405 | 83.632 | 21.951 | 37.239 | 25.898 | 16.285 | 19.668 | 0.679 | 1.638 | 0.965 | 0.828 | 0.021 | 1 | 5.454 | 7.700 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 406 | 89.310 | 18.268 | 35.935 | 27.508 | 18.625 | 16.019 | 0.783 | 1.896 | 0.964 | 1.163 | 0.020 | 1 | 6.120 | 4.347 |
| 407 | 94.048 | 18.834 | 38.116 | 28.018 | 16.226 | 18.533 | 0.762 | 1.845 | 0.912 | 0.876 | 0.019 | 1 | 6.271 | 4.496 |
| 408 | 88.813 | 18.823 | 32.664 | 24.965 | 16.434 | 19.912 | 0.759 | 1.931 | 1.113 | 0.825 | 0.019 | 1 | 6.088 | 4.322 |
| 409 | 82.390 | 20.155 | 38.392 | 28.636 | 16.373 | 17.679 | 0.742 | 1.690 | 0.887 | 0.926 | 0.023 | 1 | 8.270 | 6.897 |
| 410 | 93.637 | 19.463 | 36.341 | 29.568 | 19.454 | 18.159 | 0.746 | 1.933 | 1.035 | 1.071 | 0.019 | 1 | 6.655 | 4.691 |
| 411 | 90.180 | 17.614 | 38.338 | 27.836 | 16.289 | 19.221 | 0.803 | 2.016 | 0.926 | 0.847 | 0.020 | 1 | 6.019 | 4.259 |
| 412 | 90.435 | 18.203 | 39.577 | 29.451 | 19.403 | 19.654 | 0.801 | 2.146 | 0.987 | 0.987 | 0.020 | 1 | 6.167 | 4.311 |
| 413 | 95.823 | 19.847 | 38.958 | 26.170 | 19.106 | 17.051 | 0.729 | 1.822 | 0.928 | 1.121 | 0.018 | 1 | 6.142 | 4.379 |
| 414 | 90.051 | 18.057 | 34.950 | 26.043 | 17.905 | 18.068 | 0.794 | 1.992 | 1.029 | 0.991 | 0.019 | 1 | 6.141 | 4.308 |
| 415 | 92.347 | 21.542 | 36.712 | 25.002 | 18.829 | 18.954 | 0.690 | 1.754 | 1.029 | 0.993 | 0.018 | 1 | 8.839 | 7.348 |
| 416 | 81.507 | 19.526 | 38.230 | 28.797 | 17.043 | 16.202 | 0.766 | 1.703 | 0.870 | 1.052 | 0.023 | 1 | 8.198 | 6.848 |
| 417 | 97.640 | 19.302 | 35.231 | 27.614 | 18.129 | 17.216 | 0.739 | 1.831 | 1.003 | 1.053 | 0.018 | 1 | 6.780 | 4.804 |
| 418 | 98.485 | 20.241 | 32.592 | 26.662 | 16.401 | 18.853 | 0.722 | 1.742 | 1.082 | 0.870 | 0.017 | 1 | 3.530 | 4.947 |
| 419 | 97.174 | 21.458 | 34.039 | 29.057 | 16.639 | 19.732 | 0.697 | 1.695 | 1.069 | 0.843 | 0.018 | 1 | 10.395 | 8.627 |
| 420 | 98.311 | 21.751 | 33.838 | 26.313 | 16.610 | 18.168 | 0.683 | 1.599 | 1.028 | 0.914 | 0.017 | 1 | 6.721 | 9.607 |
| 421 | 99.250 | 21.034 | 34.270 | 24.751 | 17.753 | 17.617 | 0.697 | 1.682 | 1.032 | 1.008 | 0.016 | 1 | 6.590 | 4.762 |
| 422 | 93.443 | 21.460 | 36.613 | 25.130 | 17.402 | 19.506 | 0.690 | 1.720 | 1.008 | 0.892 | 0.018 | 1 | 9.019 | 7.509 |
| 423 | 82.727 | 19.862 | 37.388 | 25.837 | 17.923 | 17.314 | 0.750 | 1.774 | 0.942 | 1.035 | 0.022 | 1 | 7.891 | 6.559 |
| 424 | 95.449 | 20.516 | 33.628 | 26.917 | 18.147 | 19.796 | 0.709 | 1.849 | 1.128 | 0.917 | 0.018 | 1 | 6.676 | 4.745 |
| 425 | 97.258 | 20.243 | 36.903 | 27.280 | 18.454 | 17.205 | 0.719 | 1.762 | 0.966 | 1.073 | 0.018 | 1 | 6.513 | 4.675 |
| 426 | 91.498 | 21.254 | 35.873 | 28.385 | 16.909 | 18.400 | 0.706 | 1.661 | 0.984 | 0.919 | 0.020 | 1 | 6.352 | 9.031 |
| 427 | 96.022 | 19.365 | 35.093 | 24.719 | 19.802 | 16.717 | 0.748 | 1.886 | 1.041 | 1.185 | 0.017 | 1 | 6.398 | 4.504 |
| 428 | 93.341 | 18.580 | 37.843 | 24.377 | 19.986 | 16.466 | 0.781 | 1.962 | 0.963 | 1.214 | 0.018 | 1 | 5.929 | 4.171 |
| 429 | 80.961 | 19.665 | 36.721 | 26.069 | 18.371 | 17.937 | 0.757 | 1.846 | 0.989 | 1.024 | 0.022 | 1 | 7.837 | 6.505 |
| 430 | 98.796 | 20.515 | 39.750 | 25.845 | 17.962 | 16.792 | 0.710 | 1.694 | 0.874 | 1.070 | 0.017 | 1 | 6.188 | 4.478 |
| 431 | 80.516 | 19.942 | 35.754 | 27.874 | 17.809 | 19.715 | 0.750 | 1.882 | 1.050 | 0.903 | 0.023 | 1 | 8.284 | 6.871 |
| 432 | 85.731 | 18.678 | 38.745 | 24.573 | 16.249 | 16.186 | 0.776 | 1.737 | 0.837 | 1.004 | 0.020 | 1 | 7.799 | 6.492 |
| 433 | 99.855 | 18.023 | 35.081 | 28.405 | 18.806 | 16.279 | 0.789 | 1.947 | 1.000 | 1.155 | 0.017 | -1 | 7.130 | 4.950 |
| 434 | 98.551 | 18.732 | 37.135 | 24.658 | 16.139 | 18.323 | 0.753 | 1.840 | 0.928 | 0.881 | 0.016 | 1 | 6.362 | 4.515 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 435 | 83.613 | 20.576 | 35.234 | 29.515 | 19.391 | 16.340 | 0.738 | 1.737 | 1.014 | 1.187 | 0.023 | 1 | 8.894 | 7.445 |
| 436 | 87.180 | 20.768 | 35.606 | 26.735 | 18.346 | 19.102 | 0.719 | 1.803 | 1.052 | 0.960 | 0.020 | 1 | 8.742 | 7.266 |
| 437 | 91.127 | 20.477 | 32.105 | 27.241 | 17.728 | 18.704 | 0.721 | 1.779 | 1.135 | 0.948 | 0.019 | 1 | 3.295 | 4.649 |
| 438 | 98.548 | 20.046 | 35.437 | 24.953 | 17.057 | 16.513 | 0.726 | 1.675 | 0.947 | 1.033 | 0.016 | 1 | 6.447 | 4.672 |
| 439 | 84.165 | 20.917 | 39.665 | 27.150 | 17.411 | 16.381 | 0.717 | 1.616 | 0.852 | 1.063 | 0.022 | 1 | 7.994 | 6.661 |
| 440 | 80.571 | 19.283 | 33.720 | 28.701 | 16.476 | 16.989 | 0.780 | 1.736 | 0.992 | 0.970 | 0.023 | 1 | 5.807 | 8.317 |
| 441 | 87.163 | 18.273 | 33.682 | 24.449 | 19.266 | 17.194 | 0.792 | 1.995 | 1.082 | 1.120 | 0.020 | 1 | 5.864 | 4.123 |
| 442 | 98.642 | 21.694 | 35.579 | 25.088 | 17.873 | 18.269 | 0.681 | 1.666 | 1.016 | 0.978 | 0.016 | 1 | 9.665 | 8.063 |
| 443 | 99.963 | 18.521 | 32.443 | 26.829 | 19.643 | 16.888 | 0.776 | 1.972 | 1.126 | 1.163 | 0.017 | -1 | 7.231 | 4.984 |
| 444 | 84.608 | 17.979 | 35.391 | 26.165 | 17.129 | 16.756 | 0.800 | 1.885 | 0.957 | 1.022 | 0.021 | 1 | 5.668 | 4.049 |
| 445 | 83.043 | 21.196 | 34.467 | 24.069 | 19.217 | 16.738 | 0.718 | 1.696 | 1.043 | 1.148 | 0.021 | 1 | 7.995 | 6.671 |
| 446 | 98.259 | 20.064 | 39.000 | 26.905 | 16.784 | 19.377 | 0.720 | 1.802 | 0.927 | 0.866 | 0.017 | 1 | 6.360 | 4.565 |
| 447 | 95.251 | 19.310 | 37.229 | 24.392 | 18.279 | 17.664 | 0.745 | 1.861 | 0.965 | 1.035 | 0.017 | 1 | 6.098 | 4.317 |
| 448 | 81.312 | 18.389 | 38.942 | 29.926 | 16.582 | 19.945 | 0.789 | 1.986 | 0.938 | 0.831 | 0.023 | 1 | 8.320 | 6.885 |
| 449 | 84.041 | 19.615 | 32.878 | 25.559 | 18.539 | 18.833 | 0.746 | 1.905 | 1.137 | 0.984 | 0.021 | 1 | 5.794 | 4.126 |
| 450 | 83.895 | 21.144 | 38.656 | 28.972 | 18.523 | 16.010 | 0.722 | 1.633 | 0.893 | 1.157 | 0.022 | 1 | 8.407 | 7.030 |
| 451 | 88.211 | 21.616 | 36.952 | 28.726 | 19.421 | 16.774 | 0.705 | 1.674 | 0.979 | 1.158 | 0.021 | 1 | 8.987 | 7.520 |
| 452 | 83.530 | 21.466 | 37.710 | 29.136 | 18.402 | 18.230 | 0.710 | 1.706 | 0.971 | 1.009 | 0.022 | 1 | 8.559 | 7.130 |
| 453 | 93.130 | 21.336 | 38.102 | 29.045 | 16.856 | 16.984 | 0.704 | 1.586 | 0.888 | 0.992 | 0.019 | 1 | 6.337 | 9.015 |
| 454 | 96.617 | 20.170 | 34.016 | 25.840 | 19.864 | 16.221 | 0.718 | 1.789 | 1.061 | 1.225 | 0.017 | 1 | 6.597 | 4.701 |
| 455 | 98.476 | 17.832 | 36.805 | 25.011 | 16.587 | 18.039 | 0.789 | 1.942 | 0.941 | 0.920 | 0.016 | -1 | 6.483 | 4.535 |
| 456 | 82.423 | 20.442 | 35.049 | 26.557 | 18.945 | 16.920 | 0.739 | 1.754 | 1.023 | 1.120 | 0.022 | 1 | 8.275 | 6.903 |
| 457 | 98.473 | 18.054 | 37.088 | 28.570 | 17.957 | 16.203 | 0.779 | 1.892 | 0.921 | 1.108 | 0.018 | -1 | 6.815 | 4.793 |
| 458 | 99.561 | 20.877 | 38.067 | 25.291 | 19.121 | 19.445 | 0.697 | 1.847 | 1.013 | 0.983 | 0.016 | 1 | 6.423 | 4.552 |
| 459 | 94.621 | 18.064 | 39.245 | 27.966 | 16.210 | 18.537 | 0.778 | 1.924 | 0.885 | 0.874 | 0.019 | 1 | 6.247 | 4.434 |
| 460 | 94.977 | 20.069 | 35.327 | 25.802 | 16.855 | 18.454 | 0.727 | 1.759 | 0.999 | 0.913 | 0.018 | 1 | 6.317 | 4.550 |
| 461 | 80.933 | 17.798 | 33.554 | 29.346 | 19.291 | 16.510 | 0.810 | 2.012 | 1.067 | 1.168 | 0.023 | 1 | 6.030 | 4.264 |
| 462 | 85.433 | 19.550 | 36.310 | 29.585 | 17.645 | 16.002 | 0.765 | 1.721 | 0.927 | 1.103 | 0.022 | 1 | 8.944 | 7.501 |
| 463 | 81.668 | 20.979 | 34.998 | 27.107 | 19.136 | 16.106 | 0.732 | 1.680 | 1.007 | 1.188 | 0.023 | 1 | 8.310 | 6.951 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 464 | 91.495 | 20.676 | 34.931 | 24.593 | 18.567 | 17.906 | 0.714 | 1.764 | 1.044 | 1.037 | 0.018 | 1 | 5.988 | 4.305 |
| 465 | 81.566 | 20.185 | 38.982 | 29.002 | 17.475 | 16.434 | 0.746 | 1.680 | 0.870 | 1.063 | 0.023 | 1 | 8.155 | 6.803 |
| 466 | 84.011 | 19.872 | 33.763 | 28.716 | 17.327 | 18.595 | 0.751 | 1.808 | 1.064 | 0.932 | 0.022 | 1 | 6.028 | 4.366 |
| 467 | 88.583 | 19.857 | 34.054 | 27.991 | 18.125 | 16.840 | 0.746 | 1.761 | 1.027 | 1.076 | 0.020 | 1 | 6.218 | 4.498 |
| 468 | 83.103 | 19.816 | 37.258 | 26.006 | 19.803 | 18.481 | 0.750 | 1.932 | 1.028 | 1.072 | 0.022 | 1 | 5.365 | 3.847 |
| 469 | 89.124 | 18.069 | 39.620 | 28.838 | 17.788 | 16.511 | 0.789 | 1.898 | 0.866 | 1.077 | 0.020 | 1 | 5.914 | 4.223 |
| 470 | 89.644 | 21.378 | 37.959 | 29.655 | 18.097 | 17.808 | 0.706 | 1.680 | 0.946 | 1.016 | 0.021 | 1 | 9.195 | 7.692 |
| 471 | 95.779 | 21.839 | 32.667 | 27.468 | 19.350 | 18.591 | 0.682 | 1.737 | 1.161 | 1.041 | 0.018 | 1 | 6.790 | 4.883 |
| 472 | 89.246 | 18.313 | 35.725 | 25.721 | 19.076 | 19.019 | 0.793 | 2.080 | 1.066 | 1.003 | 0.019 | 1 | 5.991 | 4.191 |
| 473 | 87.554 | 21.191 | 35.480 | 27.067 | 19.675 | 18.785 | 0.707 | 1.815 | 1.084 | 1.047 | 0.020 | 1 | 5.929 | 4.274 |
| 474 | 88.747 | 21.098 | 33.946 | 25.606 | 19.424 | 17.609 | 0.710 | 1.755 | 1.091 | 1.103 | 0.020 | 1 | 5.971 | 4.314 |
| 475 | 82.611 | 18.775 | 36.360 | 24.932 | 19.901 | 18.471 | 0.786 | 2.044 | 1.055 | 1.077 | 0.021 | 1 | 5.321 | 3.780 |
| 476 | 85.190 | 21.920 | 36.764 | 29.277 | 19.187 | 17.490 | 0.701 | 1.673 | 0.998 | 1.097 | 0.022 | 1 | 8.850 | 7.394 |
| 477 | 83.499 | 18.227 | 39.343 | 24.074 | 18.242 | 18.307 | 0.803 | 2.005 | 0.929 | 0.996 | 0.021 | 1 | 5.007 | 3.568 |
| 478 | 87.310 | 19.616 | 39.289 | 25.251 | 17.818 | 18.847 | 0.744 | 1.869 | 0.933 | 0.945 | 0.020 | 1 | 8.014 | 6.633 |
| 479 | 94.885 | 19.682 | 34.919 | 27.569 | 17.280 | 16.345 | 0.745 | 1.708 | 0.963 | 1.057 | 0.018 | 1 | 6.503 | 4.720 |
| 480 | 89.520 | 20.961 | 34.821 | 27.315 | 16.726 | 18.500 | 0.715 | 1.680 | 1.012 | 0.904 | 0.020 | 1 | 6.173 | 8.790 |
| 481 | 93.796 | 18.041 | 35.752 | 27.660 | 17.762 | 18.637 | 0.791 | 2.018 | 1.018 | 0.953 | 0.019 | 1 | 6.539 | 4.562 |
| 482 | 98.392 | 18.311 | 39.067 | 28.005 | 16.323 | 18.758 | 0.764 | 1.916 | 0.898 | 0.870 | 0.017 | -1 | 6.546 | 4.630 |
| 483 | 92.347 | 21.584 | 33.397 | 25.609 | 18.902 | 18.342 | 0.692 | 1.726 | 1.115 | 1.031 | 0.018 | 1 | 6.268 | 4.527 |
| 484 | 91.642 | 18.386 | 35.359 | 24.832 | 19.572 | 16.785 | 0.786 | 1.977 | 1.028 | 1.166 | 0.018 | 1 | 6.085 | 4.269 |
| 485 | 92.978 | 20.534 | 36.019 | 28.295 | 17.171 | 19.341 | 0.720 | 1.778 | 1.014 | 0.888 | 0.019 | 1 | 9.551 | 7.952 |
| 486 | 89.619 | 21.013 | 32.876 | 29.262 | 18.028 | 18.455 | 0.715 | 1.736 | 1.110 | 0.977 | 0.020 | 1 | 9.792 | 8.160 |
| 487 | 96.190 | 19.969 | 35.112 | 27.573 | 19.599 | 16.344 | 0.725 | 1.800 | 1.024 | 1.199 | 0.018 | 1 | 6.655 | 4.747 |
| 488 | 99.283 | 18.216 | 37.857 | 28.434 | 16.393 | 16.715 | 0.774 | 1.817 | 0.875 | 0.981 | 0.017 | 1 | 6.729 | 4.795 |
| 489 | 80.774 | 18.292 | 37.218 | 28.367 | 19.569 | 19.496 | 0.806 | 2.136 | 1.050 | 1.004 | 0.023 | 1 | 5.550 | 3.930 |
| 490 | 90.693 | 18.053 | 33.826 | 25.646 | 19.558 | 18.440 | 0.799 | 2.105 | 1.123 | 1.061 | 0.019 | 1 | 6.292 | 4.360 |
| 491 | 96.553 | 19.237 | 32.647 | 29.527 | 19.115 | 19.492 | 0.755 | 2.007 | 1.183 | 0.981 | 0.018 | -1 | 7.272 | 5.021 |
| 492 | 85.990 | 18.402 | 34.808 | 27.577 | 18.148 | 19.794 | 0.786 | 2.062 | 1.090 | 0.917 | 0.021 | 1 | 6.042 | 4.251 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 493 | 89.608 | 20.240 | 37.192 | 29.430 | 17.719 | 17.184 | 0.736 | 1.724 | 0.938 | 1.031 | 0.020 | 1 | 9.225 | 7.720 |
| 494 | 80.882 | 18.707 | 35.546 | 26.264 | 16.576 | 18.092 | 0.786 | 1.853 | 0.975 | 0.916 | 0.023 | 1 | 8.031 | 6.675 |
| 495 | 80.019 | 21.149 | 38.852 | 26.330 | 19.608 | 17.687 | 0.721 | 1.763 | 0.960 | 1.109 | 0.023 | 1 | 7.520 | 6.237 |
| 496 | 98.630 | 21.263 | 34.722 | 29.828 | 19.583 | 16.156 | 0.701 | 1.681 | 1.029 | 1.212 | 0.018 | 1 | 7.005 | 5.109 |
| 497 | 92.098 | 18.089 | 33.548 | 25.459 | 19.550 | 16.995 | 0.795 | 2.020 | 1.089 | 1.150 | 0.018 | 1 | 6.380 | 4.439 |
| 498 | 96.527 | 17.654 | 35.176 | 27.951 | 17.287 | 19.177 | 0.802 | 2.065 | 1.037 | 0.901 | 0.018 | -1 | 6.857 | 4.738 |
| 499 | 97.120 | 17.677 | 37.842 | 28.881 | 19.151 | 17.085 | 0.807 | 2.050 | 0.958 | 1.121 | 0.018 | 1 | 6.758 | 4.679 |
| 500 | 84.889 | 21.946 | 37.124 | 24.104 | 16.732 | 16.071 | 0.678 | 1.495 | 0.884 | 1.041 | 0.020 | 1 | 5.344 | 7.550 |
| 501 | 88.559 | 18.785 | 38.658 | 26.094 | 17.654 | 17.528 | 0.767 | 1.873 | 0.910 | 1.007 | 0.020 | 1 | 5.638 | 4.030 |
| 502 | 98.536 | 18.621 | 32.376 | 26.523 | 19.932 | 17.342 | 0.773 | 2.002 | 1.151 | 1.149 | 0.017 | 1 | 7.105 | 4.892 |
| 503 | 89.827 | 19.056 | 39.998 | 27.377 | 17.232 | 19.600 | 0.756 | 1.933 | 0.921 | 0.879 | 0.020 | 1 | 5.755 | 4.110 |
| 504 | 80.776 | 18.871 | 39.555 | 27.932 | 16.421 | 17.439 | 0.779 | 1.794 | 0.856 | 0.942 | 0.023 | 1 | 7.801 | 6.475 |
| 505 | 94.501 | 19.764 | 38.662 | 25.895 | 18.787 | 18.890 | 0.737 | 1.906 | 0.975 | 0.995 | 0.018 | 1 | 6.070 | 4.301 |
| 506 | 99.891 | 18.434 | 36.317 | 28.026 | 18.294 | 17.617 | 0.772 | 1.948 | 0.989 | 1.038 | 0.017 | -1 | 6.968 | 4.851 |
| 507 | 99.062 | 20.232 | 32.965 | 26.553 | 16.249 | 18.407 | 0.723 | 1.713 | 1.051 | 0.883 | 0.017 | 1 | 3.517 | 4.941 |
| 508 | 98.119 | 19.783 | 36.570 | 26.692 | 17.763 | 17.295 | 0.729 | 1.772 | 0.959 | 1.027 | 0.017 | 1 | 6.554 | 4.689 |
| 509 | 88.128 | 19.395 | 32.461 | 27.590 | 17.370 | 18.194 | 0.752 | 1.834 | 1.096 | 0.955 | 0.020 | 1 | 6.332 | 4.524 |
| 510 | 93.142 | 21.868 | 32.691 | 29.989 | 19.194 | 17.915 | 0.692 | 1.697 | 1.135 | 1.071 | 0.020 | 1 | 10.267 | 8.590 |
| 511 | 92.188 | 20.113 | 36.656 | 26.939 | 19.020 | 17.435 | 0.727 | 1.812 | 0.994 | 1.091 | 0.019 | 1 | 6.154 | 4.408 |
| 512 | 92.066 | 21.400 | 34.743 | 26.870 | 17.661 | 19.305 | 0.698 | 1.727 | 1.064 | 0.915 | 0.019 | 1 | 9.396 | 7.823 |
| 513 | 97.841 | 18.636 | 38.729 | 29.324 | 16.986 | 17.063 | 0.762 | 1.827 | 0.879 | 0.995 | 0.018 | 1 | 6.646 | 4.743 |
| 514 | 97.910 | 21.297 | 38.701 | 26.668 | 19.990 | 16.532 | 0.694 | 1.715 | 0.944 | 1.209 | 0.017 | 1 | 6.302 | 4.559 |
| 515 | 90.519 | 18.819 | 38.249 | 24.110 | 18.271 | 18.873 | 0.773 | 1.974 | 0.971 | 0.968 | 0.018 | 1 | 5.642 | 3.989 |
| 516 | 88.585 | 19.866 | 35.661 | 25.309 | 16.306 | 17.269 | 0.743 | 1.690 | 0.942 | 0.944 | 0.019 | 1 | 5.775 | 8.258 |
| 517 | 89.734 | 18.282 | 38.897 | 29.909 | 19.885 | 17.126 | 0.794 | 2.024 | 0.952 | 1.161 | 0.021 | 1 | 6.210 | 4.372 |
| 518 | 88.386 | 20.346 | 38.068 | 26.301 | 18.082 | 19.647 | 0.724 | 1.854 | 0.991 | 0.920 | 0.020 | 1 | 8.471 | 7.018 |
| 519 | 96.807 | 19.331 | 39.185 | 25.930 | 18.147 | 18.666 | 0.746 | 1.904 | 0.939 | 0.972 | 0.017 | 1 | 6.205 | 4.383 |
| 520 | 91.967 | 21.197 | 34.927 | 26.454 | 18.681 | 18.620 | 0.702 | 1.760 | 1.068 | 1.003 | 0.019 | 1 | 6.207 | 4.477 |
| 521 | 95.101 | 20.614 | 32.169 | 28.078 | 16.478 | 19.522 | 0.718 | 1.746 | 1.119 | 0.844 | 0.018 | 1 | 10.257 | 8.482 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 522 | 80.833 | 17.937 | 36.028 | 26.358 | 16.407 | 16.821 | 0.811 | 1.853 | 0.922 | 0.975 | 0.023 | 1 | 5.343 | 3.854 |
| 523 | 82.755 | 20.341 | 38.175 | 27.809 | 19.704 | 18.020 | 0.736 | 1.854 | 0.988 | 1.093 | 0.022 | 1 | 8.123 | 6.744 |
| 524 | 92.319 | 20.934 | 37.160 | 29.609 | 16.053 | 19.923 | 0.714 | 1.719 | 0.968 | 0.806 | 0.020 | 1 | 9.595 | 8.000 |
| 525 | 97.925 | 17.848 | 34.510 | 27.729 | 18.843 | 16.394 | 0.797 | 1.974 | 1.021 | 1.149 | 0.018 | -1 | 6.976 | 4.835 |
| 526 | 81.080 | 18.742 | 34.333 | 24.787 | 16.944 | 16.497 | 0.787 | 1.784 | 0.974 | 1.027 | 0.022 | 1 | 2.695 | 3.815 |
| 527 | 96.509 | 17.906 | 38.191 | 29.949 | 18.413 | 18.895 | 0.799 | 2.083 | 0.977 | 0.974 | 0.019 | 1 | 6.806 | 4.717 |
| 528 | 93.072 | 18.993 | 38.995 | 28.182 | 19.484 | 18.375 | 0.768 | 1.993 | 0.971 | 1.060 | 0.019 | 1 | 6.222 | 4.378 |
| 529 | 82.389 | 20.190 | 37.653 | 25.180 | 18.220 | 18.397 | 0.739 | 1.814 | 0.972 | 0.990 | 0.022 | 1 | 7.720 | 6.399 |
| 530 | 92.033 | 21.634 | 38.250 | 25.268 | 18.206 | 17.504 | 0.690 | 1.651 | 0.934 | 1.040 | 0.018 | 1 | 8.653 | 7.218 |
| 531 | 90.161 | 20.291 | 37.475 | 24.594 | 17.659 | 19.511 | 0.722 | 1.832 | 0.992 | 0.905 | 0.019 | 1 | 5.677 | 4.075 |
| 532 | 98.475 | 21.315 | 36.080 | 26.935 | 17.319 | 19.309 | 0.692 | 1.718 | 1.015 | 0.897 | 0.017 | 1 | 9.884 | 8.222 |
| 533 | 80.370 | 17.881 | 32.095 | 26.416 | 18.513 | 18.191 | 0.807 | 2.053 | 1.144 | 1.018 | 0.023 | 1 | 5.769 | 4.056 |
| 534 | 81.162 | 21.332 | 39.562 | 24.461 | 16.751 | 16.551 | 0.694 | 1.561 | 0.842 | 1.012 | 0.022 | 1 | 7.286 | 6.027 |
| 535 | 87.248 | 18.825 | 36.532 | 25.283 | 18.243 | 17.846 | 0.771 | 1.917 | 0.988 | 1.022 | 0.020 | 1 | 5.665 | 4.029 |
| 536 | 81.098 | 19.512 | 38.084 | 29.239 | 16.697 | 19.688 | 0.762 | 1.865 | 0.955 | 0.848 | 0.023 | 1 | 8.301 | 6.887 |
| 537 | 98.941 | 18.048 | 38.101 | 28.341 | 17.791 | 17.946 | 0.786 | 1.980 | 0.938 | 0.991 | 0.017 | 1 | 6.770 | 4.721 |
| 538 | 88.010 | 18.856 | 39.568 | 29.256 | 16.671 | 19.731 | 0.766 | 1.930 | 0.920 | 0.845 | 0.021 | 1 | 5.873 | 4.217 |
| 539 | 90.251 | 20.348 | 37.133 | 24.097 | 19.876 | 19.135 | 0.727 | 1.917 | 1.051 | 1.039 | 0.018 | 1 | 5.697 | 4.052 |
| 540 | 89.333 | 18.924 | 35.686 | 24.317 | 17.044 | 19.607 | 0.758 | 1.937 | 1.027 | 0.869 | 0.019 | 1 | 5.786 | 4.111 |
| 541 | 87.867 | 19.957 | 32.698 | 24.024 | 17.787 | 16.837 | 0.740 | 1.735 | 1.059 | 1.056 | 0.019 | 1 | 5.852 | 4.223 |
| 542 | 91.691 | 18.776 | 32.081 | 26.024 | 19.100 | 18.018 | 0.768 | 1.977 | 1.157 | 1.060 | 0.019 | 1 | 6.536 | 4.555 |
| 543 | 88.099 | 18.060 | 33.315 | 26.909 | 18.686 | 19.370 | 0.797 | 2.107 | 1.142 | 0.965 | 0.020 | 1 | 6.293 | 4.370 |
| 544 | 94.889 | 18.262 | 39.584 | 28.499 | 19.575 | 17.798 | 0.792 | 2.046 | 0.944 | 1.100 | 0.019 | 1 | 6.366 | 4.444 |
| 545 | 87.112 | 21.058 | 36.682 | 25.955 | 17.398 | 18.550 | 0.710 | 1.707 | 0.980 | 0.938 | 0.020 | 1 | 8.486 | 7.065 |
| 546 | 98.389 | 17.659 | 34.433 | 27.866 | 19.710 | 18.772 | 0.811 | 2.179 | 1.118 | 1.050 | 0.017 | 1 | 7.129 | 4.836 |
| 547 | 83.664 | 19.577 | 34.381 | 28.636 | 16.715 | 16.804 | 0.767 | 1.712 | 0.975 | 0.995 | 0.022 | 1 | 5.944 | 8.506 |
| 548 | 80.298 | 20.063 | 39.491 | 24.471 | 16.793 | 19.121 | 0.737 | 1.790 | 0.909 | 0.878 | 0.022 | 1 | 7.183 | 5.923 |
| 549 | 94.335 | 18.639 | 33.612 | 29.292 | 18.185 | 18.777 | 0.771 | 1.983 | 1.100 | 0.968 | 0.019 | -1 | 6.968 | 4.851 |
| 550 | 88.855 | 18.924 | 38.467 | 25.865 | 18.212 | 17.234 | 0.764 | 1.873 | 0.921 | 1.057 | 0.020 | 1 | 5.654 | 4.038 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 551 | 81.265 | 17.772 | 39.899 | 24.487 | 19.418 | 19.444 | 0.829 | 2.187 | 0.974 | 0.999 | 0.022 | 1 | 4.854 | 3.448 |
| 552 | 86.411 | 19.138 | 35.134 | 26.524 | 17.994 | 18.072 | 0.760 | 1.885 | 1.027 | 0.996 | 0.021 | 1 | 5.858 | 4.182 |
| 553 | 92.389 | 20.275 | 32.815 | 29.109 | 17.873 | 16.717 | 0.734 | 1.706 | 1.054 | 1.069 | 0.020 | 1 | 3.366 | 4.803 |
| 554 | 85.916 | 21.286 | 33.546 | 24.332 | 19.857 | 16.026 | 0.714 | 1.686 | 1.070 | 1.239 | 0.020 | 1 | 8.417 | 7.047 |
| 555 | 94.166 | 18.833 | 38.702 | 27.217 | 17.164 | 16.557 | 0.762 | 1.791 | 0.871 | 1.037 | 0.018 | 1 | 6.134 | 4.402 |
| 556 | 99.902 | 21.822 | 35.258 | 25.804 | 18.758 | 18.278 | 0.677 | 1.697 | 1.050 | 1.026 | 0.016 | 1 | 6.661 | 4.808 |
| 557 | 96.821 | 19.078 | 36.383 | 25.649 | 19.851 | 18.579 | 0.764 | 2.014 | 1.056 | 1.068 | 0.017 | 1 | 6.488 | 4.514 |
| 558 | 81.965 | 20.412 | 37.546 | 28.061 | 16.935 | 16.657 | 0.739 | 1.646 | 0.895 | 1.017 | 0.023 | 1 | 8.224 | 6.870 |
| 559 | 92.074 | 21.908 | 39.890 | 24.370 | 18.738 | 18.167 | 0.680 | 1.685 | 0.925 | 1.031 | 0.018 | 1 | 8.309 | 6.905 |
| 560 | 80.759 | 21.225 | 32.622 | 25.562 | 18.458 | 16.001 | 0.728 | 1.624 | 1.056 | 1.154 | 0.022 | 1 | 8.282 | 6.931 |
| 561 | 83.377 | 21.746 | 38.173 | 29.574 | 18.671 | 17.079 | 0.706 | 1.644 | 0.937 | 1.093 | 0.023 | 1 | 8.558 | 7.147 |
| 562 | 86.468 | 19.368 | 39.859 | 29.575 | 18.273 | 19.016 | 0.753 | 1.925 | 0.936 | 0.961 | 0.022 | 1 | 8.604 | 7.123 |
| 563 | 88.645 | 20.757 | 39.827 | 25.535 | 16.836 | 18.557 | 0.710 | 1.705 | 0.889 | 0.907 | 0.020 | 1 | 8.165 | 6.779 |
| 564 | 89.798 | 20.879 | 35.002 | 28.406 | 17.753 | 19.634 | 0.715 | 1.791 | 1.068 | 0.904 | 0.020 | 1 | 9.391 | 7.822 |
| 565 | 95.495 | 19.413 | 38.807 | 25.211 | 17.551 | 18.939 | 0.739 | 1.880 | 0.940 | 0.927 | 0.017 | 1 | 6.051 | 4.294 |
| 566 | 93.459 | 21.466 | 32.393 | 26.376 | 18.740 | 16.874 | 0.699 | 1.659 | 1.099 | 1.111 | 0.018 | 1 | 9.701 | 8.131 |
| 567 | 88.978 | 18.603 | 37.145 | 25.594 | 17.570 | 19.765 | 0.777 | 2.007 | 1.005 | 0.889 | 0.019 | 1 | 5.785 | 4.094 |
| 568 | 96.150 | 18.793 | 32.188 | 29.548 | 16.094 | 17.202 | 0.770 | 1.772 | 1.034 | 0.936 | 0.019 | -1 | 3.647 | 5.094 |
| 569 | 91.811 | 20.101 | 36.673 | 29.809 | 17.873 | 16.391 | 0.740 | 1.705 | 0.934 | 1.090 | 0.020 | 1 | 9.551 | 8.017 |
| 570 | 89.043 | 18.722 | 32.572 | 26.201 | 16.741 | 17.388 | 0.771 | 1.823 | 1.048 | 0.963 | 0.020 | 1 | 6.227 | 4.445 |
| 571 | 97.117 | 20.979 | 39.739 | 27.971 | 17.967 | 19.091 | 0.699 | 1.766 | 0.933 | 0.941 | 0.018 | 1 | 6.307 | 4.551 |
| 572 | 84.768 | 17.899 | 34.986 | 28.058 | 17.219 | 19.865 | 0.800 | 2.072 | 1.060 | 0.867 | 0.022 | 1 | 5.994 | 4.227 |
| 573 | 93.655 | 19.569 | 34.926 | 26.781 | 16.682 | 18.674 | 0.743 | 1.807 | 1.012 | 0.893 | 0.018 | 1 | 6.380 | 4.580 |
| 574 | 98.896 | 19.897 | 34.336 | 28.263 | 19.723 | 16.594 | 0.722 | 1.825 | 1.058 | 1.189 | 0.017 | 1 | 7.025 | 4.970 |
| 575 | 83.553 | 19.780 | 39.772 | 25.884 | 19.466 | 16.589 | 0.751 | 1.823 | 0.907 | 1.173 | 0.021 | 1 | 7.630 | 6.341 |
| 576 | 83.925 | 18.902 | 34.218 | 26.107 | 18.655 | 17.416 | 0.769 | 1.908 | 1.054 | 1.071 | 0.021 | 1 | 5.729 | 4.082 |
| 577 | 92.550 | 20.561 | 32.486 | 24.962 | 16.186 | 19.536 | 0.717 | 1.737 | 1.100 | 0.829 | 0.018 | 1 | 3.182 | 4.510 |
| 578 | 95.765 | 21.354 | 39.138 | 28.507 | 17.670 | 18.915 | 0.695 | 1.713 | 0.935 | 0.934 | 0.018 | 1 | 9.457 | 7.892 |
| 579 | 92.721 | 21.314 | 36.671 | 25.593 | 17.421 | 18.573 | 0.697 | 1.689 | 0.982 | 0.938 | 0.018 | 1 | 8.997 | 7.506 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 580 | 92.716 | 21.933 | 39.723 | 28.227 | 17.221 | 17.777 | 0.683 | 1.596 | 0.881 | 0.969 | 0.019 | 1 | 6.099 | 8.644 |
| 581 | 97.718 | 21.260 | 39.038 | 27.850 | 17.260 | 16.730 | 0.699 | 1.599 | 0.871 | 1.032 | 0.018 | 1 | 6.413 | 9.146 |
| 582 | 86.964 | 21.903 | 38.949 | 24.859 | 16.607 | 16.652 | 0.676 | 1.518 | 0.854 | 0.997 | 0.020 | 1 | 5.401 | 7.640 |
| 583 | 90.502 | 21.550 | 36.129 | 27.653 | 18.599 | 17.114 | 0.702 | 1.657 | 0.989 | 1.087 | 0.020 | 1 | 9.148 | 7.658 |
| 584 | 88.554 | 19.397 | 39.353 | 28.550 | 18.521 | 18.508 | 0.751 | 1.909 | 0.941 | 1.001 | 0.021 | 1 | 5.859 | 4.190 |
| 585 | 83.576 | 21.333 | 34.032 | 26.866 | 16.940 | 19.521 | 0.710 | 1.709 | 1.071 | 0.868 | 0.022 | 1 | 5.813 | 8.252 |
| 586 | 81.882 | 20.057 | 39.256 | 28.475 | 16.095 | 17.494 | 0.742 | 1.675 | 0.856 | 0.920 | 0.023 | 1 | 8.080 | 6.730 |
| 587 | 91.722 | 20.968 | 33.105 | 26.158 | 18.684 | 17.542 | 0.710 | 1.728 | 1.094 | 1.065 | 0.019 | 1 | 6.309 | 4.558 |
| 588 | 94.674 | 19.623 | 37.978 | 28.067 | 18.450 | 18.298 | 0.734 | 1.873 | 0.968 | 1.008 | 0.019 | 1 | 6.368 | 4.527 |
| 589 | 97.234 | 19.186 | 37.686 | 24.596 | 17.929 | 16.177 | 0.744 | 1.778 | 0.905 | 1.108 | 0.017 | 1 | 6.192 | 4.416 |
| 590 | 99.475 | 20.073 | 34.060 | 26.992 | 18.737 | 16.009 | 0.722 | 1.731 | 1.020 | 1.170 | 0.017 | 1 | 6.883 | 4.941 |
| 591 | 87.652 | 21.810 | 34.822 | 26.000 | 19.770 | 17.942 | 0.696 | 1.729 | 1.083 | 1.102 | 0.020 | 1 | 8.741 | 7.288 |
| 592 | 87.630 | 17.713 | 32.481 | 27.874 | 16.692 | 16.471 | 0.802 | 1.872 | 1.021 | 1.013 | 0.021 | -1 | 6.358 | 4.514 |
| 593 | 85.998 | 18.011 | 37.981 | 28.045 | 18.092 | 17.477 | 0.800 | 1.975 | 0.936 | 1.035 | 0.021 | 1 | 5.775 | 4.103 |
| 594 | 95.770 | 20.412 | 36.878 | 25.776 | 19.675 | 17.148 | 0.713 | 1.804 | 0.998 | 1.147 | 0.017 | 1 | 6.275 | 4.478 |
| 595 | 93.509 | 20.930 | 35.773 | 24.110 | 19.868 | 16.659 | 0.706 | 1.745 | 1.021 | 1.193 | 0.017 | 1 | 6.001 | 4.322 |
| 596 | 84.796 | 19.195 | 34.764 | 28.422 | 18.221 | 16.482 | 0.768 | 1.808 | 0.998 | 1.106 | 0.022 | 1 | 5.966 | 4.308 |
| 597 | 84.871 | 18.637 | 37.666 | 29.885 | 19.958 | 16.207 | 0.781 | 1.941 | 0.960 | 1.231 | 0.022 | 1 | 5.940 | 4.242 |
| 598 | 91.364 | 19.780 | 39.744 | 29.175 | 16.087 | 19.748 | 0.740 | 1.812 | 0.902 | 0.815 | 0.020 | 1 | 9.062 | 7.544 |
| 599 | 95.956 | 20.245 | 32.710 | 26.714 | 18.403 | 19.796 | 0.718 | 1.887 | 1.168 | 0.930 | 0.018 | -1 | 6.810 | 4.797 |
| 600 | 91.869 | 19.670 | 38.741 | 28.767 | 18.798 | 17.420 | 0.739 | 1.841 | 0.935 | 1.079 | 0.020 | 1 | 6.157 | 4.410 |
| 601 | 84.050 | 21.178 | 37.253 | 25.707 | 16.222 | 18.662 | 0.703 | 1.647 | 0.936 | 0.869 | 0.021 | 1 | 5.438 | 7.700 |
| 602 | 98.926 | 18.786 | 36.206 | 27.768 | 16.693 | 16.025 | 0.763 | 1.742 | 0.904 | 1.042 | 0.017 | 1 | 6.730 | 4.844 |
| 603 | 80.598 | 19.581 | 39.658 | 24.581 | 17.712 | 16.713 | 0.756 | 1.758 | 0.868 | 1.060 | 0.022 | 1 | 7.166 | 5.935 |
| 604 | 90.362 | 19.664 | 35.344 | 25.820 | 18.474 | 17.507 | 0.741 | 1.830 | 1.018 | 1.055 | 0.019 | 1 | 6.029 | 4.308 |
| 605 | 96.428 | 17.887 | 34.022 | 25.269 | 19.241 | 16.142 | 0.796 | 1.978 | 1.040 | 1.192 | 0.017 | 1 | 6.637 | 4.609 |
| 606 | 90.694 | 21.587 | 36.328 | 27.612 | 19.251 | 19.080 | 0.694 | 1.776 | 1.055 | 1.009 | 0.020 | 1 | 9.144 | 7.606 |
| 607 | 99.489 | 18.328 | 38.901 | 28.271 | 16.548 | 19.529 | 0.766 | 1.968 | 0.927 | 0.847 | 0.017 | 1 | 6.693 | 4.706 |
| 608 | 85.114 | 21.877 | 35.520 | 25.601 | 19.090 | 17.596 | 0.698 | 1.677 | 1.033 | 1.085 | 0.021 | 1 | 8.352 | 6.961 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 609 | 85.090 | 21.203 | 37.018 | 27.749 | 18.537 | 16.457 | 0.718 | 1.650 | 0.945 | 1.126 | 0.022 | 1 | 8.514 | 7.119 |
| 610 | 85.976 | 19.936 | 33.690 | 25.496 | 16.059 | 18.397 | 0.745 | 1.728 | 1.023 | 0.873 | 0.020 | 1 | 5.789 | 8.278 |
| 611 | 98.627 | 21.487 | 35.992 | 25.388 | 19.577 | 18.618 | 0.682 | 1.778 | 1.061 | 1.051 | 0.017 | 1 | 6.514 | 4.651 |
| 612 | 91.778 | 19.633 | 37.233 | 24.480 | 17.776 | 16.676 | 0.741 | 1.755 | 0.925 | 1.066 | 0.018 | 1 | 5.792 | 4.168 |
| 613 | 90.822 | 21.401 | 34.050 | 26.990 | 18.296 | 19.424 | 0.699 | 1.763 | 1.108 | 0.942 | 0.019 | 1 | 6.255 | 4.522 |
| 614 | 98.650 | 21.241 | 36.388 | 26.189 | 19.453 | 19.341 | 0.686 | 1.826 | 1.066 | 1.006 | 0.017 | 1 | 6.584 | 4.679 |
| 615 | 85.455 | 19.320 | 34.749 | 27.831 | 18.879 | 18.115 | 0.754 | 1.915 | 1.065 | 1.042 | 0.021 | 1 | 5.993 | 4.269 |
| 616 | 84.333 | 20.530 | 32.459 | 26.437 | 16.448 | 19.367 | 0.731 | 1.744 | 1.103 | 0.849 | 0.021 | 1 | 5.904 | 8.432 |
| 617 | 99.601 | 19.043 | 38.695 | 28.756 | 18.867 | 16.369 | 0.747 | 1.850 | 0.911 | 1.153 | 0.017 | 1 | 6.746 | 4.772 |
| 618 | 84.667 | 19.405 | 34.032 | 29.693 | 19.308 | 18.661 | 0.753 | 1.957 | 1.116 | 1.035 | 0.022 | 1 | 6.260 | 4.439 |
| 619 | 96.362 | 19.802 | 36.257 | 29.039 | 19.450 | 19.411 | 0.736 | 1.963 | 1.072 | 1.002 | 0.018 | 1 | 6.811 | 4.774 |
| 620 | 82.575 | 21.692 | 38.194 | 24.306 | 19.316 | 19.420 | 0.699 | 1.786 | 1.014 | 0.995 | 0.021 | 1 | 7.537 | 6.238 |
| 621 | 90.101 | 17.828 | 33.294 | 25.977 | 18.266 | 17.624 | 0.801 | 2.013 | 1.078 | 1.036 | 0.019 | 1 | 6.311 | 4.399 |
| 622 | 89.546 | 18.481 | 36.750 | 24.485 | 16.538 | 19.989 | 0.772 | 1.976 | 0.994 | 0.827 | 0.019 | 1 | 5.728 | 4.067 |
| 623 | 84.180 | 19.468 | 37.865 | 27.245 | 16.698 | 16.656 | 0.761 | 1.713 | 0.881 | 1.003 | 0.022 | 1 | 8.224 | 6.864 |
| 624 | 99.620 | 20.214 | 39.446 | 29.025 | 18.374 | 19.222 | 0.711 | 1.860 | 0.953 | 0.956 | 0.017 | 1 | 6.691 | 4.755 |
| 625 | 81.191 | 21.843 | 39.955 | 28.000 | 17.669 | 16.030 | 0.694 | 1.543 | 0.843 | 1.102 | 0.023 | 1 | 7.849 | 6.527 |
| 626 | 95.875 | 21.122 | 34.183 | 28.779 | 16.598 | 17.340 | 0.711 | 1.607 | 0.993 | 0.957 | 0.018 | 1 | 6.796 | 9.711 |
| 627 | 85.691 | 18.267 | 32.187 | 24.727 | 17.944 | 16.256 | 0.785 | 1.872 | 1.063 | 1.104 | 0.020 | 1 | 5.885 | 4.179 |
| 628 | 89.406 | 19.218 | 36.240 | 26.890 | 18.909 | 17.291 | 0.755 | 1.884 | 0.999 | 1.094 | 0.020 | 1 | 6.019 | 4.285 |
| 629 | 99.437 | 19.609 | 39.549 | 29.843 | 18.920 | 18.435 | 0.734 | 1.905 | 0.945 | 1.026 | 0.018 | 1 | 6.797 | 4.793 |
| 630 | 90.816 | 21.431 | 34.490 | 29.764 | 18.979 | 18.610 | 0.702 | 1.754 | 1.090 | 1.020 | 0.020 | 1 | 6.528 | 4.735 |
| 631 | 89.118 | 21.208 | 38.105 | 27.052 | 19.927 | 16.376 | 0.711 | 1.712 | 0.953 | 1.217 | 0.020 | 1 | 8.607 | 7.191 |
| 632 | 94.192 | 20.699 | 34.618 | 26.800 | 16.996 | 19.778 | 0.713 | 1.777 | 1.062 | 0.859 | 0.018 | 1 | 9.618 | 7.984 |
| 633 | 86.595 | 20.935 | 34.717 | 29.440 | 18.024 | 17.197 | 0.726 | 1.682 | 1.015 | 1.048 | 0.021 | 1 | 9.275 | 7.777 |
| 634 | 93.598 | 19.807 | 39.344 | 24.863 | 18.714 | 17.081 | 0.731 | 1.807 | 0.910 | 1.096 | 0.018 | 1 | 5.800 | 4.148 |
| 635 | 81.630 | 18.011 | 35.764 | 24.333 | 18.297 | 18.440 | 0.809 | 2.040 | 1.027 | 0.992 | 0.022 | 1 | 5.243 | 3.720 |
| 636 | 92.054 | 18.376 | 37.636 | 29.512 | 16.997 | 19.968 | 0.774 | 2.012 | 0.982 | 0.851 | 0.020 | 1 | 6.414 | 4.534 |
| 637 | 87.123 | 18.968 | 32.861 | 26.894 | 18.652 | 17.678 | 0.761 | 1.915 | 1.106 | 1.055 | 0.021 | 1 | 6.190 | 4.377 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 638 | 83.022 | 20.201 | 34.934 | 26.977 | 19.872 | 18.914 | 0.734 | 1.920 | 1.110 | 1.051 | 0.022 | 1 | 5.690 | 4.074 |
| 639 | 96.844 | 19.961 | 37.576 | 26.475 | 17.118 | 18.627 | 0.725 | 1.791 | 0.951 | 0.919 | 0.017 | 1 | 6.343 | 4.549 |
| 640 | 84.390 | 21.343 | 36.366 | 26.886 | 17.067 | 17.777 | 0.707 | 1.633 | 0.958 | 0.960 | 0.021 | 1 | 5.676 | 8.042 |
| 641 | 95.670 | 18.239 | 37.151 | 29.724 | 17.638 | 17.751 | 0.776 | 1.940 | 0.953 | 0.994 | 0.019 | 1 | 6.749 | 4.748 |
| 642 | 84.959 | 18.564 | 38.966 | 27.739 | 17.064 | 18.657 | 0.779 | 1.924 | 0.917 | 0.915 | 0.022 | 1 | 5.541 | 3.975 |
| 643 | 82.319 | 21.952 | 39.219 | 26.427 | 18.370 | 19.376 | 0.690 | 1.720 | 0.962 | 0.948 | 0.022 | 1 | 7.771 | 6.426 |
| 644 | 83.422 | 20.519 | 32.895 | 25.139 | 18.645 | 19.255 | 0.727 | 1.847 | 1.152 | 0.968 | 0.021 | 1 | 5.670 | 4.071 |
| 645 | 84.582 | 18.718 | 37.523 | 28.119 | 18.481 | 19.296 | 0.781 | 2.018 | 1.007 | 0.958 | 0.022 | 1 | 5.728 | 4.072 |
| 646 | 99.852 | 17.693 | 35.659 | 26.763 | 16.939 | 18.736 | 0.801 | 2.016 | 1.000 | 0.904 | 0.017 | -1 | 6.915 | 4.783 |
| 647 | 87.061 | 21.739 | 34.636 | 29.429 | 19.445 | 16.883 | 0.707 | 1.671 | 1.049 | 1.152 | 0.021 | 1 | 9.310 | 7.802 |
| 648 | 99.686 | 21.094 | 39.327 | 26.093 | 19.964 | 16.084 | 0.696 | 1.709 | 0.917 | 1.241 | 0.016 | 1 | 6.321 | 4.566 |
| 649 | 91.400 | 21.862 | 33.678 | 24.185 | 16.842 | 19.700 | 0.679 | 1.672 | 1.085 | 0.855 | 0.018 | 1 | 6.049 | 8.625 |
| 650 | 90.210 | 20.087 | 38.750 | 24.891 | 19.683 | 16.965 | 0.730 | 1.824 | 0.946 | 1.160 | 0.019 | 1 | 5.600 | 4.019 |
| 651 | 89.021 | 21.592 | 39.036 | 28.264 | 18.651 | 16.603 | 0.701 | 1.633 | 0.903 | 1.123 | 0.020 | 1 | 8.729 | 7.301 |
| 652 | 89.541 | 17.786 | 36.781 | 26.426 | 17.544 | 17.081 | 0.801 | 1.947 | 0.941 | 1.027 | 0.020 | 1 | 5.956 | 4.210 |
| 653 | 86.359 | 19.061 | 34.082 | 25.196 | 18.049 | 19.359 | 0.761 | 1.962 | 1.098 | 0.932 | 0.020 | 1 | 5.826 | 4.128 |
| 654 | 88.115 | 20.792 | 34.491 | 29.449 | 16.526 | 18.036 | 0.728 | 1.662 | 1.002 | 0.916 | 0.021 | 1 | 6.370 | 9.065 |
| 655 | 82.596 | 21.140 | 39.893 | 26.512 | 16.708 | 16.747 | 0.704 | 1.583 | 0.839 | 0.998 | 0.022 | 1 | 7.726 | 6.417 |
| 656 | 82.668 | 18.484 | 38.391 | 28.921 | 19.692 | 19.692 | 0.798 | 2.131 | 1.026 | 1.000 | 0.023 | 1 | 5.639 | 3.992 |
| 657 | 99.893 | 19.697 | 38.967 | 24.845 | 18.592 | 17.175 | 0.728 | 1.816 | 0.918 | 1.082 | 0.016 | 1 | 6.326 | 4.482 |
| 658 | 82.721 | 17.856 | 36.648 | 29.490 | 19.231 | 17.027 | 0.812 | 2.031 | 0.989 | 1.129 | 0.023 | 1 | 5.874 | 4.162 |
| 659 | 86.128 | 19.023 | 35.946 | 25.790 | 18.252 | 19.784 | 0.767 | 1.999 | 1.058 | 0.923 | 0.020 | 1 | 5.705 | 4.048 |
| 660 | 89.567 | 19.505 | 32.307 | 29.716 | 16.007 | 17.498 | 0.765 | 1.718 | 1.037 | 0.915 | 0.021 | 1 | 3.347 | 4.761 |
| 661 | 90.127 | 21.986 | 39.331 | 26.493 | 19.625 | 18.060 | 0.686 | 1.714 | 0.958 | 1.087 | 0.019 | 1 | 8.500 | 7.071 |
| 662 | 87.750 | 18.373 | 37.506 | 25.049 | 17.605 | 18.898 | 0.786 | 1.987 | 0.973 | 0.932 | 0.020 | 1 | 5.601 | 3.970 |
| 663 | 89.402 | 18.947 | 36.203 | 25.012 | 17.331 | 19.942 | 0.760 | 1.967 | 1.030 | 0.869 | 0.019 | 1 | 5.825 | 4.133 |
| 664 | 89.057 | 20.436 | 36.695 | 29.555 | 18.877 | 19.715 | 0.721 | 1.888 | 1.052 | 0.957 | 0.021 | 1 | 6.245 | 4.475 |
| 665 | 90.383 | 19.029 | 39.938 | 24.415 | 16.468 | 16.433 | 0.757 | 1.729 | 0.824 | 1.002 | 0.019 | 1 | 8.100 | 6.745 |
| 666 | 88.995 | 18.139 | 38.861 | 26.392 | 16.991 | 17.992 | 0.788 | 1.929 | 0.900 | 0.944 | 0.020 | 1 | 5.702 | 4.057 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 667 | 81.152 | 18.125 | 34.933 | 25.634 | 18.910 | 18.707 | 0.806 | 2.075 | 1.077 | 1.011 | 0.022 | 1 | 5.447 | 3.853 |
| 668 | 95.779 | 21.391 | 34.737 | 27.038 | 16.977 | 18.687 | 0.696 | 1.667 | 1.027 | 0.908 | 0.018 | 1 | 9.803 | 8.164 |
| 669 | 96.680 | 18.067 | 34.316 | 27.061 | 16.103 | 19.720 | 0.785 | 1.983 | 1.044 | 0.817 | 0.018 | -1 | 6.782 | 4.752 |
| 670 | 91.818 | 20.898 | 35.029 | 29.265 | 19.773 | 17.533 | 0.710 | 1.785 | 1.065 | 1.128 | 0.020 | 1 | 6.519 | 4.694 |
| 671 | 96.556 | 17.735 | 34.674 | 24.905 | 16.365 | 16.320 | 0.796 | 1.843 | 0.943 | 1.003 | 0.017 | -1 | 6.477 | 4.576 |
| 672 | 87.694 | 20.257 | 37.630 | 29.869 | 16.772 | 17.395 | 0.740 | 1.687 | 0.908 | 0.964 | 0.021 | 1 | 9.085 | 7.619 |
| 673 | 95.228 | 20.126 | 35.761 | 26.292 | 18.678 | 19.856 | 0.722 | 1.915 | 1.078 | 0.941 | 0.018 | 1 | 6.431 | 4.545 |
| 674 | 88.653 | 17.992 | 35.839 | 26.144 | 18.872 | 17.131 | 0.802 | 2.001 | 1.005 | 1.102 | 0.020 | 1 | 5.966 | 4.195 |
| 675 | 84.735 | 20.164 | 37.228 | 27.116 | 16.988 | 19.284 | 0.738 | 1.799 | 0.974 | 0.881 | 0.021 | 1 | 8.373 | 6.956 |
| 676 | 93.584 | 18.746 | 35.585 | 24.109 | 16.018 | 16.951 | 0.765 | 1.759 | 0.926 | 0.945 | 0.017 | 1 | 6.036 | 4.333 |
| 677 | 89.937 | 21.669 | 36.333 | 26.641 | 19.002 | 16.783 | 0.699 | 1.651 | 0.985 | 1.132 | 0.020 | 1 | 8.885 | 7.433 |
| 678 | 86.505 | 20.816 | 33.638 | 29.486 | 19.251 | 16.276 | 0.729 | 1.707 | 1.056 | 1.183 | 0.022 | 1 | 9.369 | 7.858 |
| 679 | 96.258 | 21.863 | 34.663 | 24.852 | 19.484 | 19.857 | 0.675 | 1.799 | 1.135 | 0.981 | 0.017 | 1 | 6.405 | 4.574 |
| 680 | 80.548 | 19.644 | 36.832 | 27.424 | 17.257 | 16.099 | 0.765 | 1.698 | 0.906 | 1.072 | 0.023 | 1 | 8.035 | 6.708 |
| 681 | 89.911 | 20.645 | 37.857 | 26.558 | 16.051 | 17.951 | 0.717 | 1.647 | 0.898 | 0.894 | 0.019 | 1 | 5.852 | 8.325 |
| 682 | 94.446 | 18.459 | 34.285 | 28.978 | 19.409 | 17.843 | 0.780 | 2.018 | 1.087 | 1.088 | 0.019 | 1 | 6.896 | 4.782 |
| 683 | 90.639 | 19.394 | 32.314 | 28.242 | 19.473 | 19.555 | 0.750 | 2.012 | 1.208 | 0.996 | 0.020 | 1 | 6.704 | 4.668 |
| 684 | 81.510 | 19.661 | 34.614 | 28.334 | 17.321 | 18.718 | 0.759 | 1.833 | 1.041 | 0.925 | 0.023 | 1 | 8.609 | 7.165 |
| 685 | 96.948 | 18.141 | 34.924 | 29.662 | 18.465 | 17.818 | 0.787 | 2.000 | 1.039 | 1.036 | 0.018 | -1 | 7.095 | 4.917 |
| 686 | 91.122 | 18.963 | 32.158 | 26.788 | 16.887 | 19.587 | 0.761 | 1.923 | 1.134 | 0.862 | 0.019 | -1 | 6.523 | 4.602 |
| 687 | 83.837 | 19.880 | 39.779 | 28.205 | 18.988 | 16.652 | 0.749 | 1.793 | 0.896 | 1.140 | 0.022 | 1 | 8.080 | 6.722 |
| 688 | 82.711 | 19.881 | 38.192 | 27.468 | 16.832 | 17.318 | 0.749 | 1.718 | 0.894 | 0.972 | 0.022 | 1 | 8.095 | 6.741 |
| 689 | 93.042 | 20.031 | 37.894 | 25.988 | 18.045 | 17.349 | 0.729 | 1.767 | 0.934 | 1.040 | 0.018 | 1 | 5.981 | 4.305 |
| 690 | 92.247 | 20.168 | 33.149 | 24.814 | 17.761 | 17.648 | 0.727 | 1.756 | 1.068 | 1.006 | 0.018 | 1 | 6.225 | 4.468 |
| 691 | 95.757 | 20.656 | 37.924 | 25.706 | 19.977 | 17.682 | 0.709 | 1.823 | 0.993 | 1.130 | 0.017 | 1 | 6.179 | 4.406 |
| 692 | 91.215 | 18.612 | 39.839 | 24.806 | 17.701 | 16.542 | 0.769 | 1.840 | 0.860 | 1.070 | 0.018 | 1 | 5.586 | 3.988 |
| 693 | 87.881 | 21.024 | 39.887 | 27.239 | 19.260 | 19.519 | 0.708 | 1.845 | 0.972 | 0.987 | 0.020 | 1 | 8.333 | 6.900 |
| 694 | 98.107 | 20.165 | 37.666 | 29.936 | 18.151 | 18.050 | 0.721 | 1.795 | 0.961 | 1.006 | 0.018 | 1 | 6.807 | 4.881 |
| 695 | 97.747 | 19.720 | 33.878 | 25.001 | 17.802 | 16.933 | 0.730 | 1.761 | 1.025 | 1.051 | 0.017 | 1 | 6.599 | 4.707 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|--------|
| 696 | 82.402 | 21.838 | 37.847 | 24.937 | 16.627 | 16.667 | 0.682 | 1.525 | 0.880 | 0.998 | 0.022 | 1 | 5.217 | 7.348 |
| 697 | 86.352 | 19.516 | 39.793 | 24.039 | 16.740 | 16.808 | 0.747 | 1.719 | 0.843 | 0.996 | 0.020 | 1 | 7.659 | 6.360 |
| 698 | 81.055 | 18.940 | 39.632 | 29.262 | 17.712 | 16.196 | 0.781 | 1.790 | 0.856 | 1.094 | 0.023 | 1 | 8.034 | 6.690 |
| 699 | 80.101 | 21.780 | 36.039 | 26.889 | 18.738 | 19.953 | 0.704 | 1.776 | 1.074 | 0.939 | 0.023 | 1 | 8.048 | 6.673 |
| 700 | 87.476 | 18.465 | 35.522 | 24.304 | 18.599 | 17.102 | 0.784 | 1.933 | 1.005 | 1.088 | 0.019 | 1 | 5.680 | 4.023 |
| 701 | 96.034 | 19.241 | 33.265 | 27.176 | 16.782 | 18.706 | 0.750 | 1.844 | 1.067 | 0.897 | 0.018 | -1 | 6.781 | 4.816 |
| 702 | 93.019 | 20.032 | 33.487 | 25.381 | 17.141 | 16.375 | 0.736 | 1.673 | 1.001 | 1.047 | 0.018 | 1 | 3.139 | 4.490 |
| 703 | 99.561 | 17.906 | 37.069 | 27.964 | 17.476 | 19.048 | 0.791 | 2.040 | 0.985 | 0.917 | 0.017 | 1 | 6.895 | 4.775 |
| 704 | 80.962 | 21.574 | 32.186 | 28.456 | 18.395 | 19.889 | 0.710 | 1.774 | 1.189 | 0.925 | 0.023 | 1 | 5.967 | 8.513 |
| 705 | 94.701 | 17.720 | 35.723 | 24.859 | 18.843 | 19.209 | 0.809 | 2.147 | 1.065 | 0.981 | 0.017 | 1 | 6.348 | 4.376 |
| 706 | 92.995 | 18.978 | 37.186 | 29.615 | 19.671 | 19.258 | 0.769 | 2.051 | 1.047 | 1.021 | 0.019 | 1 | 6.582 | 4.597 |
| 707 | 86.811 | 17.981 | 36.893 | 25.861 | 18.618 | 16.781 | 0.803 | 1.969 | 0.959 | 1.109 | 0.020 | 1 | 5.683 | 4.025 |
| 708 | 88.202 | 21.672 | 38.178 | 27.296 | 18.080 | 17.202 | 0.697 | 1.628 | 0.924 | 1.051 | 0.020 | 1 | 8.614 | 7.195 |
| 709 | 97.825 | 21.108 | 33.353 | 29.964 | 17.048 | 16.323 | 0.716 | 1.581 | 1.001 | 1.044 | 0.018 | 1 | 7.107 | 10.186 |
| 710 | 94.548 | 18.165 | 35.199 | 25.263 | 16.578 | 17.398 | 0.778 | 1.870 | 0.965 | 0.953 | 0.018 | -1 | 6.321 | 4.469 |
| 711 | 93.984 | 21.549 | 33.707 | 24.508 | 18.184 | 17.473 | 0.691 | 1.655 | 1.058 | 1.041 | 0.017 | 1 | 9.317 | 7.791 |
| 712 | 92.860 | 19.137 | 33.849 | 24.335 | 16.512 | 18.849 | 0.750 | 1.848 | 1.045 | 0.876 | 0.018 | 1 | 6.193 | 4.409 |
| 713 | 86.072 | 19.449 | 38.106 | 25.283 | 17.683 | 19.559 | 0.750 | 1.915 | 0.977 | 0.904 | 0.020 | 1 | 5.415 | 3.879 |
| 714 | 93.315 | 19.677 | 33.511 | 26.857 | 16.673 | 18.732 | 0.741 | 1.799 | 1.057 | 0.890 | 0.019 | 1 | 6.487 | 4.658 |
| 715 | 82.153 | 19.465 | 38.968 | 27.377 | 17.104 | 18.704 | 0.759 | 1.840 | 0.919 | 0.914 | 0.022 | 1 | 7.920 | 6.561 |
| 716 | 84.420 | 21.473 | 32.569 | 29.936 | 18.835 | 19.770 | 0.707 | 1.798 | 1.185 | 0.953 | 0.022 | 1 | 9.478 | 7.892 |
| 717 | 92.803 | 19.124 | 38.697 | 28.780 | 16.702 | 17.439 | 0.758 | 1.785 | 0.882 | 0.958 | 0.019 | 1 | 6.190 | 4.472 |
| 718 | 94.502 | 18.149 | 34.626 | 25.409 | 19.809 | 18.079 | 0.795 | 2.088 | 1.094 | 1.096 | 0.018 | 1 | 6.481 | 4.477 |
| 719 | 88.842 | 21.946 | 36.401 | 24.732 | 18.726 | 18.810 | 0.686 | 1.710 | 1.031 | 0.996 | 0.019 | 1 | 8.489 | 7.059 |
| 720 | 85.688 | 18.558 | 39.723 | 24.572 | 17.983 | 19.538 | 0.788 | 2.022 | 0.945 | 0.920 | 0.020 | 1 | 5.188 | 3.692 |
| 721 | 91.574 | 18.099 | 39.610 | 26.833 | 17.219 | 16.990 | 0.785 | 1.890 | 0.864 | 1.013 | 0.019 | 1 | 5.864 | 4.172 |
| 722 | 80.388 | 20.016 | 36.560 | 29.659 | 18.376 | 16.641 | 0.757 | 1.749 | 0.958 | 1.104 | 0.024 | 1 | 8.471 | 7.075 |
| 723 | 95.516 | 20.621 | 36.996 | 28.882 | 18.309 | 16.386 | 0.720 | 1.682 | 0.938 | 1.117 | 0.019 | 1 | 9.708 | 8.147 |
| 724 | 80.287 | 19.495 | 35.711 | 24.067 | 16.179 | 17.859 | 0.760 | 1.746 | 0.953 | 0.906 | 0.022 | 1 | 7.600 | 6.311 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 725 | 83.637 | 20.779 | 36.091 | 27.490 | 19.013 | 19.249 | 0.723 | 1.841 | 1.060 | 0.988 | 0.022 | 1 | 8.455 | 7.019 |
| 726 | 97.821 | 18.761 | 39.846 | 29.331 | 18.805 | 17.502 | 0.764 | 1.935 | 0.911 | 1.074 | 0.018 | 1 | 6.612 | 4.649 |
| 727 | 95.088 | 20.982 | 38.008 | 25.425 | 16.527 | 17.784 | 0.701 | 1.635 | 0.903 | 0.929 | 0.017 | 1 | 6.059 | 8.642 |
| 728 | 80.164 | 19.060 | 38.948 | 24.854 | 18.435 | 18.073 | 0.776 | 1.915 | 0.937 | 1.020 | 0.022 | 1 | 7.244 | 5.993 |
| 729 | 85.439 | 17.652 | 37.155 | 29.717 | 16.029 | 18.759 | 0.807 | 1.971 | 0.936 | 0.854 | 0.022 | 1 | 5.997 | 4.288 |
| 730 | 85.716 | 18.565 | 38.532 | 24.378 | 19.065 | 17.131 | 0.788 | 1.950 | 0.939 | 1.113 | 0.020 | 1 | 5.272 | 3.756 |
| 731 | 99.414 | 17.630 | 37.959 | 26.506 | 16.970 | 16.615 | 0.795 | 1.905 | 0.885 | 1.021 | 0.017 | -1 | 6.591 | 4.624 |
| 732 | 93.083 | 21.354 | 32.866 | 27.218 | 18.052 | 18.650 | 0.699 | 1.719 | 1.117 | 0.968 | 0.019 | 1 | 9.785 | 8.140 |
| 733 | 96.123 | 17.747 | 32.580 | 28.647 | 17.874 | 19.072 | 0.812 | 2.082 | 1.134 | 0.937 | 0.018 | -1 | 7.191 | 4.914 |
| 734 | 82.564 | 18.360 | 35.184 | 24.233 | 18.164 | 16.878 | 0.790 | 1.909 | 0.996 | 1.076 | 0.021 | 1 | 5.326 | 3.803 |
| 735 | 86.798 | 17.931 | 35.635 | 28.061 | 19.638 | 17.246 | 0.808 | 2.057 | 1.035 | 1.139 | 0.021 | 1 | 6.095 | 4.274 |
| 736 | 90.131 | 19.452 | 36.912 | 28.554 | 18.121 | 16.695 | 0.753 | 1.790 | 0.943 | 1.085 | 0.020 | 1 | 6.148 | 4.435 |
| 737 | 85.026 | 19.477 | 39.912 | 26.833 | 19.321 | 16.248 | 0.758 | 1.826 | 0.891 | 1.189 | 0.021 | 1 | 7.913 | 6.584 |
| 738 | 93.921 | 17.877 | 39.880 | 29.060 | 17.649 | 18.475 | 0.798 | 2.021 | 0.906 | 0.955 | 0.019 | 1 | 6.311 | 4.433 |
| 739 | 89.487 | 21.659 | 37.090 | 27.069 | 18.448 | 18.303 | 0.695 | 1.697 | 0.991 | 1.008 | 0.020 | 1 | 8.844 | 7.373 |
| 740 | 93.214 | 19.052 | 33.548 | 28.607 | 17.020 | 19.445 | 0.754 | 1.914 | 1.087 | 0.875 | 0.019 | -1 | 6.743 | 4.771 |
| 741 | 99.183 | 21.093 | 39.460 | 27.493 | 17.805 | 18.353 | 0.696 | 1.714 | 0.916 | 0.970 | 0.017 | 1 | 6.407 | 4.641 |
| 742 | 99.918 | 19.297 | 37.217 | 29.003 | 19.106 | 19.541 | 0.751 | 2.003 | 1.038 | 0.978 | 0.017 | 1 | 7.006 | 4.871 |
| 743 | 81.175 | 18.252 | 38.641 | 26.802 | 18.732 | 16.170 | 0.800 | 1.912 | 0.903 | 1.158 | 0.023 | 1 | 5.192 | 3.735 |
| 744 | 82.557 | 18.128 | 39.253 | 28.733 | 17.919 | 19.770 | 0.804 | 2.079 | 0.960 | 0.906 | 0.023 | 1 | 5.506 | 3.920 |
| 745 | 90.820 | 17.931 | 37.300 | 27.766 | 18.926 | 16.963 | 0.802 | 2.001 | 0.962 | 1.116 | 0.020 | 1 | 6.178 | 4.339 |
| 746 | 82.752 | 20.098 | 33.304 | 27.437 | 17.662 | 17.072 | 0.750 | 1.728 | 1.043 | 1.035 | 0.022 | 1 | 8.715 | 7.287 |
| 747 | 84.500 | 19.260 | 33.872 | 24.077 | 18.733 | 16.488 | 0.762 | 1.829 | 1.040 | 1.136 | 0.020 | 1 | 5.544 | 3.976 |
| 748 | 84.208 | 21.779 | 39.521 | 25.139 | 18.274 | 19.673 | 0.690 | 1.742 | 0.960 | 0.929 | 0.021 | 1 | 7.695 | 6.360 |
| 749 | 84.862 | 21.667 | 32.274 | 29.956 | 17.947 | 18.660 | 0.709 | 1.690 | 1.134 | 0.962 | 0.022 | 1 | 6.409 | 9.135 |
| 750 | 94.195 | 19.108 | 38.770 | 28.218 | 19.479 | 18.951 | 0.764 | 2.011 | 0.991 | 1.028 | 0.019 | 1 | 6.336 | 4.446 |
| 751 | 98.547 | 20.393 | 36.632 | 26.500 | 19.109 | 17.658 | 0.709 | 1.803 | 1.004 | 1.082 | 0.017 | 1 | 6.583 | 4.684 |
| 752 | 97.535 | 21.874 | 35.860 | 26.139 | 19.332 | 17.789 | 0.680 | 1.697 | 1.035 | 1.087 | 0.017 | 1 | 6.463 | 4.680 |
| 753 | 86.427 | 17.959 | 38.990 | 28.787 | 17.299 | 16.536 | 0.799 | 1.884 | 0.868 | 1.046 | 0.021 | 1 | 5.765 | 4.136 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 754 | 83.084 | 18.156 | 35.756 | 28.931 | 19.263 | 19.442 | 0.804 | 2.132 | 1.082 | 0.991 | 0.023 | 1 | 5.938 | 4.173 |
| 755 | 86.342 | 20.775 | 32.036 | 27.723 | 16.434 | 18.335 | 0.727 | 1.674 | 1.085 | 0.896 | 0.021 | 1 | 6.224 | 8.894 |
| 756 | 82.722 | 20.711 | 36.798 | 27.405 | 19.628 | 16.888 | 0.732 | 1.763 | 0.992 | 1.162 | 0.022 | 1 | 8.221 | 6.854 |
| 757 | 88.331 | 20.907 | 38.819 | 28.650 | 16.071 | 17.689 | 0.714 | 1.615 | 0.870 | 0.909 | 0.021 | 1 | 5.923 | 8.404 |
| 758 | 82.831 | 19.318 | 32.921 | 26.142 | 17.755 | 18.693 | 0.759 | 1.887 | 1.107 | 0.950 | 0.022 | 1 | 5.763 | 4.119 |
| 759 | 82.363 | 20.190 | 39.466 | 24.691 | 16.695 | 16.935 | 0.731 | 1.666 | 0.852 | 0.986 | 0.021 | 1 | 7.424 | 6.154 |
| 760 | 88.281 | 19.460 | 32.873 | 29.210 | 16.487 | 19.369 | 0.755 | 1.843 | 1.091 | 0.851 | 0.021 | 1 | 3.278 | 4.632 |
| 761 | 98.582 | 21.894 | 34.901 | 24.855 | 19.521 | 18.724 | 0.674 | 1.747 | 1.096 | 1.043 | 0.016 | 1 | 6.538 | 4.683 |
| 762 | 98.916 | 17.770 | 32.437 | 26.648 | 19.236 | 18.234 | 0.811 | 2.109 | 1.155 | 1.055 | 0.017 | -1 | 7.203 | 4.893 |
| 763 | 80.029 | 20.734 | 39.566 | 28.890 | 16.792 | 19.130 | 0.724 | 1.732 | 0.908 | 0.878 | 0.024 | 1 | 7.961 | 6.596 |
| 764 | 98.537 | 19.815 | 35.643 | 29.686 | 19.524 | 18.768 | 0.732 | 1.932 | 1.074 | 1.040 | 0.018 | 1 | 7.100 | 4.967 |
| 765 | 87.885 | 17.640 | 35.139 | 26.880 | 16.569 | 17.257 | 0.802 | 1.918 | 0.963 | 0.960 | 0.020 | 1 | 6.024 | 4.275 |
| 766 | 96.388 | 21.038 | 36.994 | 28.726 | 17.029 | 16.478 | 0.712 | 1.593 | 0.906 | 1.033 | 0.018 | 1 | 6.585 | 9.405 |
| 767 | 99.205 | 19.665 | 37.249 | 29.600 | 18.039 | 17.352 | 0.732 | 1.800 | 0.950 | 1.040 | 0.018 | 1 | 6.898 | 4.926 |
| 768 | 81.139 | 21.245 | 36.680 | 24.068 | 16.139 | 19.251 | 0.699 | 1.666 | 0.965 | 0.838 | 0.022 | 1 | 5.107 | 7.223 |
| 769 | 97.143 | 20.654 | 35.202 | 27.619 | 17.300 | 19.410 | 0.710 | 1.777 | 1.043 | 0.891 | 0.018 | 1 | 6.674 | 4.807 |
| 770 | 87.370 | 19.846 | 32.797 | 27.384 | 18.992 | 16.220 | 0.745 | 1.774 | 1.074 | 1.171 | 0.021 | 1 | 6.187 | 4.463 |
| 771 | 93.699 | 19.853 | 36.694 | 29.146 | 19.666 | 18.288 | 0.734 | 1.912 | 1.034 | 1.075 | 0.019 | 1 | 6.563 | 4.642 |
| 772 | 94.557 | 18.243 | 38.571 | 27.948 | 17.025 | 19.118 | 0.779 | 1.981 | 0.937 | 0.891 | 0.019 | 1 | 6.330 | 4.462 |
| 773 | 84.948 | 21.279 | 33.528 | 26.636 | 18.461 | 19.311 | 0.710 | 1.775 | 1.127 | 0.956 | 0.021 | 1 | 8.788 | 7.313 |
| 774 | 98.553 | 20.568 | 36.567 | 25.610 | 17.024 | 16.140 | 0.715 | 1.612 | 0.907 | 1.055 | 0.017 | 1 | 9.565 | 8.040 |
| 775 | 98.770 | 18.229 | 32.341 | 24.141 | 16.316 | 18.384 | 0.791 | 1.904 | 1.073 | 0.887 | 0.016 | -1 | 6.819 | 4.758 |
| 776 | 95.578 | 19.576 | 37.919 | 28.524 | 17.664 | 18.301 | 0.737 | 1.837 | 0.948 | 0.965 | 0.018 | 1 | 6.467 | 4.619 |
| 777 | 95.093 | 20.147 | 38.316 | 29.412 | 16.965 | 18.599 | 0.728 | 1.765 | 0.928 | 0.912 | 0.019 | 1 | 6.435 | 4.666 |
| 778 | 98.698 | 20.477 | 38.539 | 27.623 | 16.563 | 18.298 | 0.715 | 1.702 | 0.905 | 0.905 | 0.017 | 1 | 9.678 | 8.077 |
| 779 | 98.618 | 20.636 | 39.901 | 28.747 | 19.545 | 19.345 | 0.708 | 1.885 | 0.975 | 1.010 | 0.018 | 1 | 6.560 | 4.651 |
| 780 | 86.812 | 19.134 | 32.343 | 25.848 | 19.825 | 17.865 | 0.762 | 1.970 | 1.165 | 1.110 | 0.020 | 1 | 6.112 | 4.301 |
| 781 | 84.062 | 21.024 | 34.532 | 28.596 | 19.389 | 17.919 | 0.721 | 1.774 | 1.080 | 1.082 | 0.022 | 1 | 8.885 | 7.409 |
| 782 | 86.136 | 18.195 | 33.465 | 26.121 | 18.086 | 19.639 | 0.791 | 2.073 | 1.127 | 0.921 | 0.021 | 1 | 6.019 | 4.213 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 783 | 93.889 | 21.479 | 39.348 | 25.913 | 19.325 | 19.632 | 0.688 | 1.814 | 0.990 | 0.984 | 0.018 | 1 | 8.798 | 7.292 |
| 784 | 84.188 | 19.585 | 35.479 | 26.077 | 17.066 | 19.510 | 0.753 | 1.868 | 1.031 | 0.875 | 0.021 | 1 | 8.352 | 6.932 |
| 785 | 88.540 | 19.267 | 38.910 | 27.256 | 19.473 | 16.423 | 0.756 | 1.863 | 0.923 | 1.186 | 0.020 | 1 | 5.736 | 4.111 |
| 786 | 96.271 | 19.743 | 35.613 | 25.534 | 18.609 | 19.489 | 0.734 | 1.930 | 1.070 | 0.955 | 0.017 | 1 | 6.460 | 4.542 |
| 787 | 89.174 | 18.574 | 37.921 | 26.637 | 17.541 | 17.965 | 0.773 | 1.912 | 0.936 | 0.976 | 0.020 | 1 | 5.825 | 4.146 |
| 788 | 84.458 | 20.816 | 35.975 | 28.726 | 16.236 | 17.065 | 0.728 | 1.600 | 0.926 | 0.951 | 0.022 | 1 | 5.927 | 8.415 |
| 789 | 92.901 | 21.065 | 34.946 | 26.126 | 19.622 | 19.275 | 0.698 | 1.847 | 1.113 | 1.018 | 0.018 | 1 | 6.285 | 4.479 |
| 790 | 89.075 | 18.193 | 37.765 | 29.273 | 17.187 | 19.060 | 0.785 | 1.992 | 0.960 | 0.902 | 0.021 | 1 | 6.160 | 4.368 |
| 791 | 80.511 | 19.200 | 37.127 | 27.204 | 17.492 | 16.822 | 0.774 | 1.787 | 0.924 | 1.040 | 0.023 | 1 | 7.944 | 6.611 |
| 792 | 92.690 | 21.594 | 36.498 | 25.913 | 18.972 | 19.994 | 0.688 | 1.805 | 1.068 | 0.949 | 0.018 | 1 | 6.073 | 4.368 |
| 793 | 96.718 | 18.697 | 35.904 | 28.861 | 16.405 | 17.141 | 0.767 | 1.794 | 0.934 | 0.957 | 0.018 | 1 | 6.741 | 4.836 |
| 794 | 96.591 | 21.713 | 34.221 | 26.976 | 16.415 | 16.942 | 0.689 | 1.536 | 0.975 | 0.969 | 0.018 | 1 | 6.632 | 9.487 |
| 795 | 82.883 | 19.747 | 39.736 | 26.447 | 17.391 | 17.937 | 0.748 | 1.789 | 0.889 | 0.970 | 0.022 | 1 | 7.720 | 6.396 |
| 796 | 89.775 | 21.205 | 36.730 | 25.613 | 19.200 | 16.894 | 0.708 | 1.702 | 0.983 | 1.137 | 0.019 | 1 | 8.633 | 7.207 |
| 797 | 82.258 | 18.577 | 35.814 | 29.280 | 18.054 | 17.699 | 0.783 | 1.925 | 0.998 | 1.020 | 0.023 | 1 | 5.852 | 4.189 |
| 798 | 90.431 | 20.023 | 35.793 | 29.767 | 19.924 | 16.613 | 0.733 | 1.825 | 1.021 | 1.199 | 0.020 | 1 | 6.435 | 4.619 |
| 799 | 97.717 | 20.566 | 32.785 | 24.989 | 19.866 | 17.804 | 0.707 | 1.832 | 1.149 | 1.116 | 0.017 | 1 | 6.739 | 4.755 |
| 800 | 99.924 | 21.111 | 32.366 | 26.905 | 16.636 | 18.995 | 0.699 | 1.688 | 1.101 | 0.876 | 0.017 | 1 | 3.584 | 5.044 |
| 801 | 81.986 | 20.906 | 32.470 | 28.623 | 17.967 | 17.132 | 0.735 | 1.679 | 1.081 | 1.049 | 0.023 | 1 | 6.009 | 8.594 |
| 802 | 89.279 | 21.241 | 36.813 | 27.494 | 17.888 | 17.930 | 0.707 | 1.686 | 0.973 | 0.998 | 0.020 | 1 | 8.931 | 7.459 |
| 803 | 80.385 | 18.820 | 34.578 | 24.497 | 17.458 | 19.173 | 0.776 | 1.946 | 1.059 | 0.911 | 0.022 | 1 | 5.251 | 3.758 |
| 804 | 98.168 | 17.801 | 38.121 | 25.226 | 18.283 | 19.658 | 0.804 | 2.131 | 0.995 | 0.930 | 0.017 | 1 | 6.422 | 4.432 |
| 805 | 86.057 | 21.323 | 34.432 | 28.798 | 16.203 | 19.634 | 0.710 | 1.681 | 1.041 | 0.825 | 0.021 | 1 | 6.196 | 8.779 |
| 806 | 86.390 | 18.335 | 38.125 | 29.992 | 16.518 | 16.633 | 0.794 | 1.808 | 0.870 | 0.993 | 0.022 | 1 | 5.946 | 4.315 |
| 807 | 87.706 | 18.936 | 37.682 | 26.931 | 18.123 | 18.553 | 0.767 | 1.937 | 0.973 | 0.977 | 0.020 | 1 | 5.777 | 4.113 |
| 808 | 97.859 | 17.634 | 38.722 | 29.615 | 19.935 | 17.879 | 0.814 | 2.144 | 0.977 | 1.115 | 0.018 | 1 | 6.855 | 4.705 |
| 809 | 89.826 | 21.352 | 36.026 | 25.628 | 16.990 | 16.905 | 0.701 | 1.587 | 0.941 | 1.005 | 0.019 | 1 | 5.894 | 8.396 |
| 810 | 97.087 | 21.572 | 38.091 | 24.321 | 19.565 | 19.848 | 0.681 | 1.827 | 1.035 | 0.986 | 0.017 | 1 | 6.120 | 4.364 |
| 811 | 85.443 | 21.049 | 39.930 | 27.793 | 18.729 | 17.711 | 0.714 | 1.731 | 0.913 | 1.057 | 0.021 | 1 | 8.182 | 6.799 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 812 | 98.168 | 20.896 | 35.912 | 25.969 | 19.675 | 17.785 | 0.697 | 1.793 | 1.043 | 1.106 | 0.017 | 1 | 6.558 | 4.672 |
| 813 | 81.342 | 21.254 | 32.344 | 26.107 | 18.214 | 19.652 | 0.715 | 1.782 | 1.171 | 0.927 | 0.022 | 1 | 5.667 | 8.103 |
| 814 | 86.264 | 20.567 | 39.587 | 28.026 | 17.817 | 17.581 | 0.726 | 1.721 | 0.894 | 1.013 | 0.021 | 1 | 8.353 | 6.952 |
| 815 | 95.806 | 18.258 | 35.423 | 27.379 | 18.561 | 19.171 | 0.787 | 2.067 | 1.065 | 0.968 | 0.018 | 1 | 6.714 | 4.645 |
| 816 | 91.588 | 19.045 | 39.452 | 24.291 | 19.373 | 16.136 | 0.763 | 1.864 | 0.900 | 1.201 | 0.018 | 1 | 5.601 | 3.991 |
| 817 | 88.849 | 21.678 | 34.243 | 29.647 | 16.929 | 17.090 | 0.706 | 1.569 | 0.993 | 0.991 | 0.021 | 1 | 6.471 | 9.202 |
| 818 | 95.887 | 21.135 | 33.005 | 28.377 | 18.603 | 18.220 | 0.701 | 1.742 | 1.116 | 1.021 | 0.018 | 1 | 6.866 | 4.942 |
| 819 | 84.948 | 20.274 | 37.525 | 24.028 | 16.816 | 17.715 | 0.729 | 1.703 | 0.920 | 0.949 | 0.020 | 1 | 7.831 | 6.506 |
| 820 | 91.430 | 18.366 | 34.117 | 27.936 | 18.190 | 17.828 | 0.779 | 1.961 | 1.056 | 1.020 | 0.019 | 1 | 6.532 | 4.579 |
| 821 | 88.285 | 20.909 | 35.346 | 27.325 | 18.853 | 16.445 | 0.722 | 1.688 | 0.999 | 1.146 | 0.020 | 1 | 8.945 | 7.489 |
| 822 | 92.490 | 20.541 | 35.255 | 29.631 | 19.291 | 16.040 | 0.725 | 1.720 | 1.002 | 1.203 | 0.020 | 1 | 6.535 | 4.761 |
| 823 | 90.470 | 19.868 | 37.866 | 25.372 | 18.106 | 19.883 | 0.733 | 1.912 | 1.003 | 0.911 | 0.019 | 1 | 5.773 | 4.117 |
| 824 | 99.329 | 19.617 | 34.698 | 26.868 | 18.077 | 19.385 | 0.734 | 1.910 | 1.080 | 0.933 | 0.017 | -1 | 6.911 | 4.847 |
| 825 | 90.785 | 20.918 | 35.041 | 25.139 | 19.867 | 18.446 | 0.706 | 1.832 | 1.093 | 1.077 | 0.019 | 1 | 6.008 | 4.296 |
| 826 | 94.679 | 17.948 | 32.758 | 28.271 | 16.787 | 18.694 | 0.801 | 1.977 | 1.083 | 0.898 | 0.019 | -1 | 6.951 | 4.834 |
| 827 | 88.914 | 20.924 | 37.344 | 29.585 | 17.957 | 19.473 | 0.715 | 1.789 | 1.002 | 0.922 | 0.021 | 1 | 9.207 | 7.665 |
| 828 | 92.735 | 19.678 | 37.000 | 26.906 | 17.271 | 16.466 | 0.745 | 1.714 | 0.912 | 1.049 | 0.019 | 1 | 6.100 | 4.430 |
| 829 | 90.180 | 20.214 | 37.482 | 25.254 | 19.516 | 16.833 | 0.728 | 1.798 | 0.970 | 1.159 | 0.019 | 1 | 5.740 | 4.129 |
| 830 | 80.629 | 20.470 | 36.455 | 24.261 | 17.037 | 18.721 | 0.731 | 1.747 | 0.981 | 0.910 | 0.022 | 1 | 7.581 | 6.282 |
| 831 | 83.273 | 18.088 | 37.119 | 24.634 | 16.308 | 17.039 | 0.799 | 1.844 | 0.898 | 0.957 | 0.021 | 1 | 5.222 | 3.755 |
| 832 | 92.423 | 17.606 | 32.846 | 24.972 | 19.800 | 19.364 | 0.813 | 2.224 | 1.192 | 1.022 | 0.018 | 1 | 6.487 | 4.433 |
| 833 | 90.495 | 19.891 | 34.589 | 25.252 | 18.509 | 17.853 | 0.733 | 1.828 | 1.051 | 1.037 | 0.019 | 1 | 6.047 | 4.316 |
| 834 | 95.586 | 18.418 | 32.801 | 26.297 | 16.526 | 17.042 | 0.778 | 1.822 | 1.023 | 0.970 | 0.018 | -1 | 6.702 | 4.751 |
| 835 | 90.482 | 20.417 | 37.620 | 29.531 | 19.013 | 19.396 | 0.720 | 1.881 | 1.021 | 0.980 | 0.020 | 1 | 6.257 | 4.481 |
| 836 | 89.986 | 20.682 | 33.074 | 26.345 | 16.981 | 16.503 | 0.726 | 1.619 | 1.012 | 1.029 | 0.019 | 1 | 6.188 | 8.874 |
| 837 | 93.450 | 20.881 | 37.047 | 29.385 | 16.220 | 19.761 | 0.714 | 1.723 | 0.971 | 0.821 | 0.019 | 1 | 9.676 | 8.065 |
| 838 | 99.368 | 17.754 | 38.765 | 27.054 | 19.777 | 18.459 | 0.810 | 2.154 | 0.986 | 1.071 | 0.017 | 1 | 6.671 | 4.576 |
| 839 | 88.920 | 17.829 | 37.539 | 27.578 | 19.341 | 19.115 | 0.814 | 2.157 | 1.024 | 1.012 | 0.020 | 1 | 6.031 | 4.206 |
| 840 | 95.339 | 19.660 | 34.536 | 25.911 | 16.920 | 17.941 | 0.738 | 1.773 | 1.009 | 0.943 | 0.018 | 1 | 6.442 | 4.620 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 841 | 85.960 | 21.203 | 33.308 | 29.820 | 16.187 | 16.318 | 0.726 | 1.533 | 0.976 | 0.992 | 0.022 | 1 | 6.379 | 9.082 |
| 842 | 93.858 | 19.737 | 36.833 | 26.438 | 16.854 | 19.160 | 0.735 | 1.825 | 0.978 | 0.880 | 0.018 | 1 | 6.193 | 4.443 |
| 843 | 85.914 | 17.955 | 32.835 | 25.622 | 19.472 | 18.025 | 0.804 | 2.088 | 1.142 | 1.080 | 0.020 | 1 | 6.015 | 4.196 |
| 844 | 84.215 | 21.220 | 35.102 | 25.410 | 18.012 | 18.868 | 0.711 | 1.738 | 1.051 | 0.955 | 0.021 | 1 | 8.305 | 6.906 |
| 845 | 87.639 | 17.612 | 36.587 | 29.896 | 19.610 | 16.297 | 0.815 | 2.039 | 0.981 | 1.203 | 0.021 | 1 | 6.291 | 4.416 |
| 846 | 90.517 | 18.179 | 38.009 | 24.836 | 16.858 | 18.214 | 0.785 | 1.929 | 0.923 | 0.926 | 0.019 | 1 | 5.728 | 4.061 |
| 847 | 85.236 | 21.388 | 39.733 | 29.304 | 16.005 | 18.712 | 0.698 | 1.623 | 0.874 | 0.855 | 0.022 | 1 | 5.752 | 8.120 |
| 848 | 85.670 | 18.813 | 32.657 | 26.687 | 18.440 | 19.107 | 0.769 | 1.996 | 1.150 | 0.965 | 0.021 | 1 | 6.107 | 4.295 |
| 849 | 98.292 | 20.450 | 35.867 | 25.365 | 18.855 | 18.974 | 0.708 | 1.850 | 1.055 | 0.994 | 0.017 | 1 | 6.539 | 4.626 |
| 850 | 97.869 | 18.686 | 32.808 | 28.366 | 17.431 | 17.073 | 0.771 | 1.846 | 1.052 | 1.021 | 0.018 | -1 | 7.117 | 5.015 |
| 851 | 94.602 | 18.931 | 37.722 | 24.304 | 17.447 | 16.022 | 0.756 | 1.768 | 0.887 | 1.089 | 0.017 | 1 | 5.955 | 4.262 |
| 852 | 89.578 | 20.718 | 32.099 | 24.942 | 17.678 | 18.614 | 0.716 | 1.752 | 1.131 | 0.950 | 0.019 | 1 | 3.087 | 4.382 |
| 853 | 85.419 | 20.095 | 34.895 | 27.652 | 18.953 | 17.637 | 0.739 | 1.821 | 1.049 | 1.075 | 0.021 | 1 | 5.910 | 4.258 |
| 854 | 89.013 | 18.319 | 38.264 | 24.123 | 18.252 | 19.071 | 0.792 | 2.037 | 0.975 | 0.957 | 0.019 | 1 | 5.541 | 3.909 |
| 855 | 93.175 | 19.651 | 32.559 | 29.600 | 17.725 | 16.555 | 0.747 | 1.744 | 1.053 | 1.071 | 0.019 | 1 | 6.850 | 4.947 |
| 856 | 94.134 | 20.885 | 36.347 | 25.983 | 17.988 | 16.978 | 0.710 | 1.674 | 0.962 | 1.060 | 0.018 | 1 | 9.202 | 7.700 |
| 857 | 91.720 | 19.414 | 35.186 | 27.097 | 19.096 | 19.077 | 0.751 | 1.966 | 1.085 | 1.001 | 0.019 | 1 | 6.344 | 4.464 |
| 858 | 89.118 | 20.433 | 32.925 | 27.437 | 18.540 | 16.926 | 0.730 | 1.736 | 1.077 | 1.095 | 0.020 | 1 | 6.281 | 4.550 |
| 859 | 99.061 | 21.724 | 39.264 | 24.708 | 17.675 | 18.174 | 0.677 | 1.650 | 0.913 | 0.973 | 0.016 | 1 | 9.183 | 7.664 |
| 860 | 93.354 | 18.191 | 37.329 | 27.471 | 17.921 | 16.920 | 0.782 | 1.915 | 0.933 | 1.059 | 0.019 | 1 | 6.294 | 4.445 |
| 861 | 82.586 | 17.807 | 35.017 | 28.208 | 18.143 | 19.099 | 0.811 | 2.091 | 1.064 | 0.950 | 0.023 | 1 | 5.871 | 4.135 |
| 862 | 82.919 | 18.736 | 35.856 | 27.115 | 18.554 | 16.239 | 0.782 | 1.857 | 0.970 | 1.143 | 0.022 | 1 | 5.599 | 4.028 |
| 863 | 96.812 | 18.489 | 33.124 | 26.940 | 18.550 | 17.495 | 0.777 | 1.950 | 1.088 | 1.060 | 0.018 | -1 | 6.921 | 4.809 |
| 864 | 84.572 | 18.086 | 38.994 | 24.173 | 17.818 | 19.796 | 0.805 | 2.080 | 0.965 | 0.900 | 0.020 | 1 | 5.140 | 3.648 |
| 865 | 93.606 | 21.663 | 36.435 | 24.912 | 16.115 | 18.009 | 0.682 | 1.575 | 0.937 | 0.895 | 0.018 | 1 | 6.036 | 8.612 |
| 866 | 82.228 | 20.934 | 33.637 | 26.697 | 17.091 | 18.994 | 0.724 | 1.724 | 1.073 | 0.900 | 0.022 | 1 | 5.717 | 8.138 |
| 867 | 84.928 | 17.699 | 36.693 | 24.651 | 19.517 | 17.395 | 0.821 | 2.086 | 1.006 | 1.122 | 0.020 | 1 | 5.451 | 3.842 |
| 868 | 95.948 | 21.043 | 32.304 | 25.214 | 17.306 | 17.090 | 0.704 | 1.635 | 1.065 | 1.013 | 0.017 | 1 | 3.284 | 4.697 |
| 869 | 98.061 | 19.609 | 36.249 | 29.804 | 19.699 | 16.127 | 0.730 | 1.827 | 0.988 | 1.221 | 0.018 | 1 | 6.956 | 4.942 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 870 | 93.421 | 19.581 | 35.362 | 25.702 | 16.988 | 19.055 | 0.739 | 1.841 | 1.019 | 0.892 | 0.018 | 1 | 6.230 | 4.450 |
| 871 | 83.350 | 21.165 | 38.786 | 24.488 | 19.157 | 18.508 | 0.712 | 1.780 | 0.971 | 1.035 | 0.021 | 1 | 7.555 | 6.259 |
| 872 | 93.955 | 19.811 | 34.238 | 29.320 | 16.805 | 17.925 | 0.743 | 1.753 | 1.014 | 0.938 | 0.019 | 1 | 10.032 | 8.352 |
| 873 | 94.432 | 19.357 | 33.034 | 25.395 | 19.744 | 17.277 | 0.749 | 1.913 | 1.121 | 1.143 | 0.018 | 1 | 6.551 | 4.594 |
| 874 | 84.949 | 20.131 | 39.643 | 24.880 | 18.619 | 17.672 | 0.736 | 1.803 | 0.915 | 1.054 | 0.021 | 1 | 7.653 | 6.345 |
| 875 | 80.969 | 17.611 | 33.490 | 26.641 | 16.962 | 18.724 | 0.811 | 2.026 | 1.066 | 0.906 | 0.023 | 1 | 5.688 | 4.023 |
| 876 | 90.891 | 18.662 | 38.789 | 24.076 | 19.023 | 16.553 | 0.777 | 1.906 | 0.917 | 1.149 | 0.018 | 1 | 5.604 | 3.976 |
| 877 | 93.890 | 18.554 | 34.134 | 29.367 | 16.764 | 16.292 | 0.777 | 1.782 | 0.968 | 1.029 | 0.019 | 1 | 6.753 | 4.856 |
| 878 | 94.831 | 20.588 | 33.607 | 25.461 | 17.399 | 18.977 | 0.712 | 1.767 | 1.082 | 0.917 | 0.018 | 1 | 6.433 | 4.620 |
| 879 | 83.117 | 19.525 | 35.152 | 24.093 | 18.843 | 16.693 | 0.758 | 1.820 | 1.011 | 1.129 | 0.021 | 1 | 5.320 | 3.833 |
| 880 | 92.372 | 21.844 | 39.967 | 27.171 | 18.455 | 19.859 | 0.682 | 1.754 | 0.959 | 0.929 | 0.019 | 1 | 8.794 | 7.297 |
| 881 | 87.805 | 19.638 | 38.654 | 27.818 | 18.438 | 18.513 | 0.744 | 1.882 | 0.956 | 0.996 | 0.021 | 1 | 5.773 | 4.140 |
| 882 | 98.155 | 21.955 | 39.896 | 28.405 | 17.281 | 17.484 | 0.680 | 1.583 | 0.871 | 0.988 | 0.018 | 1 | 6.453 | 9.177 |
| 883 | 99.075 | 20.802 | 37.389 | 25.871 | 18.622 | 19.322 | 0.697 | 1.824 | 1.015 | 0.964 | 0.017 | 1 | 6.490 | 4.617 |
| 884 | 84.837 | 17.627 | 38.797 | 25.650 | 18.888 | 18.862 | 0.826 | 2.142 | 0.973 | 1.001 | 0.021 | 1 | 5.364 | 3.783 |
| 885 | 95.243 | 18.280 | 36.468 | 28.514 | 17.107 | 19.287 | 0.775 | 1.991 | 0.998 | 0.887 | 0.019 | 1 | 6.650 | 4.666 |
| 886 | 94.584 | 21.083 | 35.668 | 27.655 | 16.259 | 17.590 | 0.708 | 1.605 | 0.949 | 0.924 | 0.018 | 1 | 6.464 | 9.224 |
| 887 | 89.565 | 20.404 | 36.080 | 26.294 | 19.535 | 17.277 | 0.725 | 1.804 | 1.020 | 1.131 | 0.019 | 1 | 5.936 | 4.268 |
| 888 | 83.044 | 19.556 | 34.320 | 29.162 | 18.895 | 16.213 | 0.762 | 1.795 | 1.023 | 1.165 | 0.023 | 1 | 5.967 | 4.329 |
| 889 | 90.461 | 18.239 | 39.214 | 24.140 | 19.278 | 19.473 | 0.799 | 2.125 | 0.988 | 0.990 | 0.018 | 1 | 5.583 | 3.917 |
| 890 | 95.845 | 21.124 | 39.596 | 27.381 | 19.863 | 17.077 | 0.699 | 1.749 | 0.933 | 1.163 | 0.018 | 1 | 6.163 | 4.451 |
| 891 | 94.258 | 19.601 | 36.372 | 28.223 | 19.734 | 16.479 | 0.737 | 1.848 | 0.996 | 1.197 | 0.019 | 1 | 6.497 | 4.621 |
| 892 | 97.570 | 19.702 | 38.592 | 27.214 | 17.340 | 17.695 | 0.732 | 1.778 | 0.908 | 0.980 | 0.017 | 1 | 6.383 | 4.578 |
| 893 | 90.416 | 19.812 | 39.295 | 27.549 | 19.121 | 16.933 | 0.739 | 1.820 | 0.918 | 1.129 | 0.020 | 1 | 5.851 | 4.207 |
| 894 | 93.241 | 19.978 | 38.871 | 29.236 | 18.664 | 18.606 | 0.727 | 1.866 | 0.959 | 1.003 | 0.019 | 1 | 6.304 | 4.505 |
| 895 | 99.270 | 19.225 | 35.677 | 24.314 | 17.782 | 17.610 | 0.740 | 1.841 | 0.992 | 1.010 | 0.016 | -1 | 6.537 | 4.608 |
| 896 | 82.311 | 21.107 | 35.685 | 24.417 | 18.877 | 19.727 | 0.715 | 1.829 | 1.082 | 0.957 | 0.021 | 1 | 7.851 | 6.510 |
| 897 | 82.257 | 21.481 | 32.883 | 29.009 | 19.971 | 18.039 | 0.712 | 1.770 | 1.156 | 1.107 | 0.023 | 1 | 9.007 | 7.516 |
| 898 | 85.142 | 20.744 | 36.195 | 25.603 | 17.773 | 17.223 | 0.724 | 1.687 | 0.967 | 1.032 | 0.021 | 1 | 8.267 | 6.892 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|--------|
| 899 | 84.660 | 21.323 | 38.672 | 26.265 | 18.159 | 19.607 | 0.704 | 1.771 | 0.977 | 0.926 | 0.021 | 1 | 8.034 | 6.654 |
| 900 | 81.990 | 21.839 | 36.687 | 27.737 | 19.447 | 16.858 | 0.708 | 1.662 | 0.990 | 1.154 | 0.023 | 1 | 8.262 | 6.893 |
| 901 | 90.831 | 21.564 | 34.911 | 25.460 | 19.826 | 17.172 | 0.697 | 1.716 | 1.060 | 1.155 | 0.019 | 1 | 8.941 | 7.467 |
| 902 | 84.490 | 20.171 | 32.791 | 28.844 | 18.338 | 19.858 | 0.732 | 1.894 | 1.165 | 0.923 | 0.022 | 1 | 6.215 | 4.444 |
| 903 | 91.935 | 22.000 | 32.300 | 28.068 | 16.758 | 19.168 | 0.685 | 1.633 | 1.112 | 0.874 | 0.019 | 1 | 6.646 | 9.461 |
| 904 | 99.644 | 21.041 | 38.702 | 27.747 | 19.780 | 17.269 | 0.695 | 1.761 | 0.957 | 1.145 | 0.017 | 1 | 6.576 | 4.717 |
| 905 | 86.177 | 19.869 | 38.082 | 25.759 | 16.848 | 16.218 | 0.745 | 1.664 | 0.868 | 1.039 | 0.020 | 1 | 8.139 | 6.796 |
| 906 | 86.297 | 19.108 | 35.394 | 28.553 | 19.046 | 16.820 | 0.762 | 1.877 | 1.013 | 1.132 | 0.021 | 1 | 6.065 | 4.337 |
| 907 | 91.544 | 21.873 | 32.770 | 29.255 | 18.387 | 18.245 | 0.694 | 1.675 | 1.118 | 1.008 | 0.020 | 1 | 9.999 | 8.350 |
| 908 | 84.131 | 20.579 | 39.847 | 27.874 | 18.897 | 18.277 | 0.727 | 1.806 | 0.933 | 1.034 | 0.022 | 1 | 8.072 | 6.693 |
| 909 | 91.032 | 19.337 | 35.861 | 25.928 | 18.864 | 16.074 | 0.751 | 1.807 | 0.974 | 1.174 | 0.019 | 1 | 6.032 | 4.321 |
| 910 | 95.144 | 19.751 | 39.256 | 26.804 | 17.625 | 17.306 | 0.734 | 1.769 | 0.890 | 1.018 | 0.018 | 1 | 6.099 | 4.387 |
| 911 | 90.386 | 18.924 | 36.557 | 28.154 | 18.265 | 19.551 | 0.765 | 1.998 | 1.034 | 0.934 | 0.020 | 1 | 6.242 | 4.404 |
| 912 | 97.633 | 17.894 | 38.258 | 25.650 | 19.606 | 17.830 | 0.805 | 2.092 | 0.979 | 1.100 | 0.017 | 1 | 6.409 | 4.429 |
| 913 | 88.329 | 18.899 | 37.481 | 26.411 | 16.864 | 16.143 | 0.771 | 1.747 | 0.881 | 1.045 | 0.020 | 1 | 5.707 | 4.138 |
| 914 | 92.682 | 18.496 | 35.144 | 25.402 | 16.341 | 16.891 | 0.774 | 1.797 | 0.946 | 0.967 | 0.018 | 1 | 6.158 | 4.406 |
| 915 | 99.301 | 18.943 | 35.400 | 27.135 | 19.528 | 18.055 | 0.763 | 1.984 | 1.062 | 1.082 | 0.017 | 1 | 6.930 | 4.803 |
| 916 | 83.147 | 20.850 | 39.084 | 29.966 | 18.006 | 18.008 | 0.725 | 1.727 | 0.921 | 1.000 | 0.023 | 1 | 8.491 | 7.070 |
| 917 | 88.692 | 19.519 | 34.939 | 25.318 | 18.504 | 17.835 | 0.745 | 1.862 | 1.040 | 1.038 | 0.019 | 1 | 5.902 | 4.207 |
| 918 | 85.136 | 20.790 | 32.342 | 25.132 | 19.498 | 17.036 | 0.723 | 1.757 | 1.130 | 1.145 | 0.021 | 1 | 5.806 | 4.199 |
| 919 | 80.576 | 19.584 | 39.305 | 25.861 | 18.725 | 16.485 | 0.761 | 1.798 | 0.896 | 1.136 | 0.023 | 1 | 7.406 | 6.149 |
| 920 | 91.996 | 18.585 | 37.493 | 24.313 | 16.984 | 16.525 | 0.769 | 1.803 | 0.894 | 1.028 | 0.018 | 1 | 5.794 | 4.141 |
| 921 | 97.946 | 21.452 | 33.999 | 29.676 | 17.602 | 16.069 | 0.706 | 1.570 | 0.990 | 1.095 | 0.018 | 1 | 7.034 | 10.073 |
| 922 | 90.798 | 20.777 | 33.647 | 25.009 | 18.942 | 16.583 | 0.717 | 1.710 | 1.056 | 1.142 | 0.019 | 1 | 6.060 | 4.393 |
| 923 | 95.445 | 20.811 | 35.543 | 26.537 | 19.320 | 16.825 | 0.708 | 1.737 | 1.017 | 1.148 | 0.018 | 1 | 6.406 | 4.618 |
| 924 | 91.319 | 18.365 | 33.663 | 26.042 | 19.715 | 18.228 | 0.788 | 2.066 | 1.127 | 1.082 | 0.019 | 1 | 6.388 | 4.435 |
| 925 | 84.606 | 21.487 | 37.191 | 24.682 | 19.640 | 18.773 | 0.704 | 1.788 | 1.033 | 1.046 | 0.021 | 1 | 7.916 | 6.571 |
| 926 | 87.530 | 20.551 | 34.373 | 27.529 | 19.554 | 19.257 | 0.718 | 1.889 | 1.129 | 1.015 | 0.021 | 1 | 6.121 | 4.369 |
| 927 | 91.584 | 17.752 | 35.651 | 27.163 | 17.190 | 19.820 | 0.801 | 2.085 | 1.038 | 0.867 | 0.019 | 1 | 6.335 | 4.421 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 928 | 91.578 | 20.825 | 39.795 | 25.609 | 19.166 | 18.597 | 0.708 | 1.813 | 0.949 | 1.031 | 0.019 | 1 | 8.436 | 6.996 |
| 929 | 87.387 | 18.999 | 34.807 | 26.950 | 19.266 | 18.379 | 0.768 | 1.981 | 1.082 | 1.048 | 0.020 | 1 | 6.050 | 4.269 |
| 930 | 80.267 | 18.605 | 37.352 | 25.918 | 16.758 | 17.167 | 0.789 | 1.823 | 0.908 | 0.976 | 0.023 | 1 | 7.663 | 6.363 |
| 931 | 90.616 | 19.945 | 34.432 | 26.780 | 18.126 | 16.470 | 0.740 | 1.735 | 1.005 | 1.101 | 0.019 | 1 | 6.178 | 4.473 |
| 932 | 94.052 | 21.628 | 39.098 | 27.822 | 19.589 | 19.242 | 0.687 | 1.795 | 0.993 | 1.018 | 0.019 | 1 | 9.151 | 7.598 |
| 933 | 82.695 | 17.602 | 35.910 | 29.762 | 17.790 | 19.332 | 0.817 | 2.109 | 1.034 | 0.920 | 0.023 | 1 | 5.997 | 4.226 |
| 934 | 88.512 | 20.283 | 35.928 | 27.384 | 18.014 | 18.305 | 0.731 | 1.791 | 1.011 | 0.984 | 0.020 | 1 | 5.983 | 4.322 |
| 935 | 95.609 | 17.789 | 32.954 | 24.723 | 19.334 | 19.533 | 0.803 | 2.185 | 1.179 | 0.990 | 0.017 | 1 | 6.694 | 4.563 |
| 936 | 98.344 | 21.908 | 32.802 | 27.098 | 18.030 | 19.410 | 0.678 | 1.709 | 1.141 | 0.929 | 0.017 | 1 | 10.332 | 8.563 |
| 937 | 92.135 | 17.996 | 35.325 | 26.317 | 16.687 | 17.580 | 0.783 | 1.904 | 0.970 | 0.949 | 0.019 | -1 | 6.252 | 4.421 |
| 938 | 93.840 | 21.825 | 36.962 | 28.363 | 16.323 | 18.043 | 0.687 | 1.575 | 0.930 | 0.905 | 0.019 | 1 | 6.407 | 9.115 |
| 939 | 98.578 | 19.397 | 37.550 | 25.870 | 18.932 | 19.026 | 0.748 | 1.957 | 1.011 | 0.995 | 0.017 | 1 | 6.512 | 4.556 |
| 940 | 89.875 | 21.128 | 39.151 | 24.709 | 17.819 | 19.478 | 0.700 | 1.765 | 0.953 | 0.915 | 0.019 | 1 | 8.243 | 6.831 |
| 941 | 90.005 | 19.617 | 36.643 | 26.985 | 19.098 | 16.081 | 0.747 | 1.793 | 0.960 | 1.188 | 0.020 | 1 | 5.989 | 4.312 |
| 942 | 87.393 | 20.823 | 35.831 | 25.774 | 19.725 | 18.639 | 0.715 | 1.842 | 1.071 | 1.058 | 0.020 | 1 | 5.754 | 4.133 |
| 943 | 87.979 | 21.442 | 34.820 | 27.892 | 17.456 | 17.723 | 0.707 | 1.641 | 1.010 | 0.985 | 0.021 | 1 | 6.144 | 8.741 |
| 944 | 87.388 | 18.720 | 36.404 | 28.031 | 18.079 | 16.457 | 0.775 | 1.845 | 0.949 | 1.099 | 0.021 | 1 | 5.970 | 4.283 |
| 945 | 90.798 | 17.888 | 35.222 | 28.551 | 19.323 | 16.302 | 0.800 | 1.992 | 1.011 | 1.185 | 0.020 | 1 | 6.468 | 4.530 |
| 946 | 97.389 | 17.866 | 39.428 | 28.264 | 16.798 | 16.732 | 0.782 | 1.877 | 0.850 | 1.004 | 0.018 | 1 | 6.465 | 4.580 |
| 947 | 96.221 | 19.610 | 38.630 | 26.502 | 19.352 | 18.657 | 0.744 | 1.938 | 0.984 | 1.037 | 0.018 | 1 | 6.286 | 4.426 |
| 948 | 90.445 | 20.142 | 33.837 | 25.796 | 19.220 | 19.490 | 0.726 | 1.922 | 1.144 | 0.986 | 0.019 | 1 | 6.206 | 4.390 |
| 949 | 96.706 | 19.070 | 33.184 | 25.468 | 16.332 | 17.716 | 0.754 | 1.785 | 1.026 | 0.922 | 0.017 | -1 | 6.630 | 4.732 |
| 950 | 96.611 | 18.195 | 33.160 | 25.462 | 18.159 | 18.844 | 0.789 | 2.034 | 1.116 | 0.964 | 0.017 | -1 | 6.779 | 4.672 |
| 951 | 87.148 | 19.047 | 33.108 | 26.707 | 18.482 | 16.617 | 0.762 | 1.843 | 1.060 | 1.112 | 0.020 | 1 | 6.110 | 4.361 |
| 952 | 86.928 | 20.930 | 38.740 | 29.342 | 16.442 | 17.354 | 0.718 | 1.615 | 0.872 | 0.947 | 0.021 | 1 | 5.932 | 8.405 |
| 953 | 85.111 | 19.908 | 38.418 | 27.109 | 19.254 | 17.305 | 0.744 | 1.836 | 0.952 | 1.113 | 0.021 | 1 | 8.185 | 6.803 |
| 954 | 89.914 | 20.147 | 35.951 | 29.228 | 17.965 | 16.881 | 0.739 | 1.730 | 0.969 | 1.064 | 0.020 | 1 | 9.367 | 7.844 |
| 955 | 83.558 | 18.413 | 35.652 | 24.056 | 19.622 | 17.651 | 0.796 | 2.024 | 1.045 | 1.112 | 0.021 | 1 | 5.361 | 3.800 |
| 956 | 80.541 | 21.537 | 39.419 | 29.862 | 17.233 | 17.957 | 0.705 | 1.634 | 0.893 | 0.960 | 0.024 | 1 | 8.222 | 6.840 |

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|-----|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 957 | 96.094 | 18.086 | 39.579 | 27.014 | 16.885 | 17.056 | 0.776 | 1.877 | 0.858 | 0.990 | 0.018 | 1 | 6.221 | 4.409 |
| 958 | 81.724 | 21.211 | 35.240 | 24.901 | 19.411 | 19.631 | 0.714 | 1.841 | 1.108 | 0.989 | 0.022 | 1 | 7.921 | 6.572 |
| 959 | 94.692 | 20.326 | 39.923 | 27.892 | 19.962 | 18.564 | 0.723 | 1.895 | 0.965 | 1.075 | 0.018 | 1 | 6.177 | 4.390 |
| 960 | 98.307 | 20.197 | 36.197 | 27.654 | 18.871 | 19.841 | 0.718 | 1.917 | 1.069 | 0.951 | 0.017 | 1 | 6.775 | 4.770 |
| 961 | 99.931 | 18.274 | 37.084 | 26.140 | 19.186 | 19.468 | 0.789 | 2.115 | 1.042 | 0.986 | 0.016 | 1 | 6.759 | 4.643 |
| 962 | 83.539 | 19.674 | 33.982 | 24.552 | 16.234 | 16.264 | 0.757 | 1.652 | 0.956 | 0.998 | 0.021 | 1 | 5.474 | 7.846 |
| 963 | 83.732 | 19.821 | 38.850 | 24.601 | 18.605 | 18.420 | 0.745 | 1.868 | 0.953 | 1.010 | 0.021 | 1 | 7.587 | 6.282 |
| 964 | 98.069 | 18.964 | 32.411 | 25.374 | 17.922 | 19.682 | 0.764 | 1.983 | 1.160 | 0.911 | 0.017 | -1 | 6.924 | 4.791 |
| 965 | 84.591 | 20.579 | 34.120 | 26.113 | 18.778 | 19.044 | 0.726 | 1.838 | 1.108 | 0.986 | 0.021 | 1 | 5.746 | 4.134 |
| 966 | 81.423 | 20.671 | 33.647 | 24.230 | 18.205 | 19.834 | 0.727 | 1.840 | 1.131 | 0.918 | 0.022 | 1 | 7.999 | 6.640 |
| 967 | 95.312 | 19.190 | 39.625 | 24.861 | 18.070 | 18.041 | 0.751 | 1.882 | 0.911 | 1.002 | 0.017 | 1 | 5.937 | 4.205 |
| 968 | 95.992 | 20.968 | 33.415 | 27.280 | 19.744 | 19.786 | 0.698 | 1.885 | 1.183 | 0.998 | 0.018 | 1 | 6.809 | 4.801 |
| 969 | 83.242 | 17.794 | 35.639 | 28.477 | 16.449 | 17.799 | 0.808 | 1.925 | 0.961 | 0.924 | 0.022 | 1 | 5.828 | 4.172 |
| 970 | 83.513 | 20.238 | 33.222 | 27.217 | 16.639 | 18.778 | 0.743 | 1.750 | 1.066 | 0.886 | 0.022 | 1 | 5.877 | 8.393 |
| 971 | 83.006 | 20.840 | 38.706 | 26.894 | 17.788 | 19.504 | 0.719 | 1.789 | 0.963 | 0.912 | 0.022 | 1 | 7.974 | 6.603 |
| 972 | 94.059 | 18.863 | 37.577 | 26.488 | 19.979 | 19.593 | 0.776 | 2.098 | 1.053 | 1.020 | 0.018 | 1 | 6.271 | 4.366 |
| 973 | 81.743 | 19.050 | 39.355 | 27.944 | 18.652 | 16.751 | 0.774 | 1.858 | 0.900 | 1.114 | 0.023 | 1 | 7.878 | 6.545 |
| 974 | 87.517 | 20.161 | 36.208 | 25.275 | 17.887 | 16.414 | 0.737 | 1.701 | 0.947 | 1.090 | 0.020 | 1 | 8.419 | 7.032 |
| 975 | 96.836 | 20.136 | 36.819 | 27.714 | 19.605 | 17.648 | 0.721 | 1.850 | 1.012 | 1.111 | 0.018 | 1 | 6.592 | 4.674 |
| 976 | 87.576 | 18.477 | 35.282 | 28.218 | 18.063 | 19.178 | 0.781 | 2.016 | 1.056 | 0.942 | 0.021 | 1 | 6.178 | 4.354 |
| 977 | 86.151 | 20.663 | 34.753 | 29.643 | 19.001 | 19.429 | 0.721 | 1.860 | 1.106 | 0.978 | 0.022 | 1 | 6.226 | 4.477 |
| 978 | 88.211 | 20.822 | 33.622 | 27.895 | 16.839 | 18.444 | 0.723 | 1.695 | 1.049 | 0.913 | 0.020 | 1 | 6.245 | 8.907 |
| 979 | 90.769 | 20.260 | 37.953 | 28.378 | 17.283 | 19.565 | 0.727 | 1.819 | 0.971 | 0.883 | 0.020 | 1 | 9.090 | 7.557 |
| 980 | 92.667 | 18.462 | 39.930 | 25.046 | 18.719 | 18.746 | 0.787 | 2.029 | 0.938 | 0.999 | 0.018 | 1 | 5.766 | 4.054 |
| 981 | 90.220 | 20.987 | 34.078 | 24.372 | 19.777 | 19.370 | 0.702 | 1.865 | 1.149 | 1.021 | 0.019 | 1 | 5.986 | 4.264 |
| 982 | 84.943 | 18.455 | 34.998 | 25.551 | 18.427 | 16.454 | 0.783 | 1.890 | 0.997 | 1.120 | 0.021 | 1 | 5.661 | 4.038 |
| 983 | 90.217 | 20.650 | 32.364 | 27.238 | 17.994 | 16.110 | 0.729 | 1.652 | 1.054 | 1.117 | 0.020 | 1 | 6.338 | 9.118 |
| 984 | 93.777 | 20.744 | 38.936 | 26.154 | 17.458 | 18.135 | 0.709 | 1.716 | 0.914 | 0.963 | 0.018 | 1 | 8.883 | 7.401 |
| 985 | 82.894 | 17.662 | 39.345 | 29.847 | 17.422 | 19.616 | 0.817 | 2.097 | 0.941 | 0.888 | 0.023 | 1 | 5.670 | 4.031 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 986 | 89.131 | 19.993 | 35.384 | 24.944 | 19.119 | 19.411 | 0.734 | 1.927 | 1.089 | 0.985 | 0.019 | 1 | 5.868 | 4.167 |
| 987 | 99.537 | 18.660 | 35.573 | 25.186 | 19.827 | 17.392 | 0.774 | 1.995 | 1.046 | 1.140 | 0.016 | 1 | 6.732 | 4.660 |
| 988 | 91.172 | 18.975 | 32.733 | 26.578 | 18.081 | 16.318 | 0.759 | 1.813 | 1.051 | 1.108 | 0.019 | 1 | 6.409 | 4.567 |
| 989 | 95.818 | 18.066 | 33.334 | 29.951 | 16.046 | 16.220 | 0.792 | 1.786 | 0.968 | 0.989 | 0.019 | 1 | 7.026 | 5.046 |
| 990 | 91.762 | 18.316 | 38.345 | 24.258 | 16.424 | 17.166 | 0.776 | 1.834 | 0.876 | 0.957 | 0.018 | 1 | 5.705 | 4.069 |
| 991 | 89.532 | 20.004 | 39.367 | 24.908 | 17.285 | 16.278 | 0.734 | 1.678 | 0.853 | 1.062 | 0.019 | 1 | 8.168 | 6.811 |
| 992 | 88.438 | 17.779 | 33.768 | 24.461 | 18.180 | 18.898 | 0.806 | 2.086 | 1.098 | 0.962 | 0.019 | 1 | 5.984 | 4.169 |
| 993 | 90.828 | 18.962 | 34.587 | 27.986 | 16.919 | 17.742 | 0.764 | 1.828 | 1.002 | 0.954 | 0.020 | 1 | 6.363 | 4.558 |
| 994 | 90.896 | 20.306 | 38.959 | 24.408 | 18.388 | 19.951 | 0.721 | 1.888 | 0.984 | 0.922 | 0.018 | 1 | 5.597 | 3.999 |
| 995 | 84.948 | 18.408 | 34.799 | 24.135 | 18.784 | 19.896 | 0.790 | 2.101 | 1.112 | 0.944 | 0.020 | 1 | 5.569 | 3.920 |
| 996 | 99.980 | 21.205 | 33.502 | 26.300 | 18.633 | 17.613 | 0.693 | 1.709 | 1.082 | 1.058 | 0.016 | 1 | 6.884 | 4.952 |
| 997 | 87.458 | 21.351 | 32.417 | 27.922 | 19.977 | 16.747 | 0.710 | 1.720 | 1.133 | 1.193 | 0.021 | 1 | 9.332 | 7.811 |
| 998 | 99.162 | 17.692 | 38.823 | 28.287 | 17.098 | 17.883 | 0.794 | 1.977 | 0.901 | 0.956 | 0.017 | 1 | 6.707 | 4.686 |
| 999 | 91.981 | 19.259 | 35.186 | 26.887 | 16.154 | 17.129 | 0.760 | 1.728 | 0.946 | 0.943 | 0.019 | 1 | 9.285 | 7.750 |
| 1000 | 98.526 | 21.177 | 33.414 | 28.200 | 17.108 | 17.833 | 0.703 | 1.650 | 1.046 | 0.959 | 0.018 | 1 | 10.424 | 8.686 |
| 1001 | 90.436 | 18.920 | 33.898 | 27.645 | 17.321 | 17.312 | 0.764 | 1.831 | 1.022 | 1.001 | 0.020 | 1 | 6.370 | 4.549 |
| 1002 | 91.257 | 19.505 | 37.048 | 28.021 | 18.179 | 16.462 | 0.750 | 1.776 | 0.935 | 1.104 | 0.020 | 1 | 6.149 | 4.436 |
| 1003 | 85.768 | 19.256 | 35.112 | 24.732 | 18.139 | 18.117 | 0.757 | 1.883 | 1.033 | 1.001 | 0.020 | 1 | 5.612 | 4.007 |
| 1004 | 82.622 | 21.142 | 35.999 | 27.118 | 17.563 | 18.060 | 0.718 | 1.685 | 0.990 | 0.972 | 0.022 | 1 | 8.335 | 6.945 |
| 1005 | 97.186 | 21.692 | 38.873 | 24.211 | 18.715 | 18.520 | 0.679 | 1.717 | 0.958 | 1.011 | 0.016 | 1 | 6.001 | 4.328 |
| 1006 | 91.452 | 18.521 | 37.260 | 28.214 | 18.296 | 16.067 | 0.773 | 1.855 | 0.922 | 1.139 | 0.020 | 1 | 6.213 | 4.432 |
| 1007 | 97.894 | 21.262 | 33.427 | 26.026 | 19.900 | 17.762 | 0.689 | 1.771 | 1.127 | 1.120 | 0.017 | 1 | 6.756 | 4.817 |
| 1008 | 84.134 | 20.122 | 35.765 | 26.120 | 19.745 | 17.431 | 0.740 | 1.847 | 1.039 | 1.133 | 0.021 | 1 | 5.567 | 4.009 |
| 1009 | 85.327 | 18.079 | 38.947 | 25.095 | 17.086 | 17.960 | 0.797 | 1.939 | 0.900 | 0.951 | 0.020 | 1 | 5.280 | 3.768 |
| 1010 | 81.087 | 19.319 | 38.602 | 27.203 | 18.653 | 19.465 | 0.766 | 1.973 | 0.987 | 0.958 | 0.023 | 1 | 7.810 | 6.454 |
| 1011 | 83.886 | 18.348 | 32.246 | 25.170 | 16.507 | 19.218 | 0.780 | 1.947 | 1.108 | 0.859 | 0.021 | 1 | 5.809 | 4.121 |
| 1012 | 95.752 | 18.764 | 34.237 | 27.624 | 16.688 | 19.213 | 0.762 | 1.913 | 1.049 | 0.869 | 0.018 | -1 | 6.753 | 4.767 |
| 1013 | 80.172 | 20.528 | 32.495 | 29.437 | 18.027 | 19.232 | 0.737 | 1.815 | 1.147 | 0.937 | 0.024 | 1 | 8.990 | 7.489 |
| 1014 | 86.071 | 17.926 | 34.731 | 28.304 | 18.491 | 19.302 | 0.805 | 2.108 | 1.088 | 0.958 | 0.021 | 1 | 6.172 | 4.313 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1015 | 90.721 | 21.849 | 35.949 | 25.860 | 16.447 | 17.402 | 0.683 | 1.549 | 0.942 | 0.945 | 0.019 | 1 | 5.995 | 8.533 |
| 1016 | 98.481 | 20.986 | 38.958 | 26.656 | 16.218 | 18.308 | 0.700 | 1.645 | 0.886 | 0.886 | 0.017 | 1 | 9.462 | 7.907 |
| 1017 | 82.233 | 18.773 | 39.656 | 27.296 | 17.295 | 19.442 | 0.777 | 1.957 | 0.926 | 0.890 | 0.022 | 1 | 7.810 | 6.451 |
| 1018 | 84.386 | 21.068 | 36.822 | 27.062 | 16.593 | 17.609 | 0.713 | 1.623 | 0.929 | 0.942 | 0.022 | 1 | 5.653 | 8.012 |
| 1019 | 84.317 | 19.010 | 34.182 | 28.333 | 19.123 | 18.486 | 0.768 | 1.978 | 1.100 | 1.034 | 0.022 | 1 | 6.056 | 4.287 |
| 1020 | 89.150 | 18.034 | 38.482 | 28.097 | 18.448 | 16.750 | 0.797 | 1.952 | 0.915 | 1.101 | 0.020 | 1 | 5.959 | 4.224 |
| 1021 | 94.714 | 21.084 | 37.331 | 28.900 | 18.308 | 16.703 | 0.710 | 1.661 | 0.938 | 1.096 | 0.019 | 1 | 9.605 | 8.061 |
| 1022 | 93.580 | 21.421 | 32.563 | 28.507 | 16.778 | 17.298 | 0.705 | 1.591 | 1.046 | 0.970 | 0.019 | 1 | 6.745 | 9.644 |
| 1023 | 97.040 | 18.641 | 32.858 | 28.617 | 16.347 | 19.401 | 0.774 | 1.918 | 1.088 | 0.843 | 0.018 | -1 | 7.089 | 4.990 |
| 1024 | 87.908 | 20.927 | 33.382 | 27.933 | 17.281 | 19.205 | 0.718 | 1.743 | 1.093 | 0.900 | 0.021 | 1 | 9.346 | 7.776 |
| 1025 | 91.015 | 20.720 | 38.192 | 27.895 | 17.652 | 17.639 | 0.718 | 1.703 | 0.924 | 1.001 | 0.020 | 1 | 8.979 | 7.499 |
| 1026 | 98.276 | 21.257 | 33.160 | 28.394 | 17.408 | 17.665 | 0.702 | 1.650 | 1.058 | 0.985 | 0.018 | 1 | 10.457 | 8.721 |
| 1027 | 95.201 | 21.961 | 37.154 | 29.787 | 17.850 | 19.335 | 0.684 | 1.693 | 1.001 | 0.923 | 0.019 | 1 | 9.894 | 8.268 |
| 1028 | 85.723 | 18.107 | 35.245 | 24.506 | 17.909 | 16.474 | 0.793 | 1.899 | 0.976 | 1.087 | 0.020 | 1 | 5.586 | 3.974 |
| 1029 | 82.232 | 19.575 | 33.674 | 24.593 | 18.576 | 16.878 | 0.758 | 1.811 | 1.053 | 1.101 | 0.021 | 1 | 5.444 | 3.923 |
| 1030 | 97.665 | 20.903 | 32.332 | 24.463 | 16.880 | 17.890 | 0.702 | 1.663 | 1.075 | 0.944 | 0.016 | 1 | 3.350 | 4.744 |
| 1031 | 86.554 | 19.851 | 34.513 | 29.208 | 16.774 | 19.235 | 0.749 | 1.814 | 1.043 | 0.872 | 0.021 | 1 | 9.281 | 7.731 |
| 1032 | 91.883 | 21.091 | 33.676 | 29.762 | 18.311 | 16.990 | 0.716 | 1.674 | 1.048 | 1.078 | 0.020 | 1 | 9.962 | 8.366 |
| 1033 | 84.654 | 21.029 | 32.978 | 25.226 | 16.491 | 16.559 | 0.717 | 1.572 | 1.002 | 0.996 | 0.021 | 1 | 5.746 | 8.201 |
| 1034 | 93.008 | 20.379 | 37.316 | 27.681 | 19.133 | 16.532 | 0.724 | 1.750 | 0.956 | 1.157 | 0.019 | 1 | 6.196 | 4.480 |
| 1035 | 87.801 | 20.904 | 33.643 | 29.790 | 19.176 | 17.303 | 0.721 | 1.745 | 1.084 | 1.108 | 0.021 | 1 | 9.568 | 8.002 |
| 1036 | 81.499 | 17.721 | 35.292 | 26.504 | 18.760 | 18.316 | 0.820 | 2.092 | 1.051 | 1.024 | 0.022 | 1 | 5.552 | 3.918 |
| 1037 | 87.270 | 18.400 | 38.069 | 29.193 | 16.474 | 17.826 | 0.786 | 1.864 | 0.901 | 0.924 | 0.021 | 1 | 5.940 | 4.277 |
| 1038 | 95.137 | 21.059 | 35.864 | 25.498 | 19.143 | 19.037 | 0.697 | 1.813 | 1.065 | 1.006 | 0.018 | 1 | 6.288 | 4.489 |
| 1039 | 92.088 | 17.875 | 39.520 | 27.234 | 17.526 | 16.502 | 0.793 | 1.904 | 0.861 | 1.062 | 0.019 | 1 | 5.963 | 4.232 |
| 1040 | 83.000 | 17.812 | 38.728 | 27.640 | 19.312 | 18.652 | 0.822 | 2.131 | 0.980 | 1.035 | 0.022 | 1 | 5.473 | 3.869 |
| 1041 | 99.261 | 18.593 | 34.681 | 28.312 | 18.766 | 16.333 | 0.765 | 1.888 | 1.012 | 1.149 | 0.017 | -1 | 7.073 | 4.953 |
| 1042 | 91.955 | 18.514 | 35.242 | 29.094 | 16.426 | 17.232 | 0.779 | 1.818 | 0.955 | 0.953 | 0.020 | 1 | 6.500 | 4.668 |
| 1043 | 96.508 | 20.131 | 36.382 | 27.285 | 16.212 | 16.053 | 0.734 | 1.603 | 0.887 | 1.010 | 0.018 | 1 | 6.449 | 9.250 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1044 | 85.636 | 19.604 | 33.635 | 27.434 | 17.317 | 16.328 | 0.761 | 1.716 | 1.000 | 1.061 | 0.021 | 1 | 2.987 | 4.283 |
| 1045 | 97.502 | 21.748 | 39.312 | 24.066 | 16.271 | 17.741 | 0.674 | 1.564 | 0.865 | 0.917 | 0.016 | 1 | 5.975 | 8.531 |
| 1046 | 95.934 | 21.765 | 37.234 | 24.628 | 16.538 | 16.826 | 0.680 | 1.533 | 0.896 | 0.983 | 0.017 | 1 | 6.091 | 8.704 |
| 1047 | 89.596 | 20.099 | 34.737 | 26.981 | 17.031 | 18.931 | 0.735 | 1.789 | 1.035 | 0.900 | 0.020 | 1 | 6.113 | 4.417 |
| 1048 | 86.977 | 20.212 | 39.678 | 24.755 | 16.911 | 17.308 | 0.727 | 1.693 | 0.862 | 0.977 | 0.020 | 1 | 7.867 | 6.536 |
| 1049 | 94.066 | 18.495 | 34.223 | 26.861 | 16.058 | 17.218 | 0.775 | 1.799 | 0.972 | 0.933 | 0.018 | 1 | 6.489 | 4.647 |
| 1050 | 91.617 | 19.731 | 37.139 | 26.490 | 16.572 | 16.912 | 0.744 | 1.697 | 0.902 | 0.980 | 0.019 | 1 | 8.929 | 7.474 |
| 1051 | 98.837 | 21.320 | 38.354 | 25.903 | 16.696 | 19.372 | 0.688 | 1.692 | 0.940 | 0.862 | 0.017 | 1 | 9.476 | 7.891 |
| 1052 | 80.412 | 21.672 | 33.539 | 28.327 | 18.521 | 18.689 | 0.712 | 1.717 | 1.109 | 0.991 | 0.023 | 1 | 8.672 | 7.231 |
| 1053 | 83.721 | 17.996 | 38.446 | 25.266 | 16.860 | 18.942 | 0.802 | 1.989 | 0.931 | 0.890 | 0.021 | 1 | 5.233 | 3.734 |
| 1054 | 83.116 | 18.082 | 38.770 | 28.553 | 18.663 | 17.465 | 0.805 | 1.998 | 0.932 | 1.069 | 0.022 | 1 | 5.560 | 3.964 |
| 1055 | 98.155 | 18.095 | 35.271 | 25.426 | 16.336 | 18.370 | 0.784 | 1.918 | 0.984 | 0.889 | 0.017 | -1 | 6.624 | 4.647 |
| 1056 | 82.654 | 19.398 | 35.914 | 25.979 | 16.361 | 16.200 | 0.767 | 1.679 | 0.907 | 1.010 | 0.022 | 1 | 8.110 | 6.780 |
| 1057 | 91.430 | 18.804 | 34.774 | 27.272 | 18.574 | 19.597 | 0.770 | 2.030 | 1.098 | 0.948 | 0.019 | 1 | 6.407 | 4.480 |
| 1058 | 81.616 | 18.885 | 37.458 | 27.416 | 19.481 | 18.845 | 0.783 | 2.029 | 1.023 | 1.034 | 0.023 | 1 | 5.438 | 3.877 |
| 1059 | 95.426 | 19.138 | 36.791 | 27.964 | 18.991 | 19.175 | 0.758 | 1.994 | 1.037 | 0.990 | 0.018 | 1 | 6.582 | 4.606 |
| 1060 | 81.234 | 21.426 | 38.517 | 25.898 | 19.937 | 19.703 | 0.710 | 1.850 | 1.029 | 1.012 | 0.022 | 1 | 7.615 | 6.303 |
| 1061 | 99.850 | 19.306 | 32.768 | 29.534 | 19.761 | 19.875 | 0.754 | 2.053 | 1.210 | 0.994 | 0.018 | -1 | 7.538 | 5.153 |
| 1062 | 92.870 | 17.858 | 35.048 | 27.662 | 19.739 | 17.291 | 0.805 | 2.073 | 1.057 | 1.142 | 0.019 | 1 | 6.569 | 4.549 |
| 1063 | 99.967 | 18.424 | 36.481 | 24.230 | 19.117 | 18.796 | 0.782 | 2.058 | 1.039 | 1.017 | 0.016 | 1 | 6.605 | 4.554 |
| 1064 | 82.001 | 19.267 | 35.074 | 25.874 | 19.541 | 16.693 | 0.766 | 1.881 | 1.033 | 1.171 | 0.022 | 1 | 5.465 | 3.925 |
| 1065 | 96.835 | 19.377 | 35.753 | 28.627 | 19.145 | 19.975 | 0.750 | 2.019 | 1.094 | 0.958 | 0.018 | 1 | 6.872 | 4.784 |
| 1066 | 84.703 | 19.219 | 38.901 | 29.103 | 17.686 | 16.427 | 0.768 | 1.775 | 0.877 | 1.077 | 0.022 | 1 | 8.449 | 7.048 |
| 1067 | 90.041 | 18.839 | 33.174 | 28.474 | 16.083 | 19.499 | 0.765 | 1.889 | 1.073 | 0.825 | 0.020 | 1 | 6.496 | 4.649 |
| 1068 | 96.631 | 20.356 | 36.332 | 24.553 | 19.755 | 19.799 | 0.722 | 1.943 | 1.089 | 0.998 | 0.017 | 1 | 6.323 | 4.445 |
| 1069 | 82.934 | 17.630 | 39.821 | 26.296 | 17.116 | 19.107 | 0.821 | 2.055 | 0.910 | 0.896 | 0.022 | 1 | 5.178 | 3.688 |
| 1070 | 94.509 | 19.732 | 36.893 | 26.033 | 18.612 | 18.762 | 0.735 | 1.894 | 1.013 | 0.992 | 0.018 | 1 | 6.245 | 4.421 |
| 1071 | 80.358 | 20.633 | 37.972 | 29.744 | 19.674 | 16.308 | 0.740 | 1.744 | 0.948 | 1.206 | 0.024 | 1 | 8.283 | 6.913 |
| 1072 | 90.112 | 18.903 | 37.048 | 26.688 | 16.952 | 18.280 | 0.763 | 1.864 | 0.951 | 0.927 | 0.019 | 1 | 5.954 | 4.258 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1073 | 98.891 | 21.860 | 32.830 | 28.700 | 17.227 | 18.985 | 0.684 | 1.657 | 1.103 | 0.907 | 0.018 | 1 | 10.658 | 8.842 |
| 1074 | 96.752 | 19.164 | 36.417 | 24.473 | 16.346 | 17.183 | 0.748 | 1.750 | 0.921 | 0.951 | 0.017 | 1 | 6.231 | 4.470 |
| 1075 | 89.572 | 18.665 | 33.238 | 27.127 | 19.586 | 16.506 | 0.772 | 1.934 | 1.086 | 1.187 | 0.020 | 1 | 6.368 | 4.485 |
| 1076 | 88.258 | 19.540 | 38.998 | 24.384 | 16.792 | 17.529 | 0.745 | 1.756 | 0.880 | 0.958 | 0.019 | 1 | 8.015 | 6.658 |
| 1077 | 93.144 | 19.905 | 33.401 | 27.669 | 19.695 | 19.334 | 0.734 | 1.961 | 1.168 | 1.019 | 0.019 | 1 | 6.688 | 4.683 |
| 1078 | 90.467 | 21.927 | 39.382 | 29.429 | 18.755 | 18.463 | 0.689 | 1.697 | 0.945 | 1.016 | 0.020 | 1 | 9.054 | 7.549 |
| 1079 | 87.782 | 21.658 | 35.603 | 29.005 | 18.931 | 19.134 | 0.699 | 1.758 | 1.069 | 0.989 | 0.021 | 1 | 9.213 | 7.675 |
| 1080 | 85.202 | 21.377 | 33.973 | 26.356 | 19.724 | 18.575 | 0.707 | 1.792 | 1.127 | 1.062 | 0.021 | 1 | 8.667 | 7.215 |
| 1081 | 89.330 | 20.885 | 33.925 | 29.950 | 18.900 | 17.384 | 0.720 | 1.737 | 1.070 | 1.087 | 0.021 | 1 | 6.491 | 4.722 |
| 1082 | 86.760 | 21.137 | 33.210 | 26.134 | 17.246 | 18.758 | 0.712 | 1.703 | 1.084 | 0.919 | 0.020 | 1 | 5.972 | 8.523 |
| 1083 | 84.033 | 18.644 | 38.964 | 28.304 | 19.735 | 18.487 | 0.791 | 2.050 | 0.981 | 1.068 | 0.022 | 1 | 5.586 | 3.968 |
| 1084 | 90.896 | 19.643 | 34.780 | 27.172 | 18.486 | 17.574 | 0.740 | 1.836 | 1.037 | 1.052 | 0.019 | 1 | 6.272 | 4.476 |
| 1085 | 93.776 | 21.658 | 39.554 | 26.457 | 16.890 | 19.375 | 0.683 | 1.674 | 0.917 | 0.872 | 0.018 | 1 | 8.891 | 7.408 |
| 1086 | 96.307 | 17.855 | 37.841 | 27.302 | 16.265 | 19.106 | 0.785 | 1.981 | 0.935 | 0.851 | 0.018 | 1 | 6.455 | 4.539 |
| 1087 | 93.815 | 20.221 | 37.482 | 25.739 | 16.438 | 19.622 | 0.722 | 1.783 | 0.962 | 0.838 | 0.018 | 1 | 6.031 | 4.355 |
| 1088 | 98.615 | 20.547 | 34.239 | 24.504 | 19.608 | 17.320 | 0.704 | 1.797 | 1.079 | 1.132 | 0.016 | 1 | 6.607 | 4.685 |
| 1089 | 83.010 | 21.670 | 35.208 | 27.523 | 16.872 | 16.053 | 0.706 | 1.519 | 0.935 | 1.051 | 0.022 | 1 | 5.784 | 8.175 |
| 1090 | 96.854 | 18.345 | 32.729 | 24.380 | 18.795 | 16.926 | 0.779 | 1.947 | 1.091 | 1.110 | 0.017 | -1 | 6.688 | 4.646 |
| 1091 | 86.563 | 20.594 | 32.584 | 29.073 | 17.394 | 17.852 | 0.734 | 1.712 | 1.082 | 0.974 | 0.021 | 1 | 6.340 | 9.076 |
| 1092 | 92.451 | 20.918 | 36.190 | 24.382 | 16.905 | 18.737 | 0.705 | 1.704 | 0.985 | 0.902 | 0.018 | 1 | 8.847 | 7.369 |
| 1093 | 91.251 | 20.202 | 32.572 | 26.149 | 16.720 | 18.174 | 0.732 | 1.727 | 1.071 | 0.920 | 0.019 | 1 | 3.193 | 4.530 |
| 1094 | 80.715 | 18.116 | 35.846 | 28.792 | 19.862 | 17.524 | 0.808 | 2.064 | 1.043 | 1.133 | 0.023 | 1 | 5.728 | 4.056 |
| 1095 | 93.159 | 21.233 | 39.964 | 28.359 | 18.371 | 18.249 | 0.700 | 1.725 | 0.916 | 1.007 | 0.019 | 1 | 9.045 | 7.534 |
| 1096 | 94.819 | 18.660 | 38.485 | 28.441 | 16.983 | 16.382 | 0.768 | 1.788 | 0.867 | 1.037 | 0.019 | 1 | 6.329 | 4.549 |
| 1097 | 97.916 | 18.022 | 37.099 | 27.255 | 18.472 | 19.999 | 0.796 | 2.135 | 1.037 | 0.924 | 0.017 | 1 | 6.720 | 4.628 |
| 1098 | 82.280 | 21.180 | 38.677 | 29.194 | 16.027 | 17.584 | 0.709 | 1.587 | 0.869 | 0.911 | 0.023 | 1 | 5.644 | 7.963 |
| 1099 | 93.428 | 19.317 | 32.581 | 25.192 | 16.050 | 19.141 | 0.748 | 1.822 | 1.080 | 0.838 | 0.018 | 1 | 3.263 | 4.580 |
| 1100 | 93.952 | 18.803 | 39.993 | 27.171 | 16.738 | 17.945 | 0.759 | 1.845 | 0.867 | 0.933 | 0.018 | 1 | 6.015 | 4.300 |
| 1101 | 95.115 | 19.037 | 39.003 | 28.926 | 17.829 | 18.800 | 0.752 | 1.924 | 0.939 | 0.948 | 0.019 | 1 | 6.422 | 4.548 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 1102 | 85.504 | 19.696 | 37.223 | 26.724 | 18.893 | 16.677 | 0.751 | 1.806 | 0.956 | 1.133 | 0.021 | 1 | 8.305 | 6.919 |
| 1103 | 83.641 | 18.191 | 35.659 | 25.963 | 17.528 | 19.616 | 0.794 | 2.042 | 1.042 | 0.894 | 0.021 | 1 | 5.583 | 3.958 |
| 1104 | 91.406 | 21.950 | 39.598 | 29.167 | 16.852 | 19.751 | 0.682 | 1.668 | 0.924 | 0.853 | 0.020 | 1 | 6.158 | 8.700 |
| 1105 | 95.155 | 18.738 | 36.267 | 27.666 | 17.657 | 18.355 | 0.760 | 1.922 | 0.993 | 0.962 | 0.018 | 1 | 6.545 | 4.613 |
| 1106 | 91.414 | 17.623 | 39.003 | 28.248 | 16.601 | 16.755 | 0.800 | 1.893 | 0.855 | 0.991 | 0.020 | 1 | 6.064 | 4.320 |
| 1107 | 84.016 | 20.207 | 37.688 | 29.104 | 17.815 | 19.017 | 0.739 | 1.823 | 0.977 | 0.937 | 0.022 | 1 | 8.592 | 7.138 |
| 1108 | 89.555 | 21.528 | 35.201 | 24.380 | 19.300 | 18.254 | 0.696 | 1.744 | 1.067 | 1.057 | 0.019 | 1 | 8.629 | 7.183 |
| 1109 | 98.038 | 19.053 | 33.640 | 29.650 | 17.486 | 16.449 | 0.753 | 1.781 | 1.009 | 1.063 | 0.018 | 1 | 7.136 | 5.100 |
| 1110 | 85.608 | 19.169 | 38.049 | 27.614 | 19.331 | 17.652 | 0.766 | 1.929 | 0.972 | 1.095 | 0.021 | 1 | 5.669 | 4.050 |
| 1111 | 86.214 | 19.581 | 37.423 | 24.340 | 17.335 | 16.448 | 0.751 | 1.725 | 0.903 | 1.054 | 0.020 | 1 | 7.982 | 6.649 |
| 1112 | 99.095 | 18.637 | 38.718 | 25.367 | 16.843 | 17.544 | 0.754 | 1.845 | 0.888 | 0.960 | 0.016 | 1 | 6.346 | 4.491 |
| 1113 | 98.961 | 21.199 | 33.634 | 25.968 | 19.009 | 16.376 | 0.697 | 1.669 | 1.052 | 1.161 | 0.017 | 1 | 6.727 | 4.881 |
| 1114 | 85.755 | 21.642 | 37.910 | 28.899 | 16.802 | 16.585 | 0.701 | 1.543 | 0.881 | 1.013 | 0.022 | 1 | 5.892 | 8.330 |
| 1115 | 80.843 | 21.640 | 34.886 | 27.940 | 19.427 | 18.267 | 0.712 | 1.742 | 1.080 | 1.063 | 0.023 | 1 | 8.433 | 7.024 |
| 1116 | 86.540 | 19.305 | 35.079 | 24.539 | 18.533 | 16.842 | 0.757 | 1.832 | 1.008 | 1.100 | 0.020 | 1 | 5.635 | 4.037 |
| 1117 | 95.817 | 18.526 | 35.528 | 27.877 | 19.584 | 18.438 | 0.781 | 2.052 | 1.070 | 1.062 | 0.018 | 1 | 6.760 | 4.679 |
| 1118 | 89.091 | 21.498 | 34.650 | 27.662 | 19.772 | 19.656 | 0.696 | 1.834 | 1.138 | 1.006 | 0.020 | 1 | 6.191 | 4.447 |
| 1119 | 84.956 | 18.075 | 38.364 | 27.965 | 19.842 | 17.595 | 0.809 | 2.071 | 0.976 | 1.128 | 0.022 | 1 | 5.680 | 4.014 |
| 1120 | 81.727 | 18.531 | 37.233 | 29.415 | 19.209 | 18.003 | 0.791 | 2.008 | 0.999 | 1.067 | 0.023 | 1 | 5.724 | 4.078 |
| 1121 | 96.692 | 20.173 | 34.368 | 24.055 | 17.732 | 19.445 | 0.714 | 1.843 | 1.082 | 0.912 | 0.016 | 1 | 6.411 | 4.547 |
| 1122 | 99.926 | 20.393 | 39.849 | 28.192 | 17.538 | 17.348 | 0.714 | 1.711 | 0.875 | 1.011 | 0.017 | 1 | 6.499 | 4.708 |
| 1123 | 89.549 | 19.385 | 39.409 | 25.519 | 16.247 | 17.805 | 0.749 | 1.757 | 0.864 | 0.912 | 0.019 | 1 | 8.282 | 6.887 |
| 1124 | 85.311 | 19.539 | 37.141 | 25.866 | 17.001 | 17.012 | 0.755 | 1.741 | 0.916 | 0.999 | 0.021 | 1 | 8.190 | 6.824 |
| 1125 | 87.371 | 21.917 | 35.963 | 27.847 | 18.641 | 16.213 | 0.701 | 1.590 | 0.969 | 1.150 | 0.021 | 1 | 8.900 | 7.467 |
| 1126 | 97.138 | 18.032 | 39.601 | 24.758 | 19.437 | 16.026 | 0.796 | 1.967 | 0.896 | 1.213 | 0.017 | 1 | 6.110 | 4.276 |
| 1127 | 87.066 | 21.334 | 35.839 | 28.001 | 17.723 | 16.033 | 0.715 | 1.582 | 0.942 | 1.105 | 0.021 | 1 | 6.014 | 8.547 |
| 1128 | 96.271 | 17.828 | 36.782 | 25.371 | 18.827 | 19.492 | 0.805 | 2.149 | 1.042 | 0.966 | 0.017 | 1 | 6.424 | 4.427 |
| 1129 | 98.833 | 21.020 | 39.890 | 28.515 | 19.659 | 17.068 | 0.698 | 1.747 | 0.921 | 1.152 | 0.018 | 1 | 6.478 | 4.668 |
| 1130 | 81.676 | 18.219 | 33.519 | 24.860 | 16.343 | 17.441 | 0.798 | 1.854 | 1.008 | 0.937 | 0.022 | 1 | 5.466 | 3.922 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1131 | 98.898 | 19.795 | 38.738 | 24.349 | 18.264 | 18.669 | 0.728 | 1.866 | 0.953 | 0.978 | 0.016 | 1 | 6.237 | 4.406 |
| 1132 | 99.402 | 20.419 | 39.150 | 28.264 | 17.895 | 16.194 | 0.718 | 1.669 | 0.871 | 1.105 | 0.017 | 1 | 6.498 | 4.742 |
| 1133 | 94.750 | 17.879 | 38.490 | 26.488 | 19.801 | 17.343 | 0.807 | 2.077 | 0.965 | 1.142 | 0.018 | 1 | 6.245 | 4.341 |
| 1134 | 84.061 | 21.707 | 33.730 | 24.479 | 18.173 | 18.222 | 0.699 | 1.677 | 1.079 | 0.997 | 0.021 | 1 | 5.567 | 7.933 |
| 1135 | 82.874 | 21.205 | 39.456 | 26.297 | 18.278 | 16.863 | 0.712 | 1.657 | 0.891 | 1.084 | 0.022 | 1 | 7.740 | 6.429 |
| 1136 | 92.820 | 21.110 | 39.254 | 28.985 | 19.201 | 18.504 | 0.703 | 1.786 | 0.961 | 1.038 | 0.019 | 1 | 9.198 | 7.649 |
| 1137 | 98.990 | 17.682 | 39.869 | 26.617 | 17.245 | 18.878 | 0.801 | 2.043 | 0.906 | 0.913 | 0.017 | 1 | 6.437 | 4.479 |
| 1138 | 91.881 | 19.049 | 39.875 | 25.324 | 19.378 | 17.386 | 0.767 | 1.930 | 0.922 | 1.115 | 0.018 | 1 | 5.712 | 4.049 |
| 1139 | 80.778 | 17.812 | 32.606 | 25.621 | 18.089 | 18.022 | 0.809 | 2.027 | 1.107 | 1.004 | 0.022 | 1 | 5.642 | 3.978 |
| 1140 | 95.464 | 19.722 | 39.119 | 27.327 | 17.030 | 17.940 | 0.735 | 1.773 | 0.894 | 0.949 | 0.018 | 1 | 6.184 | 4.454 |
| 1141 | 83.120 | 18.850 | 34.902 | 25.416 | 18.833 | 17.522 | 0.775 | 1.929 | 1.042 | 1.075 | 0.021 | 1 | 5.530 | 3.943 |
| 1142 | 97.297 | 18.648 | 38.112 | 28.088 | 16.452 | 19.828 | 0.754 | 1.946 | 0.952 | 0.830 | 0.018 | 1 | 6.560 | 4.643 |
| 1143 | 85.831 | 20.124 | 39.071 | 29.391 | 19.432 | 17.311 | 0.739 | 1.826 | 0.940 | 1.123 | 0.022 | 1 | 8.584 | 7.141 |
| 1144 | 94.592 | 19.350 | 38.787 | 27.692 | 16.458 | 17.655 | 0.749 | 1.763 | 0.879 | 0.932 | 0.018 | 1 | 6.179 | 4.465 |
| 1145 | 93.898 | 19.093 | 36.226 | 28.321 | 17.571 | 18.631 | 0.748 | 1.896 | 0.999 | 0.943 | 0.019 | 1 | 6.509 | 4.617 |
| 1146 | 84.537 | 17.603 | 32.114 | 25.692 | 17.426 | 19.830 | 0.807 | 2.116 | 1.160 | 0.879 | 0.021 | 1 | 6.002 | 4.177 |
| 1147 | 90.206 | 18.964 | 32.996 | 29.219 | 18.959 | 17.152 | 0.757 | 1.904 | 1.094 | 1.105 | 0.020 | 1 | 6.676 | 4.710 |
| 1148 | 93.280 | 19.214 | 35.313 | 26.335 | 18.847 | 19.931 | 0.757 | 2.018 | 1.098 | 0.946 | 0.018 | 1 | 6.379 | 4.464 |
| 1149 | 80.779 | 21.456 | 37.246 | 24.934 | 18.130 | 16.570 | 0.709 | 1.617 | 0.932 | 1.094 | 0.022 | 1 | 7.599 | 6.315 |
| 1150 | 97.406 | 20.966 | 34.072 | 26.538 | 19.371 | 16.555 | 0.703 | 1.714 | 1.054 | 1.170 | 0.017 | 1 | 6.666 | 4.809 |
| 1151 | 92.516 | 17.914 | 36.793 | 24.509 | 17.735 | 18.726 | 0.800 | 2.035 | 0.991 | 0.947 | 0.018 | 1 | 5.998 | 4.196 |
| 1152 | 97.928 | 20.707 | 37.770 | 28.617 | 19.351 | 17.685 | 0.705 | 1.789 | 0.981 | 1.094 | 0.018 | 1 | 6.642 | 4.755 |
| 1153 | 83.415 | 18.372 | 35.130 | 24.275 | 18.343 | 18.210 | 0.792 | 1.990 | 1.040 | 1.007 | 0.021 | 1 | 5.419 | 3.844 |
| 1154 | 86.771 | 21.386 | 39.691 | 29.759 | 17.896 | 17.547 | 0.707 | 1.657 | 0.893 | 1.020 | 0.022 | 1 | 8.718 | 7.280 |
| 1155 | 85.321 | 21.768 | 32.140 | 27.710 | 18.738 | 17.471 | 0.705 | 1.663 | 1.127 | 1.072 | 0.021 | 1 | 6.144 | 8.781 |
| 1156 | 85.754 | 20.247 | 34.245 | 24.254 | 16.412 | 17.968 | 0.733 | 1.698 | 1.004 | 0.913 | 0.020 | 1 | 5.590 | 7.992 |
| 1157 | 99.150 | 19.710 | 37.816 | 24.033 | 18.710 | 18.430 | 0.734 | 1.884 | 0.982 | 1.015 | 0.016 | 1 | 6.323 | 4.448 |
| 1158 | 98.076 | 18.362 | 35.189 | 24.467 | 16.651 | 18.237 | 0.774 | 1.900 | 0.991 | 0.913 | 0.016 | -1 | 6.525 | 4.581 |
| 1159 | 82.628 | 20.584 | 38.979 | 27.562 | 16.361 | 18.585 | 0.724 | 1.698 | 0.897 | 0.880 | 0.022 | 1 | 8.037 | 6.675 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1160 | 92.297 | 19.725 | 38.842 | 28.569 | 17.259 | 17.462 | 0.742 | 1.760 | 0.894 | 0.988 | 0.019 | 1 | 6.106 | 4.424 |
| 1161 | 90.525 | 19.226 | 39.002 | 27.813 | 19.893 | 19.620 | 0.767 | 2.055 | 1.013 | 1.014 | 0.020 | 1 | 5.998 | 4.225 |
| 1162 | 98.831 | 19.891 | 36.304 | 25.007 | 16.823 | 17.434 | 0.727 | 1.722 | 0.944 | 0.965 | 0.016 | 1 | 6.429 | 4.627 |
| 1163 | 87.387 | 17.729 | 34.520 | 24.351 | 17.912 | 16.519 | 0.806 | 1.942 | 0.997 | 1.084 | 0.019 | 1 | 5.779 | 4.080 |
| 1164 | 98.917 | 19.360 | 34.679 | 27.739 | 19.414 | 17.982 | 0.746 | 1.932 | 1.078 | 1.080 | 0.017 | 1 | 7.007 | 4.884 |
| 1165 | 92.776 | 18.212 | 33.156 | 26.391 | 16.218 | 19.173 | 0.784 | 1.943 | 1.067 | 0.846 | 0.019 | -1 | 6.515 | 4.586 |
| 1166 | 86.117 | 17.721 | 39.287 | 28.203 | 18.639 | 16.834 | 0.815 | 2.002 | 0.903 | 1.107 | 0.021 | 1 | 5.688 | 4.036 |
| 1167 | 98.996 | 18.333 | 32.237 | 29.152 | 17.111 | 18.488 | 0.793 | 1.942 | 1.104 | 0.926 | 0.018 | -1 | 7.413 | 5.139 |
| 1168 | 80.292 | 19.340 | 36.891 | 26.048 | 16.184 | 17.976 | 0.766 | 1.766 | 0.926 | 0.900 | 0.023 | 1 | 7.784 | 6.466 |
| 1169 | 81.334 | 18.349 | 38.511 | 26.957 | 17.177 | 16.994 | 0.795 | 1.862 | 0.887 | 1.011 | 0.023 | 1 | 7.785 | 6.463 |
| 1170 | 94.089 | 19.798 | 35.906 | 24.608 | 18.865 | 16.513 | 0.732 | 1.787 | 0.985 | 1.142 | 0.017 | 1 | 6.113 | 4.369 |
| 1171 | 80.795 | 17.737 | 32.869 | 27.086 | 19.593 | 19.959 | 0.818 | 2.230 | 1.203 | 0.982 | 0.023 | 1 | 5.846 | 4.073 |
| 1172 | 91.924 | 21.481 | 35.628 | 27.133 | 18.169 | 16.025 | 0.705 | 1.592 | 0.960 | 1.134 | 0.019 | 1 | 9.257 | 7.785 |
| 1173 | 99.329 | 18.952 | 32.063 | 28.373 | 16.922 | 18.993 | 0.770 | 1.895 | 1.120 | 0.891 | 0.017 | -1 | 7.317 | 5.121 |
| 1174 | 81.467 | 21.118 | 36.443 | 27.759 | 16.306 | 18.431 | 0.715 | 1.645 | 0.953 | 0.885 | 0.023 | 1 | 5.599 | 7.913 |
| 1175 | 87.571 | 20.745 | 39.423 | 24.565 | 16.408 | 16.160 | 0.710 | 1.570 | 0.826 | 1.015 | 0.019 | 1 | 5.339 | 7.585 |
| 1176 | 97.631 | 17.672 | 35.055 | 27.239 | 18.754 | 18.343 | 0.807 | 2.099 | 1.058 | 1.022 | 0.017 | 1 | 6.901 | 4.731 |
| 1177 | 85.079 | 18.624 | 36.577 | 26.417 | 19.774 | 16.588 | 0.785 | 1.952 | 0.994 | 1.192 | 0.021 | 1 | 5.637 | 4.013 |
| 1178 | 99.047 | 18.576 | 36.698 | 25.419 | 17.307 | 17.931 | 0.762 | 1.897 | 0.960 | 0.965 | 0.016 | -1 | 6.559 | 4.605 |
| 1179 | 93.058 | 21.272 | 32.169 | 24.546 | 17.519 | 17.577 | 0.699 | 1.650 | 1.091 | 0.997 | 0.018 | 1 | 3.152 | 4.510 |
| 1180 | 97.054 | 17.925 | 36.356 | 26.465 | 19.618 | 18.277 | 0.803 | 2.114 | 1.042 | 1.073 | 0.017 | 1 | 6.643 | 4.570 |
| 1181 | 99.604 | 21.305 | 39.581 | 25.034 | 17.716 | 18.208 | 0.686 | 1.686 | 0.908 | 0.973 | 0.016 | 1 | 6.179 | 4.473 |
| 1182 | 97.188 | 21.416 | 32.983 | 26.837 | 17.250 | 19.239 | 0.692 | 1.704 | 1.106 | 0.897 | 0.017 | 1 | 10.152 | 8.413 |
| 1183 | 97.432 | 21.594 | 39.645 | 25.777 | 17.304 | 17.453 | 0.684 | 1.610 | 0.877 | 0.991 | 0.017 | 1 | 9.118 | 7.633 |
| 1184 | 93.155 | 21.230 | 36.725 | 28.017 | 16.223 | 19.806 | 0.702 | 1.697 | 0.981 | 0.819 | 0.019 | 1 | 9.461 | 7.881 |
| 1185 | 94.115 | 20.321 | 32.369 | 29.589 | 19.893 | 16.785 | 0.716 | 1.805 | 1.133 | 1.185 | 0.019 | 1 | 6.990 | 4.981 |
| 1186 | 93.326 | 17.680 | 37.131 | 25.986 | 18.058 | 18.961 | 0.810 | 2.094 | 0.997 | 0.952 | 0.018 | 1 | 6.207 | 4.318 |
| 1187 | 94.817 | 20.800 | 33.653 | 28.050 | 16.053 | 19.288 | 0.716 | 1.699 | 1.050 | 0.832 | 0.018 | 1 | 10.033 | 8.325 |
| 1188 | 99.715 | 21.596 | 36.376 | 25.453 | 19.325 | 17.041 | 0.684 | 1.684 | 1.000 | 1.134 | 0.016 | 1 | 6.507 | 4.707 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1189 | 97.523 | 17.635 | 33.004 | 28.113 | 18.117 | 17.263 | 0.813 | 2.006 | 1.072 | 1.049 | 0.018 | -1 | 7.156 | 4.926 |
| 1190 | 99.465 | 19.862 | 35.484 | 24.826 | 17.692 | 17.591 | 0.723 | 1.776 | 0.994 | 1.006 | 0.016 | 1 | 6.576 | 4.681 |
| 1191 | 80.779 | 20.839 | 32.261 | 25.450 | 17.472 | 16.341 | 0.735 | 1.623 | 1.048 | 1.069 | 0.022 | 1 | 5.565 | 7.951 |
| 1192 | 88.834 | 18.509 | 37.538 | 25.941 | 16.467 | 17.729 | 0.777 | 1.847 | 0.911 | 0.929 | 0.020 | 1 | 5.731 | 4.106 |
| 1193 | 83.928 | 21.096 | 37.309 | 26.557 | 16.363 | 16.091 | 0.711 | 1.538 | 0.870 | 1.017 | 0.022 | 1 | 5.524 | 7.822 |
| 1194 | 89.678 | 18.153 | 35.905 | 26.542 | 19.652 | 19.001 | 0.800 | 2.129 | 1.077 | 1.034 | 0.020 | 1 | 6.117 | 4.259 |
| 1195 | 99.836 | 19.375 | 34.802 | 29.605 | 18.181 | 19.129 | 0.744 | 1.926 | 1.072 | 0.950 | 0.018 | -1 | 7.255 | 5.075 |
| 1196 | 98.435 | 18.581 | 35.453 | 25.502 | 17.482 | 18.746 | 0.766 | 1.950 | 1.022 | 0.933 | 0.017 | -1 | 6.657 | 4.648 |
| 1197 | 80.131 | 19.692 | 33.878 | 24.039 | 16.269 | 16.728 | 0.759 | 1.676 | 0.974 | 0.973 | 0.022 | 1 | 5.207 | 7.448 |
| 1198 | 87.610 | 21.695 | 34.771 | 28.803 | 18.478 | 17.949 | 0.703 | 1.679 | 1.048 | 1.029 | 0.021 | 1 | 9.266 | 7.753 |
| 1199 | 92.942 | 20.229 | 36.878 | 26.934 | 17.213 | 18.926 | 0.725 | 1.787 | 0.980 | 0.909 | 0.019 | 1 | 6.157 | 4.441 |
| 1200 | 99.760 | 19.595 | 33.383 | 26.261 | 19.991 | 17.604 | 0.740 | 1.919 | 1.126 | 1.136 | 0.017 | 1 | 7.028 | 4.891 |
| 1201 | 93.125 | 20.395 | 35.066 | 24.094 | 18.640 | 17.139 | 0.719 | 1.754 | 1.020 | 1.088 | 0.018 | 1 | 6.047 | 4.341 |
| 1202 | 93.976 | 20.626 | 39.973 | 29.006 | 17.248 | 19.573 | 0.713 | 1.785 | 0.921 | 0.881 | 0.019 | 1 | 9.258 | 7.701 |
| 1203 | 85.004 | 21.838 | 37.351 | 25.903 | 17.516 | 19.265 | 0.689 | 1.684 | 0.985 | 0.909 | 0.021 | 1 | 8.204 | 6.812 |
| 1204 | 84.870 | 20.960 | 33.601 | 29.703 | 18.904 | 19.946 | 0.715 | 1.854 | 1.156 | 0.948 | 0.022 | 1 | 6.247 | 4.499 |
| 1205 | 97.601 | 19.015 | 35.997 | 27.928 | 16.942 | 17.297 | 0.753 | 1.801 | 0.951 | 0.979 | 0.018 | 1 | 6.709 | 4.792 |
| 1206 | 94.060 | 18.537 | 37.920 | 29.532 | 17.081 | 18.897 | 0.764 | 1.941 | 0.949 | 0.904 | 0.019 | 1 | 6.517 | 4.617 |
| 1207 | 92.371 | 18.899 | 37.353 | 26.268 | 19.452 | 19.434 | 0.773 | 2.058 | 1.041 | 1.001 | 0.019 | 1 | 6.124 | 4.287 |
| 1208 | 94.150 | 20.958 | 36.398 | 29.914 | 19.921 | 19.048 | 0.700 | 1.859 | 1.071 | 1.046 | 0.019 | 1 | 6.677 | 4.759 |
| 1209 | 83.440 | 19.449 | 37.560 | 27.660 | 18.806 | 18.684 | 0.756 | 1.928 | 0.998 | 1.007 | 0.022 | 1 | 5.558 | 3.987 |
| 1210 | 85.217 | 20.917 | 32.535 | 24.988 | 18.631 | 16.325 | 0.725 | 1.671 | 1.074 | 1.141 | 0.020 | 1 | 8.615 | 7.210 |
| 1211 | 90.337 | 21.620 | 39.280 | 24.328 | 18.295 | 17.981 | 0.689 | 1.678 | 0.924 | 1.017 | 0.018 | 1 | 8.204 | 6.818 |
| 1212 | 83.800 | 18.396 | 39.082 | 24.836 | 17.031 | 19.319 | 0.789 | 1.976 | 0.930 | 0.882 | 0.021 | 1 | 5.126 | 3.664 |
| 1213 | 83.225 | 17.729 | 37.408 | 29.582 | 19.529 | 19.789 | 0.824 | 2.218 | 1.051 | 0.987 | 0.023 | 1 | 5.893 | 4.128 |
| 1214 | 84.375 | 19.203 | 36.258 | 25.464 | 19.596 | 17.145 | 0.765 | 1.913 | 1.013 | 1.143 | 0.021 | 1 | 5.490 | 3.925 |
| 1215 | 80.643 | 17.771 | 37.794 | 24.175 | 17.737 | 16.213 | 0.816 | 1.910 | 0.898 | 1.094 | 0.022 | 1 | 4.936 | 3.540 |
| 1216 | 93.347 | 18.656 | 34.973 | 27.521 | 18.011 | 19.801 | 0.770 | 2.027 | 1.081 | 0.910 | 0.019 | 1 | 6.556 | 4.579 |
| 1217 | 99.731 | 21.277 | 36.960 | 29.401 | 19.568 | 19.609 | 0.685 | 1.841 | 1.060 | 0.998 | 0.018 | 1 | 6.959 | 4.947 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1218 | 95.529 | 18.831 | 37.043 | 25.781 | 16.210 | 19.028 | 0.755 | 1.871 | 0.951 | 0.852 | 0.018 | 1 | 6.254 | 4.453 |
| 1219 | 98.974 | 18.335 | 34.822 | 24.947 | 19.381 | 17.693 | 0.784 | 2.022 | 1.065 | 1.095 | 0.016 | 1 | 6.747 | 4.655 |
| 1220 | 93.132 | 17.743 | 36.410 | 29.370 | 17.929 | 17.669 | 0.800 | 2.006 | 0.978 | 1.015 | 0.019 | 1 | 6.628 | 4.633 |
| 1221 | 93.428 | 19.749 | 32.403 | 29.493 | 18.047 | 17.149 | 0.739 | 1.782 | 1.086 | 1.052 | 0.019 | 1 | 6.907 | 4.947 |
| 1222 | 97.244 | 18.889 | 37.361 | 28.739 | 16.747 | 19.528 | 0.749 | 1.920 | 0.971 | 0.858 | 0.018 | 1 | 6.691 | 4.741 |
| 1223 | 82.460 | 19.556 | 38.558 | 26.070 | 16.244 | 19.741 | 0.753 | 1.840 | 0.933 | 0.823 | 0.022 | 1 | 7.794 | 6.450 |
| 1224 | 91.819 | 21.537 | 33.746 | 29.394 | 16.639 | 19.730 | 0.701 | 1.689 | 1.078 | 0.843 | 0.020 | 1 | 9.973 | 8.286 |
| 1225 | 89.982 | 21.888 | 37.687 | 26.152 | 18.254 | 18.921 | 0.686 | 1.698 | 0.986 | 0.965 | 0.019 | 1 | 8.678 | 7.221 |
| 1226 | 90.158 | 18.162 | 37.198 | 26.370 | 19.019 | 19.581 | 0.800 | 2.125 | 1.038 | 0.971 | 0.019 | 1 | 6.002 | 4.192 |
| 1227 | 97.179 | 17.789 | 38.460 | 26.516 | 18.260 | 16.937 | 0.800 | 1.979 | 0.915 | 1.078 | 0.017 | 1 | 6.407 | 4.473 |
| 1228 | 83.894 | 21.040 | 34.350 | 27.458 | 16.287 | 17.925 | 0.719 | 1.626 | 0.996 | 0.909 | 0.022 | 1 | 5.871 | 8.342 |
| 1229 | 87.754 | 21.975 | 35.529 | 26.839 | 17.141 | 18.445 | 0.687 | 1.619 | 1.002 | 0.929 | 0.020 | 1 | 5.965 | 8.462 |
| 1230 | 84.477 | 21.184 | 33.055 | 29.184 | 19.879 | 19.006 | 0.710 | 1.836 | 1.176 | 1.046 | 0.022 | 1 | 6.209 | 4.466 |
| 1231 | 85.651 | 19.951 | 36.253 | 24.051 | 17.773 | 16.617 | 0.743 | 1.724 | 0.949 | 1.070 | 0.020 | 1 | 8.029 | 6.691 |
| 1232 | 97.160 | 20.432 | 37.606 | 29.533 | 18.808 | 16.826 | 0.718 | 1.744 | 0.948 | 1.118 | 0.018 | 1 | 6.668 | 4.816 |
| 1233 | 85.300 | 19.076 | 32.411 | 25.434 | 18.823 | 19.751 | 0.762 | 2.022 | 1.190 | 0.953 | 0.021 | 1 | 5.958 | 4.189 |
| 1234 | 87.478 | 17.890 | 32.950 | 29.424 | 16.717 | 16.005 | 0.804 | 1.829 | 0.993 | 1.044 | 0.021 | 1 | 6.456 | 4.629 |
| 1235 | 94.343 | 18.772 | 36.926 | 26.480 | 19.045 | 18.377 | 0.772 | 1.994 | 1.013 | 1.036 | 0.018 | 1 | 6.326 | 4.428 |
| 1236 | 80.241 | 21.115 | 33.914 | 28.943 | 19.423 | 17.140 | 0.729 | 1.732 | 1.078 | 1.133 | 0.024 | 1 | 8.671 | 7.246 |
| 1237 | 88.873 | 18.695 | 33.581 | 25.486 | 16.080 | 16.873 | 0.778 | 1.763 | 0.981 | 0.953 | 0.019 | 1 | 3.033 | 4.300 |
| 1238 | 91.010 | 20.462 | 39.417 | 24.313 | 16.963 | 18.664 | 0.714 | 1.741 | 0.904 | 0.909 | 0.018 | 1 | 8.260 | 6.856 |
| 1239 | 81.167 | 20.842 | 39.736 | 26.906 | 19.749 | 17.568 | 0.727 | 1.790 | 0.939 | 1.124 | 0.023 | 1 | 7.607 | 6.310 |
| 1240 | 90.085 | 18.965 | 35.691 | 29.622 | 16.145 | 19.205 | 0.767 | 1.864 | 0.990 | 0.841 | 0.020 | 1 | 6.385 | 4.603 |
| 1241 | 99.920 | 21.222 | 34.051 | 27.458 | 19.855 | 17.356 | 0.690 | 1.753 | 1.093 | 1.144 | 0.017 | 1 | 6.984 | 4.992 |
| 1242 | 98.990 | 20.982 | 32.502 | 27.302 | 19.588 | 16.449 | 0.699 | 1.717 | 1.109 | 1.191 | 0.017 | 1 | 7.007 | 5.039 |
| 1243 | 82.980 | 21.864 | 37.203 | 26.971 | 16.474 | 16.801 | 0.688 | 1.522 | 0.894 | 0.981 | 0.022 | 1 | 5.550 | 7.826 |
| 1244 | 99.456 | 19.182 | 36.367 | 27.355 | 19.275 | 18.494 | 0.754 | 1.969 | 1.039 | 1.042 | 0.017 | 1 | 6.862 | 4.774 |
| 1245 | 82.582 | 19.185 | 33.602 | 27.986 | 16.756 | 17.751 | 0.774 | 1.799 | 1.027 | 0.944 | 0.022 | 1 | 5.856 | 4.244 |
| 1246 | 94.906 | 19.483 | 32.771 | 25.326 | 16.598 | 19.712 | 0.741 | 1.864 | 1.108 | 0.842 | 0.018 | -1 | 6.542 | 4.650 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1247 | 83.085 | 21.502 | 38.114 | 24.111 | 18.221 | 17.444 | 0.701 | 1.659 | 0.936 | 1.045 | 0.021 | 1 | 7.580 | 6.288 |
| 1248 | 84.440 | 20.343 | 33.390 | 27.035 | 16.903 | 17.109 | 0.742 | 1.672 | 1.019 | 0.988 | 0.022 | 1 | 5.888 | 8.423 |
| 1249 | 91.200 | 20.897 | 35.778 | 25.120 | 18.555 | 19.119 | 0.707 | 1.803 | 1.053 | 0.971 | 0.019 | 1 | 5.953 | 4.275 |
| 1250 | 89.317 | 21.196 | 36.304 | 26.049 | 18.541 | 19.185 | 0.704 | 1.780 | 1.039 | 0.966 | 0.019 | 1 | 8.754 | 7.275 |
| 1251 | 98.730 | 20.631 | 34.523 | 28.806 | 19.908 | 19.123 | 0.707 | 1.892 | 1.131 | 1.041 | 0.018 | 1 | 7.092 | 4.981 |
| 1252 | 91.943 | 20.445 | 35.222 | 29.911 | 16.410 | 19.289 | 0.730 | 1.746 | 1.014 | 0.851 | 0.020 | 1 | 9.851 | 8.204 |
| 1253 | 97.803 | 21.309 | 38.889 | 29.580 | 19.689 | 18.525 | 0.690 | 1.793 | 0.983 | 1.063 | 0.018 | 1 | 6.633 | 4.761 |
| 1254 | 87.351 | 20.599 | 37.696 | 27.115 | 16.004 | 17.484 | 0.722 | 1.626 | 0.888 | 0.915 | 0.021 | 1 | 5.761 | 8.188 |
| 1255 | 88.607 | 18.590 | 32.746 | 27.828 | 19.865 | 19.221 | 0.781 | 2.102 | 1.194 | 1.034 | 0.020 | 1 | 6.497 | 4.503 |
| 1256 | 87.190 | 18.562 | 36.341 | 26.834 | 17.962 | 18.903 | 0.780 | 1.986 | 1.014 | 0.950 | 0.020 | 1 | 5.871 | 4.158 |
| 1257 | 99.622 | 21.257 | 35.011 | 28.005 | 18.756 | 16.545 | 0.699 | 1.661 | 1.008 | 1.134 | 0.017 | 1 | 6.844 | 4.992 |
| 1258 | 96.207 | 20.673 | 37.057 | 27.398 | 17.111 | 16.609 | 0.717 | 1.631 | 0.910 | 1.030 | 0.018 | 1 | 9.550 | 8.027 |
| 1259 | 80.356 | 19.227 | 36.368 | 25.492 | 17.335 | 16.379 | 0.773 | 1.753 | 0.927 | 1.058 | 0.023 | 1 | 7.721 | 6.429 |
| 1260 | 81.230 | 20.893 | 32.242 | 27.515 | 16.017 | 18.955 | 0.727 | 1.674 | 1.085 | 0.845 | 0.023 | 1 | 5.881 | 8.367 |
| 1261 | 86.580 | 20.317 | 32.986 | 24.198 | 16.021 | 16.762 | 0.732 | 1.614 | 0.994 | 0.956 | 0.020 | 1 | 5.730 | 8.214 |
| 1262 | 92.655 | 21.346 | 39.016 | 26.254 | 17.028 | 17.442 | 0.695 | 1.615 | 0.883 | 0.976 | 0.019 | 1 | 8.787 | 7.350 |
| 1263 | 98.061 | 19.355 | 37.238 | 24.907 | 17.979 | 17.998 | 0.739 | 1.859 | 0.966 | 0.999 | 0.016 | 1 | 6.363 | 4.494 |
| 1264 | 98.430 | 20.407 | 34.434 | 29.767 | 16.822 | 19.080 | 0.721 | 1.759 | 1.043 | 0.882 | 0.018 | 1 | 10.555 | 8.758 |
| 1265 | 88.796 | 18.448 | 33.420 | 26.384 | 18.913 | 17.267 | 0.781 | 1.961 | 1.083 | 1.095 | 0.020 | 1 | 6.222 | 4.372 |
| 1266 | 90.536 | 21.144 | 35.713 | 28.769 | 19.457 | 19.246 | 0.703 | 1.830 | 1.084 | 1.011 | 0.020 | 1 | 6.324 | 4.543 |
| 1267 | 89.750 | 19.194 | 38.471 | 27.223 | 19.368 | 19.734 | 0.766 | 2.037 | 1.016 | 0.981 | 0.020 | 1 | 5.915 | 4.175 |
| 1268 | 83.975 | 20.503 | 37.443 | 24.761 | 19.913 | 19.045 | 0.728 | 1.900 | 1.040 | 1.046 | 0.021 | 1 | 7.809 | 6.474 |
| 1269 | 84.085 | 17.648 | 35.688 | 28.454 | 19.523 | 18.158 | 0.822 | 2.135 | 1.056 | 1.075 | 0.022 | 1 | 5.964 | 4.175 |
| 1270 | 88.257 | 18.847 | 37.808 | 27.009 | 18.142 | 19.169 | 0.771 | 1.980 | 0.987 | 0.946 | 0.020 | 1 | 5.826 | 4.134 |
| 1271 | 94.899 | 19.631 | 37.448 | 24.886 | 16.489 | 17.002 | 0.739 | 1.706 | 0.894 | 0.970 | 0.017 | 1 | 6.013 | 4.352 |
| 1272 | 91.376 | 19.049 | 33.807 | 26.270 | 19.613 | 18.254 | 0.764 | 1.988 | 1.120 | 1.074 | 0.019 | 1 | 6.372 | 4.459 |
| 1273 | 85.455 | 19.201 | 36.926 | 27.217 | 16.107 | 17.042 | 0.768 | 1.726 | 0.898 | 0.945 | 0.021 | 1 | 8.472 | 7.081 |
| 1274 | 96.301 | 19.528 | 33.473 | 29.270 | 18.363 | 19.741 | 0.741 | 1.951 | 1.138 | 0.930 | 0.018 | -1 | 7.093 | 4.958 |
| 1275 | 91.925 | 19.461 | 32.814 | 24.881 | 19.243 | 16.475 | 0.740 | 1.835 | 1.089 | 1.168 | 0.018 | 1 | 6.286 | 4.462 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1276 | 89.959 | 18.840 | 37.086 | 27.927 | 18.537 | 19.239 | 0.771 | 2.005 | 1.019 | 0.964 | 0.020 | 1 | 6.139 | 4.331 |
| 1277 | 88.613 | 20.928 | 39.039 | 27.651 | 18.586 | 16.532 | 0.717 | 1.678 | 0.900 | 1.124 | 0.020 | 1 | 8.567 | 7.155 |
| 1278 | 84.717 | 18.615 | 35.398 | 29.330 | 18.442 | 16.376 | 0.781 | 1.870 | 0.984 | 1.126 | 0.022 | 1 | 6.046 | 4.337 |
| 1279 | 85.696 | 21.442 | 39.482 | 29.989 | 17.945 | 19.584 | 0.704 | 1.750 | 0.951 | 0.916 | 0.022 | 1 | 8.707 | 7.236 |
| 1280 | 92.372 | 20.446 | 32.849 | 26.467 | 17.087 | 19.167 | 0.721 | 1.773 | 1.104 | 0.891 | 0.019 | 1 | 3.257 | 4.600 |
| 1281 | 99.458 | 18.836 | 39.698 | 24.151 | 18.044 | 19.751 | 0.765 | 2.007 | 0.952 | 0.914 | 0.016 | 1 | 6.223 | 4.344 |
| 1282 | 90.627 | 21.130 | 39.788 | 29.697 | 19.238 | 16.869 | 0.711 | 1.709 | 0.907 | 1.140 | 0.020 | 1 | 9.020 | 7.535 |
| 1283 | 95.022 | 20.744 | 39.630 | 26.034 | 16.823 | 18.016 | 0.707 | 1.679 | 0.879 | 0.934 | 0.018 | 1 | 8.910 | 7.436 |
| 1284 | 82.084 | 19.458 | 33.686 | 26.981 | 18.956 | 17.339 | 0.759 | 1.865 | 1.077 | 1.093 | 0.022 | 1 | 5.732 | 4.112 |
| 1285 | 81.585 | 21.970 | 39.336 | 29.781 | 16.230 | 17.828 | 0.684 | 1.550 | 0.866 | 0.910 | 0.023 | 1 | 5.646 | 7.932 |
| 1286 | 85.722 | 21.349 | 33.362 | 28.858 | 17.650 | 16.898 | 0.719 | 1.618 | 1.036 | 1.045 | 0.022 | 1 | 6.227 | 8.876 |
| 1287 | 80.157 | 19.798 | 37.700 | 29.131 | 19.521 | 17.218 | 0.757 | 1.856 | 0.975 | 1.134 | 0.024 | 1 | 8.176 | 6.800 |
| 1288 | 80.884 | 21.344 | 38.199 | 24.168 | 16.623 | 18.686 | 0.696 | 1.654 | 0.924 | 0.890 | 0.022 | 1 | 7.399 | 6.110 |
| 1289 | 83.787 | 18.860 | 32.155 | 27.521 | 19.056 | 17.402 | 0.768 | 1.933 | 1.134 | 1.095 | 0.022 | 1 | 6.102 | 4.318 |
| 1290 | 83.764 | 17.643 | 32.358 | 26.532 | 16.116 | 19.525 | 0.800 | 2.020 | 1.101 | 0.825 | 0.022 | -1 | 5.977 | 4.213 |
| 1291 | 90.304 | 21.147 | 35.401 | 24.938 | 18.595 | 19.894 | 0.701 | 1.820 | 1.087 | 0.935 | 0.019 | 1 | 5.903 | 4.240 |
| 1292 | 96.383 | 21.095 | 38.007 | 25.579 | 16.859 | 17.274 | 0.699 | 1.618 | 0.898 | 0.976 | 0.017 | 1 | 6.159 | 8.794 |
| 1293 | 87.548 | 18.774 | 37.122 | 29.521 | 18.098 | 16.116 | 0.776 | 1.822 | 0.922 | 1.123 | 0.021 | 1 | 6.078 | 4.383 |
| 1294 | 88.083 | 18.535 | 33.527 | 28.918 | 16.113 | 18.694 | 0.779 | 1.878 | 1.038 | 0.862 | 0.021 | 1 | 6.386 | 4.574 |
| 1295 | 91.108 | 20.296 | 38.707 | 27.909 | 17.017 | 17.506 | 0.728 | 1.701 | 0.892 | 0.972 | 0.020 | 1 | 8.924 | 7.458 |
| 1296 | 89.508 | 18.077 | 32.744 | 26.872 | 18.222 | 19.802 | 0.792 | 2.103 | 1.161 | 0.920 | 0.020 | 1 | 6.451 | 4.465 |
| 1297 | 94.551 | 18.168 | 32.969 | 28.348 | 16.097 | 18.125 | 0.791 | 1.884 | 1.038 | 0.888 | 0.019 | -1 | 6.858 | 4.848 |
| 1298 | 99.084 | 17.947 | 37.137 | 29.946 | 19.657 | 18.733 | 0.801 | 2.139 | 1.034 | 1.049 | 0.018 | 1 | 7.141 | 4.882 |
| 1299 | 92.162 | 20.562 | 32.859 | 26.538 | 17.672 | 17.773 | 0.721 | 1.724 | 1.079 | 0.994 | 0.019 | 1 | 3.229 | 4.586 |
| 1300 | 82.009 | 17.679 | 37.061 | 29.061 | 16.562 | 17.099 | 0.816 | 1.904 | 0.908 | 0.969 | 0.023 | 1 | 5.673 | 4.083 |
| 1301 | 94.173 | 19.931 | 37.193 | 26.237 | 16.458 | 17.590 | 0.734 | 1.708 | 0.915 | 0.936 | 0.018 | 1 | 9.155 | 7.646 |
| 1302 | 81.737 | 18.849 | 37.969 | 28.526 | 18.803 | 17.850 | 0.778 | 1.945 | 0.965 | 1.053 | 0.023 | 1 | 5.516 | 3.957 |
| 1303 | 94.502 | 21.522 | 37.362 | 24.613 | 16.858 | 16.172 | 0.690 | 1.535 | 0.884 | 1.042 | 0.017 | 1 | 5.981 | 8.541 |
| 1304 | 83.958 | 19.766 | 39.624 | 25.765 | 18.514 | 19.630 | 0.748 | 1.930 | 0.963 | 0.943 | 0.021 | 1 | 7.714 | 6.373 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1305 | 90.984 | 21.842 | 33.058 | 28.342 | 16.750 | 18.179 | 0.693 | 1.599 | 1.057 | 0.921 | 0.020 | 1 | 6.545 | 9.321 |
| 1306 | 93.088 | 21.711 | 32.323 | 27.797 | 17.144 | 19.640 | 0.691 | 1.694 | 1.138 | 0.873 | 0.019 | 1 | 10.006 | 8.285 |
| 1307 | 98.110 | 20.667 | 32.988 | 28.465 | 17.790 | 19.440 | 0.706 | 1.801 | 1.129 | 0.915 | 0.018 | 1 | 7.066 | 5.046 |
| 1308 | 81.245 | 20.326 | 34.114 | 26.458 | 19.005 | 16.992 | 0.743 | 1.771 | 1.055 | 1.118 | 0.023 | 1 | 8.261 | 6.892 |
| 1309 | 92.254 | 18.214 | 32.594 | 29.984 | 18.206 | 16.569 | 0.785 | 1.909 | 1.067 | 1.099 | 0.020 | -1 | 6.962 | 4.890 |
| 1310 | 89.746 | 21.752 | 33.013 | 28.381 | 19.316 | 16.576 | 0.703 | 1.650 | 1.087 | 1.165 | 0.020 | 1 | 9.583 | 8.043 |
| 1311 | 89.414 | 19.449 | 32.772 | 28.217 | 16.094 | 17.069 | 0.764 | 1.705 | 1.012 | 0.943 | 0.020 | 1 | 3.217 | 4.590 |
| 1312 | 83.080 | 21.921 | 34.227 | 25.721 | 18.751 | 17.413 | 0.701 | 1.650 | 1.057 | 1.077 | 0.022 | 1 | 8.351 | 6.966 |
| 1313 | 95.444 | 19.151 | 35.594 | 27.900 | 19.221 | 17.944 | 0.755 | 1.941 | 1.044 | 1.071 | 0.018 | 1 | 6.675 | 4.679 |
| 1314 | 95.398 | 19.391 | 36.369 | 27.630 | 16.488 | 17.518 | 0.749 | 1.754 | 0.935 | 0.941 | 0.018 | 1 | 6.440 | 4.653 |
| 1315 | 88.788 | 20.530 | 33.019 | 27.037 | 17.313 | 16.809 | 0.732 | 1.662 | 1.033 | 1.030 | 0.020 | 1 | 6.188 | 8.876 |
| 1316 | 89.494 | 17.737 | 32.678 | 26.488 | 17.754 | 19.256 | 0.804 | 2.087 | 1.133 | 0.922 | 0.020 | -1 | 6.410 | 4.438 |
| 1317 | 95.713 | 21.388 | 36.619 | 25.500 | 16.857 | 19.498 | 0.690 | 1.700 | 0.993 | 0.865 | 0.017 | 1 | 9.318 | 7.753 |
| 1318 | 88.296 | 21.894 | 37.236 | 24.875 | 19.873 | 19.206 | 0.688 | 1.785 | 1.049 | 1.035 | 0.019 | 1 | 8.322 | 6.909 |
| 1319 | 98.049 | 20.636 | 36.295 | 28.384 | 18.400 | 16.170 | 0.716 | 1.675 | 0.952 | 1.138 | 0.018 | 1 | 6.667 | 4.864 |
| 1320 | 98.840 | 19.636 | 32.193 | 27.301 | 16.810 | 18.516 | 0.743 | 1.799 | 1.097 | 0.908 | 0.017 | -1 | 7.072 | 5.034 |
| 1321 | 93.414 | 18.752 | 39.995 | 26.107 | 16.340 | 17.928 | 0.761 | 1.827 | 0.857 | 0.911 | 0.018 | 1 | 5.856 | 4.192 |
| 1322 | 88.764 | 18.628 | 35.976 | 26.679 | 18.221 | 17.765 | 0.775 | 1.932 | 1.000 | 1.026 | 0.020 | 1 | 5.993 | 4.246 |
| 1323 | 87.960 | 21.004 | 34.434 | 29.261 | 17.226 | 17.919 | 0.722 | 1.673 | 1.021 | 0.961 | 0.021 | 1 | 6.336 | 9.023 |
| 1324 | 95.289 | 20.203 | 36.517 | 27.555 | 19.000 | 16.320 | 0.725 | 1.748 | 0.967 | 1.164 | 0.018 | 1 | 6.421 | 4.629 |
| 1325 | 81.596 | 21.404 | 34.813 | 26.215 | 16.557 | 16.945 | 0.708 | 1.565 | 0.962 | 0.977 | 0.022 | 1 | 5.550 | 7.859 |
| 1326 | 86.698 | 17.910 | 37.465 | 28.083 | 19.322 | 16.201 | 0.806 | 1.983 | 0.948 | 1.193 | 0.021 | 1 | 5.886 | 4.169 |
| 1327 | 85.731 | 20.232 | 39.537 | 25.464 | 18.075 | 17.578 | 0.732 | 1.762 | 0.902 | 1.028 | 0.020 | 1 | 7.855 | 6.518 |
| 1328 | 96.331 | 20.797 | 33.409 | 26.752 | 19.195 | 18.430 | 0.701 | 1.809 | 1.126 | 1.042 | 0.018 | 1 | 6.740 | 4.790 |
| 1329 | 93.503 | 17.892 | 33.932 | 26.734 | 19.563 | 18.763 | 0.804 | 2.142 | 1.130 | 1.043 | 0.018 | 1 | 6.642 | 4.562 |
| 1330 | 89.061 | 17.854 | 34.095 | 29.862 | 19.504 | 19.903 | 0.809 | 2.207 | 1.156 | 0.980 | 0.021 | 1 | 6.697 | 4.602 |
| 1331 | 82.516 | 20.330 | 34.967 | 28.831 | 17.144 | 18.931 | 0.742 | 1.774 | 1.032 | 0.906 | 0.023 | 1 | 8.772 | 7.316 |
| 1332 | 80.281 | 20.001 | 33.645 | 29.751 | 17.557 | 18.739 | 0.754 | 1.815 | 1.079 | 0.937 | 0.024 | 1 | 8.903 | 7.422 |
| 1333 | 90.074 | 20.800 | 32.972 | 26.244 | 16.074 | 19.606 | 0.716 | 1.715 | 1.082 | 0.820 | 0.019 | 1 | 6.239 | 8.896 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1334 | 87.389 | 21.226 | 36.775 | 25.770 | 17.134 | 16.145 | 0.708 | 1.568 | 0.905 | 1.061 | 0.020 | 1 | 5.692 | 8.090 |
| 1335 | 80.914 | 19.571 | 38.356 | 24.494 | 16.044 | 17.517 | 0.751 | 1.715 | 0.875 | 0.916 | 0.022 | 1 | 7.393 | 6.125 |
| 1336 | 93.771 | 19.673 | 38.015 | 28.013 | 17.034 | 18.773 | 0.738 | 1.820 | 0.942 | 0.907 | 0.019 | 1 | 6.250 | 4.492 |
| 1337 | 87.443 | 20.000 | 33.324 | 26.241 | 18.972 | 17.205 | 0.737 | 1.809 | 1.086 | 1.103 | 0.020 | 1 | 6.037 | 4.330 |
| 1338 | 85.286 | 19.487 | 33.927 | 25.790 | 18.120 | 17.580 | 0.754 | 1.832 | 1.052 | 1.031 | 0.021 | 1 | 5.786 | 4.149 |
| 1339 | 82.471 | 18.538 | 36.600 | 24.128 | 19.303 | 16.134 | 0.789 | 1.912 | 0.968 | 1.196 | 0.021 | 1 | 5.169 | 3.704 |
| 1340 | 99.254 | 17.796 | 36.325 | 28.856 | 16.866 | 19.190 | 0.794 | 2.026 | 0.993 | 0.879 | 0.018 | -1 | 7.030 | 4.879 |
| 1341 | 84.442 | 19.501 | 33.140 | 24.390 | 16.802 | 18.299 | 0.756 | 1.800 | 1.059 | 0.918 | 0.021 | 1 | 5.622 | 4.049 |
| 1342 | 85.930 | 20.853 | 38.492 | 25.387 | 17.407 | 17.748 | 0.714 | 1.686 | 0.913 | 0.981 | 0.020 | 1 | 8.027 | 6.672 |
| 1343 | 95.176 | 21.777 | 32.860 | 29.201 | 19.858 | 16.337 | 0.694 | 1.662 | 1.102 | 1.215 | 0.019 | 1 | 10.250 | 8.609 |
| 1344 | 82.503 | 18.925 | 38.399 | 24.704 | 18.080 | 19.284 | 0.777 | 1.974 | 0.973 | 0.938 | 0.021 | 1 | 7.536 | 6.229 |
| 1345 | 90.095 | 21.498 | 34.342 | 25.775 | 19.273 | 18.136 | 0.698 | 1.740 | 1.089 | 1.063 | 0.019 | 1 | 6.042 | 4.371 |
| 1346 | 99.566 | 21.133 | 38.924 | 28.756 | 16.479 | 18.569 | 0.699 | 1.658 | 0.900 | 0.887 | 0.017 | 1 | 9.911 | 8.288 |
| 1347 | 80.964 | 21.845 | 37.564 | 24.221 | 16.564 | 17.941 | 0.680 | 1.580 | 0.919 | 0.923 | 0.022 | 1 | 5.059 | 7.126 |
| 1348 | 80.111 | 18.240 | 33.072 | 28.337 | 16.993 | 16.478 | 0.805 | 1.835 | 1.012 | 1.031 | 0.024 | 1 | 5.809 | 4.190 |
| 1349 | 91.123 | 19.221 | 33.613 | 24.145 | 18.759 | 19.970 | 0.755 | 2.015 | 1.152 | 0.939 | 0.018 | 1 | 6.137 | 4.297 |
| 1350 | 91.009 | 18.590 | 38.193 | 24.073 | 16.860 | 17.846 | 0.767 | 1.867 | 0.909 | 0.945 | 0.018 | 1 | 5.652 | 4.024 |
| 1351 | 83.217 | 18.560 | 35.405 | 29.995 | 19.690 | 18.516 | 0.788 | 2.059 | 1.079 | 1.063 | 0.023 | 1 | 6.105 | 4.305 |
| 1352 | 86.994 | 20.797 | 35.199 | 24.139 | 18.711 | 17.830 | 0.718 | 1.757 | 1.038 | 1.049 | 0.020 | 1 | 8.323 | 6.928 |
| 1353 | 99.441 | 20.591 | 37.405 | 25.170 | 19.797 | 18.563 | 0.710 | 1.863 | 1.026 | 1.066 | 0.016 | 1 | 6.478 | 4.572 |
| 1354 | 87.147 | 19.984 | 36.786 | 24.744 | 17.614 | 16.766 | 0.740 | 1.720 | 0.935 | 1.051 | 0.020 | 1 | 8.229 | 6.860 |
| 1355 | 94.261 | 20.654 | 32.343 | 24.867 | 16.417 | 16.891 | 0.716 | 1.613 | 1.030 | 0.972 | 0.018 | 1 | 3.191 | 4.579 |
| 1356 | 83.884 | 21.174 | 36.649 | 27.350 | 18.628 | 19.531 | 0.713 | 1.802 | 1.041 | 0.954 | 0.022 | 1 | 8.400 | 6.973 |
| 1357 | 99.661 | 19.062 | 36.935 | 27.686 | 16.588 | 19.686 | 0.744 | 1.903 | 0.982 | 0.843 | 0.017 | -1 | 6.783 | 4.803 |
| 1358 | 84.436 | 20.225 | 39.704 | 26.655 | 16.842 | 19.399 | 0.731 | 1.792 | 0.913 | 0.868 | 0.021 | 1 | 7.943 | 6.575 |
| 1359 | 82.866 | 21.018 | 38.601 | 27.977 | 16.341 | 16.652 | 0.714 | 1.570 | 0.855 | 0.981 | 0.022 | 1 | 5.525 | 7.805 |
| 1360 | 84.837 | 18.324 | 37.305 | 29.315 | 19.929 | 18.403 | 0.799 | 2.092 | 1.028 | 1.083 | 0.022 | 1 | 5.952 | 4.193 |
| 1361 | 96.589 | 21.676 | 39.184 | 28.948 | 18.499 | 19.618 | 0.684 | 1.758 | 0.973 | 0.943 | 0.018 | 1 | 9.609 | 7.996 |
| 1362 | 96.404 | 21.621 | 39.464 | 25.424 | 17.186 | 16.195 | 0.686 | 1.544 | 0.846 | 1.061 | 0.017 | 1 | 6.027 | 8.595 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1363 | 81.750 | 20.356 | 35.669 | 26.509 | 16.972 | 17.645 | 0.740 | 1.701 | 0.971 | 0.962 | 0.022 | 1 | 8.174 | 6.813 |
| 1364 | 84.727 | 21.624 | 36.068 | 26.736 | 19.086 | 19.403 | 0.701 | 1.780 | 1.067 | 0.984 | 0.021 | 1 | 8.447 | 7.016 |
| 1365 | 82.726 | 19.911 | 33.900 | 29.879 | 19.558 | 16.643 | 0.750 | 1.818 | 1.068 | 1.175 | 0.023 | 1 | 6.089 | 4.405 |
| 1366 | 81.149 | 17.932 | 39.100 | 27.647 | 19.324 | 19.490 | 0.821 | 2.165 | 0.993 | 0.991 | 0.023 | 1 | 5.305 | 3.760 |
| 1367 | 95.075 | 20.035 | 39.303 | 28.936 | 17.235 | 19.473 | 0.726 | 1.832 | 0.934 | 0.885 | 0.019 | 1 | 6.329 | 4.550 |
| 1368 | 86.750 | 21.726 | 37.855 | 26.919 | 19.362 | 19.118 | 0.696 | 1.771 | 1.017 | 1.013 | 0.021 | 1 | 8.439 | 7.007 |
| 1369 | 85.772 | 17.733 | 32.598 | 28.319 | 19.961 | 18.557 | 0.813 | 2.172 | 1.182 | 1.076 | 0.021 | 1 | 6.393 | 4.417 |
| 1370 | 88.837 | 18.013 | 35.160 | 26.154 | 19.477 | 19.002 | 0.805 | 2.136 | 1.094 | 1.025 | 0.020 | 1 | 6.083 | 4.232 |
| 1371 | 85.947 | 19.331 | 34.524 | 28.278 | 18.968 | 16.994 | 0.757 | 1.860 | 1.042 | 1.116 | 0.021 | 1 | 6.081 | 4.353 |
| 1372 | 89.922 | 18.606 | 36.596 | 29.025 | 16.308 | 17.272 | 0.780 | 1.805 | 0.918 | 0.944 | 0.020 | 1 | 6.213 | 4.488 |
| 1373 | 96.117 | 20.044 | 35.555 | 24.277 | 19.563 | 18.160 | 0.728 | 1.882 | 1.061 | 1.077 | 0.017 | 1 | 6.313 | 4.451 |
| 1374 | 89.207 | 21.072 | 32.709 | 29.252 | 18.903 | 17.331 | 0.716 | 1.720 | 1.108 | 1.091 | 0.021 | 1 | 6.501 | 4.731 |
| 1375 | 83.919 | 21.485 | 38.619 | 25.346 | 16.423 | 19.827 | 0.691 | 1.687 | 0.939 | 0.828 | 0.021 | 1 | 5.285 | 7.460 |
| 1376 | 96.576 | 18.814 | 38.238 | 29.323 | 19.264 | 16.217 | 0.760 | 1.886 | 0.928 | 1.188 | 0.018 | 1 | 6.646 | 4.697 |
| 1377 | 94.349 | 21.133 | 38.817 | 25.180 | 19.389 | 16.763 | 0.701 | 1.711 | 0.931 | 1.157 | 0.018 | 1 | 8.756 | 7.305 |
| 1378 | 99.069 | 18.314 | 36.326 | 29.980 | 17.398 | 17.460 | 0.776 | 1.903 | 0.960 | 0.996 | 0.018 | -1 | 7.089 | 4.982 |
| 1379 | 92.491 | 17.746 | 36.141 | 27.993 | 17.766 | 19.848 | 0.805 | 2.120 | 1.041 | 0.895 | 0.019 | 1 | 6.471 | 4.494 |
| 1380 | 99.872 | 19.523 | 35.744 | 26.435 | 16.859 | 16.442 | 0.740 | 1.706 | 0.932 | 1.025 | 0.017 | 1 | 6.681 | 4.824 |
| 1381 | 98.752 | 19.525 | 33.193 | 27.121 | 19.122 | 19.682 | 0.742 | 1.987 | 1.169 | 0.972 | 0.017 | -1 | 7.091 | 4.907 |
| 1382 | 89.799 | 20.995 | 33.106 | 29.357 | 18.800 | 18.256 | 0.713 | 1.765 | 1.119 | 1.030 | 0.020 | 1 | 6.551 | 4.733 |
| 1383 | 96.603 | 19.827 | 33.907 | 26.369 | 18.579 | 18.691 | 0.726 | 1.880 | 1.099 | 0.994 | 0.017 | -1 | 6.716 | 4.728 |
| 1384 | 91.283 | 18.981 | 32.092 | 26.590 | 18.512 | 16.067 | 0.757 | 1.822 | 1.077 | 1.152 | 0.019 | 1 | 6.483 | 4.610 |
| 1385 | 92.804 | 19.632 | 35.261 | 26.115 | 18.613 | 19.742 | 0.740 | 1.954 | 1.088 | 0.943 | 0.018 | 1 | 6.295 | 4.438 |
| 1386 | 94.849 | 18.068 | 39.662 | 29.634 | 16.482 | 17.967 | 0.780 | 1.907 | 0.869 | 0.917 | 0.019 | 1 | 6.410 | 4.559 |
| 1387 | 90.146 | 21.953 | 36.002 | 28.162 | 19.354 | 19.248 | 0.688 | 1.758 | 1.072 | 1.006 | 0.020 | 1 | 9.236 | 7.688 |
| 1388 | 88.108 | 18.163 | 39.277 | 24.871 | 19.930 | 18.343 | 0.806 | 2.107 | 0.974 | 1.087 | 0.019 | 1 | 5.472 | 3.853 |
| 1389 | 92.679 | 20.204 | 38.361 | 29.340 | 19.377 | 16.777 | 0.727 | 1.789 | 0.942 | 1.155 | 0.020 | 1 | 6.285 | 4.532 |
| 1390 | 97.237 | 21.837 | 37.118 | 27.540 | 18.861 | 17.726 | 0.684 | 1.675 | 0.986 | 1.064 | 0.018 | 1 | 9.677 | 8.093 |
| 1391 | 83.452 | 20.110 | 34.774 | 27.856 | 19.002 | 17.166 | 0.744 | 1.798 | 1.040 | 1.107 | 0.022 | 1 | 8.638 | 7.204 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1392 | 80.963 | 18.014 | 37.307 | 28.467 | 16.610 | 19.157 | 0.801 | 1.986 | 0.959 | 0.867 | 0.023 | 1 | 5.518 | 3.959 |
| 1393 | 94.745 | 20.376 | 35.600 | 24.396 | 18.091 | 17.126 | 0.718 | 1.728 | 0.989 | 1.056 | 0.017 | 1 | 6.136 | 4.416 |
| 1394 | 97.052 | 21.205 | 34.118 | 25.537 | 18.889 | 17.045 | 0.697 | 1.695 | 1.053 | 1.108 | 0.017 | 1 | 6.524 | 4.716 |
| 1395 | 90.802 | 18.096 | 33.839 | 29.977 | 16.344 | 16.354 | 0.796 | 1.807 | 0.966 | 0.999 | 0.020 | 1 | 6.648 | 4.782 |
| 1396 | 81.286 | 21.105 | 37.207 | 25.923 | 17.336 | 18.527 | 0.714 | 1.699 | 0.964 | 0.936 | 0.022 | 1 | 7.844 | 6.507 |
| 1397 | 83.067 | 21.320 | 34.852 | 26.548 | 16.097 | 17.140 | 0.707 | 1.559 | 0.954 | 0.939 | 0.022 | 1 | 5.674 | 8.048 |
| 1398 | 98.955 | 18.524 | 33.821 | 25.065 | 19.560 | 17.324 | 0.776 | 1.991 | 1.091 | 1.129 | 0.016 | 1 | 6.840 | 4.725 |
| 1399 | 97.920 | 20.369 | 39.078 | 24.344 | 19.618 | 16.477 | 0.712 | 1.772 | 0.924 | 1.191 | 0.016 | 1 | 6.086 | 4.350 |
| 1400 | 88.834 | 20.082 | 32.020 | 28.390 | 17.685 | 16.105 | 0.747 | 1.683 | 1.055 | 1.098 | 0.020 | 1 | 3.197 | 4.608 |
| 1401 | 96.905 | 19.096 | 33.754 | 29.983 | 16.903 | 18.673 | 0.756 | 1.863 | 1.054 | 0.905 | 0.018 | -1 | 7.124 | 5.054 |
| 1402 | 99.676 | 18.044 | 32.898 | 25.796 | 19.403 | 17.342 | 0.795 | 2.036 | 1.117 | 1.119 | 0.016 | -1 | 7.088 | 4.855 |
| 1403 | 89.474 | 20.502 | 33.636 | 27.320 | 19.974 | 16.457 | 0.724 | 1.777 | 1.083 | 1.214 | 0.020 | 1 | 6.249 | 4.506 |
| 1404 | 99.186 | 21.313 | 35.800 | 26.873 | 17.518 | 18.674 | 0.693 | 1.698 | 1.011 | 0.938 | 0.017 | 1 | 9.971 | 8.305 |
| 1405 | 98.214 | 19.499 | 34.712 | 25.050 | 19.677 | 16.590 | 0.740 | 1.860 | 1.045 | 1.186 | 0.016 | 1 | 6.625 | 4.662 |
| 1406 | 95.516 | 18.766 | 36.540 | 24.883 | 17.991 | 16.762 | 0.759 | 1.852 | 0.951 | 1.073 | 0.017 | 1 | 6.231 | 4.408 |
| 1407 | 96.582 | 20.426 | 32.925 | 27.059 | 16.977 | 17.975 | 0.721 | 1.711 | 1.062 | 0.944 | 0.018 | 1 | 3.437 | 4.851 |
| 1408 | 91.239 | 20.144 | 34.620 | 27.484 | 18.490 | 19.651 | 0.723 | 1.893 | 1.102 | 0.941 | 0.019 | 1 | 6.361 | 4.523 |
| 1409 | 99.144 | 17.712 | 35.893 | 27.522 | 16.755 | 18.263 | 0.800 | 1.977 | 0.976 | 0.917 | 0.017 | -1 | 6.899 | 4.801 |
| 1410 | 89.845 | 20.490 | 33.451 | 28.208 | 17.433 | 19.630 | 0.724 | 1.809 | 1.108 | 0.888 | 0.020 | 1 | 9.563 | 7.943 |
| 1411 | 84.303 | 18.888 | 35.624 | 24.759 | 16.105 | 16.968 | 0.776 | 1.751 | 0.928 | 0.949 | 0.021 | 1 | 8.103 | 6.756 |
| 1412 | 94.713 | 20.140 | 33.568 | 26.688 | 17.541 | 18.587 | 0.724 | 1.794 | 1.076 | 0.944 | 0.018 | 1 | 6.576 | 4.705 |
| 1413 | 89.539 | 21.954 | 38.235 | 29.836 | 19.134 | 19.072 | 0.690 | 1.740 | 0.999 | 1.003 | 0.021 | 1 | 9.189 | 7.653 |
| 1414 | 80.605 | 21.064 | 34.852 | 25.634 | 19.878 | 17.873 | 0.724 | 1.792 | 1.083 | 1.112 | 0.022 | 1 | 7.961 | 6.628 |
| 1415 | 99.142 | 21.893 | 38.675 | 27.913 | 18.253 | 19.134 | 0.677 | 1.708 | 0.967 | 0.954 | 0.017 | 1 | 9.762 | 8.143 |
| 1416 | 97.646 | 21.546 | 39.747 | 28.559 | 16.402 | 16.662 | 0.692 | 1.535 | 0.832 | 0.984 | 0.018 | 1 | 6.420 | 9.159 |
| 1417 | 84.442 | 19.932 | 36.437 | 24.348 | 17.977 | 17.904 | 0.743 | 1.800 | 0.985 | 1.004 | 0.020 | 1 | 7.939 | 6.594 |
| 1418 | 87.808 | 18.035 | 33.479 | 26.255 | 17.013 | 18.805 | 0.789 | 1.986 | 1.070 | 0.905 | 0.020 | 1 | 6.129 | 4.311 |
| 1419 | 96.551 | 17.959 | 36.286 | 25.552 | 17.226 | 19.427 | 0.791 | 2.041 | 1.010 | 0.887 | 0.017 | 1 | 6.469 | 4.499 |
| 1420 | 93.898 | 18.527 | 37.276 | 26.022 | 19.095 | 16.194 | 0.776 | 1.905 | 0.947 | 1.179 | 0.018 | 1 | 6.179 | 4.362 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1421 | 91.589 | 20.087 | 33.967 | 26.584 | 18.112 | 16.655 | 0.735 | 1.731 | 1.024 | 1.087 | 0.019 | 1 | 6.268 | 4.533 |
| 1422 | 81.036 | 19.103 | 34.584 | 27.644 | 19.566 | 16.619 | 0.771 | 1.894 | 1.046 | 1.177 | 0.023 | 1 | 5.664 | 4.065 |
| 1423 | 88.426 | 19.366 | 34.932 | 29.505 | 17.246 | 17.557 | 0.760 | 1.797 | 0.996 | 0.982 | 0.021 | 1 | 6.318 | 4.566 |
| 1424 | 90.647 | 18.423 | 34.289 | 24.113 | 17.427 | 16.130 | 0.776 | 1.821 | 0.979 | 1.080 | 0.018 | 1 | 5.973 | 4.253 |
| 1425 | 98.911 | 18.049 | 34.056 | 26.484 | 19.528 | 19.728 | 0.796 | 2.175 | 1.153 | 0.990 | 0.017 | 1 | 7.040 | 4.782 |
| 1426 | 86.941 | 21.762 | 38.933 | 27.107 | 18.803 | 19.892 | 0.692 | 1.778 | 0.994 | 0.945 | 0.021 | 1 | 8.369 | 6.936 |
| 1427 | 90.609 | 19.805 | 36.354 | 25.642 | 18.447 | 17.495 | 0.737 | 1.815 | 0.989 | 1.054 | 0.019 | 1 | 5.928 | 4.246 |
| 1428 | 95.895 | 21.399 | 37.936 | 27.219 | 16.496 | 19.550 | 0.692 | 1.684 | 0.950 | 0.844 | 0.018 | 1 | 9.440 | 7.868 |
| 1429 | 82.034 | 20.284 | 38.702 | 29.659 | 18.879 | 17.533 | 0.742 | 1.795 | 0.941 | 1.077 | 0.023 | 1 | 8.346 | 6.942 |
| 1430 | 96.744 | 19.358 | 33.811 | 26.928 | 16.028 | 19.084 | 0.746 | 1.814 | 1.038 | 0.840 | 0.018 | 1 | 6.710 | 4.813 |
| 1431 | 90.387 | 18.030 | 36.556 | 27.125 | 18.380 | 18.968 | 0.800 | 2.071 | 1.022 | 0.969 | 0.020 | 1 | 6.157 | 4.306 |
| 1432 | 85.960 | 17.695 | 37.384 | 26.333 | 16.189 | 17.169 | 0.807 | 1.885 | 0.892 | 0.943 | 0.021 | 1 | 5.594 | 4.004 |
| 1433 | 91.782 | 19.346 | 39.669 | 26.638 | 18.986 | 17.990 | 0.754 | 1.911 | 0.932 | 1.055 | 0.019 | 1 | 5.856 | 4.162 |
| 1434 | 93.740 | 20.337 | 32.014 | 27.623 | 16.086 | 18.037 | 0.731 | 1.678 | 1.066 | 0.892 | 0.019 | 1 | 3.383 | 4.803 |
| 1435 | 93.992 | 19.506 | 32.811 | 25.660 | 17.508 | 16.961 | 0.743 | 1.767 | 1.051 | 1.032 | 0.018 | 1 | 6.481 | 4.636 |
| 1436 | 92.985 | 20.073 | 34.813 | 28.306 | 16.684 | 18.834 | 0.735 | 1.769 | 1.020 | 0.886 | 0.019 | 1 | 9.706 | 8.073 |
| 1437 | 81.671 | 21.923 | 33.486 | 28.116 | 18.330 | 18.026 | 0.706 | 1.658 | 1.086 | 1.017 | 0.023 | 1 | 5.891 | 8.364 |
| 1438 | 80.790 | 19.092 | 38.859 | 27.187 | 16.860 | 17.478 | 0.773 | 1.799 | 0.884 | 0.965 | 0.023 | 1 | 7.756 | 6.436 |
| 1439 | 94.101 | 20.460 | 38.654 | 26.746 | 16.707 | 17.218 | 0.719 | 1.658 | 0.878 | 0.970 | 0.018 | 1 | 9.041 | 7.571 |
| 1440 | 92.429 | 21.471 | 36.421 | 25.092 | 19.944 | 17.022 | 0.697 | 1.722 | 1.015 | 1.172 | 0.018 | 1 | 8.846 | 7.384 |
| 1441 | 95.415 | 19.693 | 36.447 | 28.208 | 16.559 | 19.074 | 0.739 | 1.809 | 0.978 | 0.868 | 0.018 | 1 | 6.514 | 4.690 |
| 1442 | 87.830 | 19.616 | 35.174 | 26.347 | 18.772 | 18.513 | 0.743 | 1.901 | 1.060 | 1.014 | 0.020 | 1 | 5.943 | 4.230 |
| 1443 | 97.338 | 18.329 | 34.889 | 24.925 | 18.769 | 19.739 | 0.784 | 2.101 | 1.104 | 0.951 | 0.017 | 1 | 6.628 | 4.563 |
| 1444 | 90.573 | 18.650 | 35.420 | 29.002 | 19.225 | 18.348 | 0.777 | 2.015 | 1.061 | 1.048 | 0.020 | 1 | 6.491 | 4.545 |
| 1445 | 94.421 | 21.767 | 35.613 | 27.695 | 19.983 | 18.578 | 0.685 | 1.772 | 1.083 | 1.076 | 0.018 | 1 | 6.463 | 4.651 |
| 1446 | 99.363 | 19.553 | 32.305 | 27.810 | 18.283 | 18.135 | 0.744 | 1.863 | 1.127 | 1.008 | 0.017 | -1 | 7.230 | 5.066 |
| 1447 | 91.772 | 17.814 | 32.583 | 27.032 | 17.900 | 18.283 | 0.804 | 2.031 | 1.110 | 0.979 | 0.019 | -1 | 6.640 | 4.597 |
| 1448 | 92.020 | 18.247 | 35.039 | 29.952 | 16.569 | 19.055 | 0.776 | 1.952 | 1.017 | 0.870 | 0.020 | -1 | 6.694 | 4.736 |
| 1449 | 85.292 | 21.146 | 35.809 | 27.277 | 19.077 | 17.486 | 0.717 | 1.729 | 1.021 | 1.091 | 0.021 | 1 | 8.602 | 7.174 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1450 | 81.962 | 20.643 | 39.114 | 29.513 | 17.394 | 16.717 | 0.733 | 1.652 | 0.872 | 1.040 | 0.023 | 1 | 8.287 | 6.917 |
| 1451 | 94.414 | 19.326 | 32.070 | 27.444 | 17.219 | 19.866 | 0.752 | 1.919 | 1.156 | 0.867 | 0.018 | -1 | 6.848 | 4.815 |
| 1452 | 87.190 | 20.822 | 39.521 | 24.712 | 16.309 | 16.522 | 0.707 | 1.577 | 0.831 | 0.987 | 0.020 | 1 | 5.324 | 7.558 |
| 1453 | 87.328 | 18.366 | 34.628 | 26.823 | 17.980 | 19.758 | 0.786 | 2.055 | 1.090 | 0.910 | 0.020 | 1 | 6.065 | 4.261 |
| 1454 | 91.772 | 21.578 | 36.975 | 29.875 | 17.145 | 17.517 | 0.702 | 1.606 | 0.937 | 0.979 | 0.020 | 1 | 6.460 | 9.175 |
| 1455 | 98.725 | 20.640 | 37.950 | 25.332 | 18.259 | 16.263 | 0.709 | 1.673 | 0.910 | 1.123 | 0.016 | 1 | 6.277 | 4.553 |
| 1456 | 99.827 | 18.108 | 37.127 | 28.160 | 18.566 | 16.759 | 0.784 | 1.951 | 0.951 | 1.108 | 0.017 | 1 | 6.906 | 4.809 |
| 1457 | 80.023 | 18.751 | 37.426 | 24.619 | 19.996 | 19.858 | 0.793 | 2.125 | 1.065 | 1.007 | 0.022 | 1 | 4.997 | 3.562 |
| 1458 | 82.008 | 19.648 | 34.784 | 27.042 | 19.113 | 18.173 | 0.753 | 1.898 | 1.072 | 1.052 | 0.022 | 1 | 5.639 | 4.043 |
| 1459 | 82.108 | 18.541 | 34.087 | 29.910 | 18.469 | 19.505 | 0.783 | 2.048 | 1.114 | 0.947 | 0.023 | 1 | 6.138 | 4.333 |
| 1460 | 94.491 | 21.064 | 39.130 | 24.528 | 16.751 | 17.909 | 0.696 | 1.645 | 0.886 | 0.935 | 0.017 | 1 | 8.698 | 7.257 |
| 1461 | 90.565 | 20.859 | 32.326 | 28.618 | 17.092 | 18.260 | 0.720 | 1.695 | 1.094 | 0.936 | 0.020 | 1 | 9.857 | 8.200 |
| 1462 | 90.454 | 21.191 | 35.946 | 24.144 | 18.917 | 18.207 | 0.702 | 1.752 | 1.033 | 1.039 | 0.018 | 1 | 5.765 | 4.160 |
| 1463 | 93.413 | 19.275 | 38.613 | 29.685 | 16.710 | 17.383 | 0.756 | 1.769 | 0.883 | 0.961 | 0.019 | 1 | 6.330 | 4.588 |
| 1464 | 84.066 | 21.923 | 38.822 | 26.653 | 19.064 | 17.750 | 0.695 | 1.679 | 0.948 | 1.074 | 0.022 | 1 | 8.006 | 6.652 |
| 1465 | 81.340 | 18.139 | 37.217 | 25.692 | 19.398 | 16.946 | 0.809 | 2.004 | 0.977 | 1.145 | 0.022 | 1 | 5.232 | 3.730 |
| 1466 | 86.967 | 21.248 | 37.385 | 28.540 | 19.712 | 18.526 | 0.709 | 1.800 | 1.023 | 1.064 | 0.021 | 1 | 8.785 | 7.306 |
| 1467 | 80.435 | 18.201 | 38.923 | 27.705 | 18.757 | 16.945 | 0.805 | 1.962 | 0.917 | 1.107 | 0.023 | 1 | 5.237 | 3.758 |
| 1468 | 97.256 | 17.842 | 34.510 | 27.230 | 17.993 | 17.189 | 0.798 | 1.972 | 1.019 | 1.047 | 0.018 | -1 | 6.866 | 4.766 |
| 1469 | 97.427 | 18.172 | 34.753 | 28.881 | 16.710 | 18.905 | 0.785 | 1.960 | 1.025 | 0.884 | 0.018 | -1 | 7.008 | 4.903 |
| 1470 | 80.971 | 18.405 | 36.542 | 27.070 | 17.695 | 16.916 | 0.794 | 1.881 | 0.947 | 1.046 | 0.023 | 1 | 5.400 | 3.887 |
| 1471 | 97.414 | 19.040 | 38.680 | 28.814 | 18.801 | 19.995 | 0.761 | 2.038 | 1.003 | 0.940 | 0.018 | 1 | 6.660 | 4.649 |
| 1472 | 86.082 | 21.352 | 36.515 | 28.055 | 19.816 | 19.769 | 0.704 | 1.854 | 1.084 | 1.002 | 0.021 | 1 | 8.737 | 7.249 |
| 1473 | 94.102 | 17.930 | 35.352 | 28.643 | 19.989 | 19.633 | 0.806 | 2.210 | 1.121 | 1.018 | 0.019 | 1 | 6.796 | 4.649 |
| 1474 | 88.964 | 20.850 | 38.371 | 27.304 | 19.601 | 19.550 | 0.710 | 1.878 | 1.020 | 1.003 | 0.020 | 1 | 8.639 | 7.157 |
| 1475 | 92.535 | 17.923 | 32.810 | 26.898 | 16.945 | 18.598 | 0.799 | 1.983 | 1.083 | 0.911 | 0.019 | -1 | 6.630 | 4.620 |
| 1476 | 93.390 | 18.009 | 34.175 | 27.284 | 18.099 | 19.164 | 0.794 | 2.069 | 1.090 | 0.944 | 0.019 | 1 | 6.642 | 4.597 |
| 1477 | 84.335 | 18.618 | 36.202 | 28.104 | 18.855 | 18.636 | 0.784 | 2.014 | 1.036 | 1.012 | 0.022 | 1 | 5.842 | 4.140 |
| 1478 | 82.010 | 21.619 | 38.341 | 26.792 | 16.202 | 16.479 | 0.690 | 1.512 | 0.852 | 0.983 | 0.022 | 1 | 5.367 | 7.557 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1479 | 95.430 | 18.246 | 38.507 | 28.134 | 16.708 | 18.574 | 0.772 | 1.934 | 0.916 | 0.900 | 0.018 | 1 | 6.403 | 4.528 |
| 1480 | 80.342 | 20.841 | 34.843 | 24.676 | 19.198 | 18.682 | 0.727 | 1.818 | 1.087 | 1.028 | 0.022 | 1 | 7.787 | 6.469 |
| 1481 | 86.292 | 18.531 | 36.252 | 24.307 | 19.098 | 18.926 | 0.788 | 2.052 | 1.049 | 1.009 | 0.020 | 1 | 5.544 | 3.913 |
| 1482 | 93.247 | 17.847 | 37.440 | 24.316 | 19.813 | 17.142 | 0.809 | 2.071 | 0.987 | 1.156 | 0.018 | 1 | 5.990 | 4.173 |
| 1483 | 84.672 | 19.112 | 38.230 | 26.244 | 18.521 | 19.003 | 0.768 | 1.963 | 0.982 | 0.975 | 0.021 | 1 | 5.427 | 3.876 |
| 1484 | 93.923 | 19.204 | 38.889 | 26.846 | 19.760 | 18.764 | 0.763 | 2.006 | 0.991 | 1.053 | 0.018 | 1 | 6.147 | 4.318 |
| 1485 | 90.835 | 19.099 | 35.219 | 25.465 | 16.169 | 18.523 | 0.759 | 1.816 | 0.985 | 0.873 | 0.019 | 1 | 6.012 | 4.319 |
| 1486 | 85.382 | 21.219 | 33.168 | 25.136 | 17.785 | 17.856 | 0.712 | 1.680 | 1.075 | 0.996 | 0.020 | 1 | 5.758 | 8.229 |
| 1487 | 95.287 | 21.390 | 34.702 | 25.743 | 17.231 | 19.720 | 0.692 | 1.727 | 1.065 | 0.874 | 0.018 | 1 | 9.559 | 7.937 |
| 1488 | 94.438 | 20.024 | 38.696 | 28.515 | 16.216 | 16.482 | 0.737 | 1.633 | 0.845 | 0.984 | 0.019 | 1 | 6.277 | 8.967 |
| 1489 | 89.019 | 17.738 | 32.585 | 26.206 | 16.684 | 17.955 | 0.804 | 1.953 | 1.063 | 0.929 | 0.020 | -1 | 6.296 | 4.418 |
| 1490 | 98.192 | 20.019 | 34.544 | 28.247 | 18.008 | 17.324 | 0.725 | 1.765 | 1.023 | 1.039 | 0.018 | 1 | 6.898 | 4.941 |
| 1491 | 86.237 | 20.559 | 33.915 | 29.188 | 19.597 | 16.822 | 0.730 | 1.771 | 1.074 | 1.165 | 0.022 | 1 | 6.211 | 4.505 |
| 1492 | 83.012 | 18.655 | 33.664 | 29.758 | 18.291 | 17.042 | 0.779 | 1.894 | 1.050 | 1.073 | 0.023 | 1 | 6.165 | 4.404 |
| 1493 | 99.597 | 18.301 | 34.599 | 24.829 | 19.922 | 19.759 | 0.788 | 2.168 | 1.147 | 1.008 | 0.016 | 1 | 6.854 | 4.671 |
| 1494 | 96.023 | 20.380 | 37.100 | 25.618 | 18.414 | 16.131 | 0.720 | 1.695 | 0.931 | 1.141 | 0.017 | 1 | 6.192 | 4.487 |
| 1495 | 87.937 | 21.559 | 36.123 | 24.430 | 17.794 | 18.160 | 0.695 | 1.668 | 0.995 | 0.980 | 0.019 | 1 | 8.393 | 6.989 |
| 1496 | 89.089 | 18.122 | 37.211 | 29.258 | 18.496 | 17.283 | 0.792 | 1.974 | 0.962 | 1.070 | 0.021 | 1 | 6.224 | 4.397 |
| 1497 | 96.516 | 19.531 | 37.273 | 28.550 | 19.326 | 19.979 | 0.747 | 2.012 | 1.055 | 0.967 | 0.018 | 1 | 6.686 | 4.674 |
| 1498 | 95.295 | 21.534 | 37.885 | 25.454 | 16.470 | 16.245 | 0.689 | 1.519 | 0.864 | 1.014 | 0.017 | 1 | 6.075 | 8.678 |
| 1499 | 89.743 | 18.442 | 34.848 | 25.861 | 18.910 | 18.844 | 0.786 | 2.047 | 1.083 | 1.003 | 0.019 | 1 | 6.121 | 4.281 |
| 1500 | 97.936 | 21.977 | 35.766 | 29.550 | 17.632 | 17.177 | 0.688 | 1.584 | 0.973 | 1.027 | 0.018 | 1 | 6.909 | 9.848 |
| 1501 | 96.418 | 21.103 | 33.387 | 28.751 | 16.005 | 19.665 | 0.707 | 1.690 | 1.068 | 0.814 | 0.018 | 1 | 10.360 | 8.587 |
| 1502 | 91.996 | 21.863 | 34.463 | 27.438 | 18.686 | 16.515 | 0.696 | 1.610 | 1.021 | 1.131 | 0.019 | 1 | 9.470 | 7.955 |
| 1503 | 87.459 | 18.023 | 39.877 | 25.669 | 18.447 | 16.743 | 0.803 | 1.952 | 0.882 | 1.102 | 0.020 | 1 | 5.423 | 3.856 |
| 1504 | 98.137 | 18.343 | 35.777 | 24.278 | 18.291 | 19.328 | 0.782 | 2.051 | 1.051 | 0.946 | 0.016 | 1 | 6.522 | 4.512 |
| 1505 | 86.141 | 20.881 | 35.484 | 24.234 | 16.231 | 16.378 | 0.712 | 1.562 | 0.919 | 0.991 | 0.020 | 1 | 5.530 | 7.881 |
| 1506 | 89.182 | 20.548 | 39.915 | 27.983 | 18.108 | 16.176 | 0.726 | 1.669 | 0.859 | 1.119 | 0.020 | 1 | 8.564 | 7.158 |
| 1507 | 90.831 | 19.529 | 36.263 | 29.083 | 17.822 | 19.982 | 0.740 | 1.936 | 1.042 | 0.892 | 0.020 | 1 | 6.372 | 4.536 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1508 | 89.099 | 21.172 | 38.707 | 27.439 | 18.350 | 16.473 | 0.711 | 1.645 | 0.900 | 1.114 | 0.020 | 1 | 8.632 | 7.217 |
| 1509 | 90.219 | 20.965 | 34.877 | 26.470 | 16.939 | 19.685 | 0.711 | 1.747 | 1.050 | 0.861 | 0.019 | 1 | 9.135 | 7.598 |
| 1510 | 84.485 | 19.218 | 33.834 | 25.485 | 19.824 | 18.343 | 0.765 | 1.986 | 1.128 | 1.081 | 0.021 | 1 | 5.755 | 4.073 |
| 1511 | 91.054 | 20.645 | 39.322 | 29.624 | 17.865 | 18.445 | 0.719 | 1.759 | 0.923 | 0.969 | 0.020 | 1 | 9.144 | 7.620 |
| 1512 | 88.550 | 19.084 | 32.034 | 24.637 | 16.479 | 18.982 | 0.756 | 1.858 | 1.107 | 0.868 | 0.019 | 1 | 3.071 | 4.324 |
| 1513 | 98.379 | 20.544 | 32.640 | 28.845 | 19.230 | 18.660 | 0.709 | 1.844 | 1.161 | 1.031 | 0.018 | -1 | 7.222 | 5.089 |
| 1514 | 97.602 | 19.203 | 33.332 | 25.568 | 18.457 | 17.515 | 0.748 | 1.873 | 1.079 | 1.054 | 0.017 | -1 | 6.769 | 4.748 |
| 1515 | 88.265 | 19.173 | 37.640 | 26.358 | 16.320 | 19.274 | 0.758 | 1.857 | 0.946 | 0.847 | 0.020 | 1 | 5.711 | 4.111 |
| 1516 | 80.034 | 21.030 | 36.252 | 26.330 | 17.635 | 18.358 | 0.722 | 1.712 | 0.993 | 0.961 | 0.023 | 1 | 7.911 | 6.570 |
| 1517 | 93.045 | 21.941 | 38.615 | 29.915 | 17.867 | 17.387 | 0.690 | 1.607 | 0.913 | 1.028 | 0.020 | 1 | 9.489 | 7.973 |
| 1518 | 97.804 | 18.782 | 36.037 | 28.337 | 19.673 | 19.074 | 0.772 | 2.063 | 1.075 | 1.031 | 0.018 | 1 | 6.918 | 4.776 |
| 1519 | 99.049 | 19.072 | 32.064 | 29.144 | 17.347 | 18.367 | 0.766 | 1.873 | 1.114 | 0.944 | 0.018 | -1 | 7.377 | 5.172 |
| 1520 | 80.420 | 18.329 | 39.870 | 25.083 | 18.564 | 18.736 | 0.806 | 2.035 | 0.936 | 0.991 | 0.022 | 1 | 7.177 | 5.926 |
| 1521 | 96.836 | 19.066 | 38.409 | 26.653 | 18.779 | 18.457 | 0.759 | 1.953 | 0.969 | 1.017 | 0.017 | 1 | 6.379 | 4.478 |
| 1522 | 91.429 | 19.231 | 35.090 | 27.628 | 17.675 | 18.785 | 0.748 | 1.896 | 1.039 | 0.941 | 0.019 | 1 | 6.355 | 4.513 |
| 1523 | 83.934 | 18.915 | 34.712 | 27.882 | 17.018 | 19.883 | 0.769 | 1.951 | 1.063 | 0.856 | 0.022 | 1 | 5.883 | 4.211 |
| 1524 | 87.395 | 21.529 | 38.414 | 24.815 | 17.301 | 16.386 | 0.694 | 1.565 | 0.877 | 1.056 | 0.020 | 1 | 8.102 | 6.761 |
| 1525 | 80.067 | 21.067 | 32.395 | 25.701 | 16.557 | 18.467 | 0.720 | 1.663 | 1.081 | 0.897 | 0.023 | 1 | 5.559 | 7.917 |
| 1526 | 89.388 | 17.679 | 34.150 | 28.257 | 16.706 | 18.294 | 0.800 | 1.980 | 1.025 | 0.913 | 0.020 | -1 | 6.416 | 4.511 |
| 1527 | 94.896 | 17.938 | 35.962 | 27.766 | 16.819 | 19.735 | 0.788 | 2.038 | 1.016 | 0.852 | 0.018 | 1 | 6.603 | 4.613 |
| 1528 | 86.966 | 18.048 | 33.423 | 28.052 | 18.672 | 19.208 | 0.798 | 2.099 | 1.133 | 0.972 | 0.021 | 1 | 6.337 | 4.409 |
| 1529 | 88.247 | 18.778 | 34.712 | 24.618 | 19.958 | 19.525 | 0.779 | 2.103 | 1.137 | 1.022 | 0.019 | 1 | 5.886 | 4.120 |
| 1530 | 94.662 | 21.950 | 38.390 | 27.271 | 16.547 | 16.632 | 0.681 | 1.512 | 0.864 | 0.995 | 0.018 | 1 | 6.204 | 8.837 |
| 1531 | 82.853 | 17.686 | 35.462 | 24.535 | 17.152 | 17.097 | 0.811 | 1.937 | 0.966 | 1.003 | 0.021 | 1 | 5.366 | 3.821 |
| 1532 | 80.962 | 17.833 | 39.456 | 29.175 | 19.790 | 18.236 | 0.825 | 2.132 | 0.964 | 1.085 | 0.023 | 1 | 5.454 | 3.868 |
| 1533 | 89.582 | 21.570 | 32.263 | 29.132 | 17.403 | 16.744 | 0.711 | 1.583 | 1.058 | 1.039 | 0.020 | 1 | 6.589 | 9.413 |
| 1534 | 89.799 | 21.420 | 37.498 | 25.197 | 18.019 | 17.712 | 0.698 | 1.668 | 0.953 | 1.017 | 0.019 | 1 | 8.513 | 7.095 |
| 1535 | 85.172 | 19.267 | 33.122 | 27.717 | 18.831 | 17.899 | 0.754 | 1.906 | 1.109 | 1.052 | 0.021 | 1 | 6.116 | 4.345 |
| 1536 | 94.531 | 19.801 | 35.083 | 25.668 | 19.558 | 19.137 | 0.739 | 1.954 | 1.103 | 1.022 | 0.018 | 1 | 6.404 | 4.494 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1537 | 82.471 | 19.401 | 39.718 | 28.388 | 18.475 | 17.746 | 0.761 | 1.867 | 0.912 | 1.041 | 0.023 | 1 | 8.003 | 6.636 |
| 1538 | 84.423 | 19.465 | 36.681 | 25.292 | 16.482 | 17.830 | 0.757 | 1.763 | 0.935 | 0.924 | 0.021 | 1 | 8.082 | 6.723 |
| 1539 | 93.163 | 20.601 | 36.122 | 29.886 | 16.585 | 18.329 | 0.725 | 1.695 | 0.967 | 0.905 | 0.020 | 1 | 9.830 | 8.215 |
| 1540 | 83.641 | 17.895 | 33.892 | 29.375 | 16.167 | 17.711 | 0.806 | 1.893 | 1.000 | 0.913 | 0.022 | 1 | 6.121 | 4.387 |
| 1541 | 83.010 | 19.664 | 34.513 | 24.199 | 19.423 | 18.161 | 0.750 | 1.911 | 1.089 | 1.069 | 0.021 | 1 | 5.408 | 3.867 |
| 1542 | 82.725 | 21.906 | 39.659 | 26.796 | 19.334 | 17.164 | 0.697 | 1.666 | 0.920 | 1.126 | 0.022 | 1 | 7.782 | 6.462 |
| 1543 | 99.581 | 18.069 | 33.903 | 29.908 | 16.557 | 16.334 | 0.790 | 1.820 | 0.970 | 1.014 | 0.018 | -1 | 7.279 | 5.169 |
| 1544 | 82.581 | 20.333 | 35.487 | 29.742 | 16.598 | 19.390 | 0.743 | 1.770 | 1.014 | 0.856 | 0.023 | 1 | 5.995 | 8.496 |
| 1545 | 92.490 | 18.040 | 35.849 | 24.296 | 16.659 | 17.127 | 0.781 | 1.873 | 0.942 | 0.973 | 0.018 | 1 | 6.009 | 4.255 |
| 1546 | 90.965 | 21.068 | 39.666 | 24.176 | 19.514 | 19.275 | 0.702 | 1.841 | 0.978 | 1.012 | 0.018 | 1 | 8.169 | 6.765 |
| 1547 | 86.128 | 21.364 | 37.174 | 26.192 | 17.804 | 19.118 | 0.703 | 1.728 | 0.993 | 0.931 | 0.021 | 1 | 8.367 | 6.953 |
| 1548 | 91.461 | 20.455 | 32.486 | 29.071 | 18.122 | 18.741 | 0.721 | 1.802 | 1.135 | 0.967 | 0.020 | 1 | 6.717 | 4.813 |
| 1549 | 84.897 | 17.748 | 39.691 | 29.579 | 16.261 | 16.789 | 0.811 | 1.862 | 0.833 | 0.969 | 0.022 | 1 | 5.673 | 4.098 |
| 1550 | 84.975 | 19.423 | 34.457 | 24.381 | 16.998 | 18.609 | 0.756 | 1.833 | 1.033 | 0.913 | 0.020 | 1 | 5.551 | 3.990 |
| 1551 | 90.948 | 19.941 | 36.911 | 27.940 | 17.796 | 18.642 | 0.735 | 1.827 | 0.987 | 0.955 | 0.020 | 1 | 6.147 | 4.417 |
| 1552 | 83.710 | 20.378 | 33.525 | 29.771 | 17.797 | 18.960 | 0.738 | 1.804 | 1.096 | 0.939 | 0.023 | 1 | 9.242 | 7.707 |
| 1553 | 94.413 | 17.992 | 33.772 | 27.365 | 19.468 | 17.800 | 0.798 | 2.071 | 1.104 | 1.094 | 0.018 | 1 | 6.778 | 4.671 |
| 1554 | 97.659 | 18.042 | 33.296 | 28.091 | 16.302 | 19.991 | 0.792 | 2.012 | 1.090 | 0.815 | 0.018 | -1 | 7.092 | 4.930 |
| 1555 | 96.136 | 19.867 | 35.352 | 24.397 | 17.921 | 19.126 | 0.723 | 1.865 | 1.048 | 0.937 | 0.017 | 1 | 6.328 | 4.479 |
| 1556 | 93.579 | 19.441 | 38.253 | 27.606 | 17.971 | 19.378 | 0.742 | 1.921 | 0.976 | 0.927 | 0.019 | 1 | 6.222 | 4.416 |
| 1557 | 82.914 | 20.013 | 36.590 | 26.639 | 16.185 | 18.822 | 0.744 | 1.749 | 0.957 | 0.860 | 0.022 | 1 | 8.204 | 6.827 |
| 1558 | 86.486 | 18.245 | 39.969 | 28.967 | 19.982 | 18.132 | 0.804 | 2.089 | 0.954 | 1.102 | 0.021 | 1 | 5.764 | 4.069 |
| 1559 | 95.227 | 19.069 | 37.004 | 26.100 | 16.975 | 16.547 | 0.755 | 1.758 | 0.906 | 1.026 | 0.018 | 1 | 6.231 | 4.477 |
| 1560 | 83.636 | 20.258 | 36.335 | 28.943 | 19.781 | 18.960 | 0.733 | 1.912 | 1.066 | 1.043 | 0.022 | 1 | 5.840 | 4.191 |
| 1561 | 87.473 | 19.938 | 32.409 | 27.304 | 18.482 | 16.022 | 0.747 | 1.731 | 1.065 | 1.154 | 0.021 | 1 | 6.191 | 4.495 |
| 1562 | 81.003 | 18.853 | 35.773 | 24.897 | 18.131 | 17.125 | 0.780 | 1.870 | 0.986 | 1.059 | 0.022 | 1 | 5.216 | 3.751 |
| 1563 | 80.703 | 17.789 | 39.637 | 28.132 | 16.673 | 18.141 | 0.810 | 1.957 | 0.878 | 0.919 | 0.023 | 1 | 7.798 | 6.455 |
| 1564 | 92.273 | 21.567 | 38.454 | 26.008 | 16.654 | 19.802 | 0.686 | 1.690 | 0.948 | 0.841 | 0.019 | 1 | 5.929 | 8.408 |
| 1565 | 87.857 | 19.232 | 34.257 | 25.431 | 18.090 | 18.578 | 0.752 | 1.907 | 1.070 | 0.974 | 0.020 | 1 | 5.932 | 4.212 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1566 | 90.322 | 17.834 | 34.522 | 29.253 | 17.882 | 17.944 | 0.798 | 2.009 | 1.038 | 0.997 | 0.020 | 1 | 6.593 | 4.609 |
| 1567 | 91.493 | 20.226 | 33.289 | 27.364 | 19.142 | 17.901 | 0.722 | 1.831 | 1.113 | 1.069 | 0.019 | 1 | 6.475 | 4.611 |
| 1568 | 81.201 | 19.881 | 35.306 | 26.131 | 19.804 | 18.634 | 0.747 | 1.933 | 1.089 | 1.063 | 0.022 | 1 | 5.427 | 3.891 |
| 1569 | 94.029 | 21.947 | 34.929 | 24.510 | 19.906 | 16.175 | 0.687 | 1.644 | 1.033 | 1.231 | 0.017 | 1 | 9.109 | 7.633 |
| 1570 | 90.625 | 18.358 | 33.546 | 28.138 | 16.909 | 17.948 | 0.778 | 1.899 | 1.039 | 0.942 | 0.020 | -1 | 6.511 | 4.608 |
| 1571 | 80.469 | 18.596 | 39.262 | 27.715 | 16.423 | 16.077 | 0.791 | 1.748 | 0.828 | 1.022 | 0.023 | 1 | 7.751 | 6.454 |
| 1572 | 82.951 | 19.936 | 36.604 | 26.996 | 19.736 | 18.317 | 0.744 | 1.909 | 1.040 | 1.077 | 0.022 | 1 | 5.527 | 3.968 |
| 1573 | 93.646 | 18.770 | 37.986 | 28.697 | 19.493 | 18.503 | 0.775 | 2.024 | 1.000 | 1.053 | 0.019 | 1 | 6.436 | 4.504 |
| 1574 | 92.666 | 21.640 | 36.691 | 27.631 | 16.921 | 18.379 | 0.692 | 1.631 | 0.962 | 0.921 | 0.019 | 1 | 6.275 | 8.918 |
| 1575 | 81.950 | 21.172 | 37.125 | 27.394 | 19.972 | 18.678 | 0.717 | 1.826 | 1.041 | 1.069 | 0.023 | 1 | 8.123 | 6.745 |
| 1576 | 88.373 | 18.743 | 38.077 | 27.895 | 19.744 | 19.346 | 0.784 | 2.086 | 1.027 | 1.021 | 0.020 | 1 | 5.949 | 4.184 |
| 1577 | 99.564 | 19.477 | 32.752 | 24.067 | 16.574 | 18.764 | 0.744 | 1.814 | 1.079 | 0.883 | 0.016 | -1 | 6.765 | 4.793 |
| 1578 | 89.271 | 19.799 | 37.318 | 29.047 | 17.171 | 19.860 | 0.741 | 1.870 | 0.992 | 0.865 | 0.020 | 1 | 6.118 | 4.409 |
| 1579 | 99.199 | 18.742 | 35.710 | 24.153 | 18.159 | 16.971 | 0.760 | 1.874 | 0.984 | 1.070 | 0.016 | 1 | 6.536 | 4.583 |
| 1580 | 94.141 | 20.437 | 36.468 | 28.975 | 17.409 | 19.350 | 0.720 | 1.799 | 1.008 | 0.900 | 0.019 | 1 | 6.503 | 4.694 |
| 1581 | 97.328 | 19.378 | 33.321 | 25.864 | 16.538 | 17.166 | 0.746 | 1.739 | 1.011 | 0.963 | 0.017 | 1 | 6.674 | 4.794 |
| 1582 | 82.832 | 19.499 | 33.303 | 28.177 | 19.946 | 17.897 | 0.753 | 1.941 | 1.136 | 1.114 | 0.022 | 1 | 6.000 | 4.266 |
| 1583 | 91.924 | 21.455 | 32.117 | 26.539 | 17.766 | 18.981 | 0.697 | 1.713 | 1.144 | 0.936 | 0.019 | 1 | 3.249 | 4.619 |
| 1584 | 90.246 | 20.328 | 36.536 | 24.485 | 18.103 | 16.589 | 0.727 | 1.707 | 0.950 | 1.091 | 0.019 | 1 | 8.528 | 7.119 |
| 1585 | 92.685 | 18.572 | 37.549 | 29.748 | 19.939 | 16.423 | 0.777 | 1.958 | 0.968 | 1.214 | 0.020 | 1 | 6.510 | 4.584 |
| 1586 | 92.816 | 21.607 | 34.038 | 26.544 | 16.076 | 18.381 | 0.690 | 1.595 | 1.012 | 0.875 | 0.019 | 1 | 6.367 | 9.080 |
| 1587 | 83.780 | 20.870 | 34.712 | 29.141 | 17.492 | 16.988 | 0.733 | 1.652 | 0.993 | 1.030 | 0.022 | 1 | 6.030 | 8.582 |
| 1588 | 87.499 | 19.749 | 34.057 | 26.035 | 16.486 | 17.456 | 0.750 | 1.719 | 0.997 | 0.944 | 0.020 | 1 | 8.854 | 7.390 |
| 1589 | 99.074 | 19.194 | 34.059 | 29.049 | 19.994 | 17.261 | 0.752 | 1.941 | 1.094 | 1.158 | 0.018 | 1 | 7.235 | 5.028 |
| 1590 | 83.256 | 18.435 | 35.433 | 24.654 | 18.428 | 17.084 | 0.788 | 1.926 | 1.002 | 1.079 | 0.021 | 1 | 5.405 | 3.853 |
| 1591 | 89.867 | 18.009 | 38.124 | 29.839 | 17.447 | 19.033 | 0.794 | 2.026 | 0.957 | 0.917 | 0.021 | 1 | 6.270 | 4.425 |
| 1592 | 85.035 | 18.907 | 38.822 | 25.836 | 18.009 | 19.979 | 0.774 | 2.009 | 0.979 | 0.901 | 0.021 | 1 | 5.356 | 3.821 |
| 1593 | 85.128 | 18.265 | 33.239 | 26.012 | 16.083 | 17.909 | 0.791 | 1.861 | 1.023 | 0.898 | 0.021 | 1 | 5.869 | 4.201 |
| 1594 | 90.258 | 21.800 | 34.910 | 27.239 | 19.408 | 19.160 | 0.690 | 1.769 | 1.105 | 1.013 | 0.020 | 1 | 9.222 | 7.674 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1595 | 84.229 | 20.607 | 38.251 | 29.058 | 16.659 | 16.414 | 0.732 | 1.605 | 0.865 | 1.015 | 0.022 | 1 | 5.762 | 8.165 |
| 1596 | 97.806 | 18.535 | 33.636 | 25.958 | 16.410 | 17.314 | 0.773 | 1.820 | 1.003 | 0.948 | 0.017 | -1 | 6.750 | 4.785 |
| 1597 | 82.179 | 18.143 | 34.243 | 25.054 | 19.254 | 17.606 | 0.803 | 2.032 | 1.076 | 1.094 | 0.022 | 1 | 5.512 | 3.898 |
| 1598 | 89.499 | 20.661 | 38.409 | 24.514 | 16.463 | 18.649 | 0.711 | 1.699 | 0.914 | 0.883 | 0.019 | 1 | 8.279 | 6.884 |
| 1599 | 87.357 | 18.358 | 39.254 | 29.017 | 18.567 | 19.186 | 0.793 | 2.056 | 0.962 | 0.968 | 0.021 | 1 | 5.889 | 4.164 |
| 1600 | 84.085 | 21.539 | 37.323 | 25.573 | 19.217 | 17.256 | 0.707 | 1.693 | 0.977 | 1.114 | 0.021 | 1 | 7.998 | 6.657 |
| 1601 | 91.751 | 19.375 | 39.992 | 26.006 | 17.714 | 16.101 | 0.750 | 1.745 | 0.846 | 1.100 | 0.019 | 1 | 5.690 | 4.113 |
| 1602 | 83.723 | 17.983 | 35.383 | 27.425 | 17.576 | 17.970 | 0.799 | 1.977 | 1.005 | 0.978 | 0.022 | 1 | 5.784 | 4.106 |
| 1603 | 93.686 | 19.770 | 36.560 | 26.975 | 16.524 | 19.663 | 0.736 | 1.830 | 0.990 | 0.840 | 0.018 | 1 | 6.251 | 4.498 |
| 1604 | 92.967 | 21.449 | 39.720 | 26.210 | 17.245 | 17.727 | 0.691 | 1.630 | 0.880 | 0.973 | 0.018 | 1 | 8.722 | 7.282 |
| 1605 | 93.065 | 17.940 | 32.169 | 29.370 | 18.337 | 17.148 | 0.801 | 1.978 | 1.103 | 1.069 | 0.019 | -1 | 7.034 | 4.881 |
| 1606 | 90.248 | 19.176 | 37.805 | 24.897 | 18.773 | 19.427 | 0.763 | 1.992 | 1.010 | 0.966 | 0.019 | 1 | 5.745 | 4.061 |
| 1607 | 99.097 | 18.612 | 39.862 | 26.486 | 19.299 | 19.915 | 0.780 | 2.107 | 0.984 | 0.969 | 0.017 | 1 | 6.450 | 4.468 |
| 1608 | 91.864 | 21.670 | 32.679 | 25.005 | 18.102 | 18.287 | 0.690 | 1.679 | 1.114 | 0.990 | 0.018 | 1 | 3.115 | 4.454 |
| 1609 | 90.536 | 20.109 | 34.227 | 29.565 | 16.160 | 16.009 | 0.752 | 1.600 | 0.940 | 1.009 | 0.020 | 1 | 6.509 | 9.324 |
| 1610 | 88.459 | 20.550 | 39.160 | 25.086 | 17.615 | 16.706 | 0.721 | 1.670 | 0.876 | 1.054 | 0.019 | 1 | 8.125 | 6.769 |
| 1611 | 88.415 | 21.964 | 32.120 | 24.647 | 16.573 | 19.273 | 0.678 | 1.632 | 1.116 | 0.860 | 0.019 | 1 | 6.021 | 8.587 |
| 1612 | 94.012 | 19.531 | 33.070 | 25.947 | 19.682 | 19.624 | 0.747 | 2.013 | 1.189 | 1.003 | 0.018 | 1 | 6.613 | 4.599 |
| 1613 | 81.276 | 17.685 | 38.382 | 26.176 | 19.886 | 18.955 | 0.831 | 2.196 | 1.012 | 1.049 | 0.022 | 1 | 5.208 | 3.682 |
| 1614 | 87.314 | 19.766 | 37.449 | 24.629 | 18.706 | 18.378 | 0.742 | 1.876 | 0.990 | 1.018 | 0.020 | 1 | 5.494 | 3.931 |
| 1615 | 82.911 | 21.069 | 32.558 | 29.347 | 16.443 | 17.821 | 0.728 | 1.626 | 1.052 | 0.923 | 0.023 | 1 | 6.192 | 8.814 |
| 1616 | 85.963 | 21.134 | 33.777 | 27.132 | 19.669 | 19.063 | 0.709 | 1.833 | 1.147 | 1.032 | 0.021 | 1 | 5.991 | 4.307 |
| 1617 | 82.592 | 20.462 | 36.616 | 29.210 | 17.379 | 18.763 | 0.737 | 1.766 | 0.987 | 0.926 | 0.023 | 1 | 8.631 | 7.190 |
| 1618 | 92.840 | 21.881 | 34.190 | 25.892 | 19.184 | 19.393 | 0.683 | 1.763 | 1.128 | 0.989 | 0.018 | 1 | 6.278 | 4.520 |
| 1619 | 87.804 | 19.380 | 39.666 | 28.519 | 18.919 | 19.906 | 0.759 | 2.003 | 0.979 | 0.950 | 0.021 | 1 | 5.796 | 4.124 |
| 1620 | 95.095 | 21.007 | 34.701 | 26.010 | 17.036 | 18.058 | 0.705 | 1.671 | 1.011 | 0.943 | 0.018 | 1 | 9.556 | 7.967 |
| 1621 | 99.485 | 18.267 | 35.676 | 28.338 | 17.170 | 18.221 | 0.781 | 1.937 | 0.992 | 0.942 | 0.017 | -1 | 7.014 | 4.901 |
| 1622 | 95.635 | 19.005 | 33.417 | 24.224 | 18.232 | 16.587 | 0.749 | 1.832 | 1.042 | 1.099 | 0.017 | 1 | 6.451 | 4.557 |
| 1623 | 99.755 | 21.013 | 38.198 | 25.387 | 17.424 | 17.630 | 0.697 | 1.668 | 0.918 | 0.988 | 0.016 | 1 | 6.330 | 4.597 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1624 | 97.102 | 21.352 | 33.758 | 24.639 | 17.545 | 17.700 | 0.692 | 1.651 | 1.044 | 0.991 | 0.017 | 1 | 9.667 | 8.060 |
| 1625 | 92.153 | 17.816 | 32.077 | 28.151 | 17.952 | 17.621 | 0.807 | 1.997 | 1.109 | 1.019 | 0.019 | -1 | 6.838 | 4.740 |
| 1626 | 98.365 | 18.345 | 32.677 | 25.202 | 18.567 | 16.177 | 0.777 | 1.894 | 1.063 | 1.148 | 0.017 | -1 | 6.867 | 4.791 |
| 1627 | 94.371 | 19.196 | 38.177 | 25.721 | 16.298 | 18.353 | 0.749 | 1.805 | 0.908 | 0.888 | 0.018 | 1 | 6.035 | 4.329 |
| 1628 | 83.498 | 20.494 | 33.877 | 28.930 | 19.248 | 18.209 | 0.731 | 1.828 | 1.106 | 1.057 | 0.022 | 1 | 6.029 | 4.349 |
| 1629 | 83.487 | 17.961 | 35.097 | 29.407 | 18.082 | 18.266 | 0.802 | 2.024 | 1.036 | 0.990 | 0.023 | 1 | 6.065 | 4.285 |
| 1630 | 83.269 | 21.857 | 38.034 | 25.884 | 19.948 | 17.264 | 0.701 | 1.703 | 0.978 | 1.155 | 0.022 | 1 | 7.869 | 6.547 |
| 1631 | 93.703 | 19.919 | 33.890 | 25.081 | 16.293 | 16.192 | 0.739 | 1.631 | 0.959 | 1.006 | 0.018 | 1 | 3.112 | 4.470 |
| 1632 | 89.121 | 18.932 | 34.008 | 29.900 | 17.983 | 18.440 | 0.756 | 1.924 | 1.071 | 0.975 | 0.021 | 1 | 6.586 | 4.661 |
| 1633 | 86.576 | 20.141 | 33.781 | 28.284 | 17.084 | 17.964 | 0.743 | 1.740 | 1.037 | 0.951 | 0.021 | 1 | 9.196 | 7.677 |
| 1634 | 99.658 | 19.097 | 39.069 | 26.060 | 16.672 | 19.331 | 0.739 | 1.885 | 0.922 | 0.862 | 0.016 | 1 | 6.424 | 4.549 |
| 1635 | 93.752 | 21.580 | 34.888 | 26.073 | 16.074 | 19.524 | 0.688 | 1.650 | 1.020 | 0.823 | 0.018 | 1 | 6.323 | 9.000 |
| 1636 | 99.627 | 20.992 | 36.112 | 26.923 | 16.882 | 19.380 | 0.700 | 1.727 | 1.004 | 0.871 | 0.017 | 1 | 9.999 | 8.308 |
| 1637 | 92.203 | 21.231 | 35.939 | 27.626 | 17.142 | 18.533 | 0.704 | 1.680 | 0.993 | 0.925 | 0.019 | 1 | 9.376 | 7.831 |
| 1638 | 91.407 | 19.669 | 39.877 | 27.499 | 19.077 | 17.744 | 0.741 | 1.872 | 0.923 | 1.075 | 0.019 | 1 | 5.888 | 4.206 |
| 1639 | 91.960 | 21.045 | 32.991 | 25.592 | 17.723 | 18.482 | 0.706 | 1.720 | 1.097 | 0.959 | 0.018 | 1 | 3.160 | 4.493 |
| 1640 | 98.990 | 18.872 | 36.168 | 26.976 | 19.862 | 19.649 | 0.770 | 2.094 | 1.092 | 1.011 | 0.017 | 1 | 6.852 | 4.717 |
| 1641 | 96.346 | 19.594 | 35.148 | 24.195 | 16.607 | 17.299 | 0.737 | 1.730 | 0.965 | 0.960 | 0.017 | 1 | 6.275 | 4.511 |
| 1642 | 84.467 | 19.679 | 34.069 | 27.200 | 19.035 | 19.252 | 0.745 | 1.946 | 1.124 | 0.989 | 0.022 | 1 | 5.917 | 4.209 |
| 1643 | 94.714 | 19.686 | 33.281 | 26.081 | 16.234 | 16.459 | 0.747 | 1.661 | 0.982 | 0.986 | 0.018 | 1 | 3.258 | 4.645 |
| 1644 | 97.010 | 20.693 | 39.169 | 25.895 | 17.130 | 18.999 | 0.705 | 1.746 | 0.922 | 0.902 | 0.017 | 1 | 6.129 | 4.422 |
| 1645 | 87.678 | 21.127 | 33.748 | 25.922 | 19.492 | 18.593 | 0.708 | 1.803 | 1.129 | 1.048 | 0.020 | 1 | 5.968 | 4.292 |
| 1646 | 94.358 | 20.979 | 35.772 | 28.644 | 19.464 | 17.487 | 0.706 | 1.761 | 1.033 | 1.113 | 0.019 | 1 | 6.546 | 4.719 |
| 1647 | 84.850 | 20.639 | 37.108 | 28.770 | 17.015 | 17.602 | 0.730 | 1.677 | 0.933 | 0.967 | 0.022 | 1 | 8.694 | 7.270 |
| 1648 | 96.802 | 21.354 | 34.125 | 25.617 | 18.683 | 17.818 | 0.693 | 1.709 | 1.070 | 1.049 | 0.017 | 1 | 6.523 | 4.706 |
| 1649 | 95.071 | 18.919 | 33.847 | 27.155 | 16.976 | 17.258 | 0.758 | 1.810 | 1.011 | 0.984 | 0.018 | 1 | 6.646 | 4.736 |
| 1650 | 93.668 | 19.623 | 38.628 | 29.042 | 19.815 | 16.463 | 0.738 | 1.849 | 0.939 | 1.204 | 0.019 | 1 | 6.335 | 4.523 |
| 1651 | 89.146 | 21.654 | 33.088 | 26.938 | 17.389 | 18.320 | 0.698 | 1.649 | 1.079 | 0.949 | 0.020 | 1 | 6.242 | 8.903 |
| 1652 | 82.303 | 21.774 | 33.061 | 27.437 | 19.807 | 16.621 | 0.712 | 1.673 | 1.102 | 1.192 | 0.022 | 1 | 8.689 | 7.273 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1653 | 95.085 | 21.289 | 36.318 | 25.911 | 16.901 | 18.140 | 0.696 | 1.646 | 0.965 | 0.932 | 0.018 | 1 | 9.337 | 7.799 |
| 1654 | 99.559 | 20.712 | 38.796 | 24.584 | 17.581 | 18.078 | 0.701 | 1.722 | 0.919 | 0.973 | 0.016 | 1 | 6.227 | 4.479 |
| 1655 | 85.827 | 21.138 | 36.100 | 29.152 | 16.093 | 18.776 | 0.715 | 1.650 | 0.966 | 0.857 | 0.022 | 1 | 6.077 | 8.609 |
| 1656 | 85.772 | 21.749 | 38.018 | 25.256 | 18.576 | 19.562 | 0.692 | 1.754 | 1.003 | 0.950 | 0.020 | 1 | 8.059 | 6.679 |
| 1657 | 99.483 | 18.248 | 39.798 | 29.124 | 17.274 | 19.597 | 0.777 | 2.021 | 0.926 | 0.881 | 0.018 | 1 | 6.736 | 4.707 |
| 1658 | 81.259 | 18.046 | 33.947 | 27.693 | 17.795 | 17.611 | 0.798 | 1.962 | 1.043 | 1.010 | 0.023 | 1 | 5.779 | 4.108 |
| 1659 | 92.063 | 19.814 | 38.291 | 28.526 | 18.778 | 18.395 | 0.733 | 1.876 | 0.971 | 1.021 | 0.019 | 1 | 6.198 | 4.423 |
| 1660 | 95.287 | 21.599 | 32.052 | 28.830 | 17.353 | 17.925 | 0.697 | 1.633 | 1.101 | 0.968 | 0.019 | 1 | 10.400 | 8.660 |
| 1661 | 82.718 | 18.341 | 39.693 | 27.897 | 19.763 | 16.993 | 0.802 | 2.004 | 0.926 | 1.163 | 0.022 | 1 | 5.359 | 3.828 |
| 1662 | 87.570 | 17.778 | 38.273 | 24.271 | 18.526 | 19.227 | 0.815 | 2.124 | 0.986 | 0.964 | 0.019 | 1 | 5.464 | 3.842 |
| 1663 | 91.469 | 17.963 | 32.073 | 25.964 | 19.508 | 19.356 | 0.799 | 2.164 | 1.212 | 1.008 | 0.019 | 1 | 6.584 | 4.513 |
| 1664 | 82.246 | 19.417 | 34.236 | 27.019 | 16.292 | 17.625 | 0.769 | 1.747 | 0.991 | 0.924 | 0.022 | 1 | 5.670 | 8.107 |
| 1665 | 89.441 | 19.502 | 35.172 | 26.749 | 19.205 | 18.200 | 0.748 | 1.918 | 1.063 | 1.055 | 0.020 | 1 | 6.118 | 4.336 |
| 1666 | 94.364 | 18.055 | 33.477 | 26.950 | 16.384 | 19.469 | 0.789 | 1.986 | 1.071 | 0.842 | 0.018 | -1 | 6.689 | 4.678 |
| 1667 | 81.604 | 21.482 | 33.123 | 29.414 | 18.262 | 18.098 | 0.719 | 1.693 | 1.098 | 1.009 | 0.023 | 1 | 6.067 | 8.637 |
| 1668 | 88.867 | 21.521 | 34.657 | 29.041 | 18.834 | 18.713 | 0.702 | 1.745 | 1.083 | 1.006 | 0.021 | 1 | 9.441 | 7.877 |
| 1669 | 81.998 | 19.498 | 36.170 | 24.869 | 17.096 | 19.096 | 0.758 | 1.856 | 1.001 | 0.895 | 0.022 | 1 | 7.832 | 6.493 |
| 1670 | 92.080 | 19.477 | 39.781 | 26.344 | 16.019 | 18.768 | 0.743 | 1.786 | 0.874 | 0.854 | 0.019 | 1 | 8.637 | 7.181 |
| 1671 | 81.475 | 21.526 | 39.385 | 29.118 | 18.433 | 16.817 | 0.710 | 1.638 | 0.895 | 1.096 | 0.023 | 1 | 8.136 | 6.775 |
| 1672 | 95.690 | 17.704 | 33.418 | 27.716 | 17.210 | 18.871 | 0.808 | 2.038 | 1.080 | 0.912 | 0.018 | -1 | 6.934 | 4.785 |
| 1673 | 87.930 | 21.987 | 38.389 | 27.364 | 19.101 | 19.071 | 0.688 | 1.736 | 0.994 | 1.002 | 0.020 | 1 | 8.574 | 7.124 |
| 1674 | 93.232 | 17.942 | 34.920 | 26.295 | 19.618 | 16.934 | 0.801 | 2.037 | 1.047 | 1.158 | 0.018 | 1 | 6.437 | 4.472 |
| 1675 | 99.034 | 18.163 | 38.067 | 26.859 | 16.329 | 18.967 | 0.773 | 1.943 | 0.927 | 0.861 | 0.017 | -1 | 6.581 | 4.628 |
| 1676 | 89.074 | 18.080 | 39.639 | 28.724 | 17.940 | 16.914 | 0.791 | 1.928 | 0.879 | 1.061 | 0.020 | 1 | 5.907 | 4.205 |
| 1677 | 87.473 | 20.560 | 38.293 | 26.507 | 16.544 | 16.519 | 0.723 | 1.608 | 0.863 | 1.002 | 0.020 | 1 | 5.642 | 8.023 |
| 1678 | 99.901 | 19.496 | 33.146 | 25.129 | 16.408 | 16.662 | 0.741 | 1.696 | 0.998 | 0.985 | 0.016 | 1 | 3.463 | 4.867 |
| 1679 | 98.677 | 17.623 | 36.643 | 29.214 | 18.670 | 16.759 | 0.803 | 2.010 | 0.967 | 1.114 | 0.018 | 1 | 7.016 | 4.855 |
| 1680 | 88.697 | 19.543 | 38.453 | 25.846 | 19.333 | 16.291 | 0.749 | 1.823 | 0.926 | 1.187 | 0.020 | 1 | 5.616 | 4.038 |
| 1681 | 81.057 | 17.998 | 32.117 | 24.991 | 19.918 | 16.344 | 0.804 | 2.015 | 1.129 | 1.219 | 0.022 | 1 | 5.618 | 3.973 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1682 | 91.238 | 19.987 | 36.226 | 26.899 | 16.155 | 19.029 | 0.736 | 1.760 | 0.971 | 0.849 | 0.019 | 1 | 9.117 | 7.591 |
| 1683 | 88.743 | 20.747 | 37.854 | 28.804 | 16.091 | 18.664 | 0.720 | 1.675 | 0.918 | 0.862 | 0.021 | 1 | 6.061 | 8.595 |
| 1684 | 95.061 | 20.604 | 38.011 | 24.222 | 16.987 | 16.583 | 0.712 | 1.629 | 0.883 | 1.024 | 0.017 | 1 | 8.825 | 7.388 |
| 1685 | 96.811 | 19.116 | 38.857 | 29.176 | 16.376 | 17.456 | 0.755 | 1.770 | 0.871 | 0.938 | 0.018 | 1 | 6.494 | 4.690 |
| 1686 | 90.966 | 19.910 | 32.444 | 28.641 | 18.664 | 18.995 | 0.728 | 1.891 | 1.161 | 0.983 | 0.020 | -1 | 6.699 | 4.733 |
| 1687 | 89.022 | 20.240 | 38.706 | 27.540 | 16.642 | 16.909 | 0.732 | 1.658 | 0.867 | 0.984 | 0.020 | 1 | 8.656 | 7.243 |
| 1688 | 96.986 | 18.655 | 36.478 | 27.595 | 17.288 | 17.003 | 0.760 | 1.838 | 0.940 | 1.017 | 0.018 | 1 | 6.615 | 4.695 |
| 1689 | 98.056 | 19.217 | 35.277 | 24.340 | 19.237 | 16.275 | 0.747 | 1.848 | 1.007 | 1.182 | 0.016 | 1 | 6.487 | 4.572 |
| 1690 | 94.879 | 21.660 | 35.597 | 25.619 | 19.279 | 16.901 | 0.691 | 1.670 | 1.016 | 1.141 | 0.018 | 1 | 9.302 | 7.782 |
| 1691 | 98.245 | 19.915 | 37.468 | 29.880 | 19.285 | 18.979 | 0.728 | 1.921 | 1.021 | 1.016 | 0.018 | 1 | 6.914 | 4.865 |
| 1692 | 99.111 | 20.407 | 37.037 | 25.565 | 18.914 | 19.898 | 0.713 | 1.902 | 1.048 | 0.951 | 0.016 | 1 | 6.532 | 4.604 |
| 1693 | 90.810 | 18.940 | 34.907 | 27.929 | 17.484 | 18.227 | 0.758 | 1.885 | 1.023 | 0.959 | 0.020 | 1 | 6.360 | 4.520 |
| 1694 | 98.339 | 17.980 | 36.001 | 28.581 | 18.383 | 17.975 | 0.792 | 2.022 | 1.010 | 1.023 | 0.018 | 1 | 6.980 | 4.827 |
| 1695 | 81.590 | 18.749 | 32.678 | 24.071 | 19.399 | 19.116 | 0.779 | 2.054 | 1.179 | 1.015 | 0.021 | 1 | 5.504 | 3.887 |
| 1696 | 89.397 | 21.549 | 38.883 | 28.836 | 18.330 | 18.247 | 0.699 | 1.697 | 0.941 | 1.005 | 0.020 | 1 | 8.909 | 7.429 |
| 1697 | 91.285 | 21.513 | 39.040 | 28.807 | 17.264 | 17.246 | 0.698 | 1.604 | 0.884 | 1.001 | 0.020 | 1 | 6.124 | 8.687 |
| 1698 | 83.780 | 20.014 | 39.484 | 27.001 | 18.900 | 19.823 | 0.741 | 1.935 | 0.981 | 0.953 | 0.022 | 1 | 7.930 | 6.553 |
| 1699 | 98.180 | 21.332 | 38.140 | 29.406 | 18.274 | 17.823 | 0.696 | 1.692 | 0.946 | 1.025 | 0.018 | 1 | 9.951 | 8.331 |
| 1700 | 86.627 | 21.592 | 36.230 | 26.470 | 19.289 | 19.163 | 0.699 | 1.781 | 1.061 | 1.007 | 0.021 | 1 | 8.558 | 7.111 |
| 1701 | 93.389 | 21.198 | 35.737 | 28.507 | 19.388 | 19.275 | 0.698 | 1.824 | 1.082 | 1.006 | 0.019 | 1 | 6.495 | 4.653 |
| 1702 | 88.206 | 19.355 | 34.392 | 24.338 | 19.789 | 19.937 | 0.759 | 2.052 | 1.155 | 0.993 | 0.019 | 1 | 5.864 | 4.122 |
| 1703 | 88.583 | 21.912 | 33.920 | 29.470 | 16.617 | 17.357 | 0.698 | 1.550 | 1.002 | 0.957 | 0.021 | 1 | 6.468 | 9.190 |
| 1704 | 87.901 | 21.122 | 33.306 | 27.131 | 18.334 | 19.389 | 0.709 | 1.786 | 1.133 | 0.946 | 0.020 | 1 | 6.145 | 4.436 |
| 1705 | 96.227 | 18.145 | 38.825 | 28.478 | 16.830 | 17.763 | 0.773 | 1.907 | 0.891 | 0.947 | 0.018 | 1 | 6.466 | 4.576 |
| 1706 | 90.691 | 20.495 | 38.588 | 25.278 | 17.551 | 19.192 | 0.717 | 1.793 | 0.952 | 0.915 | 0.019 | 1 | 8.479 | 7.034 |
| 1707 | 82.313 | 19.252 | 37.353 | 25.389 | 16.046 | 17.235 | 0.765 | 1.729 | 0.891 | 0.931 | 0.022 | 1 | 7.801 | 6.489 |
| 1708 | 96.141 | 19.049 | 35.355 | 28.341 | 18.300 | 16.805 | 0.748 | 1.843 | 0.993 | 1.089 | 0.018 | 1 | 6.744 | 4.781 |
| 1709 | 91.596 | 20.039 | 38.894 | 29.338 | 16.230 | 17.170 | 0.739 | 1.667 | 0.859 | 0.945 | 0.020 | 1 | 9.194 | 7.722 |
| 1710 | 99.880 | 20.473 | 34.446 | 28.989 | 19.726 | 17.342 | 0.704 | 1.811 | 1.076 | 1.137 | 0.017 | 1 | 7.156 | 5.072 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1711 | 85.327 | 18.275 | 38.038 | 29.086 | 16.595 | 17.732 | 0.792 | 1.878 | 0.902 | 0.936 | 0.022 | 1 | 5.802 | 4.177 |
| 1712 | 87.589 | 18.657 | 39.636 | 27.727 | 17.805 | 17.921 | 0.774 | 1.915 | 0.901 | 0.994 | 0.021 | 1 | 5.672 | 4.053 |
| 1713 | 91.491 | 21.756 | 34.301 | 24.123 | 19.391 | 16.460 | 0.693 | 1.648 | 1.045 | 1.178 | 0.018 | 1 | 8.885 | 7.436 |
| 1714 | 81.485 | 19.331 | 39.860 | 28.370 | 18.392 | 16.529 | 0.767 | 1.807 | 0.876 | 1.113 | 0.023 | 1 | 7.876 | 6.546 |
| 1715 | 87.533 | 18.517 | 36.840 | 26.523 | 18.211 | 19.379 | 0.785 | 2.030 | 1.020 | 0.940 | 0.020 | 1 | 5.824 | 4.114 |
| 1716 | 99.307 | 20.455 | 34.425 | 28.271 | 16.763 | 17.381 | 0.722 | 1.669 | 0.992 | 0.964 | 0.017 | 1 | 10.362 | 8.646 |
| 1717 | 95.600 | 20.203 | 38.171 | 27.538 | 16.780 | 16.606 | 0.729 | 1.653 | 0.875 | 1.010 | 0.018 | 1 | 9.365 | 7.866 |
| 1718 | 85.794 | 21.757 | 35.237 | 27.299 | 19.667 | 16.775 | 0.705 | 1.675 | 1.034 | 1.172 | 0.021 | 1 | 8.720 | 7.293 |
| 1719 | 90.276 | 20.175 | 36.889 | 24.957 | 18.257 | 18.466 | 0.726 | 1.820 | 0.995 | 0.989 | 0.019 | 1 | 5.780 | 4.144 |
| 1720 | 96.678 | 19.425 | 38.012 | 25.562 | 17.871 | 17.459 | 0.737 | 1.819 | 0.929 | 1.024 | 0.017 | 1 | 6.232 | 4.433 |
| 1721 | 98.810 | 20.378 | 37.390 | 27.203 | 17.029 | 16.091 | 0.722 | 1.625 | 0.886 | 1.058 | 0.017 | 1 | 9.724 | 8.182 |
| 1722 | 95.162 | 21.141 | 34.501 | 27.885 | 17.207 | 19.485 | 0.703 | 1.736 | 1.063 | 0.883 | 0.018 | 1 | 9.914 | 8.237 |
| 1723 | 93.854 | 21.356 | 34.582 | 28.188 | 17.008 | 18.541 | 0.702 | 1.665 | 1.028 | 0.917 | 0.019 | 1 | 9.819 | 8.188 |
| 1724 | 80.905 | 19.875 | 33.704 | 25.041 | 16.119 | 19.567 | 0.751 | 1.796 | 1.059 | 0.824 | 0.022 | 1 | 5.404 | 7.714 |
| 1725 | 98.699 | 19.414 | 39.613 | 24.910 | 16.432 | 18.404 | 0.734 | 1.794 | 0.879 | 0.893 | 0.016 | 1 | 6.155 | 4.396 |
| 1726 | 91.513 | 18.820 | 36.092 | 29.719 | 17.708 | 18.946 | 0.759 | 1.948 | 1.016 | 0.935 | 0.020 | 1 | 6.536 | 4.625 |
| 1727 | 85.006 | 19.733 | 34.581 | 29.809 | 19.154 | 17.910 | 0.746 | 1.878 | 1.072 | 1.069 | 0.022 | 1 | 6.207 | 4.444 |
| 1728 | 96.513 | 19.485 | 32.823 | 29.257 | 16.284 | 19.744 | 0.744 | 1.849 | 1.098 | 0.825 | 0.018 | -1 | 3.619 | 5.049 |
| 1729 | 83.043 | 21.432 | 32.260 | 29.865 | 16.449 | 19.540 | 0.715 | 1.679 | 1.116 | 0.842 | 0.023 | 1 | 6.324 | 8.971 |
| 1730 | 83.844 | 21.331 | 37.963 | 29.119 | 18.405 | 17.829 | 0.713 | 1.699 | 0.954 | 1.032 | 0.022 | 1 | 8.545 | 7.122 |
| 1731 | 84.417 | 18.586 | 32.813 | 24.454 | 19.299 | 17.136 | 0.781 | 1.960 | 1.110 | 1.126 | 0.021 | 1 | 5.727 | 4.050 |
| 1732 | 98.843 | 19.761 | 33.705 | 25.116 | 18.433 | 16.167 | 0.728 | 1.751 | 1.027 | 1.140 | 0.016 | 1 | 6.702 | 4.783 |
| 1733 | 97.312 | 21.587 | 37.516 | 27.945 | 17.203 | 19.506 | 0.688 | 1.700 | 0.978 | 0.882 | 0.018 | 1 | 9.749 | 8.127 |
| 1734 | 95.722 | 20.060 | 36.586 | 24.387 | 16.572 | 18.688 | 0.723 | 1.758 | 0.964 | 0.887 | 0.017 | 1 | 6.122 | 4.404 |
| 1735 | 94.219 | 19.660 | 39.472 | 25.053 | 19.461 | 18.540 | 0.746 | 1.933 | 0.963 | 1.050 | 0.018 | 1 | 5.898 | 4.170 |
| 1736 | 81.559 | 18.883 | 36.706 | 25.126 | 19.422 | 16.643 | 0.779 | 1.910 | 0.983 | 1.167 | 0.022 | 1 | 5.202 | 3.735 |
| 1737 | 92.173 | 20.924 | 39.332 | 28.943 | 18.982 | 17.813 | 0.710 | 1.759 | 0.936 | 1.066 | 0.020 | 1 | 9.108 | 7.587 |
| 1738 | 92.782 | 19.294 | 33.947 | 27.054 | 19.021 | 19.460 | 0.753 | 1.995 | 1.134 | 0.977 | 0.019 | 1 | 6.552 | 4.579 |
| 1739 | 85.487 | 20.410 | 38.015 | 26.077 | 18.572 | 17.701 | 0.730 | 1.777 | 0.954 | 1.049 | 0.021 | 1 | 8.124 | 6.752 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1740 | 84.148 | 17.754 | 35.193 | 24.652 | 18.396 | 18.111 | 0.814 | 2.056 | 1.037 | 1.016 | 0.021 | 1 | 5.531 | 3.898 |
| 1741 | 90.986 | 19.222 | 38.424 | 29.821 | 19.737 | 16.983 | 0.756 | 1.910 | 0.956 | 1.162 | 0.020 | 1 | 6.284 | 4.468 |
| 1742 | 90.233 | 20.265 | 36.547 | 25.132 | 19.605 | 16.964 | 0.727 | 1.804 | 1.001 | 1.156 | 0.019 | 1 | 5.819 | 4.179 |
| 1743 | 85.742 | 20.053 | 32.167 | 26.791 | 17.977 | 18.956 | 0.736 | 1.842 | 1.148 | 0.948 | 0.021 | 1 | 6.098 | 4.363 |
| 1744 | 99.413 | 21.653 | 38.551 | 25.165 | 18.288 | 18.145 | 0.680 | 1.683 | 0.945 | 1.008 | 0.016 | 1 | 6.264 | 4.537 |
| 1745 | 97.308 | 21.049 | 35.275 | 25.958 | 16.584 | 18.042 | 0.702 | 1.645 | 0.982 | 0.919 | 0.017 | 1 | 9.707 | 8.094 |
| 1746 | 80.350 | 18.410 | 38.404 | 24.361 | 16.714 | 18.401 | 0.790 | 1.907 | 0.914 | 0.908 | 0.022 | 1 | 7.270 | 6.010 |
| 1747 | 86.452 | 21.220 | 36.920 | 24.501 | 18.938 | 18.899 | 0.706 | 1.783 | 1.025 | 1.002 | 0.020 | 1 | 8.120 | 6.740 |
| 1748 | 80.977 | 19.881 | 39.180 | 27.491 | 19.323 | 18.452 | 0.749 | 1.900 | 0.964 | 1.047 | 0.023 | 1 | 7.766 | 6.430 |
| 1749 | 82.391 | 19.808 | 37.133 | 28.403 | 19.303 | 16.028 | 0.757 | 1.784 | 0.951 | 1.204 | 0.023 | 1 | 8.307 | 6.936 |
| 1750 | 99.982 | 18.209 | 36.050 | 29.466 | 18.778 | 16.856 | 0.782 | 1.957 | 0.988 | 1.114 | 0.018 | -1 | 7.172 | 4.981 |
| 1751 | 90.528 | 18.399 | 37.527 | 25.809 | 16.127 | 17.884 | 0.777 | 1.849 | 0.906 | 0.902 | 0.019 | 1 | 5.840 | 4.180 |
| 1752 | 90.788 | 18.216 | 35.496 | 25.062 | 16.511 | 16.369 | 0.785 | 1.805 | 0.926 | 1.009 | 0.019 | 1 | 5.958 | 4.262 |
| 1753 | 92.682 | 21.389 | 33.010 | 27.121 | 19.837 | 19.484 | 0.690 | 1.838 | 1.191 | 1.018 | 0.019 | 1 | 6.556 | 4.666 |
| 1754 | 98.046 | 21.647 | 35.534 | 25.398 | 17.767 | 18.798 | 0.683 | 1.689 | 1.029 | 0.945 | 0.017 | 1 | 9.664 | 8.049 |
| 1755 | 99.828 | 21.594 | 36.510 | 27.857 | 19.134 | 19.519 | 0.680 | 1.790 | 1.059 | 0.980 | 0.017 | 1 | 6.805 | 4.867 |
| 1756 | 86.610 | 18.557 | 38.931 | 27.164 | 17.154 | 16.368 | 0.782 | 1.806 | 0.861 | 1.048 | 0.021 | 1 | 5.564 | 4.017 |
| 1757 | 97.324 | 19.420 | 32.686 | 26.246 | 17.794 | 17.962 | 0.745 | 1.841 | 1.094 | 0.991 | 0.017 | -1 | 6.854 | 4.832 |
| 1758 | 83.030 | 21.054 | 35.421 | 24.592 | 18.688 | 19.577 | 0.716 | 1.817 | 1.080 | 0.955 | 0.021 | 1 | 7.989 | 6.627 |
| 1759 | 82.653 | 18.369 | 36.656 | 29.583 | 17.961 | 18.174 | 0.787 | 1.967 | 0.986 | 0.988 | 0.023 | 1 | 5.851 | 4.177 |
| 1760 | 89.530 | 20.581 | 32.930 | 28.189 | 18.342 | 17.554 | 0.725 | 1.744 | 1.090 | 1.045 | 0.020 | 1 | 6.400 | 4.632 |
| 1761 | 95.654 | 18.914 | 33.706 | 25.329 | 17.946 | 17.520 | 0.756 | 1.875 | 1.052 | 1.024 | 0.017 | -1 | 6.559 | 4.614 |
| 1762 | 90.493 | 18.361 | 33.790 | 24.210 | 17.090 | 18.925 | 0.776 | 1.961 | 1.066 | 0.903 | 0.018 | 1 | 6.066 | 4.266 |
| 1763 | 81.253 | 19.500 | 32.018 | 24.964 | 16.524 | 18.474 | 0.762 | 1.795 | 1.093 | 0.894 | 0.022 | 1 | 2.772 | 3.970 |
| 1764 | 91.452 | 18.985 | 35.958 | 24.886 | 16.455 | 17.164 | 0.761 | 1.771 | 0.935 | 0.959 | 0.018 | 1 | 5.926 | 4.261 |
| 1765 | 84.705 | 20.321 | 36.381 | 24.589 | 19.729 | 16.228 | 0.738 | 1.769 | 0.988 | 1.216 | 0.021 | 1 | 7.960 | 6.644 |
| 1766 | 90.565 | 17.948 | 35.237 | 29.398 | 16.558 | 16.459 | 0.797 | 1.840 | 0.937 | 1.006 | 0.020 | 1 | 6.458 | 4.625 |
| 1767 | 99.321 | 21.025 | 38.914 | 26.275 | 18.154 | 18.803 | 0.694 | 1.758 | 0.950 | 0.965 | 0.017 | 1 | 6.375 | 4.578 |
| 1768 | 82.604 | 18.343 | 36.493 | 27.608 | 16.661 | 18.068 | 0.793 | 1.893 | 0.952 | 0.922 | 0.022 | 1 | 5.581 | 4.015 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|--------|
| 1769 | 86.706 | 21.180 | 34.784 | 24.165 | 18.743 | 19.658 | 0.706 | 1.813 | 1.104 | 0.953 | 0.020 | 1 | 8.375 | 6.952 |
| 1770 | 95.443 | 19.495 | 33.873 | 28.531 | 18.217 | 19.178 | 0.739 | 1.918 | 1.104 | 0.950 | 0.018 | -1 | 6.887 | 4.841 |
| 1771 | 89.494 | 19.092 | 38.927 | 27.329 | 19.094 | 18.801 | 0.767 | 1.985 | 0.974 | 1.016 | 0.020 | 1 | 5.854 | 4.147 |
| 1772 | 99.034 | 21.554 | 32.027 | 29.563 | 18.417 | 16.268 | 0.700 | 1.609 | 1.083 | 1.132 | 0.018 | 1 | 7.229 | 10.388 |
| 1773 | 96.580 | 17.764 | 39.760 | 29.362 | 16.252 | 16.395 | 0.792 | 1.838 | 0.821 | 0.991 | 0.018 | 1 | 6.467 | 4.621 |
| 1774 | 86.897 | 19.630 | 36.324 | 28.462 | 18.232 | 16.964 | 0.753 | 1.793 | 0.969 | 1.075 | 0.021 | 1 | 5.963 | 4.313 |
| 1775 | 80.856 | 20.413 | 33.906 | 26.736 | 18.005 | 18.870 | 0.739 | 1.806 | 1.088 | 0.954 | 0.023 | 1 | 8.346 | 6.941 |
| 1776 | 90.107 | 18.287 | 36.071 | 24.067 | 16.969 | 16.401 | 0.781 | 1.825 | 0.925 | 1.035 | 0.018 | 1 | 5.766 | 4.113 |
| 1777 | 89.447 | 19.933 | 37.913 | 25.903 | 16.684 | 17.529 | 0.737 | 1.716 | 0.902 | 0.952 | 0.019 | 1 | 8.528 | 7.111 |
| 1778 | 83.768 | 17.980 | 36.733 | 29.779 | 17.308 | 18.081 | 0.797 | 1.968 | 0.963 | 0.957 | 0.023 | 1 | 5.945 | 4.241 |
| 1779 | 86.438 | 21.911 | 36.968 | 27.145 | 17.457 | 19.665 | 0.688 | 1.694 | 1.004 | 0.888 | 0.021 | 1 | 8.614 | 7.167 |
| 1780 | 86.010 | 21.841 | 37.150 | 27.788 | 16.854 | 19.234 | 0.690 | 1.652 | 0.971 | 0.876 | 0.021 | 1 | 5.844 | 8.259 |
| 1781 | 88.120 | 21.986 | 38.619 | 27.179 | 17.131 | 16.159 | 0.685 | 1.514 | 0.862 | 1.060 | 0.020 | 1 | 5.777 | 8.170 |
| 1782 | 89.464 | 18.822 | 39.758 | 26.048 | 18.185 | 16.676 | 0.766 | 1.852 | 0.877 | 1.090 | 0.019 | 1 | 5.593 | 4.003 |
| 1783 | 90.714 | 21.169 | 39.492 | 28.502 | 17.439 | 17.601 | 0.706 | 1.655 | 0.887 | 0.991 | 0.020 | 1 | 8.898 | 7.439 |
| 1784 | 85.252 | 17.984 | 37.804 | 26.002 | 17.395 | 17.169 | 0.799 | 1.922 | 0.914 | 1.013 | 0.021 | 1 | 5.481 | 3.911 |
| 1785 | 90.610 | 21.905 | 33.013 | 25.500 | 16.849 | 18.891 | 0.683 | 1.632 | 1.083 | 0.892 | 0.019 | 1 | 6.190 | 8.826 |
| 1786 | 99.468 | 19.533 | 35.572 | 27.064 | 19.146 | 16.280 | 0.731 | 1.814 | 0.996 | 1.176 | 0.017 | 1 | 6.820 | 4.831 |
| 1787 | 97.103 | 18.085 | 34.125 | 27.294 | 16.851 | 16.351 | 0.785 | 1.836 | 0.973 | 1.031 | 0.018 | -1 | 6.810 | 4.819 |
| 1788 | 82.161 | 19.412 | 37.591 | 25.840 | 18.207 | 17.740 | 0.761 | 1.852 | 0.956 | 1.026 | 0.022 | 1 | 7.797 | 6.470 |
| 1789 | 97.622 | 18.612 | 33.002 | 27.344 | 18.759 | 17.338 | 0.772 | 1.939 | 1.094 | 1.082 | 0.017 | -1 | 7.034 | 4.887 |
| 1790 | 88.827 | 21.038 | 38.864 | 28.106 | 19.511 | 17.306 | 0.713 | 1.750 | 0.947 | 1.127 | 0.020 | 1 | 8.681 | 7.234 |
| 1791 | 95.470 | 20.916 | 37.778 | 27.800 | 19.007 | 18.347 | 0.703 | 1.786 | 0.989 | 1.036 | 0.018 | 1 | 6.365 | 4.573 |
| 1792 | 94.385 | 18.993 | 32.081 | 25.537 | 16.692 | 19.114 | 0.762 | 1.885 | 1.116 | 0.873 | 0.018 | -1 | 6.622 | 4.669 |
| 1793 | 80.054 | 18.015 | 38.255 | 28.605 | 18.945 | 19.624 | 0.816 | 2.141 | 1.008 | 0.965 | 0.024 | 1 | 5.428 | 3.853 |
| 1794 | 99.666 | 20.661 | 39.840 | 27.181 | 17.140 | 16.548 | 0.710 | 1.631 | 0.846 | 1.036 | 0.017 | 1 | 9.507 | 7.984 |
| 1795 | 89.625 | 21.532 | 34.629 | 29.344 | 17.136 | 16.275 | 0.711 | 1.552 | 0.965 | 1.053 | 0.020 | 1 | 6.441 | 9.169 |
| 1796 | 90.393 | 17.819 | 35.864 | 25.686 | 17.542 | 17.591 | 0.801 | 1.972 | 0.980 | 0.997 | 0.019 | 1 | 6.033 | 4.244 |
| 1797 | 86.505 | 21.457 | 35.206 | 25.847 | 16.155 | 17.877 | 0.697 | 1.586 | 0.967 | 0.904 | 0.020 | 1 | 5.778 | 8.213 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1798 | 88.673 | 18.176 | 35.220 | 24.277 | 17.932 | 18.687 | 0.793 | 2.015 | 1.040 | 0.960 | 0.019 | 1 | 5.818 | 4.089 |
| 1799 | 84.826 | 19.064 | 39.122 | 25.542 | 19.882 | 16.583 | 0.773 | 1.913 | 0.932 | 1.199 | 0.021 | 1 | 5.262 | 3.774 |
| 1800 | 96.973 | 18.059 | 33.541 | 28.483 | 18.238 | 19.103 | 0.795 | 2.068 | 1.113 | 0.955 | 0.018 | -1 | 7.127 | 4.890 |
| 1801 | 90.763 | 18.570 | 36.057 | 27.552 | 17.302 | 19.736 | 0.771 | 1.994 | 1.027 | 0.877 | 0.020 | 1 | 6.238 | 4.405 |
| 1802 | 94.611 | 21.856 | 35.240 | 26.613 | 17.326 | 19.783 | 0.683 | 1.698 | 1.053 | 0.876 | 0.018 | 1 | 9.567 | 7.956 |
| 1803 | 95.271 | 21.555 | 38.964 | 27.552 | 16.801 | 18.974 | 0.688 | 1.660 | 0.918 | 0.885 | 0.018 | 1 | 9.289 | 7.764 |
| 1804 | 86.735 | 20.203 | 34.732 | 24.981 | 18.549 | 18.715 | 0.731 | 1.845 | 1.073 | 0.991 | 0.020 | 1 | 5.725 | 4.104 |
| 1805 | 99.316 | 19.722 | 37.775 | 29.368 | 18.963 | 19.845 | 0.735 | 1.968 | 1.027 | 0.956 | 0.018 | 1 | 6.923 | 4.848 |
| 1806 | 85.811 | 19.323 | 38.652 | 29.887 | 17.796 | 18.781 | 0.758 | 1.893 | 0.946 | 0.948 | 0.022 | 1 | 8.763 | 7.271 |
| 1807 | 91.609 | 21.211 | 34.130 | 27.327 | 19.865 | 19.911 | 0.695 | 1.875 | 1.165 | 0.998 | 0.019 | 1 | 6.408 | 4.560 |
| 1808 | 85.608 | 20.316 | 33.072 | 24.338 | 18.035 | 16.125 | 0.738 | 1.681 | 1.033 | 1.118 | 0.020 | 1 | 2.851 | 4.070 |
| 1809 | 98.845 | 18.065 | 37.091 | 25.362 | 16.878 | 19.358 | 0.783 | 2.006 | 0.977 | 0.872 | 0.016 | 1 | 6.537 | 4.555 |
| 1810 | 87.678 | 18.798 | 39.722 | 29.530 | 18.361 | 17.007 | 0.770 | 1.881 | 0.890 | 1.080 | 0.021 | 1 | 5.874 | 4.214 |
| 1811 | 88.430 | 18.046 | 35.860 | 26.861 | 16.959 | 16.111 | 0.795 | 1.832 | 0.922 | 1.053 | 0.020 | 1 | 5.957 | 4.267 |
| 1812 | 80.342 | 20.489 | 37.210 | 29.068 | 17.544 | 19.165 | 0.738 | 1.792 | 0.987 | 0.915 | 0.024 | 1 | 8.318 | 6.911 |
| 1813 | 83.725 | 21.993 | 37.503 | 25.270 | 19.451 | 17.436 | 0.695 | 1.677 | 0.984 | 1.116 | 0.021 | 1 | 7.896 | 6.567 |
| 1814 | 90.181 | 19.953 | 35.235 | 25.950 | 16.074 | 17.672 | 0.740 | 1.691 | 0.958 | 0.910 | 0.019 | 1 | 8.970 | 7.484 |
| 1815 | 91.772 | 21.541 | 33.661 | 25.443 | 17.381 | 16.054 | 0.700 | 1.552 | 0.993 | 1.083 | 0.018 | 1 | 6.185 | 8.844 |
| 1816 | 86.008 | 21.686 | 37.812 | 28.289 | 16.712 | 19.298 | 0.694 | 1.661 | 0.952 | 0.866 | 0.021 | 1 | 5.850 | 8.262 |
| 1817 | 83.532 | 21.583 | 32.275 | 29.746 | 17.252 | 18.748 | 0.712 | 1.668 | 1.115 | 0.920 | 0.023 | 1 | 6.314 | 8.982 |
| 1818 | 95.365 | 19.957 | 39.488 | 29.790 | 19.531 | 17.368 | 0.725 | 1.849 | 0.934 | 1.125 | 0.019 | 1 | 6.465 | 4.613 |
| 1819 | 86.617 | 21.485 | 34.302 | 24.904 | 17.345 | 19.475 | 0.698 | 1.714 | 1.073 | 0.891 | 0.020 | 1 | 5.749 | 8.183 |
| 1820 | 93.497 | 20.995 | 38.560 | 26.976 | 19.466 | 19.121 | 0.701 | 1.838 | 1.001 | 1.018 | 0.019 | 1 | 6.082 | 4.355 |
| 1821 | 90.530 | 21.049 | 35.436 | 29.609 | 16.513 | 16.971 | 0.720 | 1.591 | 0.945 | 0.973 | 0.020 | 1 | 6.456 | 9.197 |
| 1822 | 84.843 | 19.528 | 35.296 | 25.168 | 18.363 | 17.570 | 0.754 | 1.840 | 1.018 | 1.045 | 0.021 | 1 | 5.559 | 3.991 |
| 1823 | 84.392 | 20.429 | 36.822 | 28.867 | 17.479 | 16.865 | 0.739 | 1.681 | 0.933 | 1.036 | 0.022 | 1 | 8.684 | 7.267 |
| 1824 | 97.018 | 17.677 | 39.151 | 27.209 | 19.521 | 19.862 | 0.816 | 2.228 | 1.006 | 0.983 | 0.018 | 1 | 6.478 | 4.449 |
| 1825 | 87.183 | 18.392 | 32.780 | 29.100 | 16.631 | 18.288 | 0.779 | 1.899 | 1.065 | 0.909 | 0.021 | 1 | 6.448 | 4.584 |
| 1826 | 87.297 | 20.187 | 36.988 | 28.938 | 16.744 | 16.137 | 0.745 | 1.629 | 0.889 | 1.038 | 0.021 | 1 | 6.019 | 8.578 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1827 | 90.471 | 17.736 | 39.522 | 29.999 | 16.323 | 16.977 | 0.801 | 1.878 | 0.843 | 0.961 | 0.020 | 1 | 6.138 | 4.401 |
| 1828 | 81.602 | 19.221 | 34.297 | 27.422 | 17.882 | 16.885 | 0.772 | 1.809 | 1.014 | 1.059 | 0.023 | 1 | 5.668 | 4.100 |
| 1829 | 93.650 | 20.251 | 36.868 | 27.124 | 19.667 | 16.892 | 0.722 | 1.805 | 0.992 | 1.164 | 0.019 | 1 | 6.258 | 4.482 |
| 1830 | 85.982 | 21.499 | 33.411 | 29.930 | 18.884 | 18.810 | 0.708 | 1.753 | 1.128 | 1.004 | 0.022 | 1 | 9.498 | 7.928 |
| 1831 | 91.671 | 20.033 | 38.970 | 27.259 | 19.834 | 18.319 | 0.734 | 1.904 | 0.979 | 1.083 | 0.019 | 1 | 5.974 | 4.253 |
| 1832 | 90.602 | 20.986 | 36.727 | 27.658 | 16.341 | 19.184 | 0.710 | 1.693 | 0.967 | 0.852 | 0.020 | 1 | 6.143 | 8.720 |
| 1833 | 95.283 | 21.550 | 38.026 | 28.508 | 19.846 | 18.483 | 0.689 | 1.779 | 1.008 | 1.074 | 0.018 | 1 | 6.399 | 4.609 |
| 1834 | 86.223 | 18.331 | 34.924 | 24.207 | 18.534 | 18.713 | 0.791 | 2.032 | 1.067 | 0.990 | 0.020 | 1 | 5.654 | 3.983 |
| 1835 | 83.757 | 20.855 | 37.001 | 25.151 | 18.880 | 16.657 | 0.725 | 1.704 | 0.960 | 1.133 | 0.021 | 1 | 7.921 | 6.600 |
| 1836 | 93.189 | 21.057 | 36.184 | 28.812 | 18.981 | 16.888 | 0.711 | 1.703 | 0.991 | 1.124 | 0.019 | 1 | 9.578 | 8.019 |
| 1837 | 90.131 | 20.351 | 35.345 | 25.244 | 17.057 | 19.770 | 0.723 | 1.810 | 1.042 | 0.863 | 0.019 | 1 | 5.914 | 4.263 |
| 1838 | 82.912 | 20.100 | 32.406 | 26.313 | 16.484 | 19.852 | 0.743 | 1.808 | 1.121 | 0.830 | 0.022 | 1 | 5.783 | 8.277 |
| 1839 | 98.937 | 19.902 | 39.713 | 26.970 | 18.746 | 16.516 | 0.724 | 1.772 | 0.888 | 1.135 | 0.017 | 1 | 6.365 | 4.555 |
| 1840 | 91.855 | 21.895 | 38.428 | 25.886 | 17.674 | 16.756 | 0.684 | 1.572 | 0.896 | 1.055 | 0.019 | 1 | 8.719 | 7.300 |
| 1841 | 96.438 | 19.502 | 35.682 | 25.743 | 18.353 | 19.967 | 0.742 | 1.965 | 1.074 | 0.919 | 0.017 | 1 | 6.498 | 4.558 |
| 1842 | 88.016 | 21.621 | 36.247 | 26.519 | 18.062 | 16.617 | 0.701 | 1.604 | 0.957 | 1.087 | 0.020 | 1 | 8.707 | 7.291 |
| 1843 | 93.365 | 20.283 | 32.472 | 28.056 | 16.628 | 18.677 | 0.730 | 1.741 | 1.087 | 0.890 | 0.019 | 1 | 3.398 | 4.800 |
| 1844 | 89.913 | 18.783 | 32.235 | 25.237 | 17.580 | 17.682 | 0.764 | 1.877 | 1.094 | 0.994 | 0.019 | -1 | 6.253 | 4.417 |
| 1845 | 80.144 | 19.487 | 36.661 | 24.084 | 19.452 | 16.298 | 0.766 | 1.835 | 0.975 | 1.194 | 0.022 | 1 | 7.376 | 6.144 |
| 1846 | 98.069 | 17.957 | 35.357 | 26.080 | 18.635 | 17.281 | 0.794 | 2.000 | 1.016 | 1.078 | 0.017 | 1 | 6.736 | 4.664 |
| 1847 | 94.640 | 21.371 | 34.908 | 27.039 | 19.139 | 19.682 | 0.691 | 1.817 | 1.112 | 0.972 | 0.018 | 1 | 6.494 | 4.645 |
| 1848 | 98.995 | 19.077 | 36.394 | 25.829 | 18.649 | 18.192 | 0.755 | 1.931 | 1.012 | 1.025 | 0.017 | 1 | 6.644 | 4.644 |
| 1849 | 82.383 | 20.079 | 33.669 | 29.265 | 18.234 | 19.495 | 0.742 | 1.879 | 1.121 | 0.935 | 0.023 | 1 | 6.030 | 4.339 |
| 1850 | 81.675 | 19.273 | 36.159 | 24.480 | 17.110 | 19.498 | 0.763 | 1.899 | 1.012 | 0.878 | 0.022 | 1 | 7.731 | 6.403 |
| 1851 | 89.309 | 20.449 | 35.918 | 25.094 | 19.805 | 19.327 | 0.723 | 1.914 | 1.089 | 1.025 | 0.019 | 1 | 5.841 | 4.157 |
| 1852 | 86.554 | 21.861 | 34.713 | 24.478 | 17.118 | 19.946 | 0.685 | 1.695 | 1.068 | 0.858 | 0.020 | 1 | 5.677 | 8.065 |
| 1853 | 86.986 | 21.985 | 34.862 | 28.448 | 16.244 | 17.297 | 0.690 | 1.526 | 0.962 | 0.939 | 0.021 | 1 | 6.167 | 8.747 |
| 1854 | 87.013 | 21.682 | 37.591 | 24.684 | 17.433 | 17.807 | 0.690 | 1.625 | 0.937 | 0.979 | 0.020 | 1 | 8.160 | 6.791 |
| 1855 | 90.359 | 18.763 | 32.663 | 25.189 | 16.564 | 16.167 | 0.774 | 1.744 | 1.002 | 1.025 | 0.019 | 1 | 6.161 | 4.437 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 1856 | 83.364 | 19.590 | 39.013 | 27.109 | 19.017 | 19.235 | 0.756 | 1.953 | 0.980 | 0.989 | 0.022 | 1 | 7.956 | 6.579 |
| 1857 | 87.977 | 19.701 | 36.157 | 28.219 | 16.193 | 17.950 | 0.753 | 1.733 | 0.944 | 0.902 | 0.021 | 1 | 9.013 | 7.532 |
| 1858 | 89.326 | 17.694 | 38.109 | 26.387 | 18.088 | 19.128 | 0.814 | 2.103 | 0.977 | 0.946 | 0.020 | 1 | 5.848 | 4.101 |
| 1859 | 84.728 | 18.770 | 37.571 | 25.334 | 17.272 | 19.017 | 0.772 | 1.933 | 0.966 | 0.908 | 0.021 | 1 | 5.380 | 3.849 |
| 1860 | 91.018 | 21.745 | 32.133 | 24.001 | 17.662 | 18.484 | 0.686 | 1.662 | 1.125 | 0.956 | 0.018 | 1 | 3.053 | 4.369 |
| 1861 | 97.077 | 20.759 | 36.241 | 29.827 | 19.453 | 17.710 | 0.706 | 1.790 | 1.025 | 1.098 | 0.018 | 1 | 6.854 | 4.910 |
| 1862 | 98.433 | 19.873 | 34.683 | 25.263 | 17.600 | 18.265 | 0.723 | 1.805 | 1.034 | 0.964 | 0.017 | 1 | 6.623 | 4.705 |
| 1863 | 80.796 | 21.388 | 37.335 | 29.834 | 17.196 | 18.447 | 0.714 | 1.666 | 0.955 | 0.932 | 0.024 | 1 | 5.769 | 8.128 |
| 1864 | 89.430 | 21.280 | 38.924 | 25.039 | 19.158 | 17.751 | 0.702 | 1.734 | 0.948 | 1.079 | 0.019 | 1 | 8.238 | 6.849 |
| 1865 | 91.202 | 20.976 | 35.565 | 28.441 | 19.563 | 16.338 | 0.716 | 1.712 | 1.009 | 1.197 | 0.020 | 1 | 9.375 | 7.853 |
| 1866 | 86.217 | 18.478 | 37.800 | 24.221 | 16.031 | 17.404 | 0.780 | 1.809 | 0.885 | 0.921 | 0.020 | 1 | 5.322 | 3.828 |
| 1867 | 95.889 | 18.849 | 39.913 | 24.533 | 16.518 | 18.287 | 0.751 | 1.847 | 0.872 | 0.903 | 0.017 | 1 | 5.904 | 4.199 |
| 1868 | 84.334 | 18.275 | 37.257 | 28.962 | 19.901 | 18.225 | 0.802 | 2.086 | 1.023 | 1.092 | 0.022 | 1 | 5.873 | 4.142 |
| 1869 | 99.963 | 19.308 | 35.345 | 24.398 | 19.723 | 16.606 | 0.747 | 1.882 | 1.028 | 1.188 | 0.016 | 1 | 6.654 | 4.660 |
| 1870 | 94.137 | 18.318 | 38.461 | 26.645 | 16.483 | 17.614 | 0.773 | 1.861 | 0.887 | 0.936 | 0.018 | 1 | 6.123 | 4.360 |
| 1871 | 83.777 | 18.344 | 33.531 | 24.073 | 17.834 | 19.123 | 0.787 | 2.015 | 1.102 | 0.933 | 0.021 | 1 | 5.581 | 3.941 |
| 1872 | 94.785 | 21.581 | 37.016 | 28.616 | 16.073 | 17.730 | 0.694 | 1.566 | 0.913 | 0.907 | 0.019 | 1 | 6.483 | 9.236 |
| 1873 | 93.166 | 19.498 | 36.564 | 28.452 | 18.299 | 19.792 | 0.742 | 1.954 | 1.042 | 0.925 | 0.019 | 1 | 6.458 | 4.566 |
| 1874 | 80.721 | 18.403 | 39.183 | 29.654 | 18.597 | 18.348 | 0.796 | 2.008 | 0.943 | 1.014 | 0.024 | 1 | 5.492 | 3.932 |
| 1875 | 82.179 | 21.678 | 33.678 | 29.135 | 19.654 | 17.800 | 0.711 | 1.728 | 1.112 | 1.104 | 0.023 | 1 | 8.932 | 7.460 |
| 1876 | 80.658 | 19.677 | 39.100 | 28.202 | 17.150 | 18.222 | 0.756 | 1.798 | 0.905 | 0.941 | 0.023 | 1 | 7.913 | 6.562 |
| 1877 | 88.314 | 18.523 | 38.968 | 25.027 | 18.321 | 17.181 | 0.783 | 1.917 | 0.911 | 1.066 | 0.019 | 1 | 5.492 | 3.909 |
| 1878 | 89.065 | 17.991 | 36.999 | 29.344 | 16.053 | 16.941 | 0.800 | 1.834 | 0.892 | 0.948 | 0.021 | 1 | 6.169 | 4.446 |
| 1879 | 80.255 | 18.116 | 34.109 | 25.694 | 17.902 | 18.921 | 0.801 | 2.033 | 1.080 | 0.946 | 0.023 | 1 | 5.459 | 3.871 |
| 1880 | 90.148 | 21.914 | 34.426 | 24.527 | 19.392 | 17.290 | 0.689 | 1.674 | 1.066 | 1.122 | 0.019 | 1 | 8.809 | 7.357 |
| 1881 | 98.104 | 21.449 | 32.072 | 25.463 | 16.982 | 17.568 | 0.690 | 1.611 | 1.077 | 0.967 | 0.017 | 1 | 3.389 | 4.840 |
| 1882 | 94.338 | 18.239 | 38.458 | 26.043 | 18.070 | 16.109 | 0.780 | 1.874 | 0.889 | 1.122 | 0.018 | 1 | 6.093 | 4.316 |
| 1883 | 86.114 | 21.236 | 37.846 | 26.270 | 19.418 | 18.344 | 0.709 | 1.778 | 0.998 | 1.059 | 0.021 | 1 | 8.246 | 6.851 |
| 1884 | 87.271 | 20.568 | 34.925 | 24.252 | 19.351 | 19.654 | 0.718 | 1.896 | 1.117 | 0.985 | 0.019 | 1 | 5.681 | 4.057 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1885 | 97.928 | 21.078 | 34.155 | 25.268 | 19.141 | 18.754 | 0.692 | 1.798 | 1.109 | 1.021 | 0.017 | 1 | 6.630 | 4.714 |
| 1886 | 91.277 | 19.454 | 34.625 | 29.560 | 18.907 | 19.454 | 0.746 | 1.972 | 1.108 | 0.972 | 0.020 | 1 | 6.659 | 4.683 |
| 1887 | 94.308 | 17.776 | 32.176 | 27.173 | 19.452 | 18.690 | 0.808 | 2.146 | 1.185 | 1.041 | 0.018 | -1 | 6.938 | 4.730 |
| 1888 | 99.362 | 18.888 | 32.544 | 25.145 | 19.367 | 16.671 | 0.758 | 1.908 | 1.107 | 1.162 | 0.016 | 1 | 6.958 | 4.841 |
| 1889 | 93.374 | 21.599 | 35.261 | 27.369 | 18.818 | 19.048 | 0.691 | 1.753 | 1.074 | 0.988 | 0.019 | 1 | 6.368 | 4.602 |
| 1890 | 81.691 | 18.341 | 32.078 | 28.434 | 19.361 | 18.959 | 0.792 | 2.089 | 1.195 | 1.021 | 0.023 | 1 | 6.136 | 4.291 |
| 1891 | 93.334 | 17.689 | 35.651 | 25.758 | 19.171 | 16.832 | 0.809 | 2.035 | 1.010 | 1.139 | 0.018 | 1 | 6.315 | 4.392 |
| 1892 | 84.577 | 19.549 | 38.246 | 27.329 | 17.069 | 17.825 | 0.755 | 1.785 | 0.912 | 0.958 | 0.022 | 1 | 8.235 | 6.847 |
| 1893 | 87.724 | 18.237 | 36.201 | 29.361 | 16.701 | 16.768 | 0.793 | 1.835 | 0.925 | 0.996 | 0.021 | 1 | 6.159 | 4.434 |
| 1894 | 81.959 | 18.456 | 35.913 | 25.183 | 16.267 | 18.489 | 0.789 | 1.883 | 0.968 | 0.880 | 0.022 | 1 | 5.300 | 3.813 |
| 1895 | 93.136 | 20.586 | 33.090 | 25.671 | 19.157 | 19.406 | 0.708 | 1.873 | 1.165 | 0.987 | 0.018 | 1 | 6.445 | 4.561 |
| 1896 | 99.393 | 21.899 | 33.009 | 26.531 | 18.876 | 18.239 | 0.677 | 1.695 | 1.124 | 1.035 | 0.017 | 1 | 6.895 | 4.975 |
| 1897 | 89.458 | 20.904 | 39.550 | 28.756 | 17.639 | 17.738 | 0.714 | 1.692 | 0.895 | 0.994 | 0.020 | 1 | 8.806 | 7.349 |
| 1898 | 90.531 | 18.652 | 32.742 | 29.559 | 16.002 | 17.294 | 0.782 | 1.785 | 1.017 | 0.925 | 0.020 | 1 | 3.395 | 4.781 |
| 1899 | 92.603 | 21.792 | 38.576 | 24.104 | 16.902 | 18.302 | 0.677 | 1.615 | 0.913 | 0.923 | 0.018 | 1 | 5.720 | 8.135 |
| 1900 | 86.107 | 19.210 | 38.827 | 25.337 | 17.494 | 18.164 | 0.758 | 1.856 | 0.918 | 0.963 | 0.020 | 1 | 7.958 | 6.595 |
| 1901 | 99.749 | 20.650 | 32.650 | 28.234 | 16.146 | 18.793 | 0.716 | 1.692 | 1.070 | 0.859 | 0.017 | 1 | 10.682 | 8.843 |
| 1902 | 95.424 | 19.133 | 37.692 | 27.791 | 19.980 | 17.506 | 0.760 | 1.959 | 0.995 | 1.141 | 0.018 | 1 | 6.470 | 4.540 |
| 1903 | 87.068 | 18.393 | 38.458 | 29.040 | 16.317 | 18.170 | 0.786 | 1.875 | 0.897 | 0.898 | 0.021 | 1 | 5.873 | 4.229 |
| 1904 | 80.335 | 17.930 | 37.709 | 26.434 | 17.421 | 18.486 | 0.811 | 2.003 | 0.952 | 0.942 | 0.023 | 1 | 5.198 | 3.716 |
| 1905 | 99.966 | 17.710 | 34.609 | 28.895 | 17.901 | 19.272 | 0.807 | 2.099 | 1.074 | 0.929 | 0.017 | -1 | 7.314 | 4.993 |
| 1906 | 81.729 | 18.702 | 37.404 | 29.840 | 18.154 | 19.638 | 0.780 | 2.021 | 1.010 | 0.924 | 0.023 | 1 | 5.755 | 4.111 |
| 1907 | 95.811 | 19.686 | 38.352 | 28.504 | 17.223 | 19.918 | 0.731 | 1.887 | 0.968 | 0.865 | 0.018 | 1 | 6.446 | 4.601 |
| 1908 | 98.516 | 21.730 | 34.680 | 25.869 | 16.442 | 16.224 | 0.686 | 1.503 | 0.942 | 1.013 | 0.017 | 1 | 6.592 | 9.449 |
| 1909 | 99.174 | 18.757 | 39.299 | 29.504 | 17.244 | 16.523 | 0.758 | 1.800 | 0.859 | 1.044 | 0.018 | 1 | 6.699 | 4.790 |
| 1910 | 99.108 | 20.811 | 37.036 | 26.647 | 18.517 | 18.089 | 0.701 | 1.759 | 0.988 | 1.024 | 0.017 | 1 | 6.570 | 4.709 |
| 1911 | 89.555 | 18.031 | 38.138 | 25.816 | 16.857 | 16.208 | 0.791 | 1.834 | 0.867 | 1.040 | 0.019 | 1 | 5.719 | 4.093 |
| 1912 | 85.406 | 19.954 | 32.782 | 24.290 | 19.131 | 16.028 | 0.745 | 1.762 | 1.073 | 1.194 | 0.020 | 1 | 5.696 | 4.116 |
| 1913 | 81.630 | 20.949 | 38.358 | 25.746 | 18.684 | 17.404 | 0.722 | 1.723 | 0.941 | 1.073 | 0.022 | 1 | 7.653 | 6.353 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1914 | 89.287 | 17.611 | 35.262 | 25.383 | 16.600 | 16.638 | 0.802 | 1.887 | 0.943 | 0.998 | 0.019 | 1 | 5.941 | 4.215 |
| 1915 | 97.972 | 21.300 | 38.962 | 26.838 | 19.371 | 18.966 | 0.688 | 1.800 | 0.984 | 1.021 | 0.017 | 1 | 6.350 | 4.543 |
| 1916 | 81.584 | 20.072 | 32.071 | 26.204 | 18.352 | 17.683 | 0.746 | 1.795 | 1.124 | 1.038 | 0.022 | 1 | 5.726 | 4.131 |
| 1917 | 94.293 | 17.983 | 36.191 | 27.474 | 18.389 | 17.779 | 0.795 | 2.011 | 0.999 | 1.034 | 0.018 | 1 | 6.517 | 4.543 |
| 1918 | 93.571 | 18.001 | 39.272 | 24.702 | 16.974 | 19.949 | 0.794 | 2.051 | 0.940 | 0.851 | 0.018 | 1 | 5.858 | 4.115 |
| 1919 | 97.176 | 19.325 | 34.236 | 27.225 | 17.328 | 18.871 | 0.744 | 1.873 | 1.057 | 0.918 | 0.018 | -1 | 6.804 | 4.808 |
| 1920 | 90.948 | 18.527 | 36.618 | 27.223 | 16.758 | 19.606 | 0.767 | 1.963 | 0.993 | 0.855 | 0.019 | 1 | 6.143 | 4.359 |
| 1921 | 94.310 | 19.340 | 32.966 | 27.956 | 17.694 | 18.019 | 0.746 | 1.847 | 1.083 | 0.982 | 0.019 | -1 | 6.787 | 4.808 |
| 1922 | 80.328 | 18.482 | 39.770 | 25.985 | 18.749 | 17.067 | 0.797 | 1.938 | 0.901 | 1.099 | 0.023 | 1 | 7.324 | 6.068 |
| 1923 | 97.226 | 20.750 | 32.638 | 29.675 | 17.208 | 16.861 | 0.722 | 1.642 | 1.044 | 1.021 | 0.018 | 1 | 10.614 | 8.878 |
| 1924 | 88.217 | 19.989 | 37.512 | 25.311 | 16.291 | 18.347 | 0.735 | 1.733 | 0.923 | 0.888 | 0.020 | 1 | 8.376 | 6.974 |
| 1925 | 96.529 | 21.141 | 39.621 | 27.133 | 16.598 | 18.503 | 0.697 | 1.660 | 0.886 | 0.897 | 0.018 | 1 | 9.252 | 7.737 |
| 1926 | 92.501 | 18.002 | 33.976 | 26.596 | 17.074 | 16.921 | 0.788 | 1.888 | 1.001 | 1.009 | 0.019 | -1 | 6.436 | 4.542 |
| 1927 | 89.630 | 19.483 | 33.111 | 25.179 | 16.903 | 19.633 | 0.744 | 1.875 | 1.103 | 0.861 | 0.019 | 1 | 6.110 | 4.358 |
| 1928 | 86.430 | 21.398 | 35.855 | 26.042 | 19.682 | 16.087 | 0.713 | 1.672 | 0.998 | 1.223 | 0.020 | 1 | 8.467 | 7.084 |
| 1929 | 80.988 | 20.991 | 36.855 | 24.860 | 19.263 | 19.121 | 0.721 | 1.829 | 1.041 | 1.007 | 0.022 | 1 | 7.628 | 6.323 |
| 1930 | 95.101 | 19.610 | 32.626 | 25.129 | 16.637 | 19.822 | 0.737 | 1.859 | 1.117 | 0.839 | 0.017 | -1 | 6.546 | 4.654 |
| 1931 | 94.839 | 18.341 | 39.864 | 28.271 | 19.221 | 19.140 | 0.791 | 2.092 | 0.962 | 1.004 | 0.019 | 1 | 6.316 | 4.403 |
| 1932 | 84.445 | 18.021 | 33.767 | 29.843 | 19.949 | 16.142 | 0.799 | 2.003 | 1.069 | 1.236 | 0.022 | 1 | 6.316 | 4.450 |
| 1933 | 80.426 | 19.633 | 38.135 | 26.161 | 19.516 | 18.767 | 0.760 | 1.950 | 1.004 | 1.040 | 0.023 | 1 | 7.601 | 6.293 |
| 1934 | 82.709 | 18.902 | 34.974 | 26.656 | 17.163 | 16.964 | 0.780 | 1.806 | 0.976 | 1.012 | 0.022 | 1 | 5.590 | 4.041 |
| 1935 | 89.747 | 21.904 | 37.370 | 28.279 | 17.383 | 16.095 | 0.694 | 1.528 | 0.896 | 1.080 | 0.020 | 1 | 6.111 | 8.664 |
| 1936 | 94.443 | 18.299 | 33.382 | 25.248 | 17.903 | 18.461 | 0.782 | 1.987 | 1.089 | 0.970 | 0.018 | -1 | 6.542 | 4.549 |
| 1937 | 87.774 | 18.196 | 32.693 | 28.479 | 18.347 | 18.843 | 0.789 | 2.044 | 1.138 | 0.974 | 0.021 | 1 | 6.506 | 4.530 |
| 1938 | 86.980 | 18.874 | 35.785 | 29.984 | 18.921 | 17.924 | 0.768 | 1.952 | 1.030 | 1.056 | 0.021 | 1 | 6.289 | 4.460 |
| 1939 | 95.198 | 20.564 | 37.371 | 24.571 | 16.523 | 19.467 | 0.709 | 1.750 | 0.963 | 0.849 | 0.017 | 1 | 6.019 | 4.346 |
| 1940 | 89.423 | 19.096 | 35.850 | 24.144 | 19.642 | 19.124 | 0.768 | 2.030 | 1.081 | 1.027 | 0.019 | 1 | 5.798 | 4.079 |
| 1941 | 83.657 | 19.846 | 32.528 | 26.923 | 17.411 | 18.762 | 0.748 | 1.823 | 1.112 | 0.928 | 0.022 | 1 | 5.917 | 4.260 |
| 1942 | 84.133 | 18.374 | 32.342 | 26.896 | 16.214 | 18.163 | 0.788 | 1.871 | 1.063 | 0.893 | 0.022 | 1 | 5.991 | 4.283 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 1943 | 83.477 | 18.573 | 37.870 | 25.811 | 19.192 | 17.983 | 0.791 | 2.002 | 0.982 | 1.067 | 0.021 | 1 | 5.338 | 3.801 |
| 1944 | 90.706 | 20.551 | 32.338 | 25.025 | 18.052 | 17.845 | 0.719 | 1.747 | 1.110 | 1.012 | 0.019 | 1 | 6.202 | 4.460 |
| 1945 | 83.900 | 18.236 | 39.402 | 25.522 | 16.527 | 19.442 | 0.791 | 1.972 | 0.913 | 0.850 | 0.021 | 1 | 7.696 | 6.358 |
| 1946 | 82.463 | 18.144 | 39.445 | 25.408 | 18.886 | 18.523 | 0.811 | 2.062 | 0.948 | 1.020 | 0.022 | 1 | 5.078 | 3.615 |
| 1947 | 85.819 | 18.098 | 38.141 | 25.205 | 18.852 | 19.629 | 0.807 | 2.126 | 1.009 | 0.960 | 0.020 | 1 | 5.442 | 3.838 |
| 1948 | 95.432 | 18.928 | 35.025 | 24.242 | 18.309 | 17.470 | 0.758 | 1.890 | 1.022 | 1.048 | 0.017 | 1 | 6.317 | 4.442 |
| 1949 | 87.018 | 21.157 | 35.844 | 24.472 | 19.177 | 18.810 | 0.707 | 1.796 | 1.060 | 1.019 | 0.020 | 1 | 8.303 | 6.897 |
| 1950 | 89.832 | 18.080 | 32.407 | 25.017 | 17.821 | 16.729 | 0.787 | 1.911 | 1.066 | 1.065 | 0.019 | -1 | 6.226 | 4.379 |
| 1951 | 99.900 | 20.864 | 37.719 | 29.751 | 17.380 | 19.147 | 0.705 | 1.751 | 0.968 | 0.908 | 0.018 | 1 | 10.265 | 8.547 |
| 1952 | 84.061 | 21.464 | 36.110 | 27.248 | 19.379 | 19.479 | 0.706 | 1.810 | 1.076 | 0.995 | 0.022 | 1 | 8.458 | 7.023 |
| 1953 | 81.724 | 21.383 | 32.149 | 25.387 | 18.008 | 19.300 | 0.711 | 1.745 | 1.160 | 0.933 | 0.022 | 1 | 5.625 | 8.043 |
| 1954 | 81.175 | 18.874 | 34.059 | 27.948 | 18.441 | 18.890 | 0.772 | 1.978 | 1.096 | 0.976 | 0.023 | 1 | 5.792 | 4.121 |
| 1955 | 97.342 | 21.009 | 35.407 | 29.492 | 18.569 | 17.540 | 0.706 | 1.719 | 1.020 | 1.059 | 0.018 | 1 | 6.850 | 4.966 |
| 1956 | 87.876 | 21.621 | 38.805 | 29.855 | 19.516 | 19.485 | 0.697 | 1.804 | 1.005 | 1.002 | 0.021 | 1 | 8.951 | 7.433 |
| 1957 | 94.428 | 20.329 | 33.378 | 24.549 | 16.332 | 19.355 | 0.720 | 1.755 | 1.069 | 0.844 | 0.017 | 1 | 3.205 | 4.525 |
| 1958 | 85.995 | 19.270 | 33.745 | 26.408 | 18.208 | 18.997 | 0.753 | 1.931 | 1.103 | 0.958 | 0.021 | 1 | 5.961 | 4.233 |
| 1959 | 91.215 | 19.935 | 36.274 | 26.762 | 17.623 | 17.564 | 0.737 | 1.765 | 0.970 | 1.003 | 0.019 | 1 | 6.069 | 4.380 |
| 1960 | 96.478 | 18.333 | 32.339 | 29.478 | 17.764 | 18.731 | 0.791 | 1.991 | 1.129 | 0.948 | 0.018 | -1 | 7.288 | 5.032 |
| 1961 | 96.731 | 20.893 | 38.356 | 24.159 | 17.622 | 16.924 | 0.702 | 1.653 | 0.901 | 1.041 | 0.017 | 1 | 8.944 | 7.475 |
| 1962 | 95.866 | 17.708 | 34.327 | 25.836 | 16.121 | 18.423 | 0.801 | 1.951 | 1.006 | 0.875 | 0.017 | -1 | 6.595 | 4.616 |
| 1963 | 83.532 | 19.152 | 34.652 | 29.440 | 18.662 | 19.237 | 0.761 | 1.979 | 1.094 | 0.970 | 0.023 | 1 | 6.090 | 4.327 |
| 1964 | 85.286 | 17.663 | 38.954 | 24.387 | 19.454 | 19.597 | 0.826 | 2.211 | 1.002 | 0.993 | 0.020 | 1 | 5.248 | 3.693 |
| 1965 | 92.934 | 20.312 | 38.675 | 25.583 | 19.019 | 16.965 | 0.722 | 1.772 | 0.930 | 1.121 | 0.018 | 1 | 5.862 | 4.218 |
| 1966 | 91.932 | 18.380 | 35.182 | 26.147 | 18.221 | 17.426 | 0.780 | 1.939 | 1.013 | 1.046 | 0.019 | 1 | 6.254 | 4.399 |
| 1967 | 92.751 | 21.935 | 37.142 | 26.194 | 16.219 | 19.333 | 0.677 | 1.621 | 0.957 | 0.839 | 0.018 | 1 | 6.083 | 8.643 |
| 1968 | 83.046 | 21.243 | 32.911 | 24.962 | 17.709 | 17.092 | 0.716 | 1.638 | 1.057 | 1.036 | 0.021 | 1 | 5.611 | 8.009 |
| 1969 | 87.529 | 20.610 | 33.692 | 28.608 | 16.825 | 18.944 | 0.729 | 1.736 | 1.062 | 0.888 | 0.021 | 1 | 9.388 | 7.818 |
| 1970 | 92.408 | 19.676 | 39.202 | 26.991 | 19.085 | 18.644 | 0.743 | 1.918 | 0.962 | 1.024 | 0.019 | 1 | 5.984 | 4.250 |
| 1971 | 81.277 | 21.768 | 37.608 | 27.740 | 16.742 | 18.885 | 0.693 | 1.637 | 0.947 | 0.887 | 0.023 | 1 | 5.507 | 7.751 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 1972 | 99.318 | 19.132 | 35.486 | 28.933 | 18.938 | 18.360 | 0.752 | 1.950 | 1.051 | 1.032 | 0.018 | 1 | 7.102 | 4.946 |
| 1973 | 92.706 | 21.446 | 37.531 | 24.688 | 16.008 | 16.335 | 0.689 | 1.508 | 0.862 | 0.980 | 0.018 | 1 | 5.847 | 8.349 |
| 1974 | 80.079 | 20.235 | 35.794 | 26.997 | 19.331 | 18.601 | 0.743 | 1.875 | 1.060 | 1.039 | 0.023 | 1 | 8.039 | 6.673 |
| 1975 | 82.959 | 21.599 | 32.181 | 24.084 | 16.094 | 18.681 | 0.690 | 1.610 | 1.081 | 0.861 | 0.021 | 1 | 5.588 | 7.957 |
| 1976 | 91.986 | 17.863 | 33.968 | 26.638 | 16.342 | 18.177 | 0.794 | 1.932 | 1.016 | 0.899 | 0.019 | -1 | 6.414 | 4.518 |
| 1977 | 95.850 | 21.767 | 38.078 | 26.196 | 19.699 | 16.119 | 0.689 | 1.646 | 0.941 | 1.222 | 0.018 | 1 | 9.158 | 7.671 |
| 1978 | 89.802 | 20.596 | 39.883 | 29.024 | 19.116 | 19.201 | 0.717 | 1.860 | 0.961 | 0.996 | 0.020 | 1 | 8.829 | 7.318 |
| 1979 | 90.593 | 17.886 | 34.257 | 25.776 | 17.048 | 18.770 | 0.794 | 2.003 | 1.046 | 0.908 | 0.019 | 1 | 6.217 | 4.355 |
| 1980 | 94.751 | 20.094 | 36.664 | 24.270 | 19.409 | 18.452 | 0.728 | 1.884 | 1.033 | 1.052 | 0.017 | 1 | 6.102 | 4.317 |
| 1981 | 87.041 | 21.456 | 35.989 | 29.669 | 18.692 | 18.285 | 0.708 | 1.723 | 1.027 | 1.022 | 0.021 | 1 | 9.206 | 7.688 |
| 1982 | 96.000 | 20.446 | 34.907 | 27.410 | 19.636 | 19.233 | 0.715 | 1.901 | 1.113 | 1.021 | 0.018 | 1 | 6.695 | 4.719 |
| 1983 | 83.417 | 19.850 | 33.499 | 27.158 | 18.797 | 17.957 | 0.746 | 1.852 | 1.097 | 1.047 | 0.022 | 1 | 5.858 | 4.203 |
| 1984 | 84.639 | 21.854 | 39.896 | 25.128 | 19.416 | 19.728 | 0.691 | 1.791 | 0.981 | 0.984 | 0.021 | 1 | 7.664 | 6.337 |
| 1985 | 86.554 | 18.583 | 35.683 | 27.068 | 16.948 | 19.330 | 0.773 | 1.952 | 1.017 | 0.877 | 0.021 | 1 | 5.891 | 4.197 |
| 1986 | 80.170 | 20.274 | 35.821 | 25.227 | 16.624 | 17.866 | 0.739 | 1.701 | 0.963 | 0.930 | 0.022 | 1 | 7.785 | 6.470 |
| 1987 | 94.620 | 20.323 | 34.832 | 29.616 | 18.442 | 17.306 | 0.725 | 1.759 | 1.026 | 1.066 | 0.019 | 1 | 6.757 | 4.873 |
| 1988 | 89.491 | 18.600 | 35.001 | 28.866 | 18.931 | 16.678 | 0.772 | 1.914 | 1.017 | 1.135 | 0.020 | 1 | 6.392 | 4.525 |
| 1989 | 92.359 | 19.855 | 36.346 | 29.016 | 17.089 | 19.759 | 0.736 | 1.856 | 1.014 | 0.865 | 0.020 | 1 | 6.416 | 4.613 |
| 1990 | 98.379 | 18.614 | 32.097 | 27.526 | 17.856 | 18.155 | 0.780 | 1.935 | 1.122 | 0.984 | 0.017 | -1 | 7.197 | 4.990 |
| 1991 | 98.829 | 19.398 | 33.452 | 28.828 | 16.503 | 19.638 | 0.746 | 1.863 | 1.080 | 0.840 | 0.018 | -1 | 7.134 | 5.075 |
| 1992 | 95.473 | 20.062 | 39.334 | 24.743 | 17.310 | 17.611 | 0.722 | 1.741 | 0.888 | 0.983 | 0.017 | 1 | 5.898 | 4.245 |
| 1993 | 87.624 | 20.265 | 38.927 | 28.059 | 17.904 | 19.584 | 0.729 | 1.850 | 0.963 | 0.914 | 0.021 | 1 | 8.589 | 7.119 |
| 1994 | 88.762 | 18.102 | 34.720 | 28.586 | 16.644 | 18.537 | 0.784 | 1.943 | 1.013 | 0.898 | 0.021 | 1 | 6.329 | 4.486 |
| 1995 | 99.621 | 21.682 | 37.816 | 26.016 | 18.411 | 17.032 | 0.684 | 1.635 | 0.937 | 1.081 | 0.016 | 1 | 9.588 | 8.033 |
| 1996 | 94.568 | 21.092 | 39.263 | 26.876 | 16.196 | 19.966 | 0.698 | 1.715 | 0.921 | 0.811 | 0.018 | 1 | 9.081 | 7.564 |
| 1997 | 88.207 | 17.944 | 37.145 | 27.907 | 19.843 | 17.826 | 0.810 | 2.099 | 1.014 | 1.113 | 0.020 | 1 | 6.044 | 4.229 |
| 1998 | 99.029 | 18.324 | 35.191 | 29.170 | 17.339 | 16.329 | 0.774 | 1.837 | 0.957 | 1.062 | 0.018 | -1 | 7.059 | 4.997 |
| 1999 | 97.018 | 20.341 | 36.648 | 27.194 | 16.012 | 18.324 | 0.722 | 1.688 | 0.937 | 0.874 | 0.018 | 1 | 9.691 | 8.078 |
| 2000 | 92.082 | 20.919 | 37.172 | 25.484 | 17.025 | 17.817 | 0.708 | 1.666 | 0.937 | 0.956 | 0.018 | 1 | 8.840 | 7.385 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2001 | 90.168 | 20.209 | 32.480 | 24.691 | 18.523 | 16.012 | 0.733 | 1.709 | 1.063 | 1.157 | 0.019 | 1 | 6.086 | 4.408 |
| 2002 | 93.954 | 21.862 | 36.528 | 29.769 | 16.833 | 19.235 | 0.689 | 1.650 | 0.987 | 0.875 | 0.019 | 1 | 6.649 | 9.426 |
| 2003 | 94.986 | 20.755 | 37.940 | 24.420 | 17.067 | 16.610 | 0.708 | 1.623 | 0.888 | 1.028 | 0.017 | 1 | 8.858 | 7.418 |
| 2004 | 94.138 | 20.395 | 34.461 | 28.142 | 18.519 | 17.369 | 0.722 | 1.760 | 1.041 | 1.066 | 0.019 | 1 | 6.595 | 4.746 |
| 2005 | 97.256 | 18.813 | 33.182 | 24.208 | 18.223 | 17.680 | 0.763 | 1.908 | 1.082 | 1.031 | 0.016 | -1 | 6.639 | 4.635 |
| 2006 | 82.885 | 18.351 | 36.265 | 29.857 | 18.056 | 16.840 | 0.792 | 1.902 | 0.962 | 1.072 | 0.023 | 1 | 5.917 | 4.246 |
| 2007 | 88.938 | 20.164 | 35.945 | 25.043 | 18.750 | 16.741 | 0.733 | 1.760 | 0.987 | 1.120 | 0.019 | 1 | 5.750 | 4.152 |
| 2008 | 95.182 | 19.247 | 38.547 | 29.034 | 18.190 | 16.462 | 0.749 | 1.800 | 0.899 | 1.105 | 0.019 | 1 | 6.426 | 4.608 |
| 2009 | 88.419 | 17.996 | 37.263 | 29.174 | 17.387 | 19.872 | 0.797 | 2.070 | 1.000 | 0.875 | 0.021 | 1 | 6.174 | 4.351 |
| 2010 | 87.241 | 21.322 | 33.449 | 27.136 | 19.478 | 16.110 | 0.715 | 1.669 | 1.064 | 1.209 | 0.021 | 1 | 9.044 | 7.584 |
| 2011 | 93.232 | 18.121 | 34.186 | 26.959 | 17.148 | 18.828 | 0.785 | 1.985 | 1.052 | 0.911 | 0.019 | -1 | 6.550 | 4.579 |
| 2012 | 85.480 | 17.725 | 37.861 | 26.195 | 17.839 | 16.067 | 0.808 | 1.913 | 0.896 | 1.110 | 0.021 | 1 | 5.513 | 3.935 |
| 2013 | 85.299 | 18.536 | 39.502 | 26.472 | 18.122 | 16.641 | 0.782 | 1.875 | 0.880 | 1.089 | 0.021 | 1 | 5.363 | 3.850 |
| 2014 | 88.010 | 21.457 | 35.644 | 28.789 | 16.605 | 16.896 | 0.708 | 1.561 | 0.940 | 0.983 | 0.021 | 1 | 6.192 | 8.799 |
| 2015 | 88.668 | 18.140 | 36.450 | 29.852 | 16.765 | 17.738 | 0.789 | 1.902 | 0.947 | 0.945 | 0.021 | 1 | 6.293 | 4.494 |
| 2016 | 98.618 | 18.255 | 32.849 | 26.768 | 17.058 | 19.789 | 0.789 | 2.018 | 1.122 | 0.862 | 0.017 | -1 | 7.088 | 4.889 |
| 2017 | 99.736 | 19.396 | 38.444 | 28.404 | 19.700 | 18.546 | 0.750 | 1.972 | 0.995 | 1.062 | 0.017 | 1 | 6.801 | 4.745 |
| 2018 | 93.250 | 19.036 | 33.932 | 26.730 | 19.485 | 19.432 | 0.764 | 2.044 | 1.147 | 1.003 | 0.019 | 1 | 6.575 | 4.568 |
| 2019 | 89.995 | 20.546 | 37.789 | 28.452 | 16.016 | 18.599 | 0.724 | 1.685 | 0.916 | 0.861 | 0.020 | 1 | 6.099 | 8.660 |
| 2020 | 99.000 | 18.285 | 34.975 | 28.251 | 18.724 | 17.364 | 0.781 | 1.974 | 1.032 | 1.078 | 0.017 | -1 | 7.071 | 4.899 |
| 2021 | 81.261 | 19.377 | 35.400 | 29.940 | 16.058 | 16.153 | 0.781 | 1.662 | 0.910 | 0.994 | 0.024 | 1 | 5.892 | 8.407 |
| 2022 | 85.590 | 21.191 | 33.906 | 26.855 | 18.206 | 19.833 | 0.711 | 1.795 | 1.122 | 0.918 | 0.021 | 1 | 8.848 | 7.358 |
| 2023 | 93.407 | 19.729 | 39.521 | 29.782 | 16.732 | 16.293 | 0.747 | 1.674 | 0.836 | 1.027 | 0.019 | 1 | 9.339 | 7.850 |
| 2024 | 89.355 | 20.739 | 33.716 | 29.747 | 18.506 | 16.162 | 0.731 | 1.672 | 1.028 | 1.145 | 0.021 | 1 | 9.686 | 8.146 |
| 2025 | 84.603 | 18.765 | 33.444 | 25.966 | 17.295 | 19.539 | 0.767 | 1.963 | 1.101 | 0.885 | 0.021 | 1 | 5.841 | 4.148 |
| 2026 | 89.729 | 21.549 | 38.679 | 24.286 | 16.391 | 17.600 | 0.684 | 1.577 | 0.879 | 0.931 | 0.019 | 1 | 5.528 | 7.856 |
| 2027 | 84.042 | 18.986 | 32.229 | 28.406 | 17.658 | 18.962 | 0.761 | 1.929 | 1.136 | 0.931 | 0.022 | 1 | 6.214 | 4.408 |
| 2028 | 98.229 | 18.064 | 35.567 | 25.215 | 18.362 | 16.687 | 0.787 | 1.940 | 0.985 | 1.100 | 0.017 | 1 | 6.612 | 4.606 |
| 2029 | 97.186 | 20.986 | 36.420 | 28.540 | 19.176 | 17.786 | 0.701 | 1.761 | 1.015 | 1.078 | 0.018 | 1 | 6.681 | 4.804 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 2030 | 99.937 | 19.490 | 39.876 | 26.631 | 16.706 | 19.112 | 0.730 | 1.838 | 0.898 | 0.874 | 0.017 | 1 | 6.407 | 4.563 |
| 2031 | 83.485 | 18.978 | 34.764 | 29.683 | 19.951 | 19.505 | 0.775 | 2.079 | 1.135 | 1.023 | 0.023 | 1 | 6.147 | 4.327 |
| 2032 | 87.487 | 20.283 | 39.038 | 26.719 | 16.038 | 16.073 | 0.730 | 1.583 | 0.823 | 0.998 | 0.020 | 1 | 5.595 | 7.962 |
| 2033 | 86.627 | 21.050 | 39.933 | 24.133 | 16.627 | 18.485 | 0.699 | 1.668 | 0.879 | 0.900 | 0.020 | 1 | 7.734 | 6.406 |
| 2034 | 87.552 | 21.790 | 32.641 | 29.224 | 18.354 | 17.135 | 0.706 | 1.629 | 1.087 | 1.071 | 0.021 | 1 | 6.445 | 9.197 |
| 2035 | 97.264 | 19.380 | 37.240 | 25.014 | 16.686 | 19.079 | 0.736 | 1.845 | 0.960 | 0.875 | 0.017 | 1 | 6.285 | 4.472 |
| 2036 | 99.821 | 21.440 | 33.652 | 27.679 | 18.570 | 19.590 | 0.684 | 1.780 | 1.134 | 0.948 | 0.017 | 1 | 7.038 | 5.028 |
| 2037 | 88.243 | 20.403 | 38.358 | 26.887 | 17.243 | 19.234 | 0.725 | 1.788 | 0.951 | 0.896 | 0.020 | 1 | 8.531 | 7.085 |
| 2038 | 88.486 | 17.878 | 38.631 | 26.382 | 18.577 | 18.317 | 0.810 | 2.064 | 0.955 | 1.014 | 0.020 | 1 | 5.726 | 4.031 |
| 2039 | 82.352 | 20.524 | 32.038 | 27.094 | 18.348 | 18.599 | 0.732 | 1.800 | 1.153 | 0.986 | 0.022 | 1 | 5.887 | 4.247 |
| 2040 | 86.234 | 18.857 | 38.951 | 26.120 | 19.782 | 16.139 | 0.776 | 1.905 | 0.922 | 1.226 | 0.021 | 1 | 5.446 | 3.900 |
| 2041 | 92.543 | 19.781 | 39.831 | 29.863 | 18.778 | 19.139 | 0.735 | 1.917 | 0.952 | 0.981 | 0.020 | 1 | 6.259 | 4.459 |
| 2042 | 90.719 | 21.078 | 33.019 | 28.651 | 18.158 | 18.686 | 0.710 | 1.748 | 1.116 | 0.972 | 0.020 | 1 | 9.770 | 8.135 |
| 2043 | 94.672 | 20.658 | 36.803 | 27.159 | 18.338 | 18.239 | 0.712 | 1.771 | 0.994 | 1.005 | 0.018 | 1 | 6.317 | 4.546 |
| 2044 | 93.556 | 19.178 | 39.492 | 29.923 | 17.788 | 17.753 | 0.751 | 1.853 | 0.900 | 1.002 | 0.019 | 1 | 6.346 | 4.541 |
| 2045 | 92.731 | 20.853 | 33.257 | 28.286 | 18.654 | 18.315 | 0.710 | 1.773 | 1.112 | 1.018 | 0.019 | 1 | 6.628 | 4.763 |
| 2046 | 81.800 | 21.867 | 39.496 | 26.059 | 18.916 | 19.157 | 0.694 | 1.741 | 0.964 | 0.987 | 0.022 | 1 | 7.603 | 6.285 |
| 2047 | 96.587 | 21.989 | 37.449 | 24.239 | 18.471 | 16.928 | 0.677 | 1.610 | 0.945 | 1.091 | 0.017 | 1 | 9.063 | 7.584 |
| 2048 | 91.935 | 18.021 | 39.846 | 26.075 | 16.491 | 19.100 | 0.789 | 1.975 | 0.893 | 0.863 | 0.019 | 1 | 5.803 | 4.110 |
| 2049 | 92.209 | 19.078 | 35.307 | 24.803 | 19.453 | 17.384 | 0.762 | 1.931 | 1.043 | 1.119 | 0.018 | 1 | 6.111 | 4.304 |
| 2050 | 96.352 | 20.319 | 33.265 | 29.363 | 17.212 | 17.025 | 0.731 | 1.685 | 1.029 | 1.011 | 0.018 | 1 | 10.386 | 8.675 |
| 2051 | 84.407 | 19.137 | 35.152 | 24.407 | 18.476 | 19.854 | 0.764 | 2.003 | 1.090 | 0.931 | 0.021 | 1 | 5.496 | 3.905 |
| 2052 | 82.340 | 19.230 | 39.601 | 27.915 | 19.082 | 16.979 | 0.767 | 1.875 | 0.911 | 1.124 | 0.023 | 1 | 7.896 | 6.556 |
| 2053 | 92.070 | 18.550 | 33.415 | 28.726 | 18.426 | 16.976 | 0.769 | 1.908 | 1.059 | 1.085 | 0.020 | -1 | 6.715 | 4.726 |
| 2054 | 83.566 | 18.957 | 36.048 | 27.301 | 17.445 | 17.469 | 0.774 | 1.842 | 0.969 | 0.999 | 0.022 | 1 | 5.641 | 4.065 |
| 2055 | 95.890 | 18.383 | 37.356 | 28.030 | 17.496 | 17.965 | 0.772 | 1.929 | 0.949 | 0.974 | 0.018 | 1 | 6.545 | 4.608 |
| 2056 | 84.060 | 18.921 | 32.361 | 26.393 | 17.542 | 17.823 | 0.769 | 1.869 | 1.093 | 0.984 | 0.021 | 1 | 5.935 | 4.231 |
| 2057 | 98.607 | 20.449 | 32.782 | 25.288 | 16.984 | 17.227 | 0.716 | 1.673 | 1.044 | 0.986 | 0.016 | 1 | 3.411 | 4.825 |
| 2058 | 94.703 | 20.005 | 35.079 | 27.843 | 17.551 | 17.049 | 0.734 | 1.730 | 0.986 | 1.029 | 0.018 | 1 | 6.521 | 4.719 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2059 | 97.736 | 21.721 | 32.768 | 29.017 | 19.588 | 19.464 | 0.678 | 1.798 | 1.192 | 1.006 | 0.018 | 1 | 7.136 | 5.081 |
| 2060 | 82.204 | 20.336 | 36.744 | 25.310 | 18.141 | 17.196 | 0.738 | 1.738 | 0.962 | 1.055 | 0.022 | 1 | 7.838 | 6.519 |
| 2061 | 90.805 | 20.294 | 39.375 | 28.887 | 18.204 | 17.284 | 0.729 | 1.749 | 0.901 | 1.053 | 0.020 | 1 | 8.955 | 7.468 |
| 2062 | 90.594 | 18.234 | 38.112 | 27.436 | 18.509 | 19.211 | 0.795 | 2.069 | 0.990 | 0.963 | 0.020 | 1 | 6.054 | 4.248 |
| 2063 | 93.090 | 19.704 | 38.365 | 26.069 | 19.223 | 17.312 | 0.738 | 1.854 | 0.952 | 1.110 | 0.018 | 1 | 5.993 | 4.269 |
| 2064 | 95.202 | 17.891 | 39.384 | 28.574 | 18.938 | 19.298 | 0.806 | 2.137 | 0.971 | 0.981 | 0.019 | 1 | 6.443 | 4.467 |
| 2065 | 87.846 | 18.388 | 34.925 | 28.340 | 16.326 | 18.799 | 0.781 | 1.910 | 1.006 | 0.868 | 0.021 | 1 | 6.187 | 4.420 |
| 2066 | 89.143 | 20.216 | 32.414 | 28.261 | 17.834 | 17.781 | 0.734 | 1.762 | 1.099 | 1.003 | 0.020 | 1 | 6.441 | 4.648 |
| 2067 | 89.045 | 19.500 | 34.384 | 27.931 | 18.786 | 16.730 | 0.749 | 1.821 | 1.033 | 1.123 | 0.020 | 1 | 6.253 | 4.480 |
| 2068 | 82.302 | 20.824 | 33.932 | 27.449 | 19.281 | 16.459 | 0.733 | 1.716 | 1.053 | 1.171 | 0.022 | 1 | 8.565 | 7.164 |
| 2069 | 96.608 | 21.473 | 39.931 | 28.133 | 18.256 | 17.434 | 0.692 | 1.662 | 0.894 | 1.047 | 0.018 | 1 | 9.350 | 7.820 |
| 2070 | 92.821 | 19.572 | 39.766 | 25.477 | 19.081 | 16.469 | 0.740 | 1.816 | 0.894 | 1.159 | 0.018 | 1 | 5.767 | 4.129 |
| 2071 | 84.138 | 20.137 | 35.334 | 28.642 | 18.076 | 18.694 | 0.741 | 1.826 | 1.041 | 0.967 | 0.022 | 1 | 8.815 | 7.334 |
| 2072 | 91.077 | 19.651 | 36.055 | 29.803 | 17.307 | 16.643 | 0.753 | 1.728 | 0.942 | 1.040 | 0.020 | 1 | 6.387 | 4.660 |
| 2073 | 99.161 | 17.977 | 32.657 | 29.668 | 17.061 | 18.357 | 0.806 | 1.970 | 1.085 | 0.929 | 0.018 | -1 | 7.466 | 5.157 |
| 2074 | 96.172 | 20.622 | 35.469 | 24.475 | 17.345 | 16.368 | 0.714 | 1.635 | 0.951 | 1.060 | 0.017 | 1 | 9.290 | 7.795 |
| 2075 | 95.851 | 18.555 | 32.983 | 24.782 | 19.806 | 19.441 | 0.778 | 2.115 | 1.190 | 1.019 | 0.017 | 1 | 6.685 | 4.589 |
| 2076 | 84.915 | 18.609 | 34.432 | 29.362 | 19.443 | 18.947 | 0.784 | 2.063 | 1.115 | 1.026 | 0.022 | 1 | 6.239 | 4.379 |
| 2077 | 80.273 | 19.265 | 36.130 | 24.517 | 17.475 | 19.746 | 0.765 | 1.932 | 1.030 | 0.885 | 0.022 | 1 | 7.594 | 6.286 |
| 2078 | 93.309 | 18.034 | 35.336 | 28.126 | 16.758 | 19.454 | 0.783 | 2.008 | 1.025 | 0.861 | 0.019 | 1 | 6.574 | 4.610 |
| 2079 | 88.112 | 20.055 | 35.370 | 26.725 | 19.104 | 17.963 | 0.733 | 1.848 | 1.048 | 1.064 | 0.020 | 1 | 5.965 | 4.271 |
| 2080 | 90.529 | 19.710 | 37.761 | 28.954 | 17.903 | 17.099 | 0.746 | 1.776 | 0.927 | 1.047 | 0.020 | 1 | 6.133 | 4.439 |
| 2081 | 94.908 | 21.687 | 37.147 | 29.670 | 17.395 | 16.284 | 0.699 | 1.553 | 0.907 | 1.068 | 0.019 | 1 | 6.607 | 9.408 |
| 2082 | 85.415 | 20.477 | 38.696 | 24.031 | 19.993 | 16.083 | 0.732 | 1.762 | 0.932 | 1.243 | 0.020 | 1 | 7.645 | 6.373 |
| 2083 | 98.794 | 17.951 | 33.797 | 27.887 | 17.012 | 19.510 | 0.797 | 2.035 | 1.081 | 0.872 | 0.017 | -1 | 7.143 | 4.925 |
| 2084 | 85.449 | 19.992 | 33.755 | 27.767 | 16.192 | 18.962 | 0.748 | 1.758 | 1.041 | 0.854 | 0.021 | 1 | 6.034 | 8.607 |
| 2085 | 95.724 | 21.431 | 33.266 | 26.782 | 17.381 | 18.663 | 0.694 | 1.682 | 1.084 | 0.931 | 0.018 | 1 | 9.945 | 8.265 |
| 2086 | 88.244 | 21.469 | 35.396 | 25.772 | 17.761 | 16.499 | 0.704 | 1.596 | 0.968 | 1.076 | 0.020 | 1 | 5.859 | 8.343 |
| 2087 | 87.213 | 21.618 | 33.831 | 27.980 | 17.984 | 19.092 | 0.702 | 1.715 | 1.096 | 0.942 | 0.021 | 1 | 6.189 | 8.807 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 2088 | 85.526 | 21.965 | 36.142 | 26.589 | 18.603 | 18.030 | 0.694 | 1.668 | 1.014 | 1.032 | 0.021 | 1 | 8.500 | 7.083 |
| 2089 | 80.572 | 20.573 | 39.815 | 27.429 | 18.158 | 17.085 | 0.732 | 1.713 | 0.885 | 1.063 | 0.023 | 1 | 7.662 | 6.355 |
| 2090 | 99.620 | 18.625 | 36.797 | 24.162 | 18.312 | 18.323 | 0.770 | 1.967 | 0.996 | 0.999 | 0.016 | 1 | 6.506 | 4.527 |
| 2091 | 81.636 | 18.543 | 38.308 | 26.254 | 19.390 | 16.975 | 0.794 | 1.961 | 0.949 | 1.142 | 0.022 | 1 | 5.203 | 3.727 |
| 2092 | 92.433 | 17.665 | 35.666 | 27.068 | 19.718 | 16.933 | 0.813 | 2.075 | 1.028 | 1.164 | 0.019 | 1 | 6.406 | 4.445 |
| 2093 | 80.004 | 19.923 | 32.884 | 24.354 | 18.116 | 16.756 | 0.755 | 1.750 | 1.060 | 1.081 | 0.022 | 1 | 2.687 | 3.816 |
| 2094 | 86.937 | 19.713 | 34.774 | 28.492 | 16.936 | 18.064 | 0.753 | 1.776 | 1.006 | 0.938 | 0.021 | 1 | 9.132 | 7.624 |
| 2095 | 86.770 | 19.974 | 38.325 | 26.757 | 17.014 | 18.184 | 0.739 | 1.762 | 0.918 | 0.936 | 0.021 | 1 | 8.353 | 6.946 |
| 2096 | 81.160 | 21.100 | 39.086 | 24.955 | 17.910 | 18.930 | 0.711 | 1.746 | 0.943 | 0.946 | 0.022 | 1 | 7.406 | 6.118 |
| 2097 | 84.761 | 20.680 | 36.331 | 26.718 | 18.807 | 17.393 | 0.728 | 1.750 | 0.996 | 1.081 | 0.021 | 1 | 8.379 | 6.981 |
| 2098 | 94.662 | 17.896 | 32.722 | 29.787 | 17.461 | 18.611 | 0.805 | 2.016 | 1.102 | 0.938 | 0.019 | -1 | 7.166 | 4.950 |
| 2099 | 91.270 | 18.571 | 36.248 | 25.576 | 18.554 | 16.000 | 0.771 | 1.861 | 0.953 | 1.160 | 0.019 | 1 | 6.007 | 4.270 |
| 2100 | 87.522 | 21.503 | 36.178 | 27.358 | 16.838 | 19.415 | 0.699 | 1.686 | 1.002 | 0.867 | 0.021 | 1 | 5.961 | 8.447 |
| 2101 | 93.285 | 21.680 | 32.779 | 29.351 | 18.449 | 16.718 | 0.702 | 1.622 | 1.073 | 1.104 | 0.019 | 1 | 6.795 | 9.727 |
| 2102 | 91.827 | 19.790 | 36.547 | 24.050 | 17.756 | 16.736 | 0.737 | 1.743 | 0.944 | 1.061 | 0.018 | 1 | 5.808 | 4.183 |
| 2103 | 95.234 | 20.858 | 36.708 | 28.094 | 17.120 | 19.463 | 0.709 | 1.754 | 0.997 | 0.880 | 0.018 | 1 | 9.660 | 8.043 |
| 2104 | 95.650 | 20.184 | 38.733 | 27.989 | 18.952 | 17.414 | 0.721 | 1.802 | 0.939 | 1.088 | 0.018 | 1 | 6.327 | 4.532 |
| 2105 | 99.210 | 21.042 | 34.616 | 29.997 | 17.423 | 17.964 | 0.707 | 1.682 | 1.022 | 0.970 | 0.018 | 1 | 10.627 | 8.866 |
| 2106 | 99.539 | 20.709 | 37.673 | 29.515 | 19.226 | 18.594 | 0.700 | 1.826 | 1.004 | 1.034 | 0.018 | 1 | 6.890 | 4.904 |
| 2107 | 97.708 | 18.066 | 37.601 | 24.235 | 16.739 | 16.872 | 0.776 | 1.860 | 0.894 | 0.992 | 0.016 | 1 | 6.244 | 4.404 |
| 2108 | 85.497 | 18.974 | 39.556 | 24.416 | 18.990 | 19.086 | 0.778 | 2.007 | 0.963 | 0.995 | 0.020 | 1 | 5.169 | 3.682 |
| 2109 | 98.863 | 17.826 | 34.995 | 28.573 | 19.774 | 17.370 | 0.803 | 2.084 | 1.061 | 1.138 | 0.018 | 1 | 7.154 | 4.895 |
| 2110 | 98.473 | 19.514 | 36.039 | 25.897 | 16.317 | 19.223 | 0.735 | 1.821 | 0.986 | 0.849 | 0.017 | 1 | 6.546 | 4.679 |
| 2111 | 84.182 | 18.592 | 37.088 | 29.717 | 17.851 | 19.281 | 0.779 | 1.997 | 1.001 | 0.926 | 0.022 | 1 | 5.934 | 4.230 |
| 2112 | 80.337 | 21.878 | 35.469 | 29.313 | 17.482 | 17.222 | 0.707 | 1.586 | 0.978 | 1.015 | 0.024 | 1 | 5.838 | 8.229 |
| 2113 | 98.774 | 18.077 | 38.838 | 26.412 | 18.712 | 19.681 | 0.796 | 2.124 | 0.989 | 0.951 | 0.017 | 1 | 6.524 | 4.505 |
| 2114 | 96.375 | 20.268 | 39.100 | 25.642 | 18.014 | 18.044 | 0.716 | 1.779 | 0.922 | 0.998 | 0.017 | 1 | 6.092 | 4.366 |
| 2115 | 94.091 | 18.844 | 32.598 | 25.299 | 18.810 | 16.004 | 0.756 | 1.848 | 1.068 | 1.175 | 0.018 | 1 | 6.523 | 4.608 |
| 2116 | 94.264 | 19.128 | 34.311 | 27.710 | 18.242 | 18.749 | 0.751 | 1.934 | 1.078 | 0.973 | 0.019 | 1 | 6.677 | 4.688 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2117 | 83.159 | 18.876 | 37.829 | 25.513 | 18.109 | 17.654 | 0.774 | 1.895 | 0.945 | 1.026 | 0.021 | 1 | 5.257 | 3.773 |
| 2118 | 95.562 | 20.682 | 36.827 | 25.173 | 17.341 | 18.361 | 0.709 | 1.726 | 0.969 | 0.944 | 0.017 | 1 | 6.152 | 4.443 |
| 2119 | 88.316 | 18.089 | 35.823 | 28.036 | 17.382 | 18.112 | 0.789 | 1.962 | 0.991 | 0.960 | 0.020 | 1 | 6.142 | 4.345 |
| 2120 | 99.691 | 19.627 | 37.935 | 24.240 | 17.877 | 16.223 | 0.730 | 1.737 | 0.899 | 1.102 | 0.016 | 1 | 6.302 | 4.507 |
| 2121 | 81.437 | 18.792 | 33.419 | 27.797 | 18.004 | 19.550 | 0.771 | 1.998 | 1.124 | 0.921 | 0.023 | 1 | 5.857 | 4.158 |
| 2122 | 80.419 | 18.167 | 32.706 | 28.149 | 16.860 | 18.859 | 0.791 | 1.966 | 1.092 | 0.894 | 0.023 | 1 | 5.893 | 4.191 |
| 2123 | 96.683 | 20.108 | 39.722 | 24.525 | 16.252 | 17.935 | 0.719 | 1.700 | 0.861 | 0.906 | 0.017 | 1 | 5.908 | 4.275 |
| 2124 | 94.852 | 21.805 | 33.210 | 24.395 | 19.283 | 19.334 | 0.679 | 1.771 | 1.163 | 0.997 | 0.017 | 1 | 6.376 | 4.561 |
| 2125 | 95.719 | 19.531 | 35.824 | 28.349 | 16.099 | 16.641 | 0.753 | 1.676 | 0.914 | 0.967 | 0.018 | 1 | 9.812 | 8.215 |
| 2126 | 84.906 | 20.282 | 34.738 | 26.705 | 18.174 | 17.109 | 0.739 | 1.740 | 1.016 | 1.062 | 0.021 | 1 | 8.598 | 7.177 |
| 2127 | 85.463 | 21.644 | 33.519 | 24.154 | 16.514 | 16.558 | 0.692 | 1.528 | 0.987 | 0.997 | 0.020 | 1 | 5.658 | 8.051 |
| 2128 | 91.302 | 19.665 | 39.020 | 27.768 | 17.142 | 18.405 | 0.741 | 1.808 | 0.911 | 0.931 | 0.019 | 1 | 5.951 | 4.290 |
| 2129 | 88.311 | 18.783 | 39.027 | 26.675 | 17.257 | 18.703 | 0.767 | 1.915 | 0.921 | 0.923 | 0.020 | 1 | 5.656 | 4.040 |
| 2130 | 80.047 | 19.987 | 38.441 | 24.708 | 19.423 | 17.062 | 0.751 | 1.825 | 0.949 | 1.138 | 0.022 | 1 | 7.264 | 6.030 |
| 2131 | 84.874 | 18.450 | 33.705 | 28.356 | 19.178 | 19.327 | 0.788 | 2.087 | 1.142 | 0.992 | 0.022 | 1 | 6.186 | 4.329 |
| 2132 | 81.416 | 17.634 | 33.264 | 27.312 | 19.428 | 19.894 | 0.822 | 2.230 | 1.182 | 0.977 | 0.023 | 1 | 5.883 | 4.096 |
| 2133 | 89.214 | 20.678 | 35.775 | 25.947 | 19.010 | 17.524 | 0.719 | 1.767 | 1.021 | 1.085 | 0.019 | 1 | 5.882 | 4.248 |
| 2134 | 81.441 | 19.288 | 33.847 | 25.006 | 16.788 | 16.553 | 0.772 | 1.729 | 0.985 | 1.014 | 0.022 | 1 | 2.705 | 3.869 |
| 2135 | 96.577 | 20.143 | 35.035 | 29.857 | 18.669 | 19.344 | 0.714 | 1.887 | 1.085 | 0.965 | 0.019 | 1 | 6.990 | 4.943 |
| 2136 | 85.890 | 19.013 | 39.860 | 26.583 | 16.903 | 17.887 | 0.765 | 1.830 | 0.873 | 0.945 | 0.021 | 1 | 8.015 | 6.647 |
| 2137 | 83.626 | 19.831 | 32.583 | 26.255 | 17.051 | 18.398 | 0.751 | 1.788 | 1.088 | 0.927 | 0.022 | 1 | 2.911 | 4.159 |
| 2138 | 96.756 | 17.695 | 36.506 | 28.677 | 17.988 | 18.800 | 0.804 | 2.079 | 1.008 | 0.957 | 0.018 | 1 | 6.839 | 4.725 |
| 2139 | 81.179 | 21.049 | 33.531 | 29.924 | 16.326 | 16.969 | 0.734 | 1.582 | 0.993 | 0.962 | 0.024 | 1 | 6.093 | 8.651 |
| 2140 | 81.238 | 18.829 | 39.738 | 26.992 | 16.619 | 17.607 | 0.778 | 1.818 | 0.861 | 0.944 | 0.023 | 1 | 7.646 | 6.337 |
| 2141 | 99.439 | 20.594 | 32.728 | 29.859 | 18.738 | 19.624 | 0.712 | 1.863 | 1.172 | 0.955 | 0.018 | -1 | 7.408 | 5.216 |
| 2142 | 93.229 | 18.262 | 38.481 | 28.279 | 19.781 | 19.902 | 0.797 | 2.173 | 1.031 | 0.994 | 0.019 | 1 | 6.351 | 4.404 |
| 2143 | 85.733 | 19.459 | 33.478 | 25.620 | 17.900 | 19.320 | 0.748 | 1.913 | 1.112 | 0.926 | 0.021 | 1 | 5.865 | 4.176 |
| 2144 | 87.297 | 18.681 | 33.846 | 27.058 | 19.415 | 18.909 | 0.779 | 2.052 | 1.132 | 1.027 | 0.021 | 1 | 6.175 | 4.323 |
| 2145 | 94.741 | 21.105 | 35.256 | 28.434 | 16.592 | 16.014 | 0.715 | 1.545 | 0.925 | 1.036 | 0.019 | 1 | 6.579 | 9.410 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2146 | 85.170 | 20.447 | 39.352 | 25.100 | 17.463 | 16.344 | 0.727 | 1.653 | 0.859 | 1.068 | 0.021 | 1 | 7.771 | 6.466 |
| 2147 | 91.237 | 19.272 | 38.430 | 27.048 | 19.057 | 19.774 | 0.760 | 2.015 | 1.010 | 0.964 | 0.019 | 1 | 6.003 | 4.237 |
| 2148 | 94.723 | 19.592 | 34.145 | 27.652 | 17.420 | 19.779 | 0.733 | 1.899 | 1.089 | 0.881 | 0.018 | -1 | 6.676 | 4.731 |
| 2149 | 85.315 | 19.341 | 33.978 | 26.326 | 17.800 | 18.385 | 0.756 | 1.871 | 1.065 | 0.968 | 0.021 | 1 | 5.857 | 4.188 |
| 2150 | 81.457 | 21.754 | 37.215 | 28.411 | 18.373 | 16.492 | 0.709 | 1.603 | 0.937 | 1.114 | 0.023 | 1 | 8.292 | 6.924 |
| 2151 | 80.133 | 18.452 | 34.205 | 26.606 | 18.879 | 17.463 | 0.791 | 1.970 | 1.062 | 1.081 | 0.023 | 1 | 5.538 | 3.944 |
| 2152 | 92.491 | 19.263 | 38.616 | 25.254 | 19.553 | 19.837 | 0.763 | 2.045 | 1.020 | 0.986 | 0.018 | 1 | 5.893 | 4.143 |
| 2153 | 92.140 | 19.164 | 32.468 | 27.797 | 17.711 | 17.061 | 0.753 | 1.814 | 1.071 | 1.038 | 0.019 | 1 | 6.641 | 4.729 |
| 2154 | 93.039 | 19.386 | 35.682 | 24.711 | 19.383 | 16.094 | 0.745 | 1.830 | 0.994 | 1.204 | 0.018 | 1 | 6.085 | 4.332 |
| 2155 | 83.812 | 19.473 | 35.887 | 28.234 | 17.360 | 16.779 | 0.765 | 1.753 | 0.951 | 1.035 | 0.022 | 1 | 8.613 | 7.197 |
| 2156 | 95.399 | 18.114 | 38.250 | 29.197 | 17.022 | 19.836 | 0.783 | 2.035 | 0.964 | 0.858 | 0.019 | 1 | 6.582 | 4.617 |
| 2157 | 88.889 | 18.772 | 35.068 | 24.277 | 17.340 | 17.375 | 0.767 | 1.849 | 0.990 | 0.998 | 0.019 | 1 | 5.794 | 4.128 |
| 2158 | 80.435 | 20.699 | 34.877 | 24.981 | 16.411 | 17.783 | 0.726 | 1.652 | 0.980 | 0.923 | 0.022 | 1 | 5.297 | 7.523 |
| 2159 | 90.107 | 17.770 | 38.824 | 28.665 | 16.908 | 18.872 | 0.801 | 2.013 | 0.922 | 0.896 | 0.020 | 1 | 6.071 | 4.293 |
| 2160 | 91.564 | 20.944 | 32.058 | 24.920 | 16.822 | 17.162 | 0.711 | 1.623 | 1.060 | 0.980 | 0.018 | 1 | 6.219 | 8.929 |
| 2161 | 89.431 | 21.152 | 37.887 | 29.616 | 16.864 | 19.169 | 0.710 | 1.704 | 0.951 | 0.880 | 0.021 | 1 | 9.208 | 7.700 |
| 2162 | 81.236 | 18.444 | 38.445 | 27.931 | 17.907 | 18.571 | 0.792 | 1.978 | 0.949 | 0.964 | 0.023 | 1 | 7.968 | 6.594 |
| 2163 | 90.796 | 20.992 | 33.632 | 28.676 | 19.846 | 17.148 | 0.710 | 1.762 | 1.100 | 1.157 | 0.020 | 1 | 6.491 | 4.686 |
| 2164 | 89.923 | 20.972 | 34.065 | 27.219 | 19.240 | 17.334 | 0.713 | 1.744 | 1.074 | 1.110 | 0.020 | 1 | 6.213 | 4.498 |
| 2165 | 95.331 | 18.124 | 35.795 | 25.328 | 17.126 | 16.289 | 0.776 | 1.844 | 0.934 | 1.051 | 0.017 | 1 | 6.325 | 4.479 |
| 2166 | 97.602 | 18.822 | 36.542 | 25.252 | 18.367 | 17.358 | 0.761 | 1.898 | 0.978 | 1.058 | 0.017 | 1 | 6.451 | 4.529 |
| 2167 | 89.104 | 19.849 | 37.191 | 26.335 | 17.911 | 16.773 | 0.742 | 1.747 | 0.933 | 1.068 | 0.020 | 1 | 8.622 | 7.193 |
| 2168 | 87.735 | 19.095 | 32.312 | 25.492 | 19.350 | 17.501 | 0.760 | 1.930 | 1.141 | 1.106 | 0.020 | 1 | 6.130 | 4.323 |
| 2169 | 83.348 | 18.400 | 37.433 | 25.849 | 17.133 | 16.094 | 0.792 | 1.806 | 0.888 | 1.065 | 0.021 | 1 | 7.917 | 6.595 |
| 2170 | 83.761 | 21.137 | 36.843 | 24.866 | 19.819 | 18.423 | 0.715 | 1.809 | 1.038 | 1.076 | 0.021 | 1 | 7.892 | 6.555 |
| 2171 | 87.201 | 20.560 | 35.649 | 28.256 | 17.753 | 18.170 | 0.729 | 1.747 | 1.008 | 0.977 | 0.021 | 1 | 9.005 | 7.515 |
| 2172 | 98.076 | 21.131 | 35.854 | 24.997 | 16.515 | 17.950 | 0.696 | 1.631 | 0.961 | 0.920 | 0.017 | 1 | 9.567 | 7.980 |
| 2173 | 92.937 | 18.424 | 32.203 | 29.781 | 19.553 | 18.948 | 0.784 | 2.090 | 1.196 | 1.032 | 0.020 | -1 | 7.127 | 4.888 |
| 2174 | 93.517 | 19.436 | 39.536 | 26.176 | 17.337 | 18.930 | 0.739 | 1.866 | 0.917 | 0.916 | 0.018 | 1 | 5.924 | 4.227 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2175 | 93.703 | 20.110 | 39.416 | 24.841 | 18.437 | 16.518 | 0.726 | 1.738 | 0.887 | 1.116 | 0.018 | 1 | 5.766 | 4.159 |
| 2176 | 97.346 | 21.874 | 33.765 | 28.094 | 19.889 | 17.595 | 0.682 | 1.714 | 1.110 | 1.130 | 0.018 | 1 | 6.850 | 4.949 |
| 2177 | 93.749 | 21.628 | 37.277 | 25.144 | 16.223 | 17.721 | 0.684 | 1.569 | 0.911 | 0.915 | 0.018 | 1 | 6.000 | 8.557 |
| 2178 | 87.738 | 21.771 | 36.327 | 25.313 | 16.529 | 16.422 | 0.687 | 1.514 | 0.907 | 1.006 | 0.020 | 1 | 5.713 | 8.111 |
| 2179 | 91.169 | 21.093 | 34.169 | 25.541 | 16.942 | 17.256 | 0.708 | 1.621 | 1.001 | 0.982 | 0.019 | 1 | 6.110 | 8.736 |
| 2180 | 92.762 | 19.943 | 34.132 | 27.499 | 17.913 | 17.488 | 0.735 | 1.775 | 1.037 | 1.024 | 0.019 | 1 | 6.465 | 4.644 |
| 2181 | 93.129 | 18.083 | 32.587 | 24.627 | 17.639 | 17.293 | 0.790 | 1.932 | 1.072 | 1.020 | 0.018 | -1 | 6.431 | 4.494 |
| 2182 | 81.867 | 21.039 | 33.436 | 26.392 | 19.044 | 16.331 | 0.729 | 1.681 | 1.058 | 1.166 | 0.022 | 1 | 8.408 | 7.033 |
| 2183 | 83.605 | 20.164 | 35.853 | 28.096 | 17.662 | 19.581 | 0.740 | 1.847 | 1.039 | 0.902 | 0.022 | 1 | 8.612 | 7.153 |
| 2184 | 89.864 | 19.429 | 39.058 | 29.536 | 19.817 | 16.311 | 0.749 | 1.860 | 0.925 | 1.215 | 0.020 | 1 | 6.081 | 4.362 |
| 2185 | 83.617 | 21.345 | 39.838 | 28.836 | 18.465 | 18.054 | 0.709 | 1.711 | 0.917 | 1.023 | 0.022 | 1 | 8.225 | 6.834 |
| 2186 | 93.415 | 18.640 | 34.599 | 28.755 | 16.069 | 19.466 | 0.765 | 1.906 | 1.027 | 0.825 | 0.019 | 1 | 6.648 | 4.739 |
| 2187 | 83.963 | 18.494 | 33.676 | 29.789 | 17.902 | 19.946 | 0.779 | 2.047 | 1.124 | 0.898 | 0.022 | 1 | 6.286 | 4.429 |
| 2188 | 80.012 | 18.348 | 35.661 | 29.381 | 17.123 | 17.878 | 0.798 | 1.908 | 0.981 | 0.958 | 0.024 | 1 | 5.713 | 4.114 |
| 2189 | 90.451 | 21.705 | 33.493 | 25.545 | 19.027 | 19.397 | 0.690 | 1.770 | 1.147 | 0.981 | 0.019 | 1 | 6.134 | 4.418 |
| 2190 | 89.464 | 21.719 | 32.067 | 26.227 | 17.833 | 17.523 | 0.697 | 1.628 | 1.103 | 1.018 | 0.020 | 1 | 6.245 | 8.935 |
| 2191 | 81.638 | 19.010 | 37.113 | 26.698 | 17.385 | 19.563 | 0.771 | 1.944 | 0.996 | 0.889 | 0.022 | 1 | 7.982 | 6.606 |
| 2192 | 87.884 | 19.092 | 35.077 | 28.317 | 17.138 | 18.638 | 0.762 | 1.874 | 1.020 | 0.920 | 0.021 | 1 | 6.162 | 4.414 |
| 2193 | 99.061 | 18.643 | 35.786 | 24.946 | 18.816 | 19.225 | 0.773 | 2.040 | 1.063 | 0.979 | 0.016 | 1 | 6.660 | 4.603 |
| 2194 | 94.167 | 18.423 | 37.609 | 24.361 | 19.101 | 16.577 | 0.782 | 1.937 | 0.949 | 1.152 | 0.017 | 1 | 6.009 | 4.226 |
| 2195 | 89.973 | 19.255 | 34.902 | 24.943 | 19.745 | 19.901 | 0.761 | 2.059 | 1.136 | 0.992 | 0.019 | 1 | 6.022 | 4.221 |
| 2196 | 98.981 | 21.274 | 39.456 | 26.983 | 16.461 | 19.172 | 0.691 | 1.675 | 0.903 | 0.859 | 0.017 | 1 | 9.513 | 7.936 |
| 2197 | 82.575 | 18.076 | 35.714 | 28.900 | 17.986 | 17.451 | 0.797 | 1.960 | 0.992 | 1.031 | 0.023 | 1 | 5.851 | 4.168 |
| 2198 | 96.246 | 19.149 | 33.507 | 27.694 | 16.678 | 16.590 | 0.758 | 1.737 | 0.993 | 1.005 | 0.018 | 1 | 6.762 | 4.876 |
| 2199 | 93.754 | 21.831 | 34.051 | 27.937 | 18.031 | 18.189 | 0.690 | 1.659 | 1.064 | 0.991 | 0.019 | 1 | 9.822 | 8.206 |
| 2200 | 87.122 | 18.984 | 32.963 | 24.623 | 18.479 | 19.694 | 0.764 | 2.011 | 1.158 | 0.938 | 0.020 | 1 | 5.945 | 4.179 |
| 2201 | 89.314 | 20.806 | 36.041 | 24.185 | 18.856 | 19.493 | 0.710 | 1.843 | 1.064 | 0.967 | 0.019 | 1 | 5.707 | 4.090 |
| 2202 | 96.493 | 18.590 | 35.559 | 26.990 | 18.907 | 18.903 | 0.776 | 2.034 | 1.063 | 1.000 | 0.018 | 1 | 6.697 | 4.644 |
| 2203 | 96.714 | 18.455 | 34.829 | 29.635 | 16.207 | 18.912 | 0.773 | 1.903 | 1.008 | 0.857 | 0.018 | -1 | 6.981 | 4.947 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2204 | 81.948 | 20.036 | 36.780 | 24.336 | 18.868 | 19.550 | 0.742 | 1.917 | 1.045 | 0.965 | 0.021 | 1 | 7.636 | 6.322 |
| 2205 | 90.296 | 19.772 | 36.296 | 29.746 | 19.409 | 19.777 | 0.741 | 1.982 | 1.080 | 0.981 | 0.020 | 1 | 6.447 | 4.555 |
| 2206 | 95.271 | 19.391 | 36.080 | 28.496 | 19.173 | 17.742 | 0.745 | 1.904 | 1.023 | 1.081 | 0.018 | 1 | 6.663 | 4.697 |
| 2207 | 89.029 | 18.002 | 37.775 | 25.787 | 18.651 | 17.311 | 0.803 | 1.998 | 0.952 | 1.077 | 0.019 | 1 | 5.768 | 4.067 |
| 2208 | 96.421 | 21.216 | 36.103 | 26.328 | 19.093 | 16.720 | 0.699 | 1.688 | 0.992 | 1.142 | 0.017 | 1 | 6.371 | 4.626 |
| 2209 | 86.735 | 19.302 | 39.773 | 29.948 | 18.791 | 17.238 | 0.758 | 1.867 | 0.906 | 1.090 | 0.022 | 1 | 5.845 | 4.209 |
| 2210 | 80.015 | 20.596 | 34.900 | 29.188 | 17.398 | 19.716 | 0.738 | 1.802 | 1.063 | 0.882 | 0.024 | 1 | 8.627 | 7.182 |
| 2211 | 94.825 | 21.761 | 34.690 | 25.184 | 19.652 | 18.889 | 0.682 | 1.771 | 1.111 | 1.040 | 0.017 | 1 | 6.317 | 4.529 |
| 2212 | 94.321 | 18.735 | 35.146 | 27.158 | 19.908 | 19.315 | 0.777 | 2.094 | 1.116 | 1.031 | 0.018 | 1 | 6.608 | 4.572 |
| 2213 | 97.537 | 19.158 | 36.534 | 27.822 | 18.815 | 18.818 | 0.754 | 1.964 | 1.030 | 1.000 | 0.018 | 1 | 6.742 | 4.713 |
| 2214 | 92.729 | 19.296 | 38.364 | 28.022 | 17.542 | 19.315 | 0.745 | 1.910 | 0.961 | 0.908 | 0.019 | 1 | 6.187 | 4.406 |
| 2215 | 99.668 | 20.682 | 39.643 | 24.911 | 16.918 | 18.904 | 0.700 | 1.732 | 0.904 | 0.895 | 0.016 | 1 | 6.189 | 4.456 |
| 2216 | 97.749 | 18.681 | 32.137 | 24.992 | 18.858 | 17.081 | 0.769 | 1.924 | 1.118 | 1.104 | 0.017 | -1 | 6.865 | 4.772 |
| 2217 | 86.806 | 20.590 | 34.403 | 26.320 | 17.454 | 18.967 | 0.725 | 1.769 | 1.059 | 0.920 | 0.020 | 1 | 8.805 | 7.333 |
| 2218 | 97.486 | 21.083 | 34.333 | 25.186 | 17.106 | 18.413 | 0.698 | 1.685 | 1.035 | 0.929 | 0.017 | 1 | 9.728 | 8.090 |
| 2219 | 98.071 | 19.026 | 39.967 | 27.596 | 17.066 | 17.872 | 0.747 | 1.836 | 0.874 | 0.955 | 0.017 | 1 | 6.369 | 4.536 |
| 2220 | 94.628 | 21.063 | 34.319 | 24.852 | 19.773 | 16.896 | 0.701 | 1.741 | 1.068 | 1.170 | 0.017 | 1 | 6.287 | 4.522 |
| 2221 | 91.342 | 19.184 | 33.972 | 27.559 | 18.347 | 19.143 | 0.752 | 1.954 | 1.104 | 0.958 | 0.019 | 1 | 6.481 | 4.558 |
| 2222 | 87.930 | 19.698 | 39.184 | 27.348 | 16.630 | 17.767 | 0.746 | 1.746 | 0.878 | 0.936 | 0.020 | 1 | 8.452 | 7.039 |
| 2223 | 80.994 | 18.418 | 35.261 | 28.659 | 17.132 | 17.068 | 0.797 | 1.857 | 0.970 | 1.004 | 0.023 | 1 | 5.708 | 4.120 |
| 2224 | 86.199 | 21.465 | 32.952 | 25.865 | 18.276 | 18.270 | 0.705 | 1.703 | 1.109 | 1.000 | 0.020 | 1 | 5.913 | 8.453 |
| 2225 | 88.137 | 19.713 | 35.599 | 26.074 | 16.299 | 19.312 | 0.746 | 1.806 | 1.000 | 0.844 | 0.020 | 1 | 8.744 | 7.279 |
| 2226 | 94.776 | 20.682 | 32.809 | 28.906 | 17.192 | 16.517 | 0.726 | 1.630 | 1.027 | 1.041 | 0.019 | 1 | 6.812 | 9.781 |
| 2227 | 83.342 | 19.493 | 36.392 | 27.564 | 18.063 | 18.024 | 0.758 | 1.851 | 0.992 | 1.002 | 0.022 | 1 | 8.382 | 6.966 |
| 2228 | 94.525 | 21.496 | 34.312 | 26.512 | 19.278 | 16.847 | 0.696 | 1.680 | 1.053 | 1.144 | 0.018 | 1 | 9.567 | 8.010 |
| 2229 | 81.882 | 20.188 | 38.406 | 26.070 | 18.775 | 17.447 | 0.742 | 1.794 | 0.943 | 1.076 | 0.022 | 1 | 7.707 | 6.398 |
| 2230 | 93.310 | 21.024 | 37.616 | 29.238 | 17.909 | 19.685 | 0.706 | 1.788 | 0.999 | 0.910 | 0.019 | 1 | 9.540 | 7.942 |
| 2231 | 91.463 | 19.147 | 32.488 | 27.068 | 18.219 | 18.029 | 0.752 | 1.893 | 1.116 | 1.011 | 0.019 | -1 | 6.556 | 4.619 |
| 2232 | 89.988 | 21.639 | 34.689 | 29.882 | 18.477 | 19.902 | 0.697 | 1.774 | 1.106 | 0.928 | 0.020 | 1 | 9.724 | 8.104 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2233 | 92.461 | 17.904 | 39.282 | 28.668 | 19.407 | 17.030 | 0.805 | 2.035 | 0.928 | 1.140 | 0.019 | 1 | 6.229 | 4.364 |
| 2234 | 90.887 | 19.612 | 37.529 | 25.955 | 17.439 | 17.676 | 0.743 | 1.790 | 0.936 | 0.987 | 0.019 | 1 | 5.861 | 4.216 |
| 2235 | 90.653 | 20.990 | 37.948 | 26.470 | 18.878 | 17.632 | 0.710 | 1.739 | 0.962 | 1.071 | 0.019 | 1 | 8.717 | 7.261 |
| 2236 | 98.793 | 18.500 | 35.389 | 24.916 | 19.863 | 17.846 | 0.781 | 2.038 | 1.066 | 1.113 | 0.016 | 1 | 6.679 | 4.609 |
| 2237 | 82.453 | 19.896 | 39.881 | 25.159 | 19.491 | 18.550 | 0.750 | 1.912 | 0.954 | 1.051 | 0.022 | 1 | 7.402 | 6.125 |
| 2238 | 94.432 | 18.884 | 32.987 | 26.145 | 19.477 | 17.777 | 0.765 | 1.973 | 1.129 | 1.096 | 0.018 | 1 | 6.669 | 4.642 |
| 2239 | 92.651 | 19.391 | 35.432 | 26.863 | 17.728 | 16.138 | 0.752 | 1.746 | 0.956 | 1.099 | 0.019 | 1 | 6.253 | 4.513 |
| 2240 | 90.460 | 19.661 | 33.734 | 27.666 | 17.213 | 19.719 | 0.740 | 1.878 | 1.095 | 0.873 | 0.020 | 1 | 6.388 | 4.563 |
| 2241 | 84.635 | 18.183 | 37.622 | 26.251 | 17.486 | 19.003 | 0.796 | 2.007 | 0.970 | 0.920 | 0.021 | 1 | 5.496 | 3.909 |
| 2242 | 97.941 | 17.678 | 39.946 | 27.629 | 18.257 | 19.661 | 0.810 | 2.145 | 0.949 | 0.929 | 0.017 | 1 | 6.492 | 4.488 |
| 2243 | 83.142 | 18.733 | 38.867 | 24.383 | 18.374 | 19.110 | 0.786 | 2.001 | 0.964 | 0.961 | 0.021 | 1 | 5.052 | 3.608 |
| 2244 | 85.335 | 18.926 | 38.063 | 26.534 | 19.594 | 16.697 | 0.774 | 1.917 | 0.953 | 1.174 | 0.021 | 1 | 5.516 | 3.946 |
| 2245 | 89.477 | 17.822 | 32.691 | 25.318 | 18.515 | 19.395 | 0.803 | 2.127 | 1.160 | 0.955 | 0.019 | 1 | 6.282 | 4.341 |
| 2246 | 89.981 | 21.679 | 32.874 | 24.207 | 16.054 | 18.880 | 0.682 | 1.611 | 1.063 | 0.850 | 0.019 | 1 | 6.011 | 8.581 |
| 2247 | 89.258 | 21.860 | 36.448 | 27.458 | 19.834 | 17.870 | 0.693 | 1.725 | 1.034 | 1.110 | 0.020 | 1 | 8.938 | 7.455 |
| 2248 | 82.081 | 19.977 | 34.728 | 29.529 | 16.861 | 17.586 | 0.758 | 1.724 | 0.992 | 0.959 | 0.023 | 1 | 5.960 | 8.493 |
| 2249 | 92.645 | 20.956 | 35.039 | 27.655 | 19.865 | 16.237 | 0.712 | 1.723 | 1.030 | 1.223 | 0.019 | 1 | 6.348 | 4.610 |
| 2250 | 81.188 | 18.672 | 39.759 | 28.911 | 16.680 | 18.371 | 0.784 | 1.877 | 0.882 | 0.908 | 0.023 | 1 | 7.995 | 6.626 |
| 2251 | 87.075 | 18.528 | 37.632 | 26.060 | 18.040 | 16.996 | 0.779 | 1.891 | 0.931 | 1.061 | 0.020 | 1 | 5.629 | 4.017 |
| 2252 | 85.184 | 20.415 | 35.098 | 27.518 | 17.160 | 16.329 | 0.741 | 1.640 | 0.954 | 1.051 | 0.021 | 1 | 5.864 | 8.368 |
| 2253 | 82.499 | 19.666 | 39.382 | 25.724 | 16.489 | 17.051 | 0.749 | 1.705 | 0.852 | 0.967 | 0.022 | 1 | 7.613 | 6.319 |
| 2254 | 91.770 | 19.794 | 37.101 | 25.251 | 18.987 | 19.953 | 0.741 | 1.967 | 1.050 | 0.952 | 0.018 | 1 | 5.951 | 4.210 |
| 2255 | 89.114 | 17.852 | 32.145 | 26.952 | 19.337 | 17.825 | 0.803 | 2.082 | 1.156 | 1.085 | 0.020 | 1 | 6.488 | 4.489 |
| 2256 | 92.447 | 17.821 | 34.558 | 29.470 | 16.425 | 19.496 | 0.792 | 2.016 | 1.039 | 0.842 | 0.020 | -1 | 6.746 | 4.730 |
| 2257 | 87.597 | 19.619 | 32.202 | 28.404 | 18.501 | 19.865 | 0.737 | 1.956 | 1.191 | 0.931 | 0.021 | -1 | 6.478 | 4.565 |
| 2258 | 99.003 | 21.576 | 36.919 | 26.470 | 18.367 | 19.828 | 0.682 | 1.770 | 1.035 | 0.926 | 0.017 | 1 | 6.545 | 4.701 |
| 2259 | 91.842 | 19.164 | 36.975 | 28.944 | 17.986 | 17.953 | 0.752 | 1.875 | 0.972 | 1.002 | 0.020 | 1 | 6.355 | 4.529 |
| 2260 | 82.494 | 20.195 | 35.508 | 25.711 | 19.879 | 17.795 | 0.740 | 1.866 | 1.061 | 1.117 | 0.022 | 1 | 5.430 | 3.911 |
| 2261 | 84.190 | 19.717 | 38.747 | 24.243 | 16.682 | 16.714 | 0.746 | 1.694 | 0.862 | 0.998 | 0.021 | 1 | 7.613 | 6.325 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2262 | 84.733 | 20.804 | 37.746 | 26.791 | 16.249 | 16.080 | 0.719 | 1.554 | 0.857 | 1.010 | 0.021 | 1 | 5.555 | 7.879 |
| 2263 | 83.170 | 18.053 | 39.380 | 28.134 | 17.661 | 18.730 | 0.804 | 2.016 | 0.924 | 0.943 | 0.022 | 1 | 5.452 | 3.890 |
| 2264 | 82.272 | 21.214 | 38.364 | 29.174 | 19.533 | 17.564 | 0.719 | 1.749 | 0.967 | 1.112 | 0.023 | 1 | 8.326 | 6.930 |
| 2265 | 83.726 | 18.152 | 34.031 | 28.707 | 19.975 | 17.143 | 0.800 | 2.045 | 1.091 | 1.165 | 0.022 | 1 | 6.106 | 4.293 |
| 2266 | 82.882 | 20.558 | 39.629 | 24.666 | 17.602 | 16.179 | 0.725 | 1.643 | 0.852 | 1.088 | 0.021 | 1 | 7.436 | 6.174 |
| 2267 | 89.956 | 21.221 | 35.879 | 29.166 | 16.951 | 16.769 | 0.715 | 1.589 | 0.940 | 1.011 | 0.020 | 1 | 6.332 | 9.013 |
| 2268 | 94.546 | 19.479 | 32.557 | 26.644 | 19.689 | 16.274 | 0.738 | 1.846 | 1.105 | 1.210 | 0.018 | 1 | 6.700 | 4.737 |
| 2269 | 80.345 | 18.451 | 37.833 | 29.428 | 16.988 | 19.703 | 0.789 | 1.989 | 0.970 | 0.862 | 0.024 | 1 | 8.275 | 6.849 |
| 2270 | 86.935 | 18.671 | 35.133 | 28.029 | 16.435 | 16.473 | 0.785 | 1.763 | 0.937 | 0.998 | 0.021 | 1 | 6.003 | 4.359 |
| 2271 | 85.502 | 21.734 | 39.260 | 26.477 | 18.857 | 19.435 | 0.694 | 1.762 | 0.975 | 0.970 | 0.021 | 1 | 8.070 | 6.685 |
| 2272 | 85.401 | 20.166 | 35.534 | 26.015 | 18.437 | 18.031 | 0.737 | 1.808 | 1.026 | 1.023 | 0.021 | 1 | 5.654 | 4.079 |
| 2273 | 98.389 | 17.927 | 33.698 | 27.460 | 17.493 | 19.454 | 0.799 | 2.061 | 1.096 | 0.899 | 0.017 | -1 | 7.094 | 4.871 |
| 2274 | 97.452 | 18.173 | 32.339 | 29.544 | 17.295 | 17.697 | 0.797 | 1.925 | 1.082 | 0.977 | 0.018 | -1 | 7.327 | 5.097 |
| 2275 | 97.058 | 18.267 | 37.576 | 27.545 | 16.296 | 16.356 | 0.777 | 1.788 | 0.869 | 0.996 | 0.018 | 1 | 6.477 | 4.640 |
| 2276 | 91.744 | 19.072 | 35.757 | 25.533 | 17.157 | 17.071 | 0.758 | 1.795 | 0.957 | 1.005 | 0.019 | 1 | 6.047 | 4.332 |
| 2277 | 99.888 | 18.131 | 39.935 | 24.520 | 17.926 | 19.462 | 0.790 | 2.062 | 0.936 | 0.921 | 0.016 | 1 | 6.294 | 4.368 |
| 2278 | 89.560 | 20.144 | 37.841 | 29.854 | 16.768 | 16.465 | 0.743 | 1.650 | 0.878 | 1.018 | 0.021 | 1 | 9.214 | 7.753 |
| 2279 | 93.315 | 21.157 | 33.143 | 28.144 | 17.599 | 18.916 | 0.706 | 1.726 | 1.102 | 0.930 | 0.019 | 1 | 9.939 | 8.260 |
| 2280 | 88.800 | 21.871 | 39.706 | 25.053 | 18.016 | 17.264 | 0.684 | 1.613 | 0.889 | 1.044 | 0.019 | 1 | 8.113 | 6.751 |
| 2281 | 92.071 | 17.700 | 36.620 | 28.248 | 18.886 | 18.303 | 0.812 | 2.101 | 1.016 | 1.032 | 0.019 | 1 | 6.431 | 4.464 |
| 2282 | 80.460 | 20.964 | 39.751 | 24.835 | 16.979 | 16.779 | 0.709 | 1.610 | 0.849 | 1.012 | 0.022 | 1 | 7.239 | 5.986 |
| 2283 | 91.912 | 18.853 | 33.548 | 29.589 | 16.010 | 19.755 | 0.763 | 1.897 | 1.066 | 0.810 | 0.020 | 1 | 6.720 | 4.811 |
| 2284 | 97.619 | 19.361 | 38.874 | 25.284 | 17.472 | 19.613 | 0.740 | 1.915 | 0.954 | 0.891 | 0.017 | 1 | 6.224 | 4.397 |
| 2285 | 94.861 | 18.408 | 36.596 | 27.448 | 18.639 | 17.560 | 0.780 | 1.966 | 0.989 | 1.061 | 0.018 | 1 | 6.499 | 4.550 |
| 2286 | 96.921 | 18.361 | 38.694 | 28.842 | 19.094 | 17.518 | 0.783 | 1.994 | 0.946 | 1.090 | 0.018 | 1 | 6.627 | 4.627 |
| 2287 | 86.934 | 19.168 | 34.637 | 25.986 | 19.187 | 16.272 | 0.760 | 1.850 | 1.024 | 1.179 | 0.020 | 1 | 5.868 | 4.198 |
| 2288 | 92.564 | 19.914 | 32.770 | 27.039 | 19.772 | 17.753 | 0.730 | 1.884 | 1.145 | 1.114 | 0.019 | 1 | 6.599 | 4.654 |
| 2289 | 88.379 | 18.016 | 36.469 | 27.343 | 18.611 | 17.323 | 0.800 | 1.995 | 0.985 | 1.074 | 0.020 | 1 | 6.022 | 4.243 |
| 2290 | 82.781 | 21.862 | 38.815 | 25.961 | 16.814 | 19.947 | 0.683 | 1.682 | 0.947 | 0.843 | 0.022 | 1 | 7.822 | 6.466 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2291 | 96.409 | 20.123 | 35.528 | 27.489 | 18.703 | 18.126 | 0.719 | 1.830 | 1.037 | 1.032 | 0.018 | 1 | 6.640 | 4.720 |
| 2292 | 88.825 | 20.326 | 35.920 | 24.488 | 18.451 | 17.454 | 0.727 | 1.766 | 1.000 | 1.057 | 0.019 | 1 | 5.691 | 4.103 |
| 2293 | 80.436 | 20.720 | 39.612 | 24.826 | 16.895 | 19.691 | 0.716 | 1.766 | 0.924 | 0.858 | 0.022 | 1 | 7.258 | 5.980 |
| 2294 | 86.453 | 19.245 | 38.770 | 29.259 | 17.884 | 19.215 | 0.757 | 1.928 | 0.957 | 0.931 | 0.021 | 1 | 5.849 | 4.193 |
| 2295 | 89.811 | 20.404 | 37.599 | 29.541 | 19.546 | 18.731 | 0.721 | 1.876 | 1.018 | 1.044 | 0.020 | 1 | 6.216 | 4.451 |
| 2296 | 89.910 | 20.667 | 36.864 | 28.406 | 17.834 | 16.116 | 0.728 | 1.643 | 0.921 | 1.107 | 0.020 | 1 | 9.106 | 7.648 |
| 2297 | 94.046 | 21.206 | 39.164 | 25.705 | 17.747 | 16.271 | 0.700 | 1.604 | 0.869 | 1.091 | 0.018 | 1 | 8.794 | 7.365 |
| 2298 | 88.415 | 17.785 | 38.733 | 26.030 | 17.584 | 19.850 | 0.810 | 2.105 | 0.966 | 0.886 | 0.020 | 1 | 5.671 | 3.993 |
| 2299 | 95.561 | 21.006 | 35.498 | 24.129 | 17.615 | 18.759 | 0.699 | 1.732 | 1.025 | 0.939 | 0.017 | 1 | 6.173 | 4.447 |
| 2300 | 95.146 | 21.531 | 37.159 | 29.425 | 18.533 | 18.273 | 0.695 | 1.710 | 0.991 | 1.014 | 0.019 | 1 | 9.790 | 8.184 |
| 2301 | 94.911 | 19.494 | 33.028 | 25.959 | 17.088 | 19.676 | 0.740 | 1.886 | 1.113 | 0.868 | 0.018 | -1 | 6.606 | 4.675 |
| 2302 | 88.719 | 19.508 | 39.393 | 25.054 | 16.236 | 19.266 | 0.744 | 1.820 | 0.901 | 0.843 | 0.019 | 1 | 8.141 | 6.745 |
| 2303 | 88.524 | 18.087 | 32.136 | 29.033 | 17.225 | 17.641 | 0.795 | 1.928 | 1.085 | 0.976 | 0.021 | -1 | 6.632 | 4.664 |
| 2304 | 87.180 | 21.287 | 34.376 | 27.280 | 18.953 | 19.093 | 0.707 | 1.787 | 1.107 | 0.993 | 0.021 | 1 | 8.995 | 7.484 |
| 2305 | 98.932 | 18.191 | 38.875 | 28.981 | 16.001 | 19.028 | 0.770 | 1.926 | 0.901 | 0.841 | 0.018 | -1 | 6.706 | 4.747 |
| 2306 | 94.485 | 18.438 | 32.955 | 25.838 | 16.699 | 19.260 | 0.778 | 1.950 | 1.091 | 0.867 | 0.018 | -1 | 6.615 | 4.633 |
| 2307 | 97.510 | 17.816 | 37.691 | 27.076 | 16.606 | 17.066 | 0.787 | 1.890 | 0.893 | 0.973 | 0.017 | -1 | 6.515 | 4.596 |
| 2308 | 99.483 | 17.728 | 37.104 | 24.063 | 16.785 | 19.875 | 0.796 | 2.068 | 0.988 | 0.845 | 0.016 | 1 | 6.479 | 4.487 |
| 2309 | 99.706 | 19.742 | 37.139 | 26.836 | 18.236 | 19.457 | 0.728 | 1.909 | 1.015 | 0.937 | 0.017 | 1 | 6.706 | 4.718 |
| 2310 | 87.404 | 19.850 | 34.140 | 29.869 | 17.871 | 17.508 | 0.748 | 1.782 | 1.036 | 1.021 | 0.021 | 1 | 6.359 | 4.604 |
| 2311 | 92.775 | 20.427 | 36.605 | 25.375 | 17.400 | 16.480 | 0.723 | 1.659 | 0.926 | 1.056 | 0.018 | 1 | 8.930 | 7.479 |
| 2312 | 83.842 | 18.520 | 39.946 | 29.471 | 18.509 | 19.551 | 0.791 | 2.055 | 0.953 | 0.947 | 0.022 | 1 | 5.620 | 4.003 |
| 2313 | 96.020 | 19.277 | 34.022 | 29.505 | 19.705 | 17.601 | 0.749 | 1.935 | 1.097 | 1.120 | 0.019 | 1 | 7.056 | 4.929 |
| 2314 | 91.239 | 19.915 | 39.185 | 27.866 | 16.191 | 19.073 | 0.735 | 1.771 | 0.900 | 0.849 | 0.020 | 1 | 8.891 | 7.407 |
| 2315 | 93.520 | 21.860 | 34.588 | 24.587 | 18.164 | 16.586 | 0.687 | 1.590 | 1.005 | 1.095 | 0.018 | 1 | 6.140 | 8.778 |
| 2316 | 97.869 | 20.857 | 38.520 | 24.056 | 16.896 | 18.186 | 0.698 | 1.682 | 0.911 | 0.929 | 0.016 | 1 | 6.049 | 4.381 |
| 2317 | 99.365 | 19.465 | 36.490 | 28.136 | 17.984 | 17.105 | 0.735 | 1.803 | 0.962 | 1.051 | 0.017 | 1 | 6.827 | 4.859 |
| 2318 | 99.321 | 20.557 | 32.839 | 29.028 | 19.136 | 19.899 | 0.712 | 1.899 | 1.189 | 0.962 | 0.018 | -1 | 7.322 | 5.126 |
| 2319 | 95.391 | 19.822 | 33.615 | 24.166 | 19.870 | 18.847 | 0.738 | 1.953 | 1.152 | 1.054 | 0.017 | 1 | 6.455 | 4.512 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 2320 | 92.490 | 21.902 | 36.462 | 24.477 | 16.504 | 16.480 | 0.678 | 1.506 | 0.905 | 1.001 | 0.018 | 1 | 5.914 | 8.433 |
| 2321 | 81.419 | 18.960 | 35.275 | 24.298 | 17.814 | 16.123 | 0.779 | 1.790 | 0.962 | 1.105 | 0.022 | 1 | 7.740 | 6.451 |
| 2322 | 82.053 | 17.896 | 35.371 | 24.285 | 18.721 | 18.313 | 0.813 | 2.069 | 1.047 | 1.022 | 0.021 | 1 | 5.314 | 3.758 |
| 2323 | 97.980 | 19.828 | 38.924 | 27.607 | 19.402 | 16.981 | 0.728 | 1.835 | 0.935 | 1.143 | 0.017 | 1 | 6.467 | 4.594 |
| 2324 | 99.457 | 20.446 | 36.421 | 28.747 | 19.182 | 19.262 | 0.708 | 1.880 | 1.056 | 0.996 | 0.017 | 1 | 6.947 | 4.902 |
| 2325 | 81.559 | 18.453 | 35.875 | 29.225 | 16.600 | 18.814 | 0.791 | 1.919 | 0.987 | 0.882 | 0.023 | 1 | 5.770 | 4.156 |
| 2326 | 94.406 | 21.503 | 37.563 | 27.547 | 17.002 | 18.525 | 0.693 | 1.652 | 0.946 | 0.918 | 0.018 | 1 | 9.375 | 7.841 |
| 2327 | 92.325 | 19.257 | 34.022 | 29.696 | 19.059 | 16.467 | 0.747 | 1.845 | 1.044 | 1.157 | 0.020 | 1 | 6.747 | 4.800 |
| 2328 | 98.841 | 18.552 | 39.063 | 27.485 | 17.566 | 18.997 | 0.768 | 1.971 | 0.936 | 0.925 | 0.017 | 1 | 6.562 | 4.598 |
| 2329 | 94.360 | 17.921 | 33.554 | 27.071 | 17.910 | 18.849 | 0.797 | 2.051 | 1.096 | 0.950 | 0.018 | -1 | 6.750 | 4.662 |
| 2330 | 83.424 | 20.849 | 39.716 | 26.954 | 19.573 | 18.127 | 0.722 | 1.808 | 0.949 | 1.080 | 0.022 | 1 | 7.846 | 6.506 |
| 2331 | 88.406 | 17.799 | 35.679 | 27.765 | 16.056 | 18.040 | 0.798 | 1.916 | 0.956 | 0.890 | 0.020 | 1 | 6.099 | 4.346 |
| 2332 | 86.530 | 18.810 | 34.069 | 27.165 | 16.583 | 19.280 | 0.769 | 1.907 | 1.053 | 0.860 | 0.021 | 1 | 6.030 | 4.311 |
| 2333 | 97.087 | 18.280 | 36.340 | 28.157 | 16.977 | 18.904 | 0.774 | 1.963 | 0.987 | 0.898 | 0.018 | -1 | 6.751 | 4.734 |
| 2334 | 95.721 | 17.751 | 34.641 | 26.127 | 17.067 | 19.595 | 0.797 | 2.065 | 1.058 | 0.871 | 0.018 | -1 | 6.636 | 4.594 |
| 2335 | 82.652 | 19.105 | 36.934 | 26.938 | 16.019 | 17.193 | 0.774 | 1.738 | 0.899 | 0.932 | 0.022 | 1 | 8.154 | 6.801 |
| 2336 | 81.736 | 21.580 | 39.137 | 25.368 | 18.948 | 18.343 | 0.703 | 1.728 | 0.953 | 1.033 | 0.022 | 1 | 7.512 | 6.218 |
| 2337 | 97.204 | 18.630 | 32.029 | 26.221 | 18.198 | 18.162 | 0.777 | 1.952 | 1.135 | 1.002 | 0.017 | -1 | 6.980 | 4.835 |
| 2338 | 84.978 | 19.230 | 38.670 | 25.417 | 18.656 | 17.787 | 0.763 | 1.895 | 0.942 | 1.049 | 0.021 | 1 | 5.300 | 3.800 |
| 2339 | 85.436 | 19.239 | 38.087 | 27.382 | 18.490 | 19.676 | 0.762 | 1.984 | 1.002 | 0.940 | 0.021 | 1 | 5.631 | 4.018 |
| 2340 | 94.491 | 17.851 | 34.979 | 28.029 | 18.666 | 16.546 | 0.796 | 1.973 | 1.007 | 1.128 | 0.019 | 1 | 6.700 | 4.673 |
| 2341 | 99.868 | 17.910 | 35.180 | 27.670 | 16.633 | 19.818 | 0.791 | 2.035 | 1.036 | 0.839 | 0.017 | -1 | 7.051 | 4.884 |
| 2342 | 99.451 | 21.551 | 34.648 | 27.157 | 17.551 | 19.445 | 0.686 | 1.717 | 1.068 | 0.903 | 0.017 | 1 | 10.211 | 8.478 |
| 2343 | 88.576 | 21.527 | 37.708 | 29.556 | 18.424 | 16.999 | 0.707 | 1.645 | 0.939 | 1.084 | 0.021 | 1 | 9.096 | 7.621 |
| 2344 | 93.146 | 21.682 | 36.323 | 24.687 | 18.528 | 19.884 | 0.685 | 1.772 | 1.058 | 0.932 | 0.018 | 1 | 5.985 | 4.312 |
| 2345 | 95.433 | 20.945 | 38.120 | 26.831 | 19.509 | 18.569 | 0.700 | 1.818 | 0.999 | 1.051 | 0.018 | 1 | 6.247 | 4.467 |
| 2346 | 89.463 | 20.681 | 34.935 | 28.909 | 16.503 | 18.692 | 0.726 | 1.702 | 1.007 | 0.883 | 0.020 | 1 | 9.466 | 7.897 |
| 2347 | 92.836 | 20.604 | 39.630 | 27.463 | 19.690 | 17.927 | 0.713 | 1.826 | 0.949 | 1.098 | 0.019 | 1 | 5.987 | 4.296 |
| 2348 | 91.872 | 19.059 | 34.914 | 29.741 | 19.619 | 19.486 | 0.764 | 2.052 | 1.120 | 1.007 | 0.020 | 1 | 6.739 | 4.693 |

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| 2349 | 86.947 | 18.094 | 33.939 | 29.195 | 19.713 | 16.125 | 0.794 | 1.981 | 1.056 | 1.223 | 0.021 | 1 | 6.383 | 4.494 |
| 2350 | 94.908 | 18.337 | 32.409 | 28.714 | 17.302 | 16.534 | 0.782 | 1.845 | 1.044 | 1.046 | 0.019 | -1 | 6.975 | 4.930 |
| 2351 | 95.424 | 21.669 | 35.952 | 25.899 | 16.572 | 19.985 | 0.684 | 1.687 | 1.017 | 0.829 | 0.018 | 1 | 9.453 | 7.855 |
| 2352 | 98.161 | 17.940 | 38.510 | 27.692 | 18.809 | 19.112 | 0.801 | 2.114 | 0.985 | 0.984 | 0.017 | 1 | 6.651 | 4.590 |
| 2353 | 97.656 | 17.708 | 39.496 | 26.674 | 17.300 | 16.702 | 0.794 | 1.920 | 0.861 | 1.036 | 0.017 | 1 | 6.336 | 4.455 |
| 2354 | 92.752 | 19.234 | 39.462 | 24.348 | 18.275 | 16.362 | 0.749 | 1.801 | 0.878 | 1.117 | 0.018 | 1 | 5.674 | 4.060 |
| 2355 | 97.495 | 20.133 | 38.039 | 27.703 | 19.269 | 16.955 | 0.719 | 1.799 | 0.952 | 1.136 | 0.018 | 1 | 6.498 | 4.641 |
| 2356 | 80.326 | 19.111 | 37.887 | 26.396 | 18.259 | 18.656 | 0.771 | 1.932 | 0.974 | 0.979 | 0.023 | 1 | 7.679 | 6.356 |
| 2357 | 98.497 | 21.371 | 38.413 | 26.847 | 16.985 | 18.522 | 0.690 | 1.661 | 0.924 | 0.917 | 0.017 | 1 | 9.563 | 7.990 |
| 2358 | 84.530 | 19.535 | 39.002 | 24.563 | 19.791 | 19.448 | 0.762 | 2.009 | 1.006 | 1.018 | 0.021 | 1 | 5.158 | 3.683 |
| 2359 | 91.648 | 20.868 | 35.523 | 27.005 | 19.390 | 18.378 | 0.709 | 1.810 | 1.063 | 1.055 | 0.019 | 1 | 6.219 | 4.460 |
| 2360 | 95.000 | 17.828 | 37.836 | 26.316 | 18.919 | 17.643 | 0.805 | 2.051 | 0.966 | 1.072 | 0.018 | 1 | 6.300 | 4.382 |
| 2361 | 95.605 | 21.154 | 36.078 | 28.210 | 17.651 | 17.316 | 0.706 | 1.653 | 0.969 | 1.019 | 0.018 | 1 | 9.762 | 8.188 |
| 2362 | 83.847 | 21.706 | 39.453 | 24.343 | 17.756 | 16.447 | 0.690 | 1.576 | 0.867 | 1.080 | 0.021 | 1 | 7.533 | 6.251 |
| 2363 | 89.427 | 17.857 | 35.299 | 26.482 | 19.463 | 17.050 | 0.807 | 2.045 | 1.034 | 1.142 | 0.020 | 1 | 6.131 | 4.286 |
| 2364 | 94.636 | 18.673 | 32.163 | 25.772 | 18.027 | 18.733 | 0.774 | 1.969 | 1.143 | 0.962 | 0.018 | -1 | 6.724 | 4.671 |
| 2365 | 97.811 | 18.866 | 34.645 | 25.428 | 17.843 | 17.825 | 0.757 | 1.891 | 1.030 | 1.001 | 0.017 | -1 | 6.655 | 4.668 |
| 2366 | 83.877 | 18.558 | 33.752 | 28.154 | 17.115 | 18.897 | 0.778 | 1.941 | 1.067 | 0.906 | 0.022 | 1 | 6.019 | 4.286 |
| 2367 | 88.824 | 17.846 | 36.529 | 24.599 | 18.427 | 16.528 | 0.805 | 1.959 | 0.957 | 1.115 | 0.019 | 1 | 5.730 | 4.045 |
| 2368 | 95.007 | 19.602 | 34.691 | 26.186 | 18.610 | 19.218 | 0.738 | 1.930 | 1.090 | 0.968 | 0.018 | 1 | 6.522 | 4.584 |
| 2369 | 84.140 | 18.902 | 32.035 | 26.585 | 17.269 | 17.295 | 0.773 | 1.829 | 1.079 | 0.999 | 0.021 | 1 | 5.975 | 4.278 |
| 2370 | 84.868 | 21.303 | 38.357 | 25.189 | 17.354 | 18.718 | 0.701 | 1.693 | 0.940 | 0.927 | 0.021 | 1 | 7.926 | 6.573 |
| 2371 | 81.773 | 19.992 | 37.640 | 26.869 | 17.136 | 18.624 | 0.746 | 1.789 | 0.950 | 0.920 | 0.022 | 1 | 7.978 | 6.619 |
| 2372 | 82.705 | 17.997 | 38.256 | 25.337 | 18.986 | 18.522 | 0.815 | 2.084 | 0.980 | 1.025 | 0.022 | 1 | 5.207 | 3.694 |
| 2373 | 91.313 | 21.093 | 36.932 | 28.431 | 18.305 | 16.981 | 0.712 | 1.673 | 0.955 | 1.078 | 0.020 | 1 | 9.250 | 7.748 |
| 2374 | 81.636 | 21.603 | 36.237 | 24.626 | 17.996 | 19.714 | 0.701 | 1.746 | 1.041 | 0.913 | 0.022 | 1 | 7.784 | 6.447 |
| 2375 | 81.655 | 21.913 | 35.327 | 27.094 | 19.858 | 18.910 | 0.702 | 1.769 | 1.097 | 1.050 | 0.023 | 1 | 8.295 | 6.898 |
| 2376 | 82.647 | 21.111 | 37.712 | 28.610 | 18.261 | 17.702 | 0.720 | 1.704 | 0.954 | 1.032 | 0.023 | 1 | 8.367 | 6.970 |
| 2377 | 81.244 | 17.958 | 35.787 | 27.634 | 19.485 | 17.645 | 0.813 | 2.068 | 1.038 | 1.104 | 0.023 | 1 | 5.621 | 3.977 |

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| 2378 | 91.068 | 19.618 | 39.877 | 24.870 | 16.103 | 17.072 | 0.739 | 1.691 | 0.832 | 0.943 | 0.018 | 1 | 8.274 | 6.895 |
| 2379 | 90.797 | 21.341 | 39.546 | 24.621 | 19.775 | 18.215 | 0.697 | 1.780 | 0.961 | 1.086 | 0.018 | 1 | 8.225 | 6.829 |
| 2380 | 85.565 | 21.323 | 36.928 | 24.245 | 17.829 | 18.950 | 0.702 | 1.725 | 0.996 | 0.941 | 0.020 | 1 | 8.018 | 6.653 |
| 2381 | 88.546 | 18.352 | 39.818 | 26.031 | 17.014 | 19.058 | 0.784 | 1.966 | 0.906 | 0.893 | 0.020 | 1 | 5.543 | 3.944 |
| 2382 | 99.620 | 21.258 | 34.281 | 24.808 | 19.779 | 16.861 | 0.689 | 1.724 | 1.069 | 1.173 | 0.016 | 1 | 6.656 | 4.773 |
| 2383 | 87.970 | 17.767 | 32.523 | 29.590 | 16.483 | 18.126 | 0.806 | 1.948 | 1.064 | 0.909 | 0.021 | -1 | 6.626 | 4.666 |
| 2384 | 95.515 | 19.786 | 39.789 | 24.588 | 18.875 | 17.089 | 0.732 | 1.818 | 0.904 | 1.105 | 0.017 | 1 | 5.885 | 4.194 |
| 2385 | 88.026 | 18.317 | 36.006 | 29.878 | 18.255 | 19.498 | 0.788 | 2.061 | 1.049 | 0.936 | 0.021 | 1 | 6.365 | 4.470 |
| 2386 | 90.819 | 17.832 | 39.964 | 29.056 | 17.664 | 19.533 | 0.805 | 2.086 | 0.931 | 0.904 | 0.020 | 1 | 6.085 | 4.279 |
| 2387 | 95.889 | 18.496 | 39.749 | 26.183 | 17.491 | 16.487 | 0.765 | 1.837 | 0.855 | 1.061 | 0.018 | 1 | 6.089 | 4.330 |
| 2388 | 97.371 | 19.277 | 33.194 | 29.340 | 19.870 | 19.073 | 0.753 | 2.020 | 1.173 | 1.042 | 0.018 | 1 | 7.266 | 5.008 |
| 2389 | 82.183 | 20.332 | 34.098 | 25.097 | 19.239 | 19.250 | 0.733 | 1.893 | 1.129 | 0.999 | 0.022 | 1 | 5.477 | 3.930 |
| 2390 | 92.763 | 18.497 | 39.961 | 29.212 | 16.438 | 19.423 | 0.768 | 1.939 | 0.897 | 0.846 | 0.019 | 1 | 6.181 | 4.407 |
| 2391 | 88.718 | 18.294 | 32.978 | 25.874 | 19.726 | 18.900 | 0.791 | 2.111 | 1.171 | 1.044 | 0.020 | 1 | 6.248 | 4.336 |
| 2392 | 84.327 | 21.449 | 34.059 | 24.807 | 18.079 | 19.492 | 0.704 | 1.752 | 1.103 | 0.927 | 0.021 | 1 | 8.358 | 6.947 |
| 2393 | 88.718 | 21.762 | 33.609 | 24.528 | 18.159 | 16.110 | 0.697 | 1.575 | 1.020 | 1.127 | 0.019 | 1 | 5.895 | 8.413 |
| 2394 | 85.619 | 21.112 | 34.818 | 27.104 | 18.320 | 16.248 | 0.722 | 1.637 | 0.993 | 1.128 | 0.021 | 1 | 8.735 | 7.320 |
| 2395 | 99.564 | 18.637 | 33.231 | 24.684 | 19.023 | 18.226 | 0.772 | 1.999 | 1.121 | 1.044 | 0.016 | -1 | 6.910 | 4.761 |
| 2396 | 85.401 | 19.677 | 32.317 | 25.150 | 19.051 | 16.068 | 0.751 | 1.785 | 1.087 | 1.186 | 0.020 | 1 | 5.845 | 4.210 |
| 2397 | 88.020 | 20.909 | 38.817 | 25.180 | 16.874 | 16.878 | 0.709 | 1.614 | 0.869 | 1.000 | 0.020 | 1 | 8.166 | 6.810 |
| 2398 | 89.127 | 18.283 | 33.603 | 28.040 | 18.568 | 18.608 | 0.787 | 2.033 | 1.106 | 0.998 | 0.020 | 1 | 6.455 | 4.503 |
| 2399 | 87.978 | 20.565 | 37.796 | 26.422 | 19.637 | 18.084 | 0.722 | 1.834 | 0.998 | 1.086 | 0.020 | 1 | 5.686 | 4.092 |
| 2400 | 92.928 | 18.310 | 37.913 | 29.639 | 18.126 | 17.155 | 0.778 | 1.927 | 0.931 | 1.057 | 0.020 | 1 | 6.461 | 4.570 |
| 2401 | 90.679 | 18.661 | 33.767 | 25.480 | 18.404 | 16.864 | 0.768 | 1.890 | 1.044 | 1.091 | 0.019 | 1 | 6.198 | 4.379 |
| 2402 | 90.094 | 21.015 | 36.892 | 28.060 | 18.980 | 19.488 | 0.707 | 1.831 | 1.043 | 0.974 | 0.020 | 1 | 6.098 | 4.390 |
| 2403 | 87.459 | 21.930 | 35.225 | 29.944 | 19.733 | 16.348 | 0.704 | 1.645 | 1.024 | 1.207 | 0.021 | 1 | 9.356 | 7.855 |
| 2404 | 90.063 | 21.122 | 39.811 | 27.894 | 17.935 | 17.240 | 0.708 | 1.665 | 0.884 | 1.040 | 0.020 | 1 | 8.676 | 7.241 |
| 2405 | 84.977 | 20.146 | 37.270 | 24.522 | 16.437 | 19.385 | 0.732 | 1.778 | 0.961 | 0.848 | 0.020 | 1 | 7.962 | 6.603 |
| 2406 | 89.900 | 20.763 | 35.783 | 25.182 | 17.392 | 19.753 | 0.713 | 1.789 | 1.038 | 0.880 | 0.019 | 1 | 8.759 | 7.279 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 2407 | 92.951 | 19.042 | 36.336 | 28.396 | 16.891 | 16.652 | 0.763 | 1.762 | 0.923 | 1.014 | 0.019 | 1 | 6.362 | 4.597 |
| 2408 | 98.284 | 19.763 | 36.988 | 29.145 | 17.895 | 16.443 | 0.736 | 1.737 | 0.928 | 1.088 | 0.018 | 1 | 6.757 | 4.877 |
| 2409 | 84.393 | 18.773 | 37.901 | 27.319 | 16.822 | 19.266 | 0.774 | 1.922 | 0.952 | 0.873 | 0.022 | 1 | 8.260 | 6.844 |
| 2410 | 91.993 | 21.883 | 34.886 | 24.657 | 17.179 | 19.652 | 0.680 | 1.683 | 1.056 | 0.874 | 0.018 | 1 | 6.047 | 8.609 |
| 2411 | 88.342 | 21.528 | 33.213 | 26.469 | 17.607 | 19.889 | 0.698 | 1.742 | 1.129 | 0.885 | 0.020 | 1 | 6.129 | 8.735 |
| 2412 | 84.887 | 21.805 | 37.439 | 25.475 | 19.714 | 16.016 | 0.703 | 1.639 | 0.954 | 1.231 | 0.021 | 1 | 8.030 | 6.705 |
| 2413 | 95.101 | 19.894 | 33.002 | 26.051 | 19.072 | 18.340 | 0.727 | 1.881 | 1.134 | 1.040 | 0.018 | 1 | 6.658 | 4.684 |
| 2414 | 89.392 | 21.276 | 35.328 | 26.214 | 16.755 | 18.317 | 0.703 | 1.648 | 0.993 | 0.915 | 0.020 | 1 | 5.997 | 8.536 |
| 2415 | 93.966 | 18.772 | 38.205 | 27.646 | 18.788 | 19.706 | 0.774 | 2.051 | 1.008 | 0.953 | 0.019 | 1 | 6.316 | 4.421 |
| 2416 | 90.489 | 21.594 | 33.173 | 27.074 | 16.888 | 17.846 | 0.698 | 1.609 | 1.047 | 0.946 | 0.019 | 1 | 6.339 | 9.043 |
| 2417 | 83.468 | 20.442 | 35.680 | 29.316 | 17.867 | 16.948 | 0.742 | 1.703 | 0.976 | 1.054 | 0.023 | 1 | 8.825 | 7.387 |
| 2418 | 92.188 | 18.846 | 33.751 | 29.315 | 19.075 | 17.262 | 0.762 | 1.928 | 1.077 | 1.105 | 0.020 | 1 | 6.773 | 4.758 |
| 2419 | 94.101 | 21.173 | 34.927 | 27.454 | 17.258 | 18.012 | 0.705 | 1.666 | 1.010 | 0.958 | 0.019 | 1 | 9.658 | 8.067 |
| 2420 | 96.527 | 19.501 | 39.216 | 25.486 | 16.203 | 19.952 | 0.734 | 1.854 | 0.922 | 0.812 | 0.017 | 1 | 6.087 | 4.352 |
| 2421 | 83.560 | 19.391 | 33.807 | 25.382 | 16.548 | 17.438 | 0.764 | 1.753 | 1.005 | 0.949 | 0.021 | 1 | 2.793 | 4.002 |
| 2422 | 95.041 | 19.145 | 37.314 | 26.401 | 17.130 | 19.885 | 0.745 | 1.933 | 0.992 | 0.861 | 0.018 | 1 | 6.283 | 4.451 |
| 2423 | 84.473 | 17.790 | 33.261 | 24.710 | 19.253 | 16.471 | 0.810 | 2.008 | 1.074 | 1.169 | 0.021 | 1 | 5.734 | 4.040 |
| 2424 | 92.759 | 19.173 | 36.607 | 28.862 | 19.233 | 19.983 | 0.761 | 2.045 | 1.071 | 0.962 | 0.019 | 1 | 6.518 | 4.562 |
| 2425 | 84.636 | 19.400 | 37.024 | 29.432 | 16.621 | 19.667 | 0.761 | 1.871 | 0.980 | 0.845 | 0.022 | 1 | 8.808 | 7.323 |
| 2426 | 84.680 | 19.824 | 38.689 | 26.142 | 19.453 | 18.966 | 0.748 | 1.938 | 0.993 | 1.026 | 0.021 | 1 | 7.951 | 6.582 |
| 2427 | 99.752 | 21.995 | 36.351 | 26.778 | 17.924 | 16.006 | 0.683 | 1.543 | 0.933 | 1.120 | 0.017 | 1 | 6.652 | 9.511 |
| 2428 | 84.763 | 20.377 | 35.404 | 25.207 | 19.843 | 18.724 | 0.728 | 1.893 | 1.089 | 1.060 | 0.021 | 1 | 5.556 | 3.981 |
| 2429 | 98.653 | 19.664 | 35.732 | 28.819 | 19.257 | 16.499 | 0.728 | 1.818 | 1.001 | 1.167 | 0.018 | 1 | 6.933 | 4.921 |
| 2430 | 87.407 | 17.683 | 39.066 | 28.693 | 19.614 | 16.168 | 0.817 | 2.024 | 0.916 | 1.213 | 0.021 | 1 | 5.871 | 4.149 |
| 2431 | 81.050 | 20.319 | 39.610 | 24.813 | 18.835 | 16.298 | 0.740 | 1.729 | 0.887 | 1.156 | 0.022 | 1 | 7.246 | 6.014 |
| 2432 | 81.438 | 20.658 | 33.678 | 29.633 | 17.684 | 19.593 | 0.734 | 1.804 | 1.107 | 0.903 | 0.023 | 1 | 9.001 | 7.502 |
| 2433 | 87.758 | 21.966 | 32.102 | 24.313 | 18.790 | 17.305 | 0.691 | 1.643 | 1.124 | 1.086 | 0.019 | 1 | 5.911 | 8.462 |
| 2434 | 96.593 | 19.121 | 39.150 | 24.935 | 17.722 | 17.536 | 0.747 | 1.844 | 0.901 | 1.011 | 0.017 | 1 | 6.073 | 4.308 |
| 2435 | 83.432 | 18.109 | 37.716 | 29.012 | 17.466 | 19.284 | 0.797 | 2.029 | 0.974 | 0.906 | 0.022 | 1 | 5.740 | 4.088 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 2436 | 82.503 | 21.384 | 32.518 | 29.606 | 19.698 | 16.138 | 0.725 | 1.676 | 1.102 | 1.221 | 0.023 | 1 | 9.173 | 7.699 |
| 2437 | 91.799 | 19.125 | 39.070 | 29.352 | 16.219 | 19.466 | 0.757 | 1.866 | 0.913 | 0.833 | 0.020 | 1 | 6.168 | 4.444 |
| 2438 | 80.178 | 19.788 | 38.162 | 25.731 | 17.927 | 16.999 | 0.755 | 1.765 | 0.915 | 1.055 | 0.023 | 1 | 7.520 | 6.241 |
| 2439 | 83.400 | 19.170 | 39.611 | 25.868 | 16.710 | 16.662 | 0.765 | 1.741 | 0.842 | 1.003 | 0.021 | 1 | 7.676 | 6.376 |
| 2440 | 85.994 | 20.596 | 35.026 | 26.198 | 17.617 | 19.542 | 0.725 | 1.804 | 1.061 | 0.901 | 0.021 | 1 | 8.623 | 7.168 |
| 2441 | 95.817 | 18.647 | 39.335 | 27.293 | 16.705 | 19.869 | 0.761 | 1.961 | 0.930 | 0.841 | 0.018 | 1 | 6.261 | 4.430 |
| 2442 | 88.175 | 19.431 | 32.836 | 25.174 | 17.916 | 19.869 | 0.742 | 1.945 | 1.151 | 0.902 | 0.020 | 1 | 6.068 | 4.291 |
| 2443 | 86.407 | 18.620 | 35.505 | 25.412 | 16.373 | 17.384 | 0.780 | 1.813 | 0.951 | 0.942 | 0.020 | 1 | 5.668 | 4.078 |
| 2444 | 95.774 | 19.062 | 37.321 | 27.336 | 17.460 | 18.121 | 0.748 | 1.867 | 0.953 | 0.964 | 0.018 | 1 | 6.427 | 4.562 |
| 2445 | 97.546 | 17.976 | 32.366 | 24.660 | 19.077 | 18.409 | 0.799 | 2.085 | 1.158 | 1.036 | 0.017 | -1 | 6.869 | 4.696 |
| 2446 | 80.164 | 19.148 | 32.426 | 29.840 | 18.417 | 18.340 | 0.764 | 1.920 | 1.134 | 1.004 | 0.024 | 1 | 6.117 | 4.361 |
| 2447 | 94.349 | 17.740 | 35.871 | 24.474 | 18.676 | 19.164 | 0.808 | 2.133 | 1.055 | 0.975 | 0.017 | 1 | 6.260 | 4.325 |
| 2448 | 89.020 | 21.922 | 35.538 | 29.054 | 17.037 | 16.823 | 0.696 | 1.545 | 0.953 | 1.013 | 0.021 | 1 | 6.310 | 8.957 |
| 2449 | 94.919 | 19.339 | 33.393 | 26.395 | 17.323 | 17.490 | 0.745 | 1.800 | 1.043 | 0.990 | 0.018 | 1 | 6.592 | 4.697 |
| 2450 | 92.800 | 18.634 | 33.699 | 28.032 | 16.695 | 18.988 | 0.768 | 1.915 | 1.059 | 0.879 | 0.019 | -1 | 6.637 | 4.693 |
| 2451 | 93.068 | 21.220 | 38.450 | 29.921 | 17.756 | 19.969 | 0.702 | 1.778 | 0.981 | 0.889 | 0.020 | 1 | 9.537 | 7.943 |
| 2452 | 83.733 | 18.339 | 32.827 | 26.740 | 19.444 | 16.728 | 0.789 | 1.972 | 1.102 | 1.162 | 0.022 | 1 | 5.949 | 4.203 |
| 2453 | 93.562 | 18.205 | 32.416 | 29.108 | 18.099 | 17.523 | 0.791 | 1.957 | 1.099 | 1.033 | 0.019 | -1 | 7.001 | 4.872 |
| 2454 | 87.303 | 17.836 | 35.937 | 25.035 | 16.056 | 18.274 | 0.796 | 1.925 | 0.955 | 0.879 | 0.020 | 1 | 5.692 | 4.051 |
| 2455 | 99.850 | 21.214 | 35.247 | 27.919 | 17.160 | 17.529 | 0.700 | 1.635 | 0.984 | 0.979 | 0.017 | 1 | 10.261 | 8.582 |
| 2456 | 86.232 | 18.354 | 38.354 | 26.389 | 18.570 | 18.551 | 0.794 | 2.022 | 0.968 | 1.001 | 0.021 | 1 | 5.569 | 3.947 |
| 2457 | 94.299 | 18.124 | 33.196 | 26.328 | 18.224 | 16.426 | 0.785 | 1.912 | 1.044 | 1.109 | 0.018 | -1 | 6.633 | 4.646 |
| 2458 | 96.968 | 18.598 | 39.938 | 24.365 | 19.343 | 18.040 | 0.780 | 2.010 | 0.936 | 1.072 | 0.017 | 1 | 6.034 | 4.217 |
| 2459 | 90.928 | 20.986 | 35.534 | 25.171 | 19.352 | 16.827 | 0.711 | 1.724 | 1.018 | 1.150 | 0.019 | 1 | 5.923 | 4.293 |
| 2460 | 98.660 | 19.330 | 34.300 | 25.849 | 16.590 | 18.138 | 0.742 | 1.797 | 1.012 | 0.915 | 0.017 | -1 | 6.718 | 4.788 |
| 2461 | 80.645 | 19.187 | 36.264 | 25.750 | 18.180 | 17.126 | 0.772 | 1.840 | 0.974 | 1.062 | 0.022 | 1 | 7.795 | 6.480 |
| 2462 | 94.656 | 21.915 | 39.018 | 27.018 | 18.439 | 17.013 | 0.684 | 1.618 | 0.909 | 1.084 | 0.018 | 1 | 9.092 | 7.611 |
| 2463 | 88.980 | 18.965 | 32.846 | 24.178 | 19.210 | 17.608 | 0.765 | 1.941 | 1.121 | 1.091 | 0.019 | 1 | 6.033 | 4.247 |
| 2464 | 86.475 | 20.804 | 38.862 | 26.075 | 17.470 | 17.968 | 0.716 | 1.703 | 0.912 | 0.972 | 0.020 | 1 | 8.147 | 6.772 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2465 | 86.315 | 19.671 | 37.914 | 24.489 | 19.614 | 19.058 | 0.753 | 1.966 | 1.020 | 1.029 | 0.020 | 1 | 5.380 | 3.835 |
| 2466 | 80.301 | 20.779 | 34.006 | 24.720 | 19.768 | 18.299 | 0.729 | 1.832 | 1.119 | 1.080 | 0.022 | 1 | 7.878 | 6.555 |
| 2467 | 90.628 | 19.187 | 35.988 | 28.481 | 17.525 | 17.871 | 0.756 | 1.845 | 0.984 | 0.981 | 0.020 | 1 | 6.287 | 4.501 |
| 2468 | 85.960 | 21.737 | 33.253 | 24.379 | 16.464 | 18.653 | 0.687 | 1.616 | 1.056 | 0.883 | 0.020 | 1 | 5.734 | 8.166 |
| 2469 | 82.716 | 17.687 | 37.205 | 26.326 | 18.837 | 17.663 | 0.823 | 2.064 | 0.981 | 1.066 | 0.022 | 1 | 5.427 | 3.843 |
| 2470 | 88.408 | 19.433 | 32.248 | 29.178 | 17.789 | 16.890 | 0.756 | 1.785 | 1.075 | 1.053 | 0.021 | 1 | 6.532 | 4.699 |
| 2471 | 93.940 | 19.753 | 36.027 | 29.915 | 18.502 | 17.377 | 0.736 | 1.816 | 0.996 | 1.065 | 0.019 | 1 | 6.676 | 4.779 |
| 2472 | 91.716 | 17.766 | 32.700 | 25.675 | 17.615 | 18.439 | 0.804 | 2.029 | 1.103 | 0.955 | 0.019 | -1 | 6.466 | 4.483 |
| 2473 | 86.452 | 21.637 | 34.965 | 28.962 | 16.324 | 19.893 | 0.700 | 1.674 | 1.036 | 0.821 | 0.021 | 1 | 6.207 | 8.782 |
| 2474 | 95.551 | 21.820 | 38.604 | 29.329 | 16.505 | 19.160 | 0.685 | 1.635 | 0.924 | 0.861 | 0.019 | 1 | 6.516 | 9.242 |
| 2475 | 85.930 | 18.875 | 37.297 | 25.857 | 19.260 | 17.140 | 0.775 | 1.928 | 0.976 | 1.124 | 0.021 | 1 | 5.560 | 3.964 |
| 2476 | 84.164 | 20.451 | 37.450 | 29.735 | 19.256 | 16.703 | 0.738 | 1.758 | 0.960 | 1.153 | 0.022 | 1 | 8.706 | 7.269 |
| 2477 | 86.820 | 21.055 | 32.785 | 29.265 | 18.214 | 19.704 | 0.714 | 1.801 | 1.157 | 0.924 | 0.021 | 1 | 9.550 | 7.940 |
| 2478 | 87.873 | 20.029 | 38.451 | 26.592 | 18.953 | 18.366 | 0.734 | 1.863 | 0.971 | 1.032 | 0.020 | 1 | 5.650 | 4.055 |
| 2479 | 90.058 | 20.926 | 32.396 | 24.478 | 19.335 | 18.935 | 0.704 | 1.829 | 1.181 | 1.021 | 0.019 | 1 | 6.132 | 4.369 |
| 2480 | 97.047 | 19.325 | 39.759 | 24.435 | 19.508 | 17.456 | 0.753 | 1.913 | 0.930 | 1.118 | 0.017 | 1 | 6.031 | 4.248 |
| 2481 | 93.316 | 19.066 | 32.021 | 28.520 | 17.811 | 17.562 | 0.759 | 1.855 | 1.105 | 1.014 | 0.019 | -1 | 6.882 | 4.860 |
| 2482 | 88.590 | 17.950 | 36.682 | 28.113 | 16.713 | 18.147 | 0.790 | 1.942 | 0.950 | 0.921 | 0.020 | 1 | 6.074 | 4.317 |
| 2483 | 93.727 | 20.492 | 33.191 | 25.992 | 18.172 | 16.796 | 0.721 | 1.706 | 1.054 | 1.082 | 0.018 | 1 | 6.416 | 4.641 |
| 2484 | 84.926 | 18.747 | 38.904 | 27.009 | 17.782 | 16.841 | 0.777 | 1.847 | 0.890 | 1.056 | 0.021 | 1 | 5.443 | 3.920 |
| 2485 | 83.128 | 20.829 | 32.797 | 25.682 | 17.081 | 19.942 | 0.722 | 1.777 | 1.129 | 0.857 | 0.022 | 1 | 5.708 | 8.149 |
| 2486 | 85.486 | 19.725 | 32.704 | 28.023 | 19.402 | 16.026 | 0.750 | 1.796 | 1.083 | 1.211 | 0.021 | 1 | 6.148 | 4.435 |
| 2487 | 95.787 | 21.620 | 37.811 | 27.906 | 16.634 | 16.510 | 0.693 | 1.533 | 0.877 | 1.007 | 0.018 | 1 | 6.391 | 9.116 |
| 2488 | 90.686 | 21.951 | 32.175 | 29.293 | 16.276 | 18.635 | 0.690 | 1.590 | 1.085 | 0.873 | 0.020 | 1 | 6.729 | 9.570 |
| 2489 | 88.642 | 21.992 | 33.002 | 28.622 | 16.155 | 18.823 | 0.688 | 1.591 | 1.060 | 0.858 | 0.021 | 1 | 6.453 | 9.163 |
| 2490 | 98.418 | 18.190 | 35.442 | 24.679 | 16.176 | 18.908 | 0.779 | 1.929 | 0.990 | 0.856 | 0.016 | -1 | 6.551 | 4.597 |
| 2491 | 94.032 | 21.868 | 37.654 | 24.269 | 18.496 | 19.127 | 0.679 | 1.720 | 0.999 | 0.967 | 0.017 | 1 | 8.796 | 7.311 |
| 2492 | 93.028 | 19.493 | 37.880 | 26.982 | 17.481 | 17.747 | 0.743 | 1.807 | 0.930 | 0.985 | 0.019 | 1 | 6.103 | 4.378 |
| 2493 | 84.936 | 19.136 | 35.288 | 29.380 | 18.830 | 19.197 | 0.763 | 1.987 | 1.078 | 0.981 | 0.022 | 1 | 6.122 | 4.343 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 2494 | 86.809 | 18.534 | 38.334 | 25.923 | 17.232 | 18.580 | 0.778 | 1.932 | 0.934 | 0.927 | 0.020 | 1 | 5.532 | 3.948 |
| 2495 | 92.703 | 18.357 | 32.380 | 28.924 | 19.949 | 16.451 | 0.781 | 1.983 | 1.124 | 1.213 | 0.019 | 1 | 6.926 | 4.818 |
| 2496 | 93.977 | 21.704 | 38.339 | 24.872 | 17.674 | 19.718 | 0.681 | 1.723 | 0.975 | 0.896 | 0.018 | 1 | 8.812 | 7.323 |
| 2497 | 97.288 | 20.233 | 38.077 | 27.414 | 18.063 | 18.558 | 0.716 | 1.810 | 0.962 | 0.973 | 0.018 | 1 | 6.445 | 4.607 |
| 2498 | 97.158 | 17.943 | 34.335 | 24.323 | 19.304 | 19.214 | 0.799 | 2.147 | 1.122 | 1.005 | 0.016 | 1 | 6.626 | 4.536 |
| 2499 | 89.985 | 18.219 | 36.917 | 26.756 | 19.095 | 18.546 | 0.797 | 2.066 | 1.020 | 1.030 | 0.020 | 1 | 6.049 | 4.236 |
| 2500 | 86.374 | 20.739 | 34.890 | 24.119 | 16.420 | 16.223 | 0.719 | 1.574 | 0.936 | 1.012 | 0.020 | 1 | 5.574 | 7.956 |
| 2501 | 88.665 | 19.888 | 34.552 | 28.851 | 17.479 | 18.413 | 0.743 | 1.805 | 1.039 | 0.949 | 0.021 | 1 | 6.293 | 4.541 |
| 2502 | 90.529 | 20.455 | 38.916 | 26.431 | 19.166 | 16.863 | 0.723 | 1.761 | 0.926 | 1.137 | 0.019 | 1 | 8.547 | 7.121 |
| 2503 | 85.508 | 18.247 | 32.459 | 26.944 | 17.454 | 17.234 | 0.784 | 1.901 | 1.069 | 1.013 | 0.021 | 1 | 6.114 | 4.333 |
| 2504 | 81.386 | 18.628 | 38.888 | 27.483 | 18.077 | 16.570 | 0.787 | 1.860 | 0.891 | 1.091 | 0.023 | 1 | 7.821 | 6.499 |
| 2505 | 87.237 | 18.596 | 35.665 | 27.732 | 16.865 | 19.774 | 0.771 | 1.970 | 1.027 | 0.853 | 0.021 | 1 | 6.020 | 4.287 |
| 2506 | 90.059 | 21.004 | 33.062 | 28.028 | 19.130 | 18.963 | 0.707 | 1.814 | 1.152 | 1.009 | 0.020 | 1 | 6.450 | 4.620 |
| 2507 | 87.850 | 19.748 | 37.464 | 26.209 | 17.457 | 17.593 | 0.745 | 1.775 | 0.936 | 0.992 | 0.020 | 1 | 8.459 | 7.041 |
| 2508 | 95.995 | 20.126 | 38.699 | 26.578 | 17.289 | 19.199 | 0.720 | 1.813 | 0.943 | 0.901 | 0.018 | 1 | 6.197 | 4.443 |
| 2509 | 93.862 | 19.987 | 37.134 | 29.272 | 17.673 | 18.660 | 0.731 | 1.818 | 0.978 | 0.947 | 0.019 | 1 | 6.479 | 4.657 |
| 2510 | 88.456 | 20.275 | 34.276 | 25.375 | 16.550 | 19.834 | 0.729 | 1.794 | 1.061 | 0.834 | 0.020 | 1 | 8.846 | 7.351 |
| 2511 | 82.030 | 21.388 | 34.657 | 26.067 | 19.951 | 17.459 | 0.716 | 1.749 | 1.079 | 1.143 | 0.022 | 1 | 8.203 | 6.840 |
| 2512 | 80.506 | 21.160 | 38.711 | 25.124 | 16.490 | 19.183 | 0.702 | 1.686 | 0.922 | 0.860 | 0.022 | 1 | 7.454 | 6.153 |
| 2513 | 89.597 | 19.278 | 34.439 | 25.098 | 16.518 | 17.601 | 0.757 | 1.770 | 0.991 | 0.939 | 0.019 | 1 | 5.942 | 4.281 |
| 2514 | 95.497 | 21.953 | 39.575 | 26.464 | 17.315 | 16.178 | 0.680 | 1.526 | 0.846 | 1.070 | 0.018 | 1 | 6.079 | 8.650 |
| 2515 | 97.017 | 20.847 | 34.026 | 26.073 | 17.694 | 18.929 | 0.704 | 1.757 | 1.076 | 0.935 | 0.017 | 1 | 6.614 | 4.750 |
| 2516 | 86.045 | 19.282 | 34.321 | 26.198 | 19.403 | 19.728 | 0.761 | 2.029 | 1.140 | 0.984 | 0.021 | 1 | 5.915 | 4.172 |
| 2517 | 83.195 | 18.121 | 37.828 | 28.509 | 18.680 | 17.132 | 0.801 | 1.976 | 0.947 | 1.090 | 0.022 | 1 | 5.645 | 4.025 |
| 2518 | 85.528 | 21.169 | 32.492 | 26.268 | 17.355 | 18.579 | 0.713 | 1.698 | 1.106 | 0.934 | 0.021 | 1 | 5.957 | 8.513 |
| 2519 | 93.221 | 20.866 | 39.830 | 29.079 | 16.862 | 19.853 | 0.708 | 1.760 | 0.922 | 0.849 | 0.019 | 1 | 9.226 | 7.685 |
| 2520 | 92.057 | 19.718 | 34.946 | 25.482 | 16.540 | 19.673 | 0.738 | 1.837 | 1.036 | 0.841 | 0.018 | 1 | 6.125 | 4.398 |
| 2521 | 98.603 | 21.858 | 39.316 | 25.720 | 19.603 | 19.297 | 0.673 | 1.780 | 0.989 | 1.016 | 0.017 | 1 | 6.240 | 4.472 |
| 2522 | 84.968 | 19.357 | 38.075 | 29.990 | 16.141 | 19.006 | 0.764 | 1.816 | 0.923 | 0.849 | 0.022 | 1 | 8.804 | 7.339 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|--------|-------|
| 2523 | 90.001 | 17.696 | 33.587 | 28.478 | 18.543 | 17.342 | 0.806 | 2.028 | 1.068 | 1.069 | 0.020 | 1 | 6.579 | 4.578 |
| 2524 | 93.806 | 19.420 | 39.018 | 28.511 | 18.703 | 16.989 | 0.743 | 1.838 | 0.915 | 1.101 | 0.019 | 1 | 6.245 | 4.462 |
| 2525 | 82.462 | 19.166 | 35.680 | 29.115 | 18.394 | 19.148 | 0.763 | 1.959 | 1.052 | 0.961 | 0.023 | 1 | 5.862 | 4.190 |
| 2526 | 99.806 | 21.497 | 33.888 | 28.312 | 18.180 | 18.308 | 0.690 | 1.697 | 1.077 | 0.993 | 0.017 | 1 | 10.500 | 8.744 |
| 2527 | 93.158 | 20.353 | 37.086 | 25.457 | 16.239 | 19.265 | 0.720 | 1.744 | 0.957 | 0.843 | 0.018 | 1 | 8.975 | 7.468 |
| 2528 | 89.879 | 21.913 | 32.984 | 25.929 | 18.481 | 16.281 | 0.696 | 1.586 | 1.054 | 1.135 | 0.019 | 1 | 6.175 | 8.820 |
| 2529 | 91.612 | 18.908 | 35.466 | 28.496 | 19.325 | 16.244 | 0.760 | 1.881 | 1.003 | 1.190 | 0.020 | 1 | 6.439 | 4.569 |
| 2530 | 83.098 | 20.172 | 37.012 | 26.649 | 18.519 | 17.719 | 0.741 | 1.796 | 0.979 | 1.045 | 0.022 | 1 | 8.116 | 6.747 |
| 2531 | 82.440 | 21.461 | 39.378 | 28.244 | 17.366 | 19.747 | 0.702 | 1.729 | 0.942 | 0.879 | 0.023 | 1 | 8.101 | 6.710 |
| 2532 | 89.682 | 21.345 | 38.305 | 28.734 | 19.754 | 16.286 | 0.709 | 1.688 | 0.941 | 1.213 | 0.020 | 1 | 8.934 | 7.476 |
| 2533 | 80.584 | 20.985 | 33.985 | 26.332 | 17.333 | 18.153 | 0.725 | 1.691 | 1.044 | 0.955 | 0.023 | 1 | 5.539 | 7.877 |
| 2534 | 82.476 | 19.210 | 39.041 | 26.396 | 16.244 | 18.355 | 0.764 | 1.801 | 0.886 | 0.885 | 0.022 | 1 | 7.773 | 6.443 |
| 2535 | 99.043 | 20.909 | 35.782 | 27.362 | 16.755 | 18.672 | 0.705 | 1.694 | 0.990 | 0.897 | 0.017 | 1 | 10.042 | 8.358 |
| 2536 | 80.941 | 21.740 | 38.461 | 25.528 | 19.190 | 17.373 | 0.703 | 1.682 | 0.951 | 1.105 | 0.022 | 1 | 7.543 | 6.258 |
| 2537 | 89.108 | 17.984 | 36.311 | 25.010 | 19.517 | 19.949 | 0.806 | 2.195 | 1.087 | 0.978 | 0.019 | 1 | 5.868 | 4.085 |
| 2538 | 87.637 | 17.741 | 37.088 | 24.177 | 19.981 | 16.715 | 0.817 | 2.068 | 0.989 | 1.195 | 0.019 | 1 | 5.564 | 3.913 |
| 2539 | 93.102 | 18.695 | 34.882 | 24.876 | 18.151 | 17.181 | 0.766 | 1.890 | 1.013 | 1.056 | 0.018 | 1 | 6.214 | 4.383 |
| 2540 | 97.204 | 21.045 | 33.945 | 29.771 | 19.746 | 17.047 | 0.701 | 1.748 | 1.084 | 1.158 | 0.018 | 1 | 7.036 | 5.062 |
| 2541 | 89.607 | 18.829 | 32.287 | 26.087 | 18.640 | 19.716 | 0.767 | 2.037 | 1.188 | 0.945 | 0.019 | 1 | 6.382 | 4.444 |
| 2542 | 97.851 | 20.644 | 32.778 | 29.097 | 17.395 | 16.181 | 0.724 | 1.626 | 1.024 | 1.075 | 0.018 | 1 | 10.534 | 8.845 |
| 2543 | 91.203 | 20.982 | 33.526 | 27.645 | 19.712 | 17.173 | 0.710 | 1.758 | 1.100 | 1.148 | 0.019 | 1 | 6.411 | 4.624 |
| 2544 | 85.336 | 21.583 | 33.268 | 25.026 | 16.170 | 17.441 | 0.693 | 1.557 | 1.010 | 0.927 | 0.020 | 1 | 5.764 | 8.206 |
| 2545 | 94.700 | 19.631 | 35.520 | 29.535 | 18.633 | 18.044 | 0.733 | 1.868 | 1.033 | 1.033 | 0.019 | 1 | 6.769 | 4.801 |
| 2546 | 89.456 | 18.196 | 39.254 | 25.992 | 16.689 | 18.517 | 0.785 | 1.935 | 0.897 | 0.901 | 0.019 | 1 | 5.654 | 4.023 |
| 2547 | 83.873 | 19.741 | 39.831 | 28.569 | 19.510 | 16.806 | 0.752 | 1.840 | 0.912 | 1.161 | 0.022 | 1 | 8.132 | 6.761 |
| 2548 | 93.027 | 18.499 | 35.953 | 24.214 | 16.496 | 16.826 | 0.771 | 1.801 | 0.927 | 0.980 | 0.018 | 1 | 5.998 | 4.281 |
| 2549 | 84.700 | 18.536 | 34.382 | 26.996 | 16.085 | 17.531 | 0.789 | 1.814 | 0.978 | 0.918 | 0.021 | 1 | 5.819 | 4.203 |
| 2550 | 83.365 | 18.524 | 32.174 | 28.678 | 16.105 | 19.371 | 0.781 | 1.915 | 1.103 | 0.831 | 0.022 | 1 | 3.111 | 4.400 |
| 2551 | 93.090 | 20.808 | 32.176 | 29.843 | 17.032 | 17.995 | 0.722 | 1.683 | 1.089 | 0.947 | 0.020 | 1 | 10.335 | 8.600 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2552 | 96.282 | 19.013 | 39.542 | 26.860 | 19.549 | 17.101 | 0.762 | 1.928 | 0.927 | 1.143 | 0.018 | 1 | 6.247 | 4.400 |
| 2553 | 95.120 | 21.780 | 39.012 | 25.029 | 17.754 | 18.285 | 0.680 | 1.655 | 0.924 | 0.971 | 0.017 | 1 | 8.854 | 7.381 |
| 2554 | 92.557 | 18.454 | 36.712 | 25.203 | 17.425 | 19.772 | 0.778 | 2.016 | 1.013 | 0.881 | 0.018 | 1 | 6.062 | 4.261 |
| 2555 | 99.771 | 19.127 | 38.208 | 24.204 | 18.680 | 17.912 | 0.754 | 1.913 | 0.958 | 1.043 | 0.016 | 1 | 6.370 | 4.461 |
| 2556 | 86.930 | 17.670 | 38.591 | 24.344 | 16.443 | 19.302 | 0.809 | 2.023 | 0.926 | 0.852 | 0.020 | 1 | 5.366 | 3.806 |
| 2557 | 84.162 | 18.933 | 32.314 | 26.362 | 18.061 | 17.418 | 0.768 | 1.874 | 1.098 | 1.037 | 0.021 | 1 | 5.947 | 4.235 |
| 2558 | 89.582 | 18.361 | 38.556 | 25.092 | 19.470 | 17.634 | 0.794 | 2.021 | 0.962 | 1.104 | 0.019 | 1 | 5.661 | 3.992 |
| 2559 | 91.282 | 18.008 | 37.838 | 24.182 | 19.268 | 16.488 | 0.802 | 1.985 | 0.945 | 1.169 | 0.018 | 1 | 5.760 | 4.052 |
| 2560 | 80.120 | 19.989 | 39.672 | 29.153 | 16.080 | 19.094 | 0.745 | 1.760 | 0.887 | 0.842 | 0.024 | 1 | 7.998 | 6.634 |
| 2561 | 80.226 | 19.753 | 32.958 | 29.140 | 16.588 | 16.554 | 0.772 | 1.678 | 1.006 | 1.002 | 0.024 | 1 | 5.912 | 8.465 |
| 2562 | 94.062 | 19.420 | 38.912 | 28.605 | 19.599 | 19.252 | 0.754 | 2.001 | 0.998 | 1.018 | 0.019 | 1 | 6.350 | 4.466 |
| 2563 | 88.933 | 21.970 | 34.245 | 25.350 | 19.524 | 19.911 | 0.685 | 1.795 | 1.152 | 0.981 | 0.019 | 1 | 5.940 | 4.280 |
| 2564 | 81.821 | 17.712 | 36.373 | 26.128 | 18.652 | 18.278 | 0.822 | 2.085 | 1.015 | 1.020 | 0.022 | 1 | 5.422 | 3.835 |
| 2565 | 89.411 | 20.633 | 38.379 | 26.176 | 19.586 | 17.321 | 0.719 | 1.789 | 0.962 | 1.131 | 0.020 | 1 | 8.462 | 7.042 |
| 2566 | 80.188 | 20.854 | 37.499 | 25.979 | 19.212 | 18.805 | 0.726 | 1.823 | 1.014 | 1.022 | 0.023 | 1 | 7.659 | 6.347 |
| 2567 | 95.480 | 20.794 | 36.871 | 29.574 | 19.592 | 16.127 | 0.714 | 1.718 | 0.969 | 1.215 | 0.019 | 1 | 6.594 | 4.795 |
| 2568 | 96.321 | 21.257 | 32.297 | 25.716 | 17.141 | 16.286 | 0.702 | 1.573 | 1.035 | 1.052 | 0.017 | 1 | 6.603 | 9.490 |
| 2569 | 83.004 | 19.455 | 39.778 | 28.202 | 17.465 | 16.858 | 0.761 | 1.764 | 0.863 | 1.036 | 0.022 | 1 | 8.022 | 6.672 |
| 2570 | 84.221 | 21.587 | 39.555 | 26.681 | 17.245 | 17.855 | 0.694 | 1.626 | 0.887 | 0.966 | 0.021 | 1 | 7.963 | 6.612 |
| 2571 | 82.625 | 21.974 | 36.424 | 26.263 | 16.529 | 18.341 | 0.683 | 1.587 | 0.957 | 0.901 | 0.022 | 1 | 5.503 | 7.768 |
| 2572 | 93.728 | 21.764 | 32.063 | 27.220 | 18.816 | 17.684 | 0.690 | 1.677 | 1.138 | 1.064 | 0.019 | 1 | 9.931 | 8.297 |
| 2573 | 84.994 | 21.636 | 37.121 | 27.116 | 18.304 | 19.309 | 0.700 | 1.738 | 1.013 | 0.948 | 0.021 | 1 | 8.421 | 6.996 |
| 2574 | 91.994 | 21.892 | 38.831 | 28.663 | 19.677 | 16.845 | 0.692 | 1.668 | 0.941 | 1.168 | 0.020 | 1 | 9.100 | 7.610 |
| 2575 | 98.513 | 21.564 | 35.881 | 27.620 | 17.805 | 16.514 | 0.695 | 1.592 | 0.956 | 1.078 | 0.017 | 1 | 6.693 | 9.572 |
| 2576 | 97.474 | 19.150 | 32.305 | 24.048 | 18.735 | 19.669 | 0.756 | 2.005 | 1.189 | 0.953 | 0.016 | -1 | 6.762 | 4.671 |
| 2577 | 99.561 | 19.781 | 38.141 | 25.237 | 17.341 | 19.329 | 0.721 | 1.854 | 0.961 | 0.897 | 0.016 | 1 | 6.409 | 4.545 |
| 2578 | 86.408 | 20.637 | 32.593 | 29.602 | 17.022 | 18.603 | 0.733 | 1.726 | 1.093 | 0.915 | 0.022 | 1 | 9.605 | 7.998 |
| 2579 | 95.236 | 19.030 | 33.479 | 25.888 | 18.807 | 16.865 | 0.753 | 1.875 | 1.065 | 1.115 | 0.018 | 1 | 6.607 | 4.649 |
| 2580 | 91.808 | 19.354 | 36.675 | 26.963 | 17.247 | 19.572 | 0.745 | 1.902 | 1.004 | 0.881 | 0.019 | 1 | 6.149 | 4.383 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 2581 | 98.583 | 21.731 | 33.335 | 28.548 | 18.483 | 17.577 | 0.689 | 1.659 | 1.082 | 1.052 | 0.018 | 1 | 10.473 | 8.757 |
| 2582 | 94.937 | 21.346 | 36.626 | 26.160 | 17.837 | 19.838 | 0.692 | 1.765 | 1.029 | 0.899 | 0.018 | 1 | 6.230 | 4.497 |
| 2583 | 96.331 | 18.901 | 37.726 | 28.605 | 16.332 | 17.373 | 0.761 | 1.783 | 0.893 | 0.940 | 0.018 | 1 | 6.510 | 4.687 |
| 2584 | 89.299 | 18.391 | 38.837 | 27.335 | 17.490 | 18.358 | 0.781 | 1.949 | 0.923 | 0.953 | 0.020 | 1 | 5.838 | 4.148 |
| 2585 | 89.130 | 21.414 | 34.967 | 27.954 | 19.797 | 16.224 | 0.710 | 1.682 | 1.030 | 1.220 | 0.020 | 1 | 9.170 | 7.686 |
| 2586 | 97.122 | 20.638 | 36.228 | 25.225 | 18.215 | 18.644 | 0.705 | 1.786 | 1.017 | 0.977 | 0.017 | 1 | 6.366 | 4.549 |
| 2587 | 84.281 | 19.217 | 34.391 | 27.854 | 18.095 | 19.272 | 0.757 | 1.944 | 1.087 | 0.939 | 0.022 | 1 | 5.949 | 4.239 |
| 2588 | 98.339 | 21.597 | 37.472 | 26.387 | 18.888 | 16.122 | 0.691 | 1.621 | 0.934 | 1.172 | 0.017 | 1 | 9.532 | 8.001 |
| 2589 | 80.971 | 18.094 | 36.066 | 28.526 | 19.017 | 18.444 | 0.807 | 2.070 | 1.039 | 1.031 | 0.023 | 1 | 5.689 | 4.029 |
| 2590 | 92.077 | 18.681 | 33.212 | 25.171 | 19.290 | 17.994 | 0.774 | 1.996 | 1.123 | 1.072 | 0.018 | 1 | 6.367 | 4.440 |
| 2591 | 88.012 | 21.980 | 33.513 | 29.507 | 16.223 | 18.556 | 0.692 | 1.582 | 1.038 | 0.874 | 0.021 | 1 | 6.484 | 9.199 |
| 2592 | 90.639 | 18.887 | 35.278 | 28.450 | 18.658 | 19.595 | 0.768 | 2.025 | 1.084 | 0.952 | 0.020 | 1 | 6.435 | 4.512 |
| 2593 | 94.070 | 18.023 | 33.427 | 24.752 | 19.040 | 19.924 | 0.795 | 2.162 | 1.166 | 0.956 | 0.018 | 1 | 6.514 | 4.470 |
| 2594 | 85.986 | 20.844 | 36.909 | 27.097 | 16.733 | 17.249 | 0.720 | 1.630 | 0.921 | 0.970 | 0.021 | 1 | 5.742 | 8.156 |
| 2595 | 90.399 | 21.603 | 36.393 | 28.482 | 16.757 | 17.475 | 0.699 | 1.585 | 0.941 | 0.959 | 0.020 | 1 | 6.247 | 8.878 |
| 2596 | 88.728 | 21.596 | 37.968 | 28.209 | 17.304 | 17.638 | 0.698 | 1.618 | 0.920 | 0.981 | 0.020 | 1 | 5.984 | 8.479 |
| 2597 | 86.082 | 18.489 | 34.609 | 29.789 | 17.425 | 16.355 | 0.788 | 1.827 | 0.976 | 1.065 | 0.022 | 1 | 6.246 | 4.498 |
| 2598 | 99.603 | 21.744 | 39.164 | 28.085 | 18.256 | 19.649 | 0.679 | 1.743 | 0.968 | 0.929 | 0.017 | 1 | 6.534 | 4.724 |
| 2599 | 95.759 | 19.760 | 34.600 | 25.987 | 17.152 | 16.038 | 0.741 | 1.680 | 0.959 | 1.069 | 0.018 | 1 | 6.414 | 4.662 |
| 2600 | 93.460 | 20.135 | 37.270 | 27.954 | 16.118 | 16.746 | 0.735 | 1.632 | 0.882 | 0.963 | 0.019 | 1 | 6.270 | 8.959 |
| 2601 | 99.863 | 18.265 | 32.940 | 26.713 | 19.899 | 18.936 | 0.789 | 2.126 | 1.179 | 1.051 | 0.017 | -1 | 7.237 | 4.913 |
| 2602 | 95.751 | 20.099 | 37.339 | 26.449 | 17.109 | 19.818 | 0.721 | 1.837 | 0.989 | 0.863 | 0.018 | 1 | 6.290 | 4.504 |
| 2603 | 97.356 | 18.239 | 32.968 | 28.777 | 19.778 | 19.511 | 0.790 | 2.154 | 1.192 | 1.014 | 0.018 | -1 | 7.289 | 4.948 |
| 2604 | 91.505 | 20.839 | 33.927 | 24.833 | 18.684 | 16.547 | 0.715 | 1.691 | 1.038 | 1.129 | 0.018 | 1 | 6.058 | 4.400 |
| 2605 | 90.960 | 19.265 | 38.509 | 27.767 | 17.850 | 17.877 | 0.751 | 1.855 | 0.928 | 0.998 | 0.020 | 1 | 6.003 | 4.296 |
| 2606 | 86.824 | 20.373 | 33.309 | 26.980 | 17.582 | 19.262 | 0.730 | 1.808 | 1.106 | 0.913 | 0.021 | 1 | 6.059 | 4.370 |
| 2607 | 84.898 | 20.589 | 32.595 | 24.396 | 17.419 | 17.919 | 0.727 | 1.716 | 1.084 | 0.972 | 0.020 | 1 | 5.664 | 8.125 |
| 2608 | 82.857 | 21.218 | 36.699 | 28.096 | 16.373 | 17.302 | 0.712 | 1.587 | 0.918 | 0.946 | 0.022 | 1 | 5.704 | 8.069 |
| 2609 | 95.119 | 19.386 | 37.176 | 25.610 | 17.832 | 17.893 | 0.739 | 1.843 | 0.961 | 0.997 | 0.018 | 1 | 6.203 | 4.408 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2610 | 82.288 | 21.233 | 32.468 | 28.202 | 16.503 | 17.872 | 0.721 | 1.619 | 1.059 | 0.923 | 0.023 | 1 | 6.016 | 8.560 |
| 2611 | 92.040 | 20.570 | 37.847 | 28.434 | 18.772 | 17.544 | 0.719 | 1.765 | 0.960 | 1.070 | 0.019 | 1 | 6.168 | 4.462 |
| 2612 | 88.326 | 20.405 | 37.362 | 28.352 | 17.845 | 19.404 | 0.727 | 1.825 | 0.997 | 0.920 | 0.021 | 1 | 8.916 | 7.407 |
| 2613 | 95.778 | 18.562 | 37.561 | 28.574 | 19.061 | 17.707 | 0.776 | 1.981 | 0.979 | 1.076 | 0.018 | 1 | 6.610 | 4.623 |
| 2614 | 96.179 | 21.592 | 34.723 | 27.618 | 16.740 | 17.419 | 0.694 | 1.582 | 0.984 | 0.961 | 0.018 | 1 | 6.645 | 9.490 |
| 2615 | 83.881 | 21.403 | 39.354 | 29.771 | 17.949 | 16.425 | 0.712 | 1.606 | 0.873 | 1.093 | 0.023 | 1 | 8.487 | 7.097 |
| 2616 | 97.046 | 20.808 | 33.706 | 26.812 | 18.550 | 18.880 | 0.702 | 1.799 | 1.110 | 0.983 | 0.017 | 1 | 6.758 | 4.816 |
| 2617 | 91.571 | 20.416 | 38.055 | 29.904 | 18.919 | 17.551 | 0.724 | 1.786 | 0.958 | 1.078 | 0.020 | 1 | 6.295 | 4.551 |
| 2618 | 94.600 | 17.865 | 33.498 | 26.964 | 16.700 | 17.058 | 0.798 | 1.890 | 1.008 | 0.979 | 0.018 | -1 | 6.679 | 4.699 |
| 2619 | 84.467 | 19.822 | 37.013 | 25.833 | 19.976 | 19.861 | 0.750 | 2.010 | 1.076 | 1.006 | 0.021 | 1 | 5.483 | 3.908 |
| 2620 | 93.970 | 20.959 | 36.537 | 28.546 | 18.227 | 18.888 | 0.707 | 1.771 | 1.016 | 0.965 | 0.019 | 1 | 6.432 | 4.646 |
| 2621 | 83.829 | 20.706 | 33.810 | 25.014 | 18.451 | 18.664 | 0.725 | 1.792 | 1.098 | 0.989 | 0.021 | 1 | 8.339 | 6.935 |
| 2622 | 83.227 | 18.813 | 38.732 | 25.453 | 19.827 | 16.828 | 0.784 | 1.948 | 0.946 | 1.178 | 0.021 | 1 | 5.180 | 3.710 |
| 2623 | 84.287 | 20.924 | 38.985 | 27.838 | 18.292 | 19.908 | 0.716 | 1.826 | 0.980 | 0.919 | 0.022 | 1 | 8.226 | 6.811 |
| 2624 | 87.370 | 21.564 | 36.678 | 29.726 | 18.403 | 17.220 | 0.708 | 1.652 | 0.971 | 1.069 | 0.021 | 1 | 9.152 | 7.670 |
| 2625 | 84.077 | 17.776 | 39.747 | 28.739 | 19.866 | 18.792 | 0.825 | 2.175 | 0.973 | 1.057 | 0.022 | 1 | 5.602 | 3.946 |
| 2626 | 94.808 | 20.800 | 35.880 | 25.030 | 16.108 | 17.149 | 0.709 | 1.599 | 0.927 | 0.939 | 0.017 | 1 | 6.154 | 8.810 |
| 2627 | 87.776 | 17.814 | 36.698 | 24.045 | 16.252 | 18.877 | 0.797 | 1.972 | 0.957 | 0.861 | 0.019 | 1 | 5.564 | 3.946 |
| 2628 | 96.342 | 18.353 | 35.966 | 28.882 | 19.895 | 17.802 | 0.787 | 2.054 | 1.048 | 1.118 | 0.018 | 1 | 6.880 | 4.755 |
| 2629 | 81.536 | 18.609 | 33.551 | 26.578 | 16.038 | 19.691 | 0.784 | 1.920 | 1.065 | 0.815 | 0.022 | 1 | 2.831 | 4.031 |
| 2630 | 96.657 | 18.235 | 32.911 | 29.622 | 19.565 | 18.326 | 0.791 | 2.078 | 1.151 | 1.068 | 0.018 | -1 | 7.313 | 5.000 |
| 2631 | 80.816 | 19.662 | 35.846 | 27.008 | 16.623 | 16.841 | 0.763 | 1.702 | 0.934 | 0.987 | 0.023 | 1 | 8.134 | 6.790 |
| 2632 | 98.299 | 21.331 | 38.254 | 26.148 | 16.309 | 18.190 | 0.691 | 1.617 | 0.902 | 0.897 | 0.017 | 1 | 6.340 | 9.043 |
| 2633 | 90.621 | 18.472 | 34.672 | 27.951 | 16.005 | 18.623 | 0.777 | 1.875 | 0.999 | 0.859 | 0.020 | 1 | 6.343 | 4.537 |
| 2634 | 98.162 | 18.431 | 35.314 | 26.384 | 17.761 | 16.043 | 0.765 | 1.834 | 0.957 | 1.107 | 0.017 | -1 | 6.689 | 4.727 |
| 2635 | 98.232 | 18.148 | 39.386 | 24.824 | 19.087 | 19.129 | 0.795 | 2.106 | 0.970 | 0.998 | 0.016 | 1 | 6.259 | 4.334 |
| 2636 | 96.474 | 21.227 | 32.412 | 28.514 | 19.540 | 17.075 | 0.698 | 1.725 | 1.130 | 1.144 | 0.018 | 1 | 6.967 | 5.020 |
| 2637 | 98.444 | 20.172 | 39.328 | 29.444 | 18.468 | 19.858 | 0.715 | 1.900 | 0.975 | 0.930 | 0.018 | 1 | 6.676 | 4.735 |
| 2638 | 98.279 | 21.246 | 37.089 | 26.953 | 17.299 | 16.871 | 0.699 | 1.608 | 0.921 | 1.025 | 0.017 | 1 | 6.507 | 9.300 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|-------|
| 2639 | 91.296 | 19.915 | 38.543 | 28.382 | 17.741 | 19.826 | 0.732 | 1.886 | 0.975 | 0.895 | 0.020 | 1 | 6.089 | 4.363 |
| 2640 | 87.422 | 21.943 | 39.324 | 25.077 | 17.271 | 17.779 | 0.679 | 1.597 | 0.891 | 0.971 | 0.020 | 1 | 8.049 | 6.690 |
| 2641 | 92.311 | 18.100 | 35.500 | 26.062 | 17.292 | 18.175 | 0.786 | 1.959 | 0.999 | 0.951 | 0.019 | 1 | 6.246 | 4.390 |
| 2642 | 93.036 | 20.739 | 35.753 | 24.696 | 17.319 | 17.762 | 0.711 | 1.692 | 0.981 | 0.975 | 0.018 | 1 | 5.996 | 4.353 |
| 2643 | 95.225 | 21.817 | 35.808 | 28.615 | 18.594 | 17.279 | 0.691 | 1.644 | 1.002 | 1.076 | 0.019 | 1 | 9.823 | 8.243 |
| 2644 | 88.519 | 20.208 | 38.889 | 28.286 | 18.477 | 19.760 | 0.727 | 1.892 | 0.983 | 0.935 | 0.021 | 1 | 8.713 | 7.214 |
| 2645 | 87.224 | 21.885 | 33.937 | 28.478 | 19.007 | 18.359 | 0.697 | 1.707 | 1.101 | 1.035 | 0.021 | 1 | 9.276 | 7.747 |
| 2646 | 83.029 | 20.018 | 39.340 | 29.960 | 19.002 | 17.550 | 0.746 | 1.826 | 0.929 | 1.083 | 0.023 | 1 | 8.404 | 6.986 |
| 2647 | 96.680 | 21.369 | 35.935 | 25.748 | 17.071 | 17.589 | 0.694 | 1.622 | 0.965 | 0.971 | 0.017 | 1 | 6.371 | 9.103 |
| 2648 | 85.460 | 20.422 | 33.024 | 25.198 | 18.918 | 18.105 | 0.728 | 1.813 | 1.121 | 1.045 | 0.020 | 1 | 5.804 | 4.168 |
| 2649 | 93.381 | 18.442 | 35.151 | 26.282 | 16.306 | 18.705 | 0.768 | 1.898 | 0.996 | 0.872 | 0.018 | 1 | 6.338 | 4.495 |
| 2650 | 80.928 | 19.691 | 33.397 | 27.324 | 19.066 | 16.453 | 0.760 | 1.804 | 1.064 | 1.159 | 0.023 | 1 | 5.688 | 4.119 |
| 2651 | 81.268 | 18.399 | 36.947 | 28.549 | 19.510 | 18.117 | 0.799 | 2.045 | 1.018 | 1.077 | 0.023 | 1 | 5.618 | 3.992 |
| 2652 | 99.760 | 18.711 | 36.661 | 24.726 | 18.646 | 19.037 | 0.770 | 2.014 | 1.028 | 0.979 | 0.016 | 1 | 6.600 | 4.575 |
| 2653 | 83.672 | 17.623 | 36.422 | 29.233 | 17.549 | 18.514 | 0.814 | 2.046 | 0.990 | 0.948 | 0.022 | 1 | 5.928 | 4.195 |
| 2654 | 98.971 | 19.515 | 35.990 | 28.845 | 19.270 | 19.572 | 0.744 | 1.990 | 1.079 | 0.985 | 0.018 | 1 | 7.028 | 4.889 |
| 2655 | 81.043 | 21.096 | 37.129 | 29.580 | 16.663 | 18.980 | 0.720 | 1.690 | 0.960 | 0.878 | 0.024 | 1 | 5.763 | 8.126 |
| 2656 | 96.254 | 17.776 | 36.746 | 26.887 | 19.502 | 19.409 | 0.810 | 2.189 | 1.059 | 1.005 | 0.018 | 1 | 6.609 | 4.533 |
| 2657 | 81.187 | 18.667 | 38.794 | 24.506 | 16.256 | 17.596 | 0.780 | 1.813 | 0.873 | 0.924 | 0.022 | 1 | 7.337 | 6.075 |
| 2658 | 96.464 | 20.044 | 32.698 | 25.312 | 19.911 | 16.390 | 0.720 | 1.811 | 1.110 | 1.215 | 0.017 | 1 | 6.668 | 4.728 |
| 2659 | 82.002 | 21.261 | 34.035 | 28.445 | 17.197 | 18.555 | 0.719 | 1.682 | 1.050 | 0.927 | 0.023 | 1 | 5.908 | 8.386 |
| 2660 | 90.600 | 19.739 | 39.241 | 28.053 | 18.614 | 18.209 | 0.738 | 1.865 | 0.938 | 1.022 | 0.020 | 1 | 5.944 | 4.256 |
| 2661 | 86.709 | 20.649 | 38.079 | 29.949 | 16.613 | 19.767 | 0.725 | 1.762 | 0.955 | 0.840 | 0.022 | 1 | 8.986 | 7.495 |
| 2662 | 87.288 | 19.885 | 39.616 | 27.496 | 17.325 | 16.272 | 0.744 | 1.690 | 0.848 | 1.065 | 0.021 | 1 | 8.335 | 6.959 |
| 2663 | 91.589 | 17.957 | 39.482 | 25.042 | 17.192 | 16.974 | 0.793 | 1.903 | 0.865 | 1.013 | 0.018 | 1 | 5.694 | 4.039 |
| 2664 | 96.773 | 19.001 | 36.126 | 26.203 | 17.901 | 16.056 | 0.752 | 1.787 | 0.940 | 1.115 | 0.017 | 1 | 6.459 | 4.607 |
| 2665 | 86.216 | 19.732 | 39.851 | 27.321 | 18.971 | 16.354 | 0.749 | 1.790 | 0.886 | 1.160 | 0.021 | 1 | 8.135 | 6.773 |
| 2666 | 87.392 | 21.741 | 38.356 | 29.395 | 17.388 | 19.968 | 0.694 | 1.718 | 0.974 | 0.871 | 0.021 | 1 | 8.924 | 7.433 |
| 2667 | 86.192 | 19.157 | 38.555 | 24.810 | 17.643 | 19.631 | 0.761 | 1.946 | 0.967 | 0.899 | 0.020 | 1 | 5.340 | 3.816 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2668 | 94.570 | 21.482 | 36.394 | 26.171 | 17.570 | 18.704 | 0.692 | 1.689 | 0.997 | 0.939 | 0.018 | 1 | 9.314 | 7.773 |
| 2669 | 98.381 | 19.614 | 34.451 | 27.555 | 17.344 | 17.688 | 0.735 | 1.786 | 1.017 | 0.981 | 0.017 | 1 | 6.859 | 4.896 |
| 2670 | 82.294 | 20.865 | 39.045 | 25.490 | 17.014 | 19.110 | 0.714 | 1.731 | 0.925 | 0.890 | 0.022 | 1 | 7.629 | 6.308 |
| 2671 | 98.645 | 21.398 | 36.602 | 25.983 | 17.957 | 16.673 | 0.693 | 1.618 | 0.946 | 1.077 | 0.017 | 1 | 9.635 | 8.091 |
| 2672 | 97.108 | 19.881 | 33.054 | 26.896 | 17.618 | 16.538 | 0.734 | 1.718 | 1.033 | 1.065 | 0.017 | 1 | 6.776 | 4.883 |
| 2673 | 82.074 | 19.981 | 35.989 | 27.998 | 16.908 | 16.610 | 0.755 | 1.677 | 0.931 | 1.018 | 0.023 | 1 | 8.414 | 7.041 |
| 2674 | 94.586 | 19.911 | 39.323 | 27.992 | 17.656 | 19.711 | 0.726 | 1.877 | 0.950 | 0.896 | 0.019 | 1 | 6.213 | 4.439 |
| 2675 | 85.726 | 20.228 | 34.238 | 24.836 | 17.459 | 18.508 | 0.734 | 1.778 | 1.051 | 0.943 | 0.020 | 1 | 5.652 | 4.084 |
| 2676 | 98.325 | 21.717 | 34.131 | 26.672 | 19.330 | 16.077 | 0.690 | 1.630 | 1.037 | 1.202 | 0.017 | 1 | 9.989 | 8.394 |
| 2677 | 83.859 | 18.157 | 33.335 | 29.667 | 19.508 | 19.970 | 0.800 | 2.174 | 1.184 | 0.977 | 0.022 | 1 | 6.354 | 4.413 |
| 2678 | 91.426 | 21.780 | 39.351 | 24.092 | 18.808 | 17.670 | 0.685 | 1.675 | 0.927 | 1.064 | 0.018 | 1 | 8.260 | 6.871 |
| 2679 | 95.662 | 20.656 | 34.345 | 26.940 | 16.884 | 19.302 | 0.713 | 1.752 | 1.054 | 0.875 | 0.018 | 1 | 9.822 | 8.152 |
| 2680 | 80.478 | 20.187 | 37.668 | 28.400 | 18.780 | 19.472 | 0.742 | 1.895 | 1.016 | 0.965 | 0.023 | 1 | 8.114 | 6.719 |
| 2681 | 85.495 | 19.548 | 37.130 | 24.495 | 17.148 | 16.123 | 0.754 | 1.702 | 0.896 | 1.064 | 0.020 | 1 | 7.972 | 6.649 |
| 2682 | 92.045 | 18.073 | 32.801 | 29.212 | 19.501 | 18.267 | 0.795 | 2.090 | 1.151 | 1.068 | 0.020 | 1 | 6.928 | 4.767 |
| 2683 | 95.621 | 21.204 | 33.069 | 28.407 | 19.884 | 16.475 | 0.701 | 1.715 | 1.100 | 1.207 | 0.018 | 1 | 6.819 | 4.936 |
| 2684 | 81.646 | 17.810 | 38.719 | 26.836 | 16.334 | 16.006 | 0.813 | 1.816 | 0.835 | 1.020 | 0.022 | 1 | 7.757 | 6.458 |
| 2685 | 91.438 | 21.703 | 38.776 | 24.587 | 17.499 | 18.433 | 0.683 | 1.656 | 0.927 | 0.949 | 0.018 | 1 | 8.443 | 7.025 |
| 2686 | 95.244 | 21.542 | 37.862 | 26.253 | 19.804 | 19.664 | 0.685 | 1.832 | 1.042 | 1.007 | 0.018 | 1 | 6.194 | 4.429 |
| 2687 | 99.219 | 19.953 | 34.820 | 27.140 | 18.522 | 18.211 | 0.720 | 1.841 | 1.055 | 1.017 | 0.017 | -1 | 6.890 | 4.866 |
| 2688 | 83.226 | 19.279 | 36.357 | 25.840 | 18.142 | 17.597 | 0.764 | 1.854 | 0.983 | 1.031 | 0.022 | 1 | 5.423 | 3.901 |
| 2689 | 96.338 | 20.352 | 33.443 | 25.462 | 17.397 | 16.773 | 0.722 | 1.679 | 1.022 | 1.037 | 0.017 | 1 | 3.288 | 4.674 |
| 2690 | 86.893 | 19.334 | 32.239 | 24.849 | 18.330 | 16.407 | 0.756 | 1.797 | 1.077 | 1.117 | 0.020 | 1 | 5.942 | 4.257 |
| 2691 | 94.015 | 20.600 | 35.278 | 28.089 | 18.779 | 18.945 | 0.711 | 1.831 | 1.069 | 0.991 | 0.019 | 1 | 6.544 | 4.673 |
| 2692 | 97.438 | 19.912 | 32.669 | 25.630 | 17.648 | 18.295 | 0.727 | 1.805 | 1.100 | 0.965 | 0.017 | -1 | 6.771 | 4.803 |
| 2693 | 92.540 | 19.866 | 35.067 | 29.307 | 16.337 | 17.022 | 0.749 | 1.679 | 0.951 | 0.960 | 0.020 | 1 | 9.774 | 8.184 |
| 2694 | 87.434 | 18.648 | 32.153 | 24.612 | 17.725 | 18.925 | 0.769 | 1.965 | 1.140 | 0.937 | 0.020 | 1 | 6.039 | 4.244 |
| 2695 | 89.016 | 20.900 | 36.384 | 24.495 | 18.047 | 18.876 | 0.710 | 1.767 | 1.015 | 0.956 | 0.019 | 1 | 8.463 | 7.031 |
| 2696 | 94.820 | 20.501 | 39.760 | 28.027 | 17.081 | 17.782 | 0.717 | 1.701 | 0.877 | 0.961 | 0.018 | 1 | 9.181 | 7.672 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2697 | 97.586 | 21.699 | 35.349 | 26.230 | 17.985 | 16.567 | 0.689 | 1.592 | 0.977 | 1.086 | 0.017 | 1 | 6.522 | 9.333 |
| 2698 | 99.380 | 21.984 | 35.340 | 26.387 | 18.177 | 17.030 | 0.680 | 1.601 | 0.996 | 1.067 | 0.017 | 1 | 6.670 | 9.539 |
| 2699 | 82.172 | 18.721 | 37.349 | 27.141 | 18.632 | 19.456 | 0.785 | 2.034 | 1.020 | 0.958 | 0.022 | 1 | 5.453 | 3.886 |
| 2700 | 91.731 | 20.163 | 38.747 | 29.709 | 16.962 | 16.873 | 0.736 | 1.678 | 0.873 | 1.005 | 0.020 | 1 | 9.280 | 7.789 |
| 2701 | 81.710 | 21.646 | 34.755 | 29.505 | 19.665 | 19.805 | 0.706 | 1.823 | 1.136 | 0.993 | 0.023 | 1 | 8.840 | 7.347 |
| 2702 | 94.810 | 19.988 | 36.051 | 25.496 | 18.915 | 19.414 | 0.729 | 1.918 | 1.063 | 0.974 | 0.018 | 1 | 6.296 | 4.444 |
| 2703 | 87.881 | 18.094 | 33.645 | 27.604 | 17.257 | 18.897 | 0.788 | 1.998 | 1.075 | 0.913 | 0.021 | 1 | 6.283 | 4.415 |
| 2704 | 97.852 | 17.988 | 34.764 | 27.459 | 17.599 | 17.016 | 0.791 | 1.924 | 0.996 | 1.034 | 0.017 | -1 | 6.885 | 4.808 |
| 2705 | 95.347 | 20.285 | 33.517 | 26.824 | 17.869 | 17.638 | 0.722 | 1.750 | 1.059 | 1.013 | 0.018 | 1 | 6.621 | 4.756 |
| 2706 | 82.878 | 19.506 | 32.054 | 28.996 | 19.703 | 17.157 | 0.750 | 1.890 | 1.150 | 1.148 | 0.023 | 1 | 6.210 | 4.426 |
| 2707 | 84.483 | 17.659 | 32.013 | 27.505 | 18.555 | 19.670 | 0.812 | 2.165 | 1.194 | 0.943 | 0.022 | 1 | 6.252 | 4.325 |
| 2708 | 83.681 | 19.091 | 39.964 | 29.416 | 16.591 | 19.793 | 0.766 | 1.906 | 0.910 | 0.838 | 0.022 | 1 | 8.319 | 6.889 |
| 2709 | 96.620 | 20.233 | 38.633 | 27.546 | 17.752 | 18.978 | 0.717 | 1.815 | 0.951 | 0.935 | 0.018 | 1 | 6.355 | 4.552 |
| 2710 | 97.306 | 18.834 | 39.632 | 24.920 | 18.348 | 19.216 | 0.768 | 1.994 | 0.948 | 0.955 | 0.017 | 1 | 6.133 | 4.295 |
| 2711 | 81.766 | 21.120 | 33.459 | 25.756 | 16.577 | 16.001 | 0.721 | 1.543 | 0.974 | 1.036 | 0.022 | 1 | 5.604 | 7.961 |
| 2712 | 88.039 | 18.661 | 32.511 | 24.323 | 18.325 | 18.416 | 0.773 | 1.969 | 1.130 | 0.995 | 0.019 | 1 | 6.022 | 4.228 |
| 2713 | 98.854 | 18.992 | 38.867 | 25.951 | 18.631 | 18.242 | 0.759 | 1.942 | 0.949 | 1.021 | 0.017 | 1 | 6.418 | 4.496 |
| 2714 | 83.887 | 18.168 | 36.583 | 29.534 | 16.192 | 19.936 | 0.792 | 1.989 | 0.988 | 0.812 | 0.022 | 1 | 5.912 | 4.241 |
| 2715 | 88.463 | 21.292 | 32.253 | 29.813 | 16.286 | 17.376 | 0.718 | 1.581 | 1.044 | 0.937 | 0.021 | 1 | 6.617 | 9.437 |
| 2716 | 85.567 | 21.211 | 35.586 | 28.780 | 19.477 | 17.233 | 0.717 | 1.731 | 1.032 | 1.130 | 0.022 | 1 | 8.917 | 7.450 |
| 2717 | 98.065 | 19.401 | 35.747 | 24.485 | 19.490 | 18.858 | 0.751 | 1.977 | 1.073 | 1.033 | 0.016 | 1 | 6.510 | 4.535 |
| 2718 | 87.985 | 21.250 | 33.222 | 26.584 | 19.619 | 18.541 | 0.705 | 1.796 | 1.149 | 1.058 | 0.020 | 1 | 6.111 | 4.395 |
| 2719 | 99.750 | 19.351 | 38.934 | 24.925 | 19.058 | 16.037 | 0.740 | 1.814 | 0.901 | 1.188 | 0.016 | 1 | 6.325 | 4.482 |
| 2720 | 94.225 | 20.229 | 36.386 | 26.491 | 18.512 | 19.224 | 0.717 | 1.865 | 1.037 | 0.963 | 0.018 | 1 | 6.299 | 4.481 |
| 2721 | 80.466 | 18.088 | 34.569 | 27.010 | 16.475 | 16.761 | 0.809 | 1.837 | 0.961 | 0.983 | 0.023 | 1 | 5.525 | 3.990 |
| 2722 | 82.032 | 19.424 | 39.378 | 26.546 | 17.552 | 18.640 | 0.759 | 1.863 | 0.919 | 0.942 | 0.022 | 1 | 7.696 | 6.367 |
| 2723 | 84.751 | 17.687 | 39.302 | 27.384 | 16.186 | 18.486 | 0.805 | 1.960 | 0.882 | 0.876 | 0.022 | 1 | 5.463 | 3.909 |
| 2724 | 82.795 | 21.826 | 33.125 | 27.518 | 17.184 | 17.499 | 0.703 | 1.589 | 1.047 | 0.982 | 0.022 | 1 | 5.924 | 8.408 |
| 2725 | 89.966 | 20.315 | 35.392 | 26.060 | 16.398 | 19.892 | 0.727 | 1.786 | 1.025 | 0.824 | 0.019 | 1 | 8.970 | 7.458 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2726 | 93.033 | 19.683 | 39.397 | 29.878 | 18.951 | 19.723 | 0.741 | 1.965 | 0.982 | 0.961 | 0.020 | 1 | 6.355 | 4.503 |
| 2727 | 94.033 | 21.548 | 33.427 | 29.774 | 18.375 | 16.982 | 0.704 | 1.641 | 1.058 | 1.082 | 0.019 | 1 | 6.844 | 9.792 |
| 2728 | 98.378 | 19.988 | 34.030 | 25.525 | 18.037 | 18.805 | 0.721 | 1.843 | 1.083 | 0.959 | 0.017 | -1 | 6.728 | 4.753 |
| 2729 | 95.667 | 19.632 | 32.043 | 26.084 | 18.234 | 19.701 | 0.742 | 1.932 | 1.184 | 0.926 | 0.018 | -1 | 6.818 | 4.762 |
| 2730 | 90.061 | 19.918 | 39.140 | 26.266 | 18.317 | 16.665 | 0.738 | 1.756 | 0.894 | 1.099 | 0.019 | 1 | 8.449 | 7.039 |
| 2731 | 87.111 | 18.698 | 34.642 | 24.224 | 17.243 | 17.040 | 0.773 | 1.834 | 0.990 | 1.012 | 0.020 | 1 | 5.689 | 4.065 |
| 2732 | 93.896 | 20.225 | 32.345 | 27.035 | 17.903 | 19.018 | 0.719 | 1.826 | 1.141 | 0.941 | 0.018 | 1 | 6.691 | 4.758 |
| 2733 | 99.369 | 21.525 | 35.113 | 24.701 | 18.621 | 18.647 | 0.682 | 1.731 | 1.061 | 0.999 | 0.016 | 1 | 6.554 | 4.702 |
| 2734 | 91.762 | 19.371 | 32.984 | 29.878 | 17.190 | 19.223 | 0.746 | 1.880 | 1.104 | 0.894 | 0.020 | -1 | 6.825 | 4.854 |
| 2735 | 99.943 | 20.658 | 36.547 | 25.653 | 18.826 | 16.936 | 0.704 | 1.731 | 0.979 | 1.112 | 0.016 | 1 | 6.567 | 4.710 |
| 2736 | 95.591 | 19.221 | 37.331 | 26.674 | 17.404 | 18.650 | 0.743 | 1.876 | 0.966 | 0.933 | 0.018 | 1 | 6.342 | 4.501 |
| 2737 | 83.065 | 18.668 | 38.959 | 29.946 | 17.362 | 17.695 | 0.783 | 1.878 | 0.900 | 0.981 | 0.023 | 1 | 8.458 | 7.029 |
| 2738 | 93.849 | 20.281 | 34.820 | 24.613 | 17.648 | 19.536 | 0.717 | 1.833 | 1.068 | 0.903 | 0.018 | 1 | 6.198 | 4.423 |
| 2739 | 92.433 | 20.366 | 36.006 | 29.027 | 17.070 | 19.200 | 0.727 | 1.781 | 1.007 | 0.889 | 0.019 | 1 | 9.624 | 8.016 |
| 2740 | 90.524 | 19.685 | 33.261 | 24.424 | 18.449 | 18.344 | 0.735 | 1.869 | 1.106 | 1.006 | 0.018 | 1 | 6.105 | 4.327 |
| 2741 | 96.445 | 18.970 | 36.704 | 29.524 | 18.926 | 19.819 | 0.763 | 2.042 | 1.056 | 0.955 | 0.018 | 1 | 6.868 | 4.778 |
| 2742 | 96.608 | 20.737 | 37.058 | 29.350 | 19.808 | 19.626 | 0.706 | 1.902 | 1.064 | 1.009 | 0.018 | 1 | 6.750 | 4.777 |
| 2743 | 95.931 | 20.217 | 32.150 | 26.600 | 19.337 | 18.124 | 0.717 | 1.853 | 1.165 | 1.067 | 0.018 | -1 | 6.846 | 4.821 |
| 2744 | 94.079 | 18.800 | 34.428 | 24.873 | 17.740 | 18.376 | 0.761 | 1.921 | 1.049 | 0.965 | 0.018 | 1 | 6.340 | 4.455 |
| 2745 | 84.393 | 20.828 | 35.237 | 26.055 | 17.942 | 17.500 | 0.725 | 1.702 | 1.006 | 1.025 | 0.021 | 1 | 8.395 | 7.001 |
| 2746 | 92.394 | 20.730 | 33.620 | 25.196 | 19.327 | 18.898 | 0.706 | 1.844 | 1.137 | 1.023 | 0.018 | 1 | 6.276 | 4.461 |
| 2747 | 80.732 | 20.520 | 33.376 | 25.174 | 19.903 | 19.254 | 0.730 | 1.908 | 1.173 | 1.034 | 0.022 | 1 | 5.452 | 3.911 |
| 2748 | 97.460 | 18.672 | 36.136 | 24.464 | 16.263 | 18.156 | 0.757 | 1.843 | 0.952 | 0.896 | 0.016 | -1 | 6.355 | 4.506 |
| 2749 | 94.490 | 19.175 | 38.211 | 24.331 | 16.707 | 16.227 | 0.751 | 1.718 | 0.862 | 1.030 | 0.017 | 1 | 5.876 | 4.238 |
| 2750 | 93.132 | 19.395 | 34.946 | 26.743 | 16.901 | 17.641 | 0.749 | 1.781 | 0.988 | 0.958 | 0.019 | 1 | 6.334 | 4.551 |
| 2751 | 83.576 | 21.147 | 32.344 | 27.340 | 17.458 | 18.897 | 0.718 | 1.719 | 1.124 | 0.924 | 0.022 | 1 | 5.975 | 8.531 |
| 2752 | 95.188 | 19.183 | 37.709 | 28.746 | 16.798 | 19.725 | 0.746 | 1.904 | 0.969 | 0.852 | 0.019 | 1 | 6.493 | 4.629 |
| 2753 | 84.509 | 20.331 | 37.047 | 24.558 | 18.679 | 17.997 | 0.733 | 1.804 | 0.990 | 1.038 | 0.021 | 1 | 7.895 | 6.556 |
| 2754 | 97.819 | 21.071 | 34.990 | 27.310 | 19.765 | 16.525 | 0.700 | 1.722 | 1.037 | 1.196 | 0.017 | 1 | 6.698 | 4.832 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2755 | 95.148 | 18.778 | 36.983 | 24.734 | 16.605 | 19.616 | 0.755 | 1.929 | 0.979 | 0.847 | 0.017 | 1 | 6.150 | 4.351 |
| 2756 | 92.609 | 19.638 | 33.483 | 27.623 | 17.411 | 19.258 | 0.736 | 1.867 | 1.095 | 0.904 | 0.019 | 1 | 6.569 | 4.673 |
| 2757 | 89.924 | 21.654 | 33.929 | 27.613 | 17.983 | 16.814 | 0.703 | 1.607 | 1.026 | 1.069 | 0.020 | 1 | 6.297 | 8.984 |
| 2758 | 80.021 | 19.344 | 34.224 | 28.199 | 19.192 | 16.103 | 0.771 | 1.825 | 1.031 | 1.192 | 0.024 | 1 | 5.664 | 4.104 |
| 2759 | 87.579 | 21.758 | 37.486 | 27.286 | 17.363 | 17.731 | 0.693 | 1.613 | 0.936 | 0.979 | 0.020 | 1 | 5.843 | 8.276 |
| 2760 | 93.385 | 20.417 | 35.813 | 24.604 | 16.957 | 18.562 | 0.718 | 1.740 | 0.992 | 0.914 | 0.018 | 1 | 6.029 | 4.353 |
| 2761 | 91.398 | 21.986 | 32.808 | 28.290 | 16.905 | 18.192 | 0.689 | 1.596 | 1.070 | 0.929 | 0.020 | 1 | 6.586 | 9.382 |
| 2762 | 95.375 | 20.698 | 38.632 | 25.939 | 19.995 | 16.313 | 0.711 | 1.754 | 0.940 | 1.226 | 0.018 | 1 | 6.070 | 4.374 |
| 2763 | 81.945 | 20.942 | 37.312 | 26.464 | 16.664 | 18.822 | 0.716 | 1.694 | 0.951 | 0.885 | 0.022 | 1 | 8.001 | 6.644 |
| 2764 | 87.001 | 20.223 | 34.066 | 24.055 | 16.581 | 16.577 | 0.735 | 1.640 | 0.973 | 1.000 | 0.019 | 1 | 5.652 | 8.101 |
| 2765 | 82.294 | 18.907 | 38.401 | 26.549 | 19.397 | 18.651 | 0.783 | 2.012 | 0.991 | 1.040 | 0.022 | 1 | 5.286 | 3.774 |
| 2766 | 89.088 | 19.769 | 34.718 | 29.542 | 18.026 | 19.973 | 0.736 | 1.922 | 1.095 | 0.903 | 0.021 | 1 | 6.446 | 4.593 |
| 2767 | 95.767 | 17.748 | 36.184 | 24.536 | 17.853 | 17.226 | 0.800 | 1.976 | 0.969 | 1.036 | 0.017 | 1 | 6.304 | 4.396 |
| 2768 | 96.262 | 17.735 | 33.628 | 24.446 | 17.219 | 16.878 | 0.802 | 1.923 | 1.014 | 1.020 | 0.017 | -1 | 6.554 | 4.573 |
| 2769 | 96.167 | 19.186 | 39.191 | 26.772 | 16.574 | 17.219 | 0.749 | 1.761 | 0.862 | 0.963 | 0.018 | 1 | 6.170 | 4.441 |
| 2770 | 83.436 | 18.590 | 36.497 | 29.751 | 17.676 | 16.286 | 0.789 | 1.827 | 0.931 | 1.085 | 0.023 | 1 | 5.881 | 4.258 |
| 2771 | 90.512 | 21.405 | 37.093 | 27.808 | 16.191 | 19.537 | 0.698 | 1.669 | 0.963 | 0.829 | 0.020 | 1 | 6.132 | 8.694 |
| 2772 | 84.792 | 17.655 | 38.899 | 29.603 | 17.091 | 19.169 | 0.812 | 2.054 | 0.932 | 0.892 | 0.022 | 1 | 5.805 | 4.125 |
| 2773 | 94.270 | 18.424 | 38.425 | 25.005 | 16.218 | 18.932 | 0.765 | 1.908 | 0.915 | 0.857 | 0.018 | 1 | 5.976 | 4.240 |
| 2774 | 85.267 | 19.445 | 36.504 | 28.288 | 17.376 | 16.336 | 0.764 | 1.734 | 0.924 | 1.064 | 0.022 | 1 | 8.673 | 7.256 |
| 2775 | 99.093 | 19.803 | 37.295 | 27.880 | 16.352 | 16.108 | 0.740 | 1.639 | 0.870 | 1.015 | 0.017 | 1 | 9.872 | 8.293 |
| 2776 | 84.537 | 19.159 | 36.294 | 29.958 | 17.212 | 18.790 | 0.767 | 1.879 | 0.992 | 0.916 | 0.022 | 1 | 6.012 | 4.336 |
| 2777 | 93.050 | 20.313 | 37.115 | 26.214 | 16.270 | 18.334 | 0.724 | 1.704 | 0.932 | 0.887 | 0.018 | 1 | 9.068 | 7.564 |
| 2778 | 93.500 | 17.716 | 36.786 | 25.106 | 19.094 | 16.591 | 0.809 | 2.014 | 0.970 | 1.151 | 0.018 | 1 | 6.141 | 4.287 |
| 2779 | 93.366 | 20.746 | 35.311 | 24.896 | 17.924 | 16.549 | 0.714 | 1.662 | 0.976 | 1.083 | 0.018 | 1 | 9.079 | 7.602 |
| 2780 | 83.262 | 21.948 | 33.245 | 25.796 | 18.881 | 18.212 | 0.699 | 1.690 | 1.116 | 1.037 | 0.022 | 1 | 8.512 | 7.095 |
| 2781 | 91.650 | 20.680 | 33.043 | 25.532 | 18.339 | 18.976 | 0.712 | 1.804 | 1.129 | 0.966 | 0.019 | 1 | 6.286 | 4.494 |
| 2782 | 86.621 | 21.135 | 39.908 | 29.638 | 17.838 | 18.401 | 0.711 | 1.715 | 0.908 | 0.969 | 0.022 | 1 | 8.656 | 7.208 |
| 2783 | 91.634 | 18.396 | 37.927 | 26.792 | 16.909 | 17.228 | 0.776 | 1.856 | 0.900 | 0.982 | 0.019 | 1 | 6.002 | 4.283 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2784 | 92.053 | 19.097 | 33.199 | 26.512 | 17.189 | 18.539 | 0.752 | 1.871 | 1.076 | 0.927 | 0.019 | -1 | 6.444 | 4.568 |
| 2785 | 99.406 | 17.938 | 35.751 | 25.512 | 17.196 | 16.918 | 0.790 | 1.902 | 0.954 | 1.016 | 0.016 | -1 | 6.695 | 4.682 |
| 2786 | 90.191 | 20.632 | 39.950 | 24.048 | 19.156 | 19.499 | 0.716 | 1.874 | 0.968 | 0.982 | 0.018 | 1 | 5.414 | 3.876 |
| 2787 | 86.144 | 21.330 | 35.196 | 24.548 | 19.225 | 16.770 | 0.710 | 1.688 | 1.023 | 1.146 | 0.020 | 1 | 8.294 | 6.924 |
| 2788 | 92.816 | 20.705 | 34.619 | 25.852 | 18.515 | 19.009 | 0.710 | 1.812 | 1.084 | 0.974 | 0.018 | 1 | 6.263 | 4.480 |
| 2789 | 83.352 | 19.138 | 33.551 | 29.373 | 18.279 | 16.227 | 0.773 | 1.803 | 1.028 | 1.126 | 0.023 | 1 | 6.094 | 4.408 |
| 2790 | 84.337 | 18.387 | 37.507 | 28.481 | 16.634 | 17.503 | 0.791 | 1.857 | 0.910 | 0.950 | 0.022 | 1 | 5.702 | 4.113 |
| 2791 | 90.591 | 18.985 | 39.436 | 27.435 | 18.201 | 19.560 | 0.766 | 1.989 | 0.958 | 0.930 | 0.020 | 1 | 5.895 | 4.178 |
| 2792 | 85.777 | 20.346 | 37.982 | 25.170 | 18.028 | 16.491 | 0.733 | 1.697 | 0.909 | 1.093 | 0.020 | 1 | 8.005 | 6.670 |
| 2793 | 95.716 | 19.617 | 32.518 | 28.253 | 19.186 | 16.479 | 0.731 | 1.818 | 1.097 | 1.164 | 0.018 | 1 | 6.952 | 4.930 |
| 2794 | 91.259 | 20.680 | 38.691 | 28.311 | 17.398 | 17.410 | 0.719 | 1.683 | 0.900 | 0.999 | 0.020 | 1 | 9.010 | 7.536 |
| 2795 | 87.612 | 18.512 | 36.231 | 26.269 | 16.081 | 19.239 | 0.777 | 1.908 | 0.975 | 0.836 | 0.020 | 1 | 5.801 | 4.155 |
| 2796 | 96.985 | 18.716 | 36.783 | 26.676 | 17.184 | 16.988 | 0.758 | 1.826 | 0.929 | 1.012 | 0.017 | 1 | 6.483 | 4.607 |
| 2797 | 81.423 | 17.849 | 39.495 | 24.456 | 19.181 | 16.255 | 0.821 | 1.985 | 0.897 | 1.180 | 0.022 | 1 | 4.875 | 3.488 |
| 2798 | 82.725 | 21.939 | 38.127 | 27.394 | 19.611 | 19.103 | 0.697 | 1.765 | 1.015 | 1.027 | 0.022 | 1 | 8.096 | 6.716 |
| 2799 | 96.292 | 20.020 | 39.431 | 28.659 | 17.525 | 18.206 | 0.726 | 1.785 | 0.906 | 0.963 | 0.018 | 1 | 6.364 | 4.581 |
| 2800 | 85.803 | 20.888 | 32.531 | 26.682 | 17.231 | 19.137 | 0.720 | 1.741 | 1.118 | 0.900 | 0.021 | 1 | 6.018 | 8.603 |
| 2801 | 85.591 | 21.495 | 37.087 | 24.706 | 16.694 | 16.648 | 0.694 | 1.551 | 0.899 | 1.003 | 0.020 | 1 | 5.439 | 7.710 |
| 2802 | 87.577 | 19.592 | 33.959 | 29.316 | 17.977 | 16.845 | 0.755 | 1.777 | 1.025 | 1.067 | 0.021 | 1 | 6.321 | 4.572 |
| 2803 | 99.660 | 18.233 | 34.150 | 28.255 | 19.105 | 19.119 | 0.788 | 2.096 | 1.119 | 0.999 | 0.017 | -1 | 7.263 | 4.955 |
| 2804 | 92.423 | 20.358 | 33.752 | 26.859 | 16.704 | 17.705 | 0.729 | 1.690 | 1.019 | 0.943 | 0.019 | 1 | 9.535 | 7.948 |
| 2805 | 81.035 | 18.252 | 38.668 | 27.395 | 18.815 | 16.754 | 0.801 | 1.949 | 0.920 | 1.123 | 0.023 | 1 | 5.262 | 3.776 |
| 2806 | 99.223 | 20.114 | 34.844 | 24.641 | 17.240 | 18.785 | 0.716 | 1.791 | 1.034 | 0.918 | 0.016 | 1 | 6.592 | 4.696 |
| 2807 | 92.189 | 21.736 | 39.769 | 28.001 | 18.808 | 16.392 | 0.694 | 1.619 | 0.885 | 1.147 | 0.019 | 1 | 8.895 | 7.447 |
| 2808 | 85.349 | 18.296 | 38.986 | 27.482 | 16.928 | 19.094 | 0.787 | 1.969 | 0.924 | 0.887 | 0.021 | 1 | 5.549 | 3.966 |
| 2809 | 95.763 | 21.504 | 39.376 | 27.833 | 18.801 | 17.182 | 0.693 | 1.673 | 0.914 | 1.094 | 0.018 | 1 | 9.275 | 7.753 |
| 2810 | 83.144 | 18.684 | 34.956 | 26.168 | 17.680 | 18.451 | 0.776 | 1.934 | 1.034 | 0.958 | 0.022 | 1 | 5.612 | 4.004 |
| 2811 | 87.301 | 19.423 | 36.934 | 27.386 | 17.535 | 19.698 | 0.750 | 1.917 | 1.008 | 0.890 | 0.021 | 1 | 5.847 | 4.187 |
| 2812 | 88.911 | 20.796 | 35.788 | 26.682 | 19.516 | 16.838 | 0.719 | 1.748 | 1.016 | 1.159 | 0.020 | 1 | 8.825 | 7.369 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2813 | 80.482 | 19.172 | 39.116 | 29.495 | 17.573 | 19.544 | 0.769 | 1.936 | 0.949 | 0.899 | 0.024 | 1 | 8.135 | 6.730 |
| 2814 | 84.391 | 18.425 | 36.984 | 26.174 | 16.618 | 18.259 | 0.785 | 1.893 | 0.943 | 0.910 | 0.021 | 1 | 5.495 | 3.943 |
| 2815 | 84.860 | 21.754 | 38.556 | 27.687 | 16.599 | 17.467 | 0.690 | 1.566 | 0.884 | 0.950 | 0.022 | 1 | 5.633 | 7.952 |
| 2816 | 90.757 | 18.527 | 39.733 | 25.694 | 19.871 | 19.103 | 0.791 | 2.104 | 0.981 | 1.040 | 0.019 | 1 | 5.720 | 4.017 |
| 2817 | 96.092 | 19.364 | 33.557 | 25.279 | 17.214 | 17.963 | 0.741 | 1.817 | 1.048 | 0.958 | 0.017 | -1 | 6.558 | 4.656 |
| 2818 | 95.085 | 18.863 | 35.133 | 25.666 | 17.914 | 17.002 | 0.754 | 1.851 | 0.994 | 1.054 | 0.018 | 1 | 6.405 | 4.531 |
| 2819 | 98.677 | 18.398 | 32.815 | 25.230 | 19.231 | 16.388 | 0.776 | 1.936 | 1.085 | 1.174 | 0.016 | -1 | 6.904 | 4.792 |
| 2820 | 89.354 | 19.183 | 37.407 | 28.111 | 16.684 | 16.189 | 0.766 | 1.714 | 0.879 | 1.031 | 0.020 | 1 | 8.920 | 7.477 |
| 2821 | 81.187 | 21.223 | 37.135 | 26.746 | 18.474 | 18.568 | 0.716 | 1.745 | 0.998 | 0.995 | 0.023 | 1 | 7.967 | 6.612 |
| 2822 | 81.917 | 21.971 | 38.123 | 27.631 | 17.466 | 17.360 | 0.691 | 1.585 | 0.914 | 1.006 | 0.023 | 1 | 8.106 | 6.745 |
| 2823 | 84.006 | 19.486 | 38.152 | 28.630 | 16.073 | 16.907 | 0.762 | 1.692 | 0.864 | 0.951 | 0.022 | 1 | 8.432 | 7.054 |
| 2824 | 81.493 | 18.329 | 33.413 | 27.130 | 17.437 | 16.029 | 0.799 | 1.826 | 1.002 | 1.088 | 0.023 | 1 | 5.719 | 4.121 |
| 2825 | 99.559 | 20.981 | 34.049 | 27.379 | 18.264 | 18.998 | 0.696 | 1.776 | 1.094 | 0.961 | 0.017 | 1 | 6.952 | 4.968 |
| 2826 | 93.649 | 20.622 | 36.191 | 24.290 | 16.713 | 17.394 | 0.713 | 1.654 | 0.942 | 0.961 | 0.017 | 1 | 8.938 | 7.469 |
| 2827 | 85.050 | 17.662 | 38.276 | 28.045 | 18.683 | 16.729 | 0.817 | 2.005 | 0.925 | 1.117 | 0.022 | 1 | 5.689 | 4.037 |
| 2828 | 89.783 | 18.658 | 33.371 | 28.803 | 19.899 | 19.689 | 0.779 | 2.122 | 1.186 | 1.011 | 0.020 | 1 | 6.650 | 4.599 |
| 2829 | 87.694 | 18.006 | 33.267 | 25.827 | 19.162 | 19.897 | 0.801 | 2.169 | 1.174 | 0.963 | 0.020 | 1 | 6.152 | 4.262 |
| 2830 | 88.612 | 17.838 | 32.088 | 26.341 | 16.132 | 18.048 | 0.803 | 1.916 | 1.065 | 0.894 | 0.020 | -1 | 6.307 | 4.448 |
| 2831 | 82.454 | 20.530 | 37.162 | 24.428 | 17.030 | 18.314 | 0.726 | 1.722 | 0.951 | 0.930 | 0.021 | 1 | 7.699 | 6.385 |
| 2832 | 90.153 | 18.435 | 34.915 | 27.287 | 17.630 | 16.865 | 0.775 | 1.871 | 0.988 | 1.045 | 0.020 | 1 | 6.240 | 4.435 |
| 2833 | 82.274 | 20.852 | 35.522 | 25.156 | 18.907 | 16.418 | 0.729 | 1.694 | 0.994 | 1.152 | 0.022 | 1 | 7.963 | 6.644 |
| 2834 | 82.209 | 19.641 | 32.082 | 26.212 | 16.738 | 18.650 | 0.757 | 1.802 | 1.103 | 0.897 | 0.022 | 1 | 2.882 | 4.119 |
| 2835 | 80.811 | 21.506 | 34.050 | 28.774 | 17.001 | 16.382 | 0.720 | 1.552 | 0.980 | 1.038 | 0.023 | 1 | 5.896 | 8.344 |
| 2836 | 99.353 | 21.950 | 34.694 | 28.098 | 17.476 | 17.390 | 0.684 | 1.588 | 1.005 | 1.005 | 0.017 | 1 | 6.916 | 9.879 |
| 2837 | 87.675 | 18.109 | 32.310 | 26.102 | 19.905 | 17.723 | 0.797 | 2.078 | 1.165 | 1.123 | 0.020 | 1 | 6.252 | 4.348 |
| 2838 | 94.413 | 19.101 | 36.954 | 27.315 | 17.586 | 16.409 | 0.755 | 1.780 | 0.920 | 1.072 | 0.018 | 1 | 6.315 | 4.532 |
| 2839 | 96.158 | 19.070 | 38.445 | 25.370 | 17.894 | 17.412 | 0.749 | 1.851 | 0.918 | 1.028 | 0.017 | 1 | 6.151 | 4.361 |
| 2840 | 82.453 | 19.166 | 35.376 | 29.353 | 17.077 | 18.727 | 0.771 | 1.868 | 1.012 | 0.912 | 0.023 | 1 | 8.786 | 7.310 |
| 2841 | 83.470 | 19.656 | 36.896 | 26.318 | 18.724 | 18.481 | 0.751 | 1.893 | 1.008 | 1.013 | 0.022 | 1 | 5.454 | 3.917 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2842 | 97.265 | 19.988 | 33.005 | 25.290 | 17.272 | 17.918 | 0.725 | 1.761 | 1.066 | 0.964 | 0.017 | 1 | 6.660 | 4.760 |
| 2843 | 83.475 | 18.410 | 37.119 | 25.048 | 17.924 | 19.137 | 0.792 | 2.013 | 0.998 | 0.937 | 0.021 | 1 | 5.321 | 3.786 |
| 2844 | 80.344 | 18.172 | 36.641 | 27.027 | 18.357 | 17.472 | 0.802 | 1.972 | 0.978 | 1.051 | 0.023 | 1 | 5.370 | 3.838 |
| 2845 | 91.926 | 18.708 | 35.307 | 25.626 | 19.597 | 18.368 | 0.778 | 2.029 | 1.075 | 1.067 | 0.019 | 1 | 6.213 | 4.340 |
| 2846 | 82.379 | 20.822 | 39.049 | 25.257 | 19.427 | 18.652 | 0.723 | 1.829 | 0.975 | 1.042 | 0.022 | 1 | 7.540 | 6.244 |
| 2847 | 84.193 | 19.879 | 33.108 | 28.432 | 19.716 | 18.052 | 0.739 | 1.900 | 1.141 | 1.092 | 0.022 | 1 | 6.129 | 4.368 |
| 2848 | 97.236 | 20.430 | 34.185 | 26.200 | 17.032 | 16.854 | 0.721 | 1.659 | 0.991 | 1.011 | 0.017 | 1 | 9.838 | 8.224 |
| 2849 | 85.506 | 19.865 | 33.340 | 25.263 | 19.921 | 17.568 | 0.739 | 1.887 | 1.124 | 1.134 | 0.020 | 1 | 5.815 | 4.146 |
| 2850 | 88.440 | 20.919 | 33.414 | 29.069 | 18.224 | 18.469 | 0.718 | 1.754 | 1.098 | 0.987 | 0.021 | 1 | 9.565 | 7.981 |
| 2851 | 93.683 | 20.640 | 36.715 | 25.187 | 19.813 | 16.906 | 0.712 | 1.779 | 1.000 | 1.172 | 0.018 | 1 | 6.056 | 4.347 |
| 2852 | 88.161 | 18.027 | 34.723 | 28.307 | 16.106 | 18.237 | 0.792 | 1.905 | 0.989 | 0.883 | 0.021 | 1 | 6.228 | 4.443 |
| 2853 | 94.367 | 18.766 | 39.554 | 27.139 | 19.756 | 16.274 | 0.771 | 1.920 | 0.911 | 1.214 | 0.018 | 1 | 6.126 | 4.330 |
| 2854 | 88.700 | 17.649 | 32.947 | 28.556 | 19.875 | 17.111 | 0.813 | 2.096 | 1.123 | 1.161 | 0.021 | 1 | 6.581 | 4.555 |
| 2855 | 88.762 | 20.718 | 32.508 | 29.275 | 18.170 | 16.209 | 0.733 | 1.659 | 1.058 | 1.121 | 0.021 | 1 | 6.484 | 9.314 |
| 2856 | 86.470 | 21.725 | 38.982 | 24.389 | 19.372 | 16.615 | 0.697 | 1.657 | 0.923 | 1.166 | 0.020 | 1 | 7.824 | 6.514 |
| 2857 | 93.864 | 21.336 | 32.275 | 27.076 | 19.328 | 18.186 | 0.695 | 1.758 | 1.162 | 1.063 | 0.018 | 1 | 6.662 | 4.777 |
| 2858 | 98.484 | 21.278 | 36.008 | 28.781 | 16.129 | 17.702 | 0.703 | 1.590 | 0.940 | 0.911 | 0.018 | 1 | 6.825 | 9.742 |
| 2859 | 95.196 | 20.249 | 34.321 | 24.197 | 19.656 | 17.728 | 0.720 | 1.846 | 1.089 | 1.109 | 0.017 | 1 | 6.330 | 4.480 |
| 2860 | 91.335 | 18.606 | 32.706 | 24.342 | 16.913 | 16.116 | 0.772 | 1.775 | 1.010 | 1.049 | 0.018 | 1 | 6.166 | 4.409 |
| 2861 | 92.044 | 19.035 | 38.596 | 26.068 | 16.526 | 18.012 | 0.756 | 1.814 | 0.895 | 0.917 | 0.019 | 1 | 5.869 | 4.212 |
| 2862 | 82.685 | 21.421 | 37.475 | 29.288 | 17.776 | 18.248 | 0.712 | 1.682 | 0.961 | 0.974 | 0.023 | 1 | 8.553 | 7.131 |
| 2863 | 95.193 | 21.133 | 36.253 | 28.249 | 19.555 | 19.986 | 0.693 | 1.871 | 1.091 | 0.978 | 0.018 | 1 | 6.572 | 4.677 |
| 2864 | 95.248 | 17.733 | 33.654 | 26.169 | 18.601 | 17.500 | 0.804 | 2.036 | 1.073 | 1.063 | 0.018 | -1 | 6.706 | 4.630 |
| 2865 | 97.153 | 21.312 | 37.372 | 29.527 | 16.402 | 16.968 | 0.705 | 1.566 | 0.893 | 0.967 | 0.018 | 1 | 6.704 | 9.565 |
| 2866 | 83.270 | 19.494 | 35.739 | 29.348 | 16.145 | 19.139 | 0.765 | 1.810 | 0.987 | 0.844 | 0.023 | 1 | 8.838 | 7.376 |
| 2867 | 94.906 | 19.880 | 35.669 | 27.771 | 17.065 | 17.765 | 0.736 | 1.752 | 0.976 | 0.961 | 0.018 | 1 | 6.484 | 4.683 |
| 2868 | 91.521 | 20.986 | 34.602 | 27.226 | 19.595 | 17.661 | 0.708 | 1.775 | 1.077 | 1.110 | 0.019 | 1 | 6.300 | 4.535 |
| 2869 | 85.129 | 17.652 | 38.226 | 28.531 | 16.675 | 18.276 | 0.807 | 1.980 | 0.914 | 0.912 | 0.022 | 1 | 5.740 | 4.093 |
| 2870 | 86.773 | 21.561 | 39.710 | 27.217 | 16.604 | 18.647 | 0.690 | 1.635 | 0.888 | 0.890 | 0.021 | 1 | 5.597 | 7.907 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 2871 | 91.936 | 18.062 | 32.200 | 24.393 | 16.797 | 17.606 | 0.793 | 1.905 | 1.068 | 0.954 | 0.018 | -1 | 6.336 | 4.447 |
| 2872 | 81.787 | 20.325 | 34.341 | 29.476 | 17.846 | 17.125 | 0.749 | 1.721 | 1.018 | 1.042 | 0.023 | 1 | 8.876 | 7.430 |
| 2873 | 87.107 | 18.827 | 32.548 | 29.077 | 17.225 | 18.669 | 0.764 | 1.907 | 1.103 | 0.923 | 0.021 | -1 | 6.470 | 4.590 |
| 2874 | 91.798 | 17.985 | 35.809 | 25.377 | 16.058 | 16.427 | 0.791 | 1.806 | 0.907 | 0.978 | 0.018 | 1 | 6.036 | 4.318 |
| 2875 | 82.827 | 19.562 | 34.742 | 28.291 | 18.278 | 17.305 | 0.760 | 1.819 | 1.024 | 1.056 | 0.022 | 1 | 5.820 | 4.206 |
| 2876 | 83.499 | 21.432 | 36.676 | 26.738 | 19.591 | 19.551 | 0.707 | 1.826 | 1.067 | 1.002 | 0.022 | 1 | 8.233 | 6.830 |
| 2877 | 96.918 | 18.944 | 32.491 | 27.330 | 17.598 | 19.885 | 0.765 | 1.979 | 1.154 | 0.885 | 0.018 | -1 | 7.030 | 4.882 |
| 2878 | 96.523 | 20.281 | 34.976 | 29.795 | 16.454 | 17.018 | 0.735 | 1.650 | 0.957 | 0.967 | 0.019 | 1 | 10.263 | 8.595 |
| 2879 | 90.570 | 19.026 | 36.457 | 27.432 | 17.446 | 17.420 | 0.761 | 1.833 | 0.956 | 1.002 | 0.020 | 1 | 6.117 | 4.381 |
| 2880 | 97.430 | 18.962 | 33.431 | 27.934 | 16.860 | 19.231 | 0.761 | 1.903 | 1.080 | 0.877 | 0.018 | -1 | 6.987 | 4.920 |
| 2881 | 98.585 | 19.099 | 37.975 | 26.873 | 18.502 | 16.172 | 0.744 | 1.815 | 0.913 | 1.144 | 0.017 | 1 | 6.515 | 4.627 |
| 2882 | 86.192 | 18.758 | 39.668 | 25.164 | 18.276 | 17.339 | 0.777 | 1.899 | 0.898 | 1.054 | 0.020 | 1 | 5.274 | 3.774 |
| 2883 | 92.100 | 21.111 | 37.772 | 28.826 | 16.156 | 16.762 | 0.711 | 1.559 | 0.872 | 0.964 | 0.020 | 1 | 6.259 | 8.917 |
| 2884 | 95.174 | 20.195 | 35.442 | 26.344 | 16.967 | 16.590 | 0.730 | 1.662 | 0.947 | 1.023 | 0.018 | 1 | 9.479 | 7.943 |
| 2885 | 93.830 | 20.224 | 35.685 | 25.956 | 19.312 | 17.784 | 0.719 | 1.834 | 1.040 | 1.086 | 0.018 | 1 | 6.273 | 4.465 |
| 2886 | 80.622 | 19.380 | 34.852 | 28.161 | 18.047 | 18.195 | 0.766 | 1.870 | 1.040 | 0.992 | 0.023 | 1 | 5.662 | 4.081 |
| 2887 | 85.797 | 20.135 | 37.381 | 27.777 | 19.677 | 19.904 | 0.737 | 1.966 | 1.059 | 0.989 | 0.021 | 1 | 5.763 | 4.116 |
| 2888 | 86.645 | 20.288 | 39.562 | 28.853 | 16.021 | 17.685 | 0.732 | 1.661 | 0.852 | 0.906 | 0.021 | 1 | 5.774 | 8.185 |
| 2889 | 89.568 | 20.336 | 38.073 | 28.749 | 19.564 | 18.483 | 0.723 | 1.871 | 0.999 | 1.058 | 0.020 | 1 | 6.058 | 4.341 |
| 2890 | 81.700 | 19.005 | 35.017 | 26.691 | 17.832 | 19.772 | 0.767 | 1.979 | 1.074 | 0.902 | 0.022 | 1 | 5.567 | 3.978 |
| 2891 | 98.988 | 19.330 | 39.242 | 25.132 | 18.188 | 16.674 | 0.737 | 1.804 | 0.888 | 1.091 | 0.016 | 1 | 6.253 | 4.442 |
| 2892 | 87.577 | 21.517 | 35.662 | 25.201 | 16.414 | 17.707 | 0.693 | 1.586 | 0.957 | 0.927 | 0.020 | 1 | 5.736 | 8.157 |
| 2893 | 85.412 | 20.592 | 34.354 | 26.587 | 16.461 | 19.041 | 0.728 | 1.724 | 1.033 | 0.865 | 0.021 | 1 | 5.853 | 8.332 |
| 2894 | 80.883 | 20.245 | 35.163 | 27.142 | 18.732 | 17.140 | 0.746 | 1.772 | 1.020 | 1.093 | 0.023 | 1 | 8.223 | 6.854 |
| 2895 | 95.444 | 19.288 | 35.579 | 26.529 | 16.288 | 17.659 | 0.751 | 1.760 | 0.954 | 0.922 | 0.018 | 1 | 6.404 | 4.614 |
| 2896 | 87.025 | 21.737 | 37.624 | 29.233 | 16.332 | 16.478 | 0.697 | 1.509 | 0.872 | 0.991 | 0.021 | 1 | 6.030 | 8.541 |
| 2897 | 81.166 | 18.133 | 37.510 | 27.226 | 18.367 | 18.735 | 0.807 | 2.046 | 0.989 | 0.980 | 0.023 | 1 | 5.385 | 3.833 |
| 2898 | 86.698 | 19.907 | 33.808 | 29.630 | 18.388 | 19.749 | 0.735 | 1.916 | 1.128 | 0.931 | 0.021 | 1 | 6.381 | 4.548 |
| 2899 | 82.880 | 19.612 | 37.883 | 29.653 | 18.485 | 17.704 | 0.757 | 1.845 | 0.955 | 1.044 | 0.023 | 1 | 8.527 | 7.090 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2900 | 94.864 | 20.424 | 34.350 | 24.150 | 19.247 | 17.955 | 0.711 | 1.821 | 1.083 | 1.072 | 0.017 | 1 | 6.285 | 4.463 |
| 2901 | 84.334 | 20.938 | 35.291 | 24.089 | 18.313 | 18.851 | 0.716 | 1.775 | 1.053 | 0.971 | 0.020 | 1 | 8.056 | 6.691 |
| 2902 | 92.242 | 19.451 | 39.984 | 27.252 | 16.479 | 18.936 | 0.744 | 1.821 | 0.886 | 0.870 | 0.019 | 1 | 5.877 | 4.231 |
| 2903 | 80.461 | 20.569 | 35.909 | 29.476 | 18.705 | 19.411 | 0.735 | 1.853 | 1.061 | 0.964 | 0.024 | 1 | 8.562 | 7.110 |
| 2904 | 89.287 | 20.331 | 36.756 | 27.759 | 19.421 | 17.726 | 0.726 | 1.827 | 1.011 | 1.096 | 0.020 | 1 | 6.028 | 4.331 |
| 2905 | 97.613 | 18.671 | 37.208 | 25.516 | 19.493 | 18.183 | 0.776 | 2.018 | 1.013 | 1.072 | 0.017 | 1 | 6.463 | 4.492 |
| 2906 | 82.682 | 17.832 | 32.241 | 29.336 | 16.225 | 19.417 | 0.796 | 1.999 | 1.106 | 0.836 | 0.023 | -1 | 6.257 | 4.426 |
| 2907 | 86.293 | 20.335 | 36.678 | 29.520 | 17.785 | 16.640 | 0.741 | 1.693 | 0.939 | 1.069 | 0.022 | 1 | 8.989 | 7.533 |
| 2908 | 84.313 | 20.332 | 36.771 | 25.721 | 19.406 | 18.513 | 0.732 | 1.865 | 1.031 | 1.048 | 0.021 | 1 | 8.095 | 6.718 |
| 2909 | 86.394 | 19.536 | 33.542 | 24.015 | 16.763 | 16.533 | 0.756 | 1.704 | 0.993 | 1.014 | 0.020 | 1 | 2.824 | 4.049 |
| 2910 | 82.759 | 21.959 | 37.643 | 24.692 | 17.885 | 18.794 | 0.687 | 1.670 | 0.974 | 0.952 | 0.021 | 1 | 7.732 | 6.404 |
| 2911 | 84.929 | 21.051 | 39.478 | 29.093 | 16.978 | 18.009 | 0.713 | 1.662 | 0.886 | 0.943 | 0.022 | 1 | 8.463 | 7.056 |
| 2912 | 97.276 | 21.478 | 38.344 | 24.804 | 19.541 | 17.671 | 0.686 | 1.733 | 0.970 | 1.106 | 0.017 | 1 | 6.119 | 4.405 |
| 2913 | 86.266 | 21.121 | 34.337 | 25.513 | 18.147 | 18.211 | 0.713 | 1.721 | 1.059 | 0.996 | 0.020 | 1 | 8.613 | 7.178 |
| 2914 | 84.279 | 21.936 | 34.769 | 28.858 | 16.255 | 19.049 | 0.693 | 1.609 | 1.015 | 0.853 | 0.022 | 1 | 6.073 | 8.587 |
| 2915 | 94.866 | 21.667 | 34.860 | 28.552 | 19.450 | 18.394 | 0.689 | 1.747 | 1.086 | 1.057 | 0.019 | 1 | 6.642 | 4.795 |
| 2916 | 96.331 | 19.843 | 32.438 | 28.131 | 19.457 | 18.685 | 0.732 | 1.922 | 1.176 | 1.041 | 0.018 | -1 | 7.062 | 4.928 |
| 2917 | 90.512 | 20.851 | 36.402 | 24.606 | 18.329 | 19.533 | 0.708 | 1.816 | 1.040 | 0.938 | 0.019 | 1 | 5.795 | 4.162 |
| 2918 | 93.622 | 19.118 | 32.715 | 29.352 | 18.172 | 18.049 | 0.756 | 1.895 | 1.107 | 1.007 | 0.019 | -1 | 6.960 | 4.895 |
| 2919 | 96.047 | 19.595 | 35.644 | 28.543 | 19.782 | 18.430 | 0.743 | 1.950 | 1.072 | 1.073 | 0.018 | 1 | 6.791 | 4.755 |
| 2920 | 87.956 | 21.375 | 36.030 | 28.430 | 19.571 | 18.677 | 0.704 | 1.789 | 1.062 | 1.048 | 0.021 | 1 | 9.043 | 7.526 |
| 2921 | 97.610 | 17.639 | 38.315 | 27.804 | 16.160 | 16.324 | 0.792 | 1.842 | 0.848 | 0.990 | 0.018 | 1 | 6.512 | 4.630 |
| 2922 | 99.237 | 18.960 | 38.092 | 26.926 | 16.011 | 17.042 | 0.755 | 1.743 | 0.868 | 0.940 | 0.017 | 1 | 6.493 | 4.679 |
| 2923 | 97.363 | 21.160 | 35.912 | 29.256 | 17.467 | 16.006 | 0.712 | 1.582 | 0.932 | 1.091 | 0.018 | 1 | 6.791 | 9.715 |
| 2924 | 84.448 | 21.546 | 35.114 | 25.285 | 18.590 | 19.900 | 0.702 | 1.786 | 1.096 | 0.934 | 0.021 | 1 | 8.305 | 6.894 |
| 2925 | 98.733 | 17.934 | 39.416 | 28.789 | 16.154 | 19.419 | 0.779 | 1.984 | 0.902 | 0.832 | 0.018 | 1 | 6.649 | 4.678 |
| 2926 | 99.142 | 19.466 | 38.027 | 28.809 | 17.186 | 16.160 | 0.744 | 1.713 | 0.877 | 1.064 | 0.018 | 1 | 6.668 | 4.834 |
| 2927 | 84.144 | 21.248 | 34.014 | 29.674 | 18.416 | 17.773 | 0.721 | 1.703 | 1.064 | 1.036 | 0.022 | 1 | 9.192 | 7.692 |
| 2928 | 91.423 | 20.204 | 39.700 | 24.385 | 19.011 | 17.238 | 0.724 | 1.794 | 0.913 | 1.103 | 0.018 | 1 | 5.546 | 3.985 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|-------|--------|
| 2929 | 85.251 | 19.770 | 38.814 | 25.660 | 17.989 | 18.156 | 0.745 | 1.828 | 0.931 | 0.991 | 0.021 | 1 | 7.930 | 6.574 |
| 2930 | 88.429 | 21.637 | 39.161 | 29.962 | 17.652 | 17.918 | 0.699 | 1.644 | 0.908 | 0.985 | 0.021 | 1 | 8.993 | 7.524 |
| 2931 | 85.672 | 18.157 | 39.565 | 26.825 | 16.449 | 18.638 | 0.789 | 1.932 | 0.887 | 0.883 | 0.021 | 1 | 5.433 | 3.891 |
| 2932 | 95.319 | 18.820 | 34.813 | 24.775 | 16.620 | 17.711 | 0.757 | 1.824 | 0.986 | 0.938 | 0.017 | 1 | 6.337 | 4.504 |
| 2933 | 96.229 | 18.822 | 34.379 | 26.182 | 18.007 | 19.885 | 0.762 | 2.013 | 1.102 | 0.906 | 0.017 | 1 | 6.681 | 4.647 |
| 2934 | 86.756 | 17.927 | 34.654 | 24.326 | 19.400 | 18.713 | 0.808 | 2.126 | 1.100 | 1.037 | 0.020 | 1 | 5.758 | 4.025 |
| 2935 | 82.672 | 19.646 | 32.446 | 27.026 | 18.805 | 17.265 | 0.753 | 1.836 | 1.112 | 1.089 | 0.022 | 1 | 5.885 | 4.223 |
| 2936 | 90.893 | 17.738 | 35.494 | 24.106 | 17.992 | 19.969 | 0.806 | 2.140 | 1.069 | 0.901 | 0.018 | 1 | 5.977 | 4.156 |
| 2937 | 85.924 | 18.847 | 37.752 | 29.040 | 18.714 | 17.461 | 0.770 | 1.919 | 0.958 | 1.072 | 0.022 | 1 | 5.891 | 4.210 |
| 2938 | 85.855 | 20.285 | 35.178 | 28.073 | 19.962 | 16.325 | 0.737 | 1.789 | 1.032 | 1.223 | 0.021 | 1 | 5.940 | 4.306 |
| 2939 | 94.811 | 18.187 | 33.802 | 27.141 | 19.633 | 19.578 | 0.793 | 2.156 | 1.160 | 1.003 | 0.018 | 1 | 6.806 | 4.660 |
| 2940 | 88.724 | 17.829 | 37.800 | 29.882 | 17.989 | 17.796 | 0.802 | 2.007 | 0.947 | 1.011 | 0.021 | 1 | 6.229 | 4.396 |
| 2941 | 91.294 | 20.141 | 33.335 | 29.086 | 18.281 | 16.750 | 0.736 | 1.739 | 1.051 | 1.091 | 0.020 | 1 | 6.584 | 4.769 |
| 2942 | 97.026 | 17.812 | 35.923 | 24.856 | 17.909 | 17.418 | 0.797 | 1.983 | 0.983 | 1.028 | 0.017 | 1 | 6.464 | 4.495 |
| 2943 | 88.206 | 19.011 | 33.046 | 25.823 | 17.499 | 18.256 | 0.758 | 1.881 | 1.082 | 0.959 | 0.020 | 1 | 6.108 | 4.336 |
| 2944 | 82.709 | 17.736 | 33.801 | 28.715 | 17.265 | 19.610 | 0.806 | 2.079 | 1.091 | 0.880 | 0.023 | 1 | 6.059 | 4.263 |
| 2945 | 99.488 | 21.188 | 33.300 | 28.591 | 16.042 | 16.123 | 0.710 | 1.518 | 0.966 | 0.995 | 0.017 | 1 | 7.055 | 10.125 |
| 2946 | 98.639 | 18.007 | 39.594 | 25.056 | 18.351 | 17.036 | 0.793 | 1.965 | 0.894 | 1.077 | 0.016 | 1 | 6.259 | 4.371 |
| 2947 | 82.918 | 19.765 | 34.856 | 28.772 | 16.881 | 16.239 | 0.765 | 1.676 | 0.950 | 1.040 | 0.023 | 1 | 5.881 | 8.405 |
| 2948 | 97.570 | 19.926 | 34.586 | 27.572 | 19.761 | 19.960 | 0.734 | 1.993 | 1.148 | 0.990 | 0.018 | 1 | 6.910 | 4.807 |
| 2949 | 95.351 | 20.306 | 36.581 | 24.493 | 17.995 | 17.960 | 0.716 | 1.771 | 0.983 | 1.002 | 0.017 | 1 | 6.125 | 4.386 |
| 2950 | 83.636 | 17.621 | 39.410 | 29.037 | 18.436 | 18.109 | 0.823 | 2.074 | 0.927 | 1.018 | 0.022 | 1 | 5.618 | 3.983 |
| 2951 | 80.451 | 20.954 | 34.173 | 29.978 | 17.673 | 18.222 | 0.733 | 1.713 | 1.050 | 0.970 | 0.024 | 1 | 5.992 | 8.513 |
| 2952 | 96.341 | 19.142 | 37.259 | 29.025 | 18.209 | 19.029 | 0.750 | 1.945 | 0.999 | 0.957 | 0.018 | 1 | 6.701 | 4.716 |
| 2953 | 88.925 | 21.701 | 35.878 | 25.648 | 18.304 | 16.148 | 0.699 | 1.588 | 0.960 | 1.133 | 0.019 | 1 | 8.692 | 7.284 |
| 2954 | 87.030 | 21.899 | 34.109 | 26.392 | 16.852 | 18.948 | 0.688 | 1.635 | 1.050 | 0.889 | 0.020 | 1 | 5.979 | 8.493 |
| 2955 | 91.258 | 18.796 | 39.208 | 28.975 | 16.681 | 18.160 | 0.766 | 1.854 | 0.889 | 0.919 | 0.020 | 1 | 6.088 | 4.372 |
| 2956 | 87.884 | 21.650 | 39.937 | 24.500 | 19.627 | 18.132 | 0.694 | 1.744 | 0.945 | 1.082 | 0.019 | 1 | 7.866 | 6.528 |
| 2957 | 82.946 | 19.516 | 32.659 | 28.081 | 16.793 | 19.584 | 0.758 | 1.864 | 1.114 | 0.858 | 0.022 | 1 | 3.009 | 4.286 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2958 | 93.401 | 19.840 | 34.941 | 25.196 | 19.327 | 16.747 | 0.730 | 1.818 | 1.032 | 1.154 | 0.018 | 1 | 6.223 | 4.433 |
| 2959 | 82.233 | 20.072 | 38.434 | 24.090 | 17.126 | 18.764 | 0.737 | 1.788 | 0.934 | 0.913 | 0.021 | 1 | 7.444 | 6.156 |
| 2960 | 94.378 | 20.491 | 32.756 | 29.533 | 18.826 | 19.217 | 0.710 | 1.857 | 1.161 | 0.980 | 0.019 | -1 | 6.996 | 4.955 |
| 2961 | 80.344 | 21.480 | 36.156 | 26.233 | 16.455 | 19.669 | 0.701 | 1.682 | 0.999 | 0.837 | 0.023 | 1 | 5.370 | 7.579 |
| 2962 | 84.401 | 21.040 | 32.675 | 27.252 | 16.126 | 19.083 | 0.718 | 1.673 | 1.078 | 0.845 | 0.022 | 1 | 6.017 | 8.562 |
| 2963 | 84.219 | 21.772 | 39.592 | 29.694 | 18.144 | 19.003 | 0.697 | 1.706 | 0.938 | 0.955 | 0.022 | 1 | 8.498 | 7.063 |
| 2964 | 98.824 | 19.130 | 36.866 | 29.009 | 19.903 | 16.364 | 0.751 | 1.896 | 0.984 | 1.216 | 0.018 | 1 | 6.915 | 4.857 |
| 2965 | 91.748 | 19.760 | 38.366 | 24.215 | 16.943 | 17.815 | 0.735 | 1.759 | 0.906 | 0.951 | 0.018 | 1 | 5.661 | 4.076 |
| 2966 | 86.254 | 17.745 | 36.593 | 27.347 | 19.554 | 19.416 | 0.819 | 2.196 | 1.065 | 1.007 | 0.021 | 1 | 5.904 | 4.119 |
| 2967 | 99.504 | 21.551 | 36.686 | 27.449 | 16.284 | 17.606 | 0.690 | 1.573 | 0.924 | 0.925 | 0.017 | 1 | 6.683 | 9.548 |
| 2968 | 92.541 | 19.905 | 39.433 | 24.425 | 17.745 | 19.289 | 0.727 | 1.861 | 0.939 | 0.920 | 0.018 | 1 | 5.678 | 4.054 |
| 2969 | 82.979 | 19.008 | 37.053 | 29.056 | 16.077 | 16.941 | 0.781 | 1.737 | 0.891 | 0.949 | 0.023 | 1 | 8.548 | 7.154 |
| 2970 | 97.253 | 21.699 | 33.494 | 24.495 | 17.455 | 16.589 | 0.685 | 1.569 | 1.016 | 1.052 | 0.017 | 1 | 6.459 | 9.266 |
| 2971 | 89.319 | 19.372 | 32.989 | 25.560 | 19.009 | 16.557 | 0.748 | 1.836 | 1.078 | 1.148 | 0.019 | 1 | 6.147 | 4.378 |
| 2972 | 82.669 | 21.279 | 32.637 | 27.128 | 19.528 | 16.837 | 0.720 | 1.709 | 1.114 | 1.160 | 0.022 | 1 | 8.718 | 7.291 |
| 2973 | 82.554 | 20.415 | 34.746 | 25.950 | 19.339 | 16.973 | 0.738 | 1.779 | 1.045 | 1.139 | 0.022 | 1 | 8.209 | 6.846 |
| 2974 | 95.260 | 21.796 | 34.691 | 27.192 | 18.713 | 18.327 | 0.686 | 1.699 | 1.068 | 1.021 | 0.018 | 1 | 6.505 | 4.724 |
| 2975 | 81.340 | 19.162 | 32.036 | 28.027 | 18.196 | 16.599 | 0.772 | 1.816 | 1.086 | 1.096 | 0.023 | 1 | 5.945 | 4.282 |
| 2976 | 99.671 | 19.491 | 36.676 | 27.575 | 18.218 | 16.487 | 0.735 | 1.781 | 0.946 | 1.105 | 0.017 | 1 | 6.762 | 4.823 |
| 2977 | 89.187 | 18.955 | 37.740 | 25.512 | 17.376 | 18.346 | 0.760 | 1.885 | 0.947 | 0.947 | 0.019 | 1 | 5.706 | 4.072 |
| 2978 | 85.208 | 20.930 | 35.016 | 28.665 | 18.750 | 16.738 | 0.727 | 1.696 | 1.013 | 1.120 | 0.022 | 1 | 8.941 | 7.485 |
| 2979 | 97.194 | 21.661 | 36.632 | 27.892 | 19.637 | 16.734 | 0.690 | 1.679 | 0.993 | 1.173 | 0.018 | 1 | 9.755 | 8.170 |
| 2980 | 84.826 | 19.001 | 34.763 | 24.575 | 18.068 | 19.853 | 0.766 | 1.996 | 1.091 | 0.910 | 0.020 | 1 | 5.581 | 3.962 |
| 2981 | 99.286 | 18.242 | 39.095 | 27.025 | 19.498 | 17.503 | 0.789 | 2.028 | 0.946 | 1.114 | 0.017 | 1 | 6.585 | 4.567 |
| 2982 | 86.603 | 20.044 | 35.813 | 24.120 | 17.027 | 19.814 | 0.734 | 1.838 | 1.029 | 0.859 | 0.020 | 1 | 8.238 | 6.834 |
| 2983 | 99.946 | 21.668 | 39.843 | 24.489 | 16.537 | 17.720 | 0.676 | 1.581 | 0.860 | 0.933 | 0.016 | 1 | 6.146 | 8.776 |
| 2984 | 97.736 | 20.946 | 36.125 | 24.544 | 16.123 | 18.178 | 0.700 | 1.638 | 0.949 | 0.887 | 0.016 | 1 | 9.436 | 7.861 |
| 2985 | 94.453 | 18.977 | 33.637 | 29.687 | 19.182 | 18.393 | 0.760 | 1.980 | 1.117 | 1.043 | 0.019 | 1 | 7.024 | 4.888 |
| 2986 | 81.017 | 19.778 | 35.943 | 27.995 | 18.544 | 18.928 | 0.752 | 1.895 | 1.043 | 0.980 | 0.023 | 1 | 8.306 | 6.890 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 2987 | 81.611 | 18.494 | 32.004 | 28.696 | 19.016 | 17.574 | 0.782 | 1.978 | 1.143 | 1.082 | 0.023 | 1 | 6.135 | 4.330 |
| 2988 | 83.823 | 20.385 | 35.007 | 28.754 | 19.714 | 19.841 | 0.726 | 1.940 | 1.130 | 0.994 | 0.022 | 1 | 5.963 | 4.263 |
| 2989 | 88.988 | 20.595 | 32.957 | 25.868 | 19.566 | 19.974 | 0.713 | 1.920 | 1.200 | 0.980 | 0.020 | 1 | 6.184 | 4.381 |
| 2990 | 99.596 | 17.724 | 38.782 | 25.208 | 19.341 | 16.338 | 0.805 | 2.013 | 0.920 | 1.184 | 0.016 | 1 | 6.447 | 4.470 |
| 2991 | 90.647 | 17.615 | 39.713 | 26.184 | 19.607 | 19.069 | 0.823 | 2.196 | 0.974 | 1.028 | 0.019 | 1 | 5.796 | 4.040 |
| 2992 | 81.829 | 21.154 | 33.669 | 26.581 | 19.964 | 17.852 | 0.719 | 1.788 | 1.123 | 1.118 | 0.022 | 1 | 8.400 | 7.002 |
| 2993 | 97.385 | 18.519 | 32.413 | 24.353 | 18.953 | 19.711 | 0.778 | 2.088 | 1.193 | 0.962 | 0.016 | -1 | 6.814 | 4.667 |
| 2994 | 90.553 | 18.872 | 35.225 | 24.407 | 19.997 | 16.682 | 0.771 | 1.944 | 1.041 | 1.199 | 0.018 | 1 | 5.951 | 4.199 |
| 2995 | 99.459 | 19.113 | 36.837 | 24.666 | 18.758 | 17.238 | 0.752 | 1.883 | 0.977 | 1.088 | 0.016 | 1 | 6.505 | 4.564 |
| 2996 | 91.316 | 19.909 | 33.385 | 24.757 | 17.281 | 17.354 | 0.737 | 1.740 | 1.037 | 0.996 | 0.018 | 1 | 6.119 | 4.407 |
| 2997 | 81.831 | 19.010 | 34.127 | 25.596 | 16.310 | 17.079 | 0.779 | 1.756 | 0.978 | 0.955 | 0.022 | 1 | 2.736 | 3.917 |
| 2998 | 86.674 | 19.662 | 34.677 | 27.220 | 19.128 | 18.483 | 0.744 | 1.913 | 1.085 | 1.035 | 0.021 | 1 | 6.012 | 4.278 |
| 2999 | 91.896 | 19.338 | 39.505 | 29.150 | 18.330 | 18.870 | 0.748 | 1.924 | 0.942 | 0.971 | 0.020 | 1 | 6.163 | 4.386 |
| 3000 | 80.168 | 20.985 | 33.446 | 28.621 | 18.867 | 19.125 | 0.726 | 1.810 | 1.136 | 0.987 | 0.024 | 1 | 8.694 | 7.235 |
| 3001 | 99.715 | 18.813 | 37.988 | 26.970 | 16.768 | 17.059 | 0.754 | 1.798 | 0.890 | 0.983 | 0.017 | 1 | 6.589 | 4.696 |
| 3002 | 92.815 | 18.431 | 32.064 | 27.507 | 18.892 | 17.646 | 0.781 | 1.982 | 1.140 | 1.071 | 0.019 | -1 | 6.801 | 4.723 |
| 3003 | 90.752 | 21.347 | 33.113 | 29.184 | 19.100 | 18.015 | 0.704 | 1.739 | 1.121 | 1.060 | 0.020 | 1 | 6.578 | 4.766 |
| 3004 | 92.087 | 20.438 | 38.158 | 29.365 | 16.210 | 19.073 | 0.726 | 1.726 | 0.925 | 0.850 | 0.020 | 1 | 9.377 | 7.831 |
| 3005 | 91.113 | 20.013 | 32.650 | 28.012 | 17.123 | 17.639 | 0.740 | 1.737 | 1.065 | 0.971 | 0.020 | 1 | 3.293 | 4.671 |
| 3006 | 93.400 | 21.469 | 38.824 | 28.607 | 18.485 | 18.959 | 0.694 | 1.744 | 0.964 | 0.975 | 0.019 | 1 | 9.270 | 7.719 |
| 3007 | 85.269 | 18.961 | 35.324 | 28.112 | 18.257 | 19.476 | 0.767 | 1.990 | 1.068 | 0.937 | 0.022 | 1 | 5.979 | 4.243 |
| 3008 | 94.096 | 20.899 | 39.844 | 27.288 | 18.587 | 19.740 | 0.702 | 1.834 | 0.962 | 0.942 | 0.018 | 1 | 6.036 | 4.331 |
| 3009 | 86.302 | 18.479 | 34.532 | 29.683 | 19.335 | 17.318 | 0.783 | 1.983 | 1.061 | 1.116 | 0.022 | 1 | 6.344 | 4.472 |
| 3010 | 99.926 | 18.261 | 33.911 | 24.591 | 19.640 | 19.593 | 0.787 | 2.149 | 1.157 | 1.002 | 0.016 | 1 | 6.920 | 4.711 |
| 3011 | 98.632 | 20.412 | 39.065 | 24.318 | 18.905 | 18.318 | 0.710 | 1.824 | 0.953 | 1.032 | 0.016 | 1 | 6.165 | 4.377 |
| 3012 | 84.038 | 20.024 | 33.842 | 25.045 | 18.565 | 17.800 | 0.742 | 1.816 | 1.075 | 1.043 | 0.021 | 1 | 5.610 | 4.037 |
| 3013 | 93.252 | 18.718 | 38.821 | 27.607 | 16.025 | 18.598 | 0.765 | 1.850 | 0.892 | 0.862 | 0.019 | 1 | 6.106 | 4.379 |
| 3014 | 98.460 | 18.344 | 34.797 | 29.509 | 16.132 | 16.601 | 0.778 | 1.784 | 0.941 | 0.972 | 0.018 | 1 | 7.030 | 5.043 |
| 3015 | 95.470 | 19.193 | 35.529 | 28.482 | 19.562 | 19.361 | 0.759 | 2.028 | 1.096 | 1.010 | 0.018 | 1 | 6.785 | 4.718 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 3016 | 98.080 | 20.942 | 33.503 | 26.894 | 17.501 | 19.561 | 0.701 | 1.770 | 1.106 | 0.895 | 0.017 | 1 | 10.169 | 8.422 |
| 3017 | 85.130 | 17.924 | 34.466 | 29.328 | 19.983 | 19.494 | 0.811 | 2.202 | 1.145 | 1.025 | 0.022 | 1 | 6.295 | 4.366 |
| 3018 | 97.137 | 17.753 | 32.468 | 28.642 | 19.273 | 18.421 | 0.812 | 2.123 | 1.161 | 1.046 | 0.018 | -1 | 7.301 | 4.958 |
| 3019 | 89.360 | 17.711 | 37.175 | 26.825 | 19.660 | 16.685 | 0.815 | 2.052 | 0.978 | 1.178 | 0.020 | 1 | 5.987 | 4.196 |
| 3020 | 98.203 | 20.708 | 37.199 | 25.951 | 19.038 | 16.464 | 0.707 | 1.714 | 0.954 | 1.156 | 0.017 | 1 | 6.392 | 4.611 |
| 3021 | 87.797 | 20.827 | 35.185 | 29.558 | 17.659 | 17.026 | 0.728 | 1.665 | 0.986 | 1.037 | 0.021 | 1 | 6.287 | 8.963 |
| 3022 | 93.665 | 18.274 | 38.425 | 25.752 | 19.417 | 16.370 | 0.789 | 1.958 | 0.931 | 1.186 | 0.018 | 1 | 6.046 | 4.252 |
| 3023 | 90.324 | 20.133 | 36.727 | 28.361 | 17.045 | 17.126 | 0.738 | 1.697 | 0.930 | 0.995 | 0.020 | 1 | 9.173 | 7.687 |
| 3024 | 99.713 | 20.748 | 35.312 | 27.436 | 18.611 | 16.580 | 0.708 | 1.696 | 0.997 | 1.122 | 0.017 | 1 | 6.802 | 4.921 |
| 3025 | 87.308 | 19.343 | 38.459 | 27.426 | 18.670 | 18.721 | 0.756 | 1.933 | 0.972 | 0.997 | 0.021 | 1 | 5.729 | 4.089 |
| 3026 | 82.821 | 20.290 | 35.685 | 24.331 | 19.452 | 16.152 | 0.742 | 1.755 | 0.998 | 1.204 | 0.021 | 1 | 7.824 | 6.531 |
| 3027 | 92.328 | 20.837 | 38.176 | 28.148 | 17.477 | 19.779 | 0.710 | 1.788 | 0.976 | 0.884 | 0.019 | 1 | 9.185 | 7.639 |
| 3028 | 98.734 | 19.715 | 33.243 | 29.926 | 16.944 | 16.118 | 0.748 | 1.677 | 0.995 | 1.051 | 0.018 | 1 | 3.632 | 5.156 |
| 3029 | 97.416 | 20.626 | 32.536 | 25.731 | 17.294 | 18.115 | 0.711 | 1.717 | 1.088 | 0.955 | 0.017 | 1 | 3.423 | 4.820 |
| 3030 | 83.952 | 20.034 | 33.781 | 26.851 | 16.311 | 17.350 | 0.750 | 1.680 | 0.996 | 0.940 | 0.022 | 1 | 5.807 | 8.299 |
| 3031 | 80.785 | 19.265 | 39.776 | 24.537 | 16.130 | 19.497 | 0.759 | 1.849 | 0.896 | 0.827 | 0.022 | 1 | 7.199 | 5.935 |
| 3032 | 99.713 | 19.537 | 34.408 | 24.601 | 17.547 | 18.915 | 0.736 | 1.866 | 1.060 | 0.928 | 0.016 | -1 | 6.717 | 4.726 |
| 3033 | 87.068 | 17.917 | 35.431 | 24.188 | 17.976 | 18.253 | 0.804 | 2.022 | 1.023 | 0.985 | 0.020 | 1 | 5.669 | 3.991 |
| 3034 | 88.476 | 20.038 | 35.763 | 28.015 | 18.461 | 16.933 | 0.740 | 1.766 | 0.990 | 1.090 | 0.020 | 1 | 6.059 | 4.388 |
| 3035 | 80.051 | 21.569 | 33.050 | 24.419 | 19.094 | 18.389 | 0.711 | 1.738 | 1.134 | 1.038 | 0.022 | 1 | 7.966 | 6.629 |
| 3036 | 82.913 | 18.263 | 39.238 | 24.499 | 16.222 | 19.942 | 0.790 | 1.980 | 0.922 | 0.813 | 0.021 | 1 | 7.454 | 6.152 |
| 3037 | 87.907 | 18.593 | 37.921 | 24.680 | 16.823 | 19.187 | 0.773 | 1.937 | 0.950 | 0.877 | 0.019 | 1 | 5.515 | 3.930 |
| 3038 | 87.382 | 21.985 | 37.194 | 26.007 | 19.411 | 16.751 | 0.694 | 1.645 | 0.972 | 1.159 | 0.020 | 1 | 8.415 | 7.026 |
| 3039 | 80.929 | 20.263 | 33.783 | 24.483 | 16.869 | 17.323 | 0.742 | 1.687 | 1.012 | 0.974 | 0.022 | 1 | 5.330 | 7.613 |
| 3040 | 91.922 | 20.518 | 36.181 | 27.763 | 18.560 | 16.804 | 0.724 | 1.724 | 0.977 | 1.104 | 0.019 | 1 | 6.210 | 4.512 |
| 3041 | 81.769 | 19.417 | 34.551 | 24.509 | 19.107 | 17.475 | 0.760 | 1.884 | 1.059 | 1.093 | 0.022 | 1 | 5.343 | 3.832 |
| 3042 | 98.729 | 19.554 | 33.154 | 27.740 | 19.208 | 19.038 | 0.742 | 1.956 | 1.154 | 1.009 | 0.017 | -1 | 7.150 | 4.960 |
| 3043 | 88.167 | 17.872 | 33.029 | 28.457 | 17.873 | 19.426 | 0.799 | 2.087 | 1.129 | 0.920 | 0.021 | 1 | 6.513 | 4.521 |
| 3044 | 81.145 | 21.552 | 32.698 | 28.889 | 17.440 | 17.239 | 0.720 | 1.609 | 1.061 | 1.012 | 0.023 | 1 | 6.020 | 8.556 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3045 | 88.189 | 21.390 | 38.633 | 27.646 | 16.764 | 17.684 | 0.700 | 1.610 | 0.892 | 0.948 | 0.020 | 1 | 5.821 | 8.247 |
| 3046 | 95.143 | 17.677 | 33.239 | 24.109 | 17.939 | 17.909 | 0.806 | 2.028 | 1.078 | 1.002 | 0.017 | -1 | 6.514 | 4.500 |
| 3047 | 87.959 | 19.786 | 36.106 | 28.364 | 17.935 | 17.582 | 0.746 | 1.795 | 0.984 | 1.020 | 0.021 | 1 | 6.045 | 4.368 |
| 3048 | 83.309 | 17.688 | 38.269 | 29.981 | 18.529 | 18.616 | 0.820 | 2.100 | 0.971 | 0.995 | 0.023 | 1 | 5.837 | 4.126 |
| 3049 | 91.895 | 18.199 | 33.241 | 25.976 | 17.894 | 19.891 | 0.785 | 2.076 | 1.137 | 0.900 | 0.019 | 1 | 6.465 | 4.481 |
| 3050 | 91.326 | 20.981 | 36.559 | 25.239 | 17.228 | 18.863 | 0.706 | 1.720 | 0.987 | 0.913 | 0.019 | 1 | 8.813 | 7.341 |
| 3051 | 95.442 | 18.302 | 37.597 | 27.768 | 17.801 | 17.931 | 0.779 | 1.952 | 0.950 | 0.993 | 0.018 | 1 | 6.472 | 4.547 |
| 3052 | 96.960 | 21.173 | 39.386 | 27.999 | 17.786 | 19.438 | 0.695 | 1.758 | 0.945 | 0.915 | 0.018 | 1 | 9.463 | 7.875 |
| 3053 | 90.310 | 19.868 | 34.217 | 28.555 | 16.261 | 19.177 | 0.745 | 1.784 | 1.036 | 0.848 | 0.020 | 1 | 9.572 | 7.958 |
| 3054 | 91.546 | 17.846 | 38.742 | 29.735 | 17.741 | 18.282 | 0.800 | 2.019 | 0.930 | 0.970 | 0.020 | 1 | 6.326 | 4.452 |
| 3055 | 82.201 | 20.683 | 36.351 | 29.029 | 16.628 | 19.373 | 0.731 | 1.741 | 0.990 | 0.858 | 0.023 | 1 | 5.815 | 8.223 |
| 3056 | 93.966 | 17.830 | 38.561 | 26.005 | 18.957 | 18.841 | 0.809 | 2.120 | 0.980 | 1.006 | 0.018 | 1 | 6.130 | 4.261 |
| 3057 | 81.053 | 19.208 | 33.169 | 24.858 | 16.794 | 17.134 | 0.773 | 1.766 | 1.023 | 0.980 | 0.022 | 1 | 2.716 | 3.882 |
| 3058 | 97.142 | 21.649 | 38.930 | 29.932 | 16.680 | 18.931 | 0.690 | 1.645 | 0.915 | 0.881 | 0.018 | 1 | 9.877 | 8.271 |
| 3059 | 83.765 | 19.999 | 34.484 | 26.546 | 17.490 | 17.065 | 0.749 | 1.728 | 1.002 | 1.025 | 0.022 | 1 | 8.501 | 7.100 |
| 3060 | 87.014 | 21.504 | 37.316 | 26.421 | 19.077 | 16.093 | 0.708 | 1.636 | 0.942 | 1.185 | 0.020 | 1 | 8.422 | 7.043 |
| 3061 | 89.439 | 19.866 | 36.469 | 26.026 | 17.084 | 17.360 | 0.741 | 1.734 | 0.944 | 0.984 | 0.019 | 1 | 8.722 | 7.279 |
| 3062 | 94.026 | 19.617 | 38.780 | 29.147 | 17.289 | 17.456 | 0.743 | 1.771 | 0.896 | 0.990 | 0.019 | 1 | 6.305 | 4.558 |
| 3063 | 87.109 | 18.788 | 36.377 | 24.015 | 16.873 | 17.922 | 0.769 | 1.852 | 0.957 | 0.942 | 0.019 | 1 | 5.509 | 3.941 |
| 3064 | 97.112 | 18.515 | 35.195 | 24.272 | 17.971 | 18.095 | 0.772 | 1.948 | 1.025 | 0.993 | 0.016 | 1 | 6.461 | 4.508 |
| 3065 | 95.978 | 20.377 | 32.256 | 28.117 | 16.887 | 16.962 | 0.729 | 1.661 | 1.049 | 0.996 | 0.018 | 1 | 3.463 | 4.932 |
| 3066 | 80.176 | 18.476 | 33.466 | 28.927 | 18.348 | 19.889 | 0.786 | 2.070 | 1.143 | 0.923 | 0.024 | 1 | 5.938 | 4.194 |
| 3067 | 98.152 | 21.893 | 39.675 | 27.672 | 18.178 | 16.116 | 0.685 | 1.566 | 0.864 | 1.128 | 0.017 | 1 | 9.455 | 7.955 |
| 3068 | 81.086 | 17.709 | 36.752 | 24.437 | 19.753 | 18.882 | 0.827 | 2.182 | 1.051 | 1.046 | 0.022 | 1 | 5.141 | 3.633 |
| 3069 | 83.873 | 20.210 | 37.434 | 29.359 | 19.624 | 18.052 | 0.738 | 1.864 | 1.006 | 1.087 | 0.022 | 1 | 8.615 | 7.159 |
| 3070 | 93.146 | 19.701 | 34.678 | 28.298 | 19.680 | 17.141 | 0.735 | 1.869 | 1.062 | 1.148 | 0.019 | 1 | 6.595 | 4.674 |
| 3071 | 89.258 | 20.524 | 34.290 | 27.548 | 17.220 | 16.579 | 0.733 | 1.647 | 0.986 | 1.039 | 0.020 | 1 | 6.186 | 8.854 |
| 3072 | 99.087 | 21.303 | 34.560 | 28.904 | 18.325 | 19.119 | 0.692 | 1.758 | 1.083 | 0.958 | 0.018 | 1 | 7.011 | 5.043 |
| 3073 | 86.527 | 21.424 | 32.672 | 29.398 | 17.880 | 19.255 | 0.709 | 1.733 | 1.137 | 0.929 | 0.021 | 1 | 9.576 | 7.971 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3074 | 97.554 | 21.168 | 37.621 | 29.019 | 19.642 | 16.510 | 0.701 | 1.708 | 0.961 | 1.190 | 0.018 | 1 | 6.609 | 4.801 |
| 3075 | 86.740 | 20.300 | 33.400 | 26.715 | 19.728 | 18.498 | 0.725 | 1.883 | 1.144 | 1.066 | 0.021 | 1 | 6.064 | 4.321 |
| 3076 | 82.083 | 17.740 | 32.207 | 24.012 | 18.880 | 17.608 | 0.812 | 2.057 | 1.133 | 1.072 | 0.021 | 1 | 5.591 | 3.929 |
| 3077 | 95.033 | 21.513 | 33.406 | 28.547 | 18.902 | 19.198 | 0.690 | 1.771 | 1.141 | 0.985 | 0.019 | 1 | 6.802 | 4.886 |
| 3078 | 92.592 | 18.799 | 36.013 | 28.828 | 16.635 | 17.173 | 0.770 | 1.798 | 0.939 | 0.969 | 0.019 | 1 | 6.434 | 4.631 |
| 3079 | 98.352 | 20.903 | 32.448 | 28.540 | 18.844 | 18.820 | 0.698 | 1.802 | 1.161 | 1.001 | 0.018 | -1 | 7.166 | 5.087 |
| 3080 | 99.362 | 18.539 | 35.296 | 27.711 | 19.397 | 18.781 | 0.778 | 2.059 | 1.082 | 1.033 | 0.017 | 1 | 7.044 | 4.842 |
| 3081 | 85.684 | 19.457 | 32.836 | 27.037 | 18.103 | 16.020 | 0.762 | 1.754 | 1.039 | 1.130 | 0.021 | 1 | 6.012 | 4.356 |
| 3082 | 99.522 | 21.417 | 37.093 | 26.692 | 18.595 | 17.691 | 0.689 | 1.694 | 0.978 | 1.051 | 0.017 | 1 | 6.553 | 4.745 |
| 3083 | 80.795 | 17.724 | 32.143 | 29.932 | 16.626 | 19.749 | 0.799 | 2.052 | 1.132 | 0.842 | 0.024 | -1 | 6.245 | 4.398 |
| 3084 | 86.034 | 20.339 | 34.445 | 28.803 | 16.146 | 16.202 | 0.746 | 1.590 | 0.939 | 0.997 | 0.021 | 1 | 6.132 | 8.754 |
| 3085 | 87.465 | 21.775 | 32.930 | 24.268 | 16.559 | 18.866 | 0.685 | 1.627 | 1.076 | 0.878 | 0.019 | 1 | 5.846 | 8.335 |
| 3086 | 89.176 | 21.596 | 36.611 | 28.061 | 16.501 | 19.510 | 0.695 | 1.667 | 0.984 | 0.846 | 0.020 | 1 | 6.121 | 8.671 |
| 3087 | 87.216 | 21.120 | 37.459 | 26.592 | 17.544 | 16.246 | 0.713 | 1.600 | 0.902 | 1.080 | 0.020 | 1 | 8.480 | 7.099 |
| 3088 | 90.528 | 19.757 | 36.290 | 28.195 | 17.188 | 16.070 | 0.751 | 1.683 | 0.916 | 1.070 | 0.020 | 1 | 9.193 | 7.721 |
| 3089 | 89.557 | 17.771 | 35.419 | 24.055 | 18.512 | 19.390 | 0.809 | 2.133 | 1.070 | 0.955 | 0.019 | 1 | 5.875 | 4.092 |
| 3090 | 89.455 | 19.306 | 33.836 | 26.115 | 17.867 | 18.455 | 0.748 | 1.881 | 1.074 | 0.968 | 0.019 | 1 | 6.156 | 4.372 |
| 3091 | 94.707 | 18.457 | 32.636 | 24.266 | 17.984 | 19.532 | 0.778 | 2.033 | 1.150 | 0.921 | 0.017 | -1 | 6.546 | 4.528 |
| 3092 | 82.094 | 19.431 | 38.480 | 26.150 | 19.870 | 16.716 | 0.763 | 1.883 | 0.951 | 1.189 | 0.022 | 1 | 7.685 | 6.391 |
| 3093 | 88.838 | 20.786 | 32.801 | 27.886 | 16.866 | 19.252 | 0.721 | 1.738 | 1.101 | 0.876 | 0.020 | 1 | 9.512 | 7.899 |
| 3094 | 92.834 | 19.167 | 38.549 | 25.014 | 16.250 | 16.238 | 0.754 | 1.695 | 0.843 | 1.001 | 0.018 | 1 | 5.772 | 4.190 |
| 3095 | 91.805 | 19.762 | 36.180 | 25.991 | 19.745 | 16.583 | 0.736 | 1.838 | 1.004 | 1.191 | 0.019 | 1 | 6.080 | 4.339 |
| 3096 | 98.303 | 20.878 | 36.681 | 27.539 | 16.328 | 16.103 | 0.713 | 1.553 | 0.884 | 1.014 | 0.017 | 1 | 6.583 | 9.433 |
| 3097 | 97.381 | 21.448 | 39.340 | 28.163 | 18.690 | 17.621 | 0.692 | 1.693 | 0.923 | 1.061 | 0.018 | 1 | 9.503 | 7.938 |
| 3098 | 83.853 | 18.900 | 38.049 | 27.148 | 16.742 | 19.950 | 0.770 | 1.941 | 0.964 | 0.839 | 0.022 | 1 | 8.166 | 6.758 |
| 3099 | 85.991 | 19.777 | 35.862 | 25.348 | 19.541 | 17.635 | 0.744 | 1.880 | 1.037 | 1.108 | 0.020 | 1 | 5.622 | 4.022 |
| 3100 | 92.544 | 21.733 | 39.575 | 29.084 | 18.990 | 19.329 | 0.688 | 1.763 | 0.968 | 0.982 | 0.019 | 1 | 9.171 | 7.624 |
| 3101 | 89.951 | 20.121 | 34.065 | 25.456 | 18.715 | 18.674 | 0.726 | 1.858 | 1.098 | 1.002 | 0.019 | 1 | 6.086 | 4.334 |
| 3102 | 86.627 | 19.774 | 36.151 | 26.387 | 17.478 | 17.567 | 0.748 | 1.772 | 0.969 | 0.995 | 0.021 | 1 | 8.537 | 7.113 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3103 | 91.194 | 21.602 | 35.719 | 29.712 | 18.498 | 19.680 | 0.696 | 1.767 | 1.069 | 0.940 | 0.020 | 1 | 9.668 | 8.058 |
| 3104 | 81.529 | 21.810 | 35.858 | 24.617 | 18.070 | 18.122 | 0.697 | 1.659 | 1.009 | 0.997 | 0.022 | 1 | 7.819 | 6.492 |
| 3105 | 91.512 | 19.757 | 39.770 | 27.756 | 16.840 | 19.095 | 0.737 | 1.819 | 0.904 | 0.882 | 0.019 | 1 | 8.812 | 7.318 |
| 3106 | 92.339 | 19.457 | 36.184 | 25.334 | 19.129 | 17.447 | 0.747 | 1.880 | 1.011 | 1.096 | 0.018 | 1 | 6.073 | 4.306 |
| 3107 | 95.286 | 20.751 | 39.053 | 29.498 | 19.658 | 17.971 | 0.707 | 1.813 | 0.964 | 1.094 | 0.019 | 1 | 6.441 | 4.620 |
| 3108 | 92.789 | 20.346 | 33.244 | 28.323 | 19.072 | 18.345 | 0.716 | 1.839 | 1.126 | 1.040 | 0.019 | 1 | 6.686 | 4.753 |
| 3109 | 84.722 | 18.743 | 34.015 | 25.718 | 19.626 | 19.577 | 0.780 | 2.092 | 1.153 | 1.002 | 0.021 | 1 | 5.810 | 4.083 |
| 3110 | 86.743 | 18.066 | 39.995 | 28.570 | 18.407 | 19.831 | 0.806 | 2.117 | 0.956 | 0.928 | 0.021 | 1 | 5.729 | 4.046 |
| 3111 | 87.586 | 19.999 | 39.432 | 27.417 | 17.476 | 17.514 | 0.738 | 1.750 | 0.887 | 0.998 | 0.021 | 1 | 8.388 | 6.980 |
| 3112 | 92.176 | 17.651 | 33.460 | 25.991 | 16.290 | 19.492 | 0.802 | 2.027 | 1.069 | 0.836 | 0.019 | -1 | 6.440 | 4.493 |
| 3113 | 97.435 | 21.355 | 36.127 | 27.919 | 17.796 | 16.319 | 0.702 | 1.598 | 0.944 | 1.090 | 0.018 | 1 | 6.631 | 9.482 |
| 3114 | 97.662 | 19.819 | 38.943 | 29.907 | 17.563 | 16.344 | 0.737 | 1.711 | 0.871 | 1.075 | 0.018 | 1 | 6.594 | 4.798 |
| 3115 | 86.356 | 17.833 | 35.690 | 25.722 | 19.322 | 16.578 | 0.811 | 2.013 | 1.006 | 1.166 | 0.020 | 1 | 5.761 | 4.062 |
| 3116 | 91.360 | 21.161 | 39.250 | 28.270 | 18.306 | 18.192 | 0.705 | 1.725 | 0.930 | 1.006 | 0.020 | 1 | 8.944 | 7.452 |
| 3117 | 90.199 | 21.804 | 34.197 | 24.101 | 19.741 | 16.530 | 0.694 | 1.663 | 1.061 | 1.194 | 0.018 | 1 | 8.754 | 7.324 |
| 3118 | 82.492 | 21.480 | 36.906 | 29.639 | 17.885 | 17.492 | 0.714 | 1.647 | 0.959 | 1.022 | 0.023 | 1 | 8.670 | 7.248 |
| 3119 | 86.307 | 18.902 | 38.927 | 25.458 | 18.980 | 18.185 | 0.777 | 1.966 | 0.955 | 1.044 | 0.020 | 1 | 5.399 | 3.845 |
| 3120 | 95.334 | 20.684 | 37.375 | 27.910 | 17.492 | 19.705 | 0.710 | 1.798 | 0.995 | 0.888 | 0.018 | 1 | 6.389 | 4.605 |
| 3121 | 83.757 | 19.088 | 32.083 | 26.424 | 17.012 | 17.925 | 0.768 | 1.830 | 1.089 | 0.949 | 0.022 | 1 | 5.920 | 4.245 |
| 3122 | 95.697 | 18.416 | 33.276 | 27.788 | 17.202 | 16.164 | 0.772 | 1.812 | 1.003 | 1.064 | 0.018 | -1 | 6.821 | 4.848 |
| 3123 | 86.092 | 18.065 | 39.508 | 25.713 | 18.147 | 17.619 | 0.803 | 1.980 | 0.905 | 1.030 | 0.020 | 1 | 5.365 | 3.815 |
| 3124 | 89.911 | 20.854 | 37.608 | 29.018 | 19.509 | 17.425 | 0.716 | 1.771 | 0.982 | 1.120 | 0.020 | 1 | 9.107 | 7.594 |
| 3125 | 86.551 | 18.642 | 32.407 | 26.719 | 17.829 | 16.228 | 0.777 | 1.827 | 1.051 | 1.099 | 0.021 | 1 | 6.127 | 4.379 |
| 3126 | 96.312 | 19.441 | 37.962 | 29.358 | 19.381 | 19.133 | 0.749 | 1.981 | 1.015 | 1.013 | 0.018 | 1 | 6.692 | 4.692 |
| 3127 | 95.811 | 19.645 | 38.062 | 28.871 | 19.935 | 17.919 | 0.742 | 1.927 | 0.995 | 1.113 | 0.018 | 1 | 6.569 | 4.629 |
| 3128 | 89.223 | 20.779 | 39.742 | 28.308 | 16.805 | 16.377 | 0.718 | 1.597 | 0.835 | 1.026 | 0.020 | 1 | 8.676 | 7.276 |
| 3129 | 82.214 | 20.787 | 35.557 | 25.732 | 16.571 | 16.669 | 0.724 | 1.599 | 0.935 | 0.994 | 0.022 | 1 | 5.448 | 7.735 |
| 3130 | 95.442 | 17.668 | 38.385 | 25.584 | 19.830 | 18.554 | 0.816 | 2.173 | 1.000 | 1.069 | 0.017 | 1 | 6.236 | 4.304 |
| 3131 | 84.508 | 21.476 | 36.487 | 27.854 | 18.369 | 17.382 | 0.710 | 1.665 | 0.980 | 1.057 | 0.022 | 1 | 8.567 | 7.153 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 3132 | 83.223 | 20.091 | 32.581 | 26.347 | 18.119 | 16.722 | 0.748 | 1.734 | 1.069 | 1.084 | 0.022 | 1 | 2.909 | 4.150 |
| 3133 | 97.076 | 17.982 | 38.688 | 26.377 | 19.284 | 17.489 | 0.800 | 2.045 | 0.951 | 1.103 | 0.017 | 1 | 6.386 | 4.436 |
| 3134 | 83.763 | 18.560 | 38.487 | 29.180 | 18.994 | 19.465 | 0.791 | 2.072 | 0.999 | 0.976 | 0.022 | 1 | 5.727 | 4.064 |
| 3135 | 87.674 | 20.952 | 36.945 | 29.381 | 19.890 | 17.065 | 0.718 | 1.764 | 1.000 | 1.166 | 0.021 | 1 | 9.033 | 7.542 |
| 3136 | 85.184 | 20.596 | 32.949 | 26.810 | 17.980 | 17.250 | 0.732 | 1.711 | 1.069 | 1.042 | 0.021 | 1 | 8.890 | 7.433 |
| 3137 | 87.662 | 18.472 | 34.719 | 26.988 | 17.177 | 17.434 | 0.779 | 1.874 | 0.997 | 0.985 | 0.020 | 1 | 6.040 | 4.306 |
| 3138 | 99.022 | 19.579 | 33.721 | 25.591 | 19.858 | 19.286 | 0.744 | 1.999 | 1.161 | 1.030 | 0.016 | 1 | 6.902 | 4.774 |
| 3139 | 94.743 | 21.081 | 32.861 | 29.212 | 16.850 | 16.281 | 0.719 | 1.572 | 1.008 | 1.035 | 0.019 | 1 | 6.859 | 9.829 |
| 3140 | 99.202 | 19.125 | 36.683 | 29.725 | 18.204 | 18.886 | 0.747 | 1.939 | 1.011 | 0.964 | 0.018 | 1 | 7.051 | 4.940 |
| 3141 | 88.193 | 21.538 | 35.335 | 26.565 | 16.124 | 19.259 | 0.694 | 1.643 | 1.001 | 0.837 | 0.020 | 1 | 5.974 | 8.482 |
| 3142 | 93.533 | 20.636 | 34.058 | 26.243 | 17.445 | 19.322 | 0.713 | 1.782 | 1.080 | 0.903 | 0.018 | 1 | 6.378 | 4.589 |
| 3143 | 96.598 | 18.932 | 39.931 | 29.402 | 17.019 | 16.101 | 0.760 | 1.749 | 0.829 | 1.057 | 0.018 | 1 | 6.405 | 4.632 |
| 3144 | 87.688 | 17.981 | 33.636 | 24.727 | 17.397 | 16.188 | 0.792 | 1.868 | 0.998 | 1.075 | 0.020 | 1 | 5.896 | 4.188 |
| 3145 | 98.085 | 19.149 | 37.988 | 24.027 | 18.162 | 17.226 | 0.747 | 1.848 | 0.932 | 1.054 | 0.016 | 1 | 6.213 | 4.387 |
| 3146 | 81.684 | 21.342 | 38.985 | 25.791 | 16.318 | 16.259 | 0.695 | 1.526 | 0.836 | 1.004 | 0.022 | 1 | 5.166 | 7.271 |
| 3147 | 93.063 | 20.486 | 39.113 | 25.545 | 17.078 | 18.853 | 0.714 | 1.754 | 0.919 | 0.906 | 0.018 | 1 | 8.701 | 7.232 |
| 3148 | 98.877 | 17.794 | 38.677 | 26.306 | 16.453 | 16.847 | 0.784 | 1.871 | 0.861 | 0.977 | 0.017 | -1 | 6.441 | 4.547 |
| 3149 | 89.449 | 19.611 | 32.895 | 29.461 | 18.993 | 16.606 | 0.745 | 1.815 | 1.082 | 1.144 | 0.021 | 1 | 6.601 | 4.725 |
| 3150 | 87.432 | 18.256 | 36.502 | 25.373 | 16.080 | 17.665 | 0.787 | 1.848 | 0.924 | 0.910 | 0.020 | 1 | 5.660 | 4.058 |
| 3151 | 80.410 | 20.284 | 39.630 | 24.032 | 16.124 | 19.626 | 0.725 | 1.762 | 0.902 | 0.822 | 0.022 | 1 | 7.124 | 5.865 |
| 3152 | 94.324 | 19.168 | 34.691 | 25.057 | 16.057 | 17.185 | 0.755 | 1.734 | 0.958 | 0.934 | 0.018 | 1 | 6.242 | 4.503 |
| 3153 | 94.592 | 18.415 | 34.036 | 27.371 | 17.482 | 17.177 | 0.774 | 1.882 | 1.018 | 1.018 | 0.018 | -1 | 6.669 | 4.700 |
| 3154 | 91.805 | 19.738 | 34.128 | 25.856 | 16.871 | 17.494 | 0.743 | 1.741 | 1.007 | 0.964 | 0.019 | 1 | 6.194 | 4.474 |
| 3155 | 98.857 | 20.681 | 37.973 | 29.296 | 17.166 | 17.762 | 0.713 | 1.689 | 0.920 | 0.966 | 0.018 | 1 | 10.027 | 8.390 |
| 3156 | 96.404 | 19.928 | 35.577 | 28.932 | 18.181 | 17.658 | 0.728 | 1.798 | 1.007 | 1.030 | 0.018 | 1 | 6.770 | 4.842 |
| 3157 | 93.515 | 21.890 | 38.161 | 29.931 | 17.159 | 16.725 | 0.693 | 1.548 | 0.888 | 1.026 | 0.019 | 1 | 6.476 | 9.199 |
| 3158 | 80.399 | 21.195 | 33.895 | 27.086 | 16.871 | 19.579 | 0.718 | 1.720 | 1.075 | 0.862 | 0.023 | 1 | 5.649 | 8.012 |
| 3159 | 80.063 | 20.292 | 32.898 | 25.061 | 16.628 | 16.365 | 0.747 | 1.626 | 1.003 | 1.016 | 0.022 | 1 | 5.415 | 7.736 |
| 3160 | 95.811 | 21.177 | 37.252 | 26.486 | 19.589 | 18.355 | 0.695 | 1.792 | 1.019 | 1.067 | 0.018 | 1 | 6.305 | 4.516 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 3161 | 81.415 | 18.050 | 39.782 | 28.230 | 19.718 | 18.544 | 0.818 | 2.120 | 0.962 | 1.063 | 0.023 | 1 | 5.325 | 3.783 |
| 3162 | 90.882 | 19.935 | 39.351 | 27.142 | 17.799 | 17.139 | 0.736 | 1.753 | 0.888 | 1.039 | 0.019 | 1 | 8.665 | 7.219 |
| 3163 | 94.639 | 20.046 | 32.425 | 27.596 | 17.850 | 17.796 | 0.728 | 1.778 | 1.099 | 1.003 | 0.018 | 1 | 6.774 | 4.843 |
| 3164 | 99.062 | 20.140 | 32.647 | 28.133 | 17.330 | 18.498 | 0.723 | 1.779 | 1.097 | 0.937 | 0.017 | -1 | 7.122 | 5.088 |
| 3165 | 96.187 | 17.849 | 38.178 | 27.528 | 18.517 | 18.936 | 0.804 | 2.098 | 0.981 | 0.978 | 0.018 | 1 | 6.504 | 4.507 |
| 3166 | 80.493 | 21.214 | 38.562 | 27.583 | 18.415 | 16.273 | 0.720 | 1.635 | 0.900 | 1.132 | 0.023 | 1 | 7.854 | 6.538 |
| 3167 | 99.635 | 20.430 | 36.843 | 24.962 | 16.582 | 19.171 | 0.710 | 1.750 | 0.970 | 0.865 | 0.016 | 1 | 6.436 | 4.631 |
| 3168 | 95.992 | 20.617 | 34.708 | 29.389 | 18.245 | 19.940 | 0.708 | 1.852 | 1.100 | 0.915 | 0.019 | 1 | 6.884 | 4.910 |
| 3169 | 85.915 | 21.625 | 36.395 | 28.501 | 16.076 | 18.709 | 0.697 | 1.609 | 0.956 | 0.859 | 0.021 | 1 | 5.980 | 8.465 |
| 3170 | 93.539 | 17.888 | 35.106 | 26.696 | 16.014 | 19.466 | 0.786 | 1.983 | 1.011 | 0.823 | 0.018 | -1 | 6.430 | 4.527 |
| 3171 | 86.049 | 18.747 | 37.702 | 24.264 | 18.493 | 19.867 | 0.781 | 2.046 | 1.017 | 0.931 | 0.020 | 1 | 5.375 | 3.812 |
| 3172 | 87.258 | 21.433 | 35.400 | 28.126 | 16.464 | 18.670 | 0.704 | 1.639 | 0.992 | 0.882 | 0.021 | 1 | 6.096 | 8.648 |
| 3173 | 96.385 | 20.753 | 32.242 | 26.493 | 17.584 | 18.681 | 0.708 | 1.747 | 1.125 | 0.941 | 0.018 | 1 | 3.449 | 4.847 |
| 3174 | 88.901 | 18.463 | 39.080 | 24.752 | 19.933 | 17.083 | 0.792 | 2.005 | 0.947 | 1.167 | 0.019 | 1 | 5.517 | 3.902 |
| 3175 | 86.326 | 19.558 | 32.821 | 26.899 | 16.661 | 17.017 | 0.760 | 1.722 | 1.026 | 0.979 | 0.021 | 1 | 3.019 | 4.323 |
| 3176 | 91.836 | 18.085 | 36.699 | 29.825 | 18.904 | 16.307 | 0.789 | 1.947 | 0.959 | 1.159 | 0.020 | 1 | 6.534 | 4.605 |
| 3177 | 98.573 | 21.296 | 33.295 | 28.767 | 16.388 | 19.178 | 0.700 | 1.670 | 1.068 | 0.855 | 0.018 | 1 | 10.580 | 8.774 |
| 3178 | 87.526 | 17.942 | 34.093 | 29.250 | 17.048 | 18.873 | 0.791 | 2.002 | 1.054 | 0.903 | 0.021 | 1 | 6.415 | 4.515 |
| 3179 | 81.852 | 18.738 | 33.285 | 27.807 | 17.081 | 17.014 | 0.786 | 1.820 | 1.024 | 1.004 | 0.023 | 1 | 5.833 | 4.208 |
| 3180 | 94.521 | 21.997 | 33.600 | 28.817 | 18.774 | 19.603 | 0.682 | 1.745 | 1.142 | 0.958 | 0.019 | 1 | 10.115 | 8.412 |
| 3181 | 96.155 | 19.252 | 39.897 | 29.754 | 19.504 | 19.532 | 0.758 | 2.028 | 0.978 | 0.999 | 0.019 | 1 | 6.559 | 4.593 |
| 3182 | 99.935 | 21.478 | 32.274 | 24.171 | 17.273 | 17.468 | 0.685 | 1.617 | 1.076 | 0.989 | 0.016 | 1 | 3.394 | 4.834 |
| 3183 | 90.464 | 18.323 | 38.442 | 26.722 | 16.163 | 19.006 | 0.777 | 1.919 | 0.915 | 0.850 | 0.019 | 1 | 5.868 | 4.186 |
| 3184 | 93.433 | 18.165 | 37.112 | 25.543 | 17.069 | 19.946 | 0.785 | 2.038 | 0.997 | 0.856 | 0.018 | 1 | 6.133 | 4.303 |
| 3185 | 92.998 | 19.808 | 36.154 | 28.302 | 17.109 | 17.584 | 0.741 | 1.751 | 0.960 | 0.973 | 0.019 | 1 | 6.360 | 4.607 |
| 3186 | 93.717 | 19.625 | 33.265 | 29.225 | 19.062 | 19.882 | 0.739 | 1.984 | 1.171 | 0.959 | 0.019 | 1 | 6.939 | 4.841 |
| 3187 | 93.939 | 19.360 | 34.907 | 27.419 | 18.228 | 18.400 | 0.742 | 1.892 | 1.049 | 0.991 | 0.019 | 1 | 6.541 | 4.622 |
| 3188 | 87.508 | 19.610 | 33.261 | 25.797 | 16.075 | 16.852 | 0.756 | 1.679 | 0.990 | 0.954 | 0.020 | 1 | 5.930 | 8.517 |
| 3189 | 80.668 | 21.386 | 36.938 | 26.927 | 16.045 | 17.182 | 0.701 | 1.554 | 0.900 | 0.934 | 0.023 | 1 | 5.410 | 7.631 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 3190 | 81.032 | 20.785 | 39.223 | 27.104 | 18.906 | 19.014 | 0.725 | 1.824 | 0.967 | 0.994 | 0.023 | 1 | 7.725 | 6.392 |
| 3191 | 85.501 | 19.160 | 35.562 | 24.967 | 17.014 | 18.361 | 0.762 | 1.846 | 0.995 | 0.927 | 0.020 | 1 | 5.558 | 3.991 |
| 3192 | 84.003 | 20.627 | 38.087 | 27.980 | 16.867 | 17.473 | 0.728 | 1.665 | 0.902 | 0.965 | 0.022 | 1 | 8.343 | 6.961 |
| 3193 | 85.924 | 21.694 | 38.890 | 25.064 | 17.319 | 19.683 | 0.687 | 1.706 | 0.951 | 0.880 | 0.020 | 1 | 7.956 | 6.587 |
| 3194 | 86.110 | 17.657 | 37.821 | 28.728 | 16.838 | 17.142 | 0.807 | 1.924 | 0.898 | 0.982 | 0.021 | 1 | 5.860 | 4.186 |
| 3195 | 97.322 | 21.744 | 38.551 | 28.980 | 17.171 | 17.313 | 0.689 | 1.586 | 0.894 | 0.992 | 0.018 | 1 | 6.571 | 9.353 |
| 3196 | 85.997 | 20.435 | 32.646 | 28.347 | 16.808 | 16.094 | 0.746 | 1.610 | 1.008 | 1.044 | 0.021 | 1 | 6.201 | 8.885 |
| 3197 | 98.221 | 19.379 | 35.411 | 24.315 | 17.602 | 19.450 | 0.738 | 1.912 | 1.046 | 0.905 | 0.016 | 1 | 6.497 | 4.566 |
| 3198 | 92.752 | 19.694 | 33.250 | 24.502 | 17.928 | 17.429 | 0.736 | 1.795 | 1.063 | 1.029 | 0.018 | 1 | 6.249 | 4.454 |
| 3199 | 88.015 | 21.894 | 34.288 | 26.861 | 19.764 | 16.435 | 0.700 | 1.653 | 1.056 | 1.203 | 0.020 | 1 | 8.977 | 7.521 |
| 3200 | 99.889 | 20.430 | 34.011 | 26.258 | 19.052 | 17.631 | 0.705 | 1.796 | 1.079 | 1.081 | 0.016 | 1 | 6.898 | 4.889 |
| 3201 | 97.208 | 20.073 | 39.673 | 27.701 | 18.727 | 19.357 | 0.723 | 1.897 | 0.960 | 0.967 | 0.018 | 1 | 6.366 | 4.512 |
| 3202 | 91.830 | 19.543 | 37.214 | 25.556 | 17.786 | 19.423 | 0.739 | 1.904 | 1.000 | 0.916 | 0.019 | 1 | 5.956 | 4.237 |
| 3203 | 90.142 | 20.004 | 36.449 | 25.060 | 19.772 | 19.166 | 0.738 | 1.946 | 1.068 | 1.032 | 0.019 | 1 | 5.865 | 4.157 |
| 3204 | 82.895 | 21.427 | 38.269 | 29.433 | 18.039 | 17.133 | 0.713 | 1.641 | 0.919 | 1.053 | 0.023 | 1 | 8.480 | 7.080 |
| 3205 | 80.233 | 20.445 | 35.610 | 26.909 | 17.192 | 18.281 | 0.739 | 1.735 | 0.996 | 0.940 | 0.023 | 1 | 8.112 | 6.750 |
| 3206 | 88.783 | 21.105 | 35.933 | 27.004 | 16.062 | 18.551 | 0.708 | 1.640 | 0.963 | 0.866 | 0.020 | 1 | 6.002 | 8.532 |
| 3207 | 97.707 | 19.332 | 32.978 | 24.316 | 19.588 | 18.702 | 0.751 | 1.981 | 1.161 | 1.047 | 0.016 | 1 | 6.732 | 4.666 |
| 3208 | 90.557 | 20.920 | 35.524 | 29.190 | 17.001 | 19.284 | 0.717 | 1.734 | 1.021 | 0.882 | 0.020 | 1 | 9.548 | 7.960 |
| 3209 | 89.835 | 18.651 | 32.923 | 25.546 | 17.661 | 18.612 | 0.768 | 1.945 | 1.102 | 0.949 | 0.019 | -1 | 6.242 | 4.388 |
| 3210 | 91.125 | 19.176 | 37.143 | 25.190 | 17.941 | 17.624 | 0.751 | 1.855 | 0.958 | 1.018 | 0.019 | 1 | 5.867 | 4.180 |
| 3211 | 93.663 | 18.846 | 33.083 | 24.915 | 18.518 | 17.497 | 0.762 | 1.911 | 1.089 | 1.058 | 0.018 | 1 | 6.441 | 4.517 |
| 3212 | 84.232 | 19.124 | 32.894 | 29.710 | 17.457 | 17.899 | 0.768 | 1.849 | 1.075 | 0.975 | 0.022 | 1 | 6.285 | 4.511 |
| 3213 | 81.251 | 20.385 | 34.079 | 26.387 | 18.460 | 17.745 | 0.741 | 1.776 | 1.062 | 1.040 | 0.022 | 1 | 8.277 | 6.894 |
| 3214 | 95.937 | 18.704 | 37.098 | 28.938 | 19.653 | 18.337 | 0.775 | 2.031 | 1.024 | 1.072 | 0.018 | 1 | 6.730 | 4.680 |
| 3215 | 97.405 | 19.274 | 34.239 | 25.932 | 18.284 | 18.763 | 0.745 | 1.922 | 1.082 | 0.975 | 0.017 | -1 | 6.725 | 4.705 |
| 3216 | 98.601 | 20.631 | 37.514 | 29.274 | 16.717 | 19.425 | 0.713 | 1.752 | 0.963 | 0.861 | 0.018 | 1 | 10.091 | 8.397 |
| 3217 | 89.912 | 18.524 | 33.311 | 24.623 | 17.079 | 19.582 | 0.769 | 1.979 | 1.101 | 0.872 | 0.019 | 1 | 6.110 | 4.297 |
| 3218 | 97.371 | 18.836 | 35.562 | 28.802 | 17.962 | 16.767 | 0.753 | 1.844 | 0.977 | 1.071 | 0.018 | 1 | 6.867 | 4.864 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3219 | 92.276 | 20.360 | 37.186 | 24.488 | 16.522 | 17.969 | 0.720 | 1.694 | 0.928 | 0.919 | 0.018 | 1 | 8.703 | 7.261 |
| 3220 | 89.162 | 18.455 | 39.535 | 25.521 | 17.378 | 18.444 | 0.781 | 1.941 | 0.906 | 0.942 | 0.019 | 1 | 5.559 | 3.952 |
| 3221 | 98.947 | 21.187 | 39.615 | 25.115 | 19.674 | 18.035 | 0.689 | 1.780 | 0.952 | 1.091 | 0.016 | 1 | 6.190 | 4.424 |
| 3222 | 94.148 | 18.967 | 34.820 | 26.317 | 19.674 | 18.874 | 0.767 | 2.032 | 1.107 | 1.042 | 0.018 | 1 | 6.508 | 4.527 |
| 3223 | 93.061 | 18.105 | 36.929 | 26.997 | 16.279 | 18.344 | 0.779 | 1.912 | 0.938 | 0.887 | 0.019 | 1 | 6.237 | 4.425 |
| 3224 | 99.738 | 17.685 | 35.120 | 26.694 | 16.828 | 17.170 | 0.804 | 1.922 | 0.968 | 0.980 | 0.017 | -1 | 6.910 | 4.819 |
| 3225 | 86.674 | 18.174 | 35.755 | 29.640 | 18.562 | 16.522 | 0.788 | 1.930 | 0.981 | 1.123 | 0.022 | 1 | 6.220 | 4.419 |
| 3226 | 97.064 | 20.392 | 38.670 | 27.249 | 19.133 | 20.000 | 0.717 | 1.919 | 1.012 | 0.957 | 0.018 | 1 | 6.404 | 4.530 |
| 3227 | 93.494 | 19.626 | 37.740 | 24.412 | 19.520 | 18.371 | 0.747 | 1.931 | 1.004 | 1.063 | 0.018 | 1 | 5.937 | 4.193 |
| 3228 | 89.967 | 19.534 | 33.454 | 26.895 | 16.743 | 16.948 | 0.755 | 1.725 | 1.007 | 0.988 | 0.020 | 1 | 3.137 | 4.467 |
| 3229 | 94.115 | 17.827 | 33.261 | 24.145 | 17.727 | 19.471 | 0.799 | 2.087 | 1.118 | 0.910 | 0.017 | -1 | 6.448 | 4.446 |
| 3230 | 96.480 | 19.155 | 35.427 | 28.843 | 19.721 | 16.371 | 0.750 | 1.884 | 1.019 | 1.205 | 0.018 | 1 | 6.847 | 4.824 |
| 3231 | 93.752 | 18.398 | 36.155 | 27.485 | 16.622 | 19.295 | 0.767 | 1.952 | 0.993 | 0.861 | 0.019 | 1 | 6.425 | 4.540 |
| 3232 | 82.811 | 18.589 | 39.732 | 29.327 | 16.587 | 17.759 | 0.786 | 1.848 | 0.864 | 0.934 | 0.023 | 1 | 8.223 | 6.833 |
| 3233 | 92.479 | 17.871 | 39.427 | 25.994 | 18.315 | 19.815 | 0.808 | 2.134 | 0.967 | 0.924 | 0.018 | 1 | 5.924 | 4.138 |
| 3234 | 89.830 | 20.899 | 36.919 | 25.076 | 19.362 | 16.595 | 0.715 | 1.721 | 0.974 | 1.167 | 0.019 | 1 | 8.513 | 7.106 |
| 3235 | 87.958 | 17.910 | 35.977 | 24.005 | 19.876 | 16.615 | 0.809 | 2.038 | 1.014 | 1.196 | 0.019 | 1 | 5.668 | 3.986 |
| 3236 | 92.052 | 17.663 | 38.166 | 27.550 | 19.116 | 17.714 | 0.815 | 2.085 | 0.965 | 1.079 | 0.019 | 1 | 6.191 | 4.316 |
| 3237 | 90.676 | 20.269 | 32.313 | 29.220 | 16.138 | 18.497 | 0.739 | 1.709 | 1.072 | 0.872 | 0.020 | 1 | 9.987 | 8.293 |
| 3238 | 89.118 | 20.517 | 37.494 | 29.906 | 16.017 | 17.163 | 0.732 | 1.617 | 0.885 | 0.933 | 0.021 | 1 | 6.229 | 8.861 |
| 3239 | 91.680 | 20.112 | 39.275 | 26.059 | 16.988 | 19.591 | 0.725 | 1.819 | 0.931 | 0.867 | 0.019 | 1 | 8.622 | 7.150 |
| 3240 | 89.789 | 20.641 | 38.986 | 28.731 | 19.873 | 16.559 | 0.722 | 1.765 | 0.934 | 1.200 | 0.020 | 1 | 8.842 | 7.379 |
| 3241 | 82.809 | 19.671 | 39.746 | 27.771 | 19.170 | 19.967 | 0.756 | 1.990 | 0.985 | 0.960 | 0.022 | 1 | 7.931 | 6.548 |
| 3242 | 88.418 | 21.400 | 37.010 | 28.518 | 17.185 | 17.949 | 0.705 | 1.642 | 0.949 | 0.957 | 0.021 | 1 | 6.079 | 8.622 |
| 3243 | 89.431 | 18.266 | 37.381 | 27.274 | 16.577 | 18.740 | 0.780 | 1.933 | 0.945 | 0.885 | 0.020 | 1 | 5.963 | 4.245 |
| 3244 | 93.946 | 20.933 | 37.435 | 28.890 | 16.689 | 19.171 | 0.710 | 1.713 | 0.958 | 0.871 | 0.019 | 1 | 9.575 | 7.990 |
| 3245 | 95.677 | 18.263 | 34.316 | 26.766 | 17.050 | 19.683 | 0.779 | 2.011 | 1.070 | 0.866 | 0.018 | -1 | 6.704 | 4.671 |
| 3246 | 91.375 | 19.490 | 39.847 | 24.580 | 17.407 | 17.710 | 0.742 | 1.802 | 0.881 | 0.983 | 0.018 | 1 | 5.556 | 3.985 |
| 3247 | 82.172 | 20.595 | 33.895 | 26.070 | 17.676 | 17.335 | 0.736 | 1.700 | 1.033 | 1.020 | 0.022 | 1 | 8.355 | 6.973 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|--------|-------|
| 3248 | 95.763 | 20.723 | 36.772 | 24.155 | 19.187 | 19.061 | 0.705 | 1.846 | 1.040 | 1.007 | 0.017 | 1 | 6.137 | 4.360 |
| 3249 | 96.274 | 18.619 | 36.382 | 29.741 | 18.582 | 19.610 | 0.773 | 2.051 | 1.050 | 0.948 | 0.019 | 1 | 6.919 | 4.805 |
| 3250 | 98.702 | 18.126 | 37.895 | 27.493 | 19.760 | 17.586 | 0.794 | 2.060 | 0.986 | 1.124 | 0.017 | 1 | 6.719 | 4.641 |
| 3251 | 94.805 | 21.135 | 35.683 | 24.912 | 19.234 | 18.908 | 0.695 | 1.805 | 1.069 | 1.017 | 0.017 | 1 | 6.217 | 4.441 |
| 3252 | 87.304 | 19.420 | 39.273 | 28.008 | 18.277 | 17.873 | 0.752 | 1.861 | 0.920 | 1.023 | 0.021 | 1 | 5.697 | 4.095 |
| 3253 | 99.289 | 20.949 | 33.065 | 25.900 | 17.233 | 19.722 | 0.698 | 1.764 | 1.118 | 0.874 | 0.017 | 1 | 10.204 | 8.437 |
| 3254 | 95.686 | 20.898 | 33.562 | 27.633 | 17.363 | 16.598 | 0.715 | 1.625 | 1.012 | 1.046 | 0.018 | 1 | 6.671 | 9.572 |
| 3255 | 83.681 | 18.983 | 35.874 | 29.555 | 17.612 | 18.750 | 0.770 | 1.915 | 1.014 | 0.939 | 0.023 | 1 | 5.965 | 4.279 |
| 3256 | 88.952 | 19.707 | 37.229 | 28.537 | 19.659 | 16.882 | 0.743 | 1.854 | 0.981 | 1.164 | 0.020 | 1 | 6.065 | 4.348 |
| 3257 | 94.606 | 20.348 | 33.254 | 25.364 | 16.633 | 17.501 | 0.724 | 1.678 | 1.026 | 0.950 | 0.018 | 1 | 3.230 | 4.592 |
| 3258 | 99.681 | 20.095 | 38.773 | 25.610 | 18.872 | 19.151 | 0.723 | 1.892 | 0.981 | 0.985 | 0.016 | 1 | 6.425 | 4.529 |
| 3259 | 84.093 | 19.948 | 36.866 | 24.300 | 16.085 | 19.408 | 0.739 | 1.779 | 0.963 | 0.829 | 0.021 | 1 | 7.891 | 6.545 |
| 3260 | 96.909 | 20.391 | 35.946 | 29.684 | 17.320 | 16.498 | 0.729 | 1.658 | 0.941 | 1.050 | 0.018 | 1 | 10.131 | 8.513 |
| 3261 | 94.806 | 21.651 | 34.604 | 28.424 | 16.079 | 19.435 | 0.692 | 1.640 | 1.026 | 0.827 | 0.019 | 1 | 6.696 | 9.516 |
| 3262 | 87.613 | 20.353 | 33.967 | 25.513 | 17.982 | 18.535 | 0.728 | 1.794 | 1.075 | 0.970 | 0.020 | 1 | 5.896 | 4.244 |
| 3263 | 97.783 | 20.599 | 33.319 | 25.239 | 18.344 | 18.188 | 0.706 | 1.773 | 1.096 | 1.009 | 0.017 | 1 | 6.680 | 4.759 |
| 3264 | 90.698 | 18.052 | 36.746 | 26.499 | 19.040 | 19.762 | 0.803 | 2.149 | 1.056 | 0.963 | 0.019 | 1 | 6.109 | 4.252 |
| 3265 | 82.664 | 19.076 | 38.534 | 24.788 | 16.029 | 16.522 | 0.767 | 1.706 | 0.845 | 0.970 | 0.021 | 1 | 7.572 | 6.294 |
| 3266 | 83.478 | 18.312 | 39.098 | 28.164 | 18.929 | 16.419 | 0.795 | 1.930 | 0.904 | 1.153 | 0.022 | 1 | 5.485 | 3.932 |
| 3267 | 80.435 | 18.719 | 35.162 | 25.508 | 17.993 | 18.652 | 0.780 | 1.958 | 1.042 | 0.965 | 0.022 | 1 | 5.325 | 3.806 |
| 3268 | 80.663 | 21.897 | 35.966 | 28.385 | 19.884 | 19.850 | 0.702 | 1.815 | 1.105 | 1.002 | 0.023 | 1 | 8.367 | 6.945 |
| 3269 | 98.652 | 19.883 | 33.229 | 28.830 | 19.607 | 19.765 | 0.732 | 1.980 | 1.185 | 0.992 | 0.018 | 1 | 7.269 | 5.035 |
| 3270 | 85.843 | 21.856 | 32.636 | 24.362 | 17.986 | 18.357 | 0.692 | 1.663 | 1.114 | 0.980 | 0.020 | 1 | 5.757 | 8.221 |
| 3271 | 89.181 | 19.352 | 34.587 | 24.535 | 16.049 | 18.124 | 0.754 | 1.766 | 0.988 | 0.886 | 0.019 | 1 | 5.831 | 4.211 |
| 3272 | 95.469 | 20.204 | 39.960 | 28.352 | 19.709 | 19.568 | 0.727 | 1.944 | 0.983 | 1.007 | 0.018 | 1 | 6.299 | 4.457 |
| 3273 | 88.433 | 19.612 | 32.640 | 24.846 | 18.101 | 19.679 | 0.737 | 1.926 | 1.157 | 0.920 | 0.019 | 1 | 6.065 | 4.290 |
| 3274 | 95.344 | 20.970 | 38.569 | 24.139 | 16.966 | 17.286 | 0.699 | 1.633 | 0.888 | 0.981 | 0.017 | 1 | 8.788 | 7.344 |
| 3275 | 90.096 | 18.854 | 37.054 | 27.291 | 18.445 | 19.180 | 0.770 | 1.996 | 1.015 | 0.962 | 0.020 | 1 | 6.075 | 4.288 |
| 3276 | 89.599 | 21.578 | 32.096 | 26.265 | 16.659 | 18.858 | 0.695 | 1.646 | 1.107 | 0.883 | 0.019 | 1 | 6.277 | 8.958 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3277 | 90.370 | 21.345 | 35.484 | 26.296 | 16.461 | 17.783 | 0.700 | 1.604 | 0.965 | 0.926 | 0.019 | 1 | 6.054 | 8.623 |
| 3278 | 82.187 | 20.191 | 37.397 | 26.005 | 16.721 | 17.025 | 0.739 | 1.671 | 0.902 | 0.982 | 0.022 | 1 | 7.899 | 6.576 |
| 3279 | 85.701 | 19.741 | 36.286 | 25.542 | 17.525 | 17.158 | 0.749 | 1.757 | 0.956 | 1.021 | 0.021 | 1 | 8.279 | 6.897 |
| 3280 | 90.858 | 21.397 | 35.761 | 28.095 | 16.668 | 18.291 | 0.703 | 1.634 | 0.978 | 0.911 | 0.020 | 1 | 6.285 | 8.935 |
| 3281 | 83.019 | 19.749 | 32.242 | 27.061 | 18.804 | 18.105 | 0.746 | 1.869 | 1.145 | 1.039 | 0.022 | 1 | 5.949 | 4.249 |
| 3282 | 93.651 | 18.251 | 37.138 | 28.204 | 18.642 | 19.775 | 0.791 | 2.105 | 1.034 | 0.943 | 0.019 | 1 | 6.483 | 4.507 |
| 3283 | 82.465 | 19.143 | 37.274 | 27.094 | 17.552 | 19.653 | 0.765 | 1.944 | 0.998 | 0.893 | 0.022 | 1 | 8.113 | 6.715 |
| 3284 | 87.871 | 21.062 | 33.352 | 27.167 | 18.960 | 18.575 | 0.711 | 1.782 | 1.125 | 1.021 | 0.020 | 1 | 6.148 | 4.433 |
| 3285 | 92.632 | 20.328 | 36.164 | 24.688 | 17.909 | 18.681 | 0.719 | 1.800 | 1.012 | 0.959 | 0.018 | 1 | 5.985 | 4.288 |
| 3286 | 81.581 | 18.534 | 32.324 | 27.957 | 18.159 | 17.622 | 0.780 | 1.931 | 1.107 | 1.030 | 0.023 | 1 | 5.985 | 4.248 |
| 3287 | 98.298 | 19.251 | 39.273 | 25.048 | 16.198 | 18.018 | 0.741 | 1.777 | 0.871 | 0.899 | 0.016 | 1 | 6.159 | 4.410 |
| 3288 | 97.584 | 20.851 | 37.287 | 27.413 | 17.546 | 16.047 | 0.712 | 1.611 | 0.901 | 1.093 | 0.018 | 1 | 9.647 | 8.124 |
| 3289 | 80.656 | 19.071 | 34.262 | 25.643 | 16.721 | 19.056 | 0.773 | 1.876 | 1.044 | 0.877 | 0.022 | 1 | 2.731 | 3.870 |
| 3290 | 89.899 | 21.922 | 35.006 | 26.717 | 18.242 | 16.034 | 0.696 | 1.564 | 0.979 | 1.138 | 0.020 | 1 | 6.120 | 8.708 |
| 3291 | 90.056 | 20.166 | 34.805 | 27.048 | 18.053 | 18.861 | 0.729 | 1.830 | 1.061 | 0.957 | 0.020 | 1 | 6.180 | 4.430 |
| 3292 | 92.760 | 21.564 | 32.996 | 24.620 | 18.728 | 18.180 | 0.691 | 1.712 | 1.119 | 1.030 | 0.018 | 1 | 6.229 | 4.498 |
| 3293 | 91.234 | 21.705 | 34.314 | 26.558 | 17.846 | 19.780 | 0.690 | 1.733 | 1.097 | 0.902 | 0.019 | 1 | 9.325 | 7.757 |
| 3294 | 82.089 | 19.646 | 33.746 | 29.419 | 18.897 | 17.360 | 0.756 | 1.845 | 1.074 | 1.089 | 0.023 | 1 | 6.021 | 4.336 |
| 3295 | 81.045 | 21.554 | 32.656 | 24.530 | 16.118 | 19.552 | 0.696 | 1.655 | 1.092 | 0.824 | 0.022 | 1 | 5.483 | 7.789 |
| 3296 | 89.486 | 21.776 | 33.928 | 29.681 | 18.596 | 19.078 | 0.697 | 1.730 | 1.110 | 0.975 | 0.021 | 1 | 9.730 | 8.122 |
| 3297 | 98.704 | 18.945 | 39.867 | 25.487 | 17.056 | 17.914 | 0.746 | 1.846 | 0.877 | 0.952 | 0.017 | 1 | 6.222 | 4.410 |
| 3298 | 88.711 | 21.338 | 32.624 | 25.725 | 18.674 | 16.334 | 0.711 | 1.641 | 1.073 | 1.143 | 0.020 | 1 | 9.083 | 7.614 |
| 3299 | 88.511 | 19.890 | 32.878 | 27.972 | 17.309 | 19.715 | 0.737 | 1.862 | 1.126 | 0.878 | 0.020 | 1 | 6.357 | 4.553 |
| 3300 | 94.670 | 19.486 | 32.543 | 25.843 | 16.529 | 18.978 | 0.743 | 1.822 | 1.091 | 0.871 | 0.018 | -1 | 6.584 | 4.696 |
| 3301 | 95.097 | 18.941 | 33.230 | 27.148 | 16.788 | 18.524 | 0.760 | 1.864 | 1.063 | 0.906 | 0.018 | -1 | 6.729 | 4.765 |
| 3302 | 94.895 | 21.477 | 34.236 | 25.280 | 16.157 | 19.572 | 0.689 | 1.664 | 1.044 | 0.826 | 0.017 | 1 | 9.531 | 7.902 |
| 3303 | 91.148 | 18.911 | 33.791 | 24.148 | 19.958 | 16.736 | 0.767 | 1.940 | 1.086 | 1.193 | 0.018 | 1 | 6.104 | 4.295 |
| 3304 | 93.536 | 18.167 | 39.321 | 27.960 | 16.695 | 19.749 | 0.782 | 2.006 | 0.927 | 0.845 | 0.019 | 1 | 6.184 | 4.368 |
| 3305 | 97.644 | 18.130 | 38.479 | 24.179 | 19.642 | 18.186 | 0.797 | 2.086 | 0.983 | 1.080 | 0.016 | 1 | 6.231 | 4.316 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3306 | 87.838 | 18.643 | 38.694 | 26.960 | 19.472 | 17.073 | 0.783 | 1.960 | 0.944 | 1.141 | 0.020 | 1 | 5.709 | 4.054 |
| 3307 | 96.594 | 18.067 | 38.978 | 29.372 | 19.309 | 17.255 | 0.794 | 2.024 | 0.938 | 1.119 | 0.018 | 1 | 6.652 | 4.632 |
| 3308 | 97.132 | 19.617 | 33.755 | 27.740 | 17.553 | 16.396 | 0.741 | 1.731 | 1.006 | 1.071 | 0.018 | 1 | 6.810 | 4.907 |
| 3309 | 96.267 | 20.487 | 32.456 | 26.385 | 17.880 | 16.482 | 0.720 | 1.677 | 1.059 | 1.085 | 0.018 | 1 | 3.367 | 4.797 |
| 3310 | 84.311 | 21.564 | 34.623 | 24.118 | 19.784 | 17.719 | 0.705 | 1.739 | 1.083 | 1.117 | 0.020 | 1 | 8.112 | 6.759 |
| 3311 | 88.932 | 18.569 | 32.287 | 28.754 | 17.020 | 16.672 | 0.779 | 1.814 | 1.044 | 1.021 | 0.021 | 1 | 6.535 | 4.676 |
| 3312 | 89.824 | 21.209 | 35.355 | 28.997 | 17.347 | 16.552 | 0.717 | 1.598 | 0.959 | 1.048 | 0.020 | 1 | 6.341 | 9.034 |
| 3313 | 81.085 | 21.571 | 39.767 | 29.991 | 18.933 | 19.504 | 0.706 | 1.782 | 0.967 | 0.971 | 0.024 | 1 | 8.227 | 6.815 |
| 3314 | 98.153 | 19.968 | 38.166 | 27.841 | 16.797 | 16.774 | 0.732 | 1.681 | 0.880 | 1.001 | 0.017 | 1 | 9.669 | 8.103 |
| 3315 | 96.192 | 20.640 | 32.834 | 29.443 | 18.664 | 18.643 | 0.707 | 1.808 | 1.136 | 1.001 | 0.019 | 1 | 7.075 | 5.038 |
| 3316 | 96.801 | 21.937 | 38.646 | 28.902 | 19.614 | 19.988 | 0.676 | 1.805 | 1.025 | 0.981 | 0.018 | 1 | 6.502 | 4.674 |
| 3317 | 89.914 | 18.980 | 35.786 | 28.886 | 18.891 | 19.349 | 0.766 | 2.015 | 1.069 | 0.976 | 0.020 | 1 | 6.382 | 4.487 |
| 3318 | 87.774 | 21.431 | 35.981 | 24.196 | 16.252 | 19.385 | 0.691 | 1.663 | 0.990 | 0.838 | 0.019 | 1 | 5.616 | 7.983 |
| 3319 | 97.849 | 20.764 | 38.000 | 29.884 | 19.227 | 18.584 | 0.702 | 1.821 | 0.995 | 1.035 | 0.018 | 1 | 6.771 | 4.837 |
| 3320 | 91.569 | 19.672 | 36.170 | 29.230 | 18.679 | 18.103 | 0.738 | 1.870 | 1.017 | 1.032 | 0.020 | 1 | 6.443 | 4.592 |
| 3321 | 95.762 | 18.399 | 33.652 | 25.881 | 16.012 | 17.624 | 0.777 | 1.828 | 1.000 | 0.909 | 0.017 | -1 | 6.585 | 4.680 |
| 3322 | 83.654 | 17.829 | 32.242 | 27.478 | 19.431 | 16.084 | 0.805 | 1.992 | 1.101 | 1.208 | 0.022 | 1 | 6.100 | 4.296 |
| 3323 | 92.322 | 17.738 | 38.432 | 25.064 | 16.611 | 19.167 | 0.801 | 2.017 | 0.931 | 0.867 | 0.018 | 1 | 5.873 | 4.133 |
| 3324 | 83.457 | 21.608 | 33.481 | 29.611 | 17.155 | 17.433 | 0.715 | 1.601 | 1.033 | 0.984 | 0.023 | 1 | 6.201 | 8.803 |
| 3325 | 94.335 | 17.647 | 35.267 | 25.954 | 16.214 | 16.944 | 0.798 | 1.879 | 0.940 | 0.957 | 0.018 | -1 | 6.374 | 4.505 |
| 3326 | 95.846 | 17.789 | 39.638 | 25.466 | 16.655 | 18.282 | 0.794 | 1.964 | 0.881 | 0.911 | 0.017 | 1 | 6.065 | 4.265 |
| 3327 | 84.477 | 18.719 | 33.039 | 29.764 | 17.130 | 17.824 | 0.778 | 1.867 | 1.058 | 0.961 | 0.022 | 1 | 6.305 | 4.514 |
| 3328 | 85.114 | 19.515 | 32.153 | 26.781 | 19.444 | 19.144 | 0.749 | 1.977 | 1.200 | 1.016 | 0.021 | 1 | 6.117 | 4.311 |
| 3329 | 91.532 | 21.534 | 38.302 | 29.498 | 18.584 | 16.429 | 0.704 | 1.626 | 0.914 | 1.131 | 0.020 | 1 | 9.278 | 7.789 |
| 3330 | 81.467 | 21.934 | 38.373 | 26.666 | 16.784 | 17.775 | 0.683 | 1.576 | 0.901 | 0.944 | 0.023 | 1 | 5.323 | 7.483 |
| 3331 | 93.124 | 18.877 | 36.001 | 29.806 | 17.013 | 18.241 | 0.761 | 1.868 | 0.979 | 0.933 | 0.020 | 1 | 6.625 | 4.728 |
| 3332 | 80.006 | 17.785 | 36.773 | 25.832 | 17.239 | 18.535 | 0.815 | 2.012 | 0.973 | 0.930 | 0.023 | 1 | 5.194 | 3.707 |
| 3333 | 90.950 | 21.502 | 35.192 | 25.579 | 16.868 | 19.211 | 0.693 | 1.678 | 1.025 | 0.878 | 0.019 | 1 | 6.049 | 8.608 |
| 3334 | 92.212 | 20.138 | 39.169 | 29.567 | 16.717 | 18.243 | 0.733 | 1.736 | 0.893 | 0.916 | 0.020 | 1 | 9.270 | 7.749 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3335 | 98.518 | 20.643 | 35.761 | 29.306 | 19.904 | 17.866 | 0.702 | 1.830 | 1.056 | 1.114 | 0.018 | 1 | 6.978 | 4.952 |
| 3336 | 89.925 | 21.885 | 37.944 | 27.461 | 19.021 | 16.540 | 0.694 | 1.625 | 0.937 | 1.150 | 0.020 | 1 | 8.818 | 7.380 |
| 3337 | 81.379 | 19.282 | 36.139 | 27.176 | 16.980 | 19.926 | 0.765 | 1.914 | 1.021 | 0.852 | 0.023 | 1 | 8.185 | 6.786 |
| 3338 | 81.840 | 19.575 | 34.260 | 27.887 | 18.891 | 18.746 | 0.753 | 1.923 | 1.099 | 1.008 | 0.023 | 1 | 5.790 | 4.141 |
| 3339 | 89.861 | 17.761 | 34.026 | 25.924 | 18.358 | 19.403 | 0.807 | 2.126 | 1.110 | 0.946 | 0.019 | 1 | 6.246 | 4.329 |
| 3340 | 82.479 | 18.006 | 35.285 | 27.221 | 19.558 | 19.223 | 0.811 | 2.154 | 1.099 | 1.017 | 0.022 | 1 | 5.725 | 4.021 |
| 3341 | 84.305 | 19.744 | 36.108 | 28.439 | 18.496 | 16.219 | 0.757 | 1.758 | 0.961 | 1.140 | 0.022 | 1 | 8.643 | 7.226 |
| 3342 | 93.685 | 19.966 | 36.400 | 27.825 | 16.784 | 17.229 | 0.738 | 1.704 | 0.934 | 0.974 | 0.019 | 1 | 9.457 | 7.912 |
| 3343 | 92.799 | 18.935 | 36.772 | 28.111 | 19.347 | 18.312 | 0.768 | 1.989 | 1.024 | 1.057 | 0.019 | 1 | 6.406 | 4.495 |
| 3344 | 98.597 | 18.715 | 36.430 | 26.770 | 17.411 | 17.282 | 0.757 | 1.854 | 0.952 | 1.007 | 0.017 | -1 | 6.665 | 4.708 |
| 3345 | 81.411 | 19.340 | 37.831 | 27.936 | 16.156 | 16.245 | 0.770 | 1.675 | 0.856 | 0.995 | 0.023 | 1 | 8.093 | 6.764 |
| 3346 | 88.147 | 19.632 | 37.855 | 29.312 | 16.411 | 18.018 | 0.753 | 1.754 | 0.909 | 0.911 | 0.021 | 1 | 8.998 | 7.521 |
| 3347 | 96.924 | 18.682 | 37.239 | 24.363 | 17.757 | 18.315 | 0.766 | 1.931 | 0.969 | 0.970 | 0.017 | 1 | 6.253 | 4.388 |
| 3348 | 80.029 | 20.600 | 32.031 | 27.120 | 16.427 | 17.549 | 0.741 | 1.649 | 1.061 | 0.936 | 0.023 | 1 | 5.744 | 8.202 |
| 3349 | 82.072 | 20.962 | 34.807 | 27.901 | 17.366 | 18.164 | 0.726 | 1.695 | 1.021 | 0.956 | 0.023 | 1 | 5.769 | 8.193 |
| 3350 | 90.200 | 21.545 | 33.408 | 25.256 | 17.827 | 19.324 | 0.694 | 1.724 | 1.112 | 0.923 | 0.019 | 1 | 9.118 | 7.581 |
| 3351 | 83.272 | 20.979 | 38.931 | 24.466 | 17.886 | 18.887 | 0.712 | 1.753 | 0.945 | 0.947 | 0.021 | 1 | 7.552 | 6.247 |
| 3352 | 96.847 | 19.126 | 34.752 | 27.892 | 19.244 | 18.488 | 0.756 | 1.973 | 1.086 | 1.041 | 0.018 | 1 | 6.878 | 4.788 |
| 3353 | 90.861 | 17.988 | 34.300 | 27.488 | 19.694 | 17.644 | 0.802 | 2.076 | 1.089 | 1.116 | 0.019 | 1 | 6.467 | 4.488 |
| 3354 | 96.887 | 21.774 | 35.358 | 24.798 | 16.627 | 16.740 | 0.682 | 1.532 | 0.944 | 0.993 | 0.017 | 1 | 6.323 | 9.051 |
| 3355 | 91.827 | 18.918 | 38.621 | 28.753 | 18.947 | 18.765 | 0.769 | 1.993 | 0.976 | 1.010 | 0.020 | 1 | 6.229 | 4.392 |
| 3356 | 94.939 | 19.081 | 38.275 | 26.560 | 16.787 | 17.694 | 0.752 | 1.807 | 0.901 | 0.949 | 0.018 | 1 | 6.164 | 4.413 |
| 3357 | 95.046 | 17.933 | 32.337 | 28.017 | 16.373 | 19.363 | 0.802 | 1.993 | 1.105 | 0.846 | 0.018 | -1 | 6.989 | 4.855 |
| 3358 | 84.819 | 19.938 | 32.519 | 28.560 | 17.443 | 18.739 | 0.746 | 1.815 | 1.113 | 0.931 | 0.022 | 1 | 6.190 | 4.463 |
| 3359 | 89.015 | 18.349 | 33.345 | 27.347 | 16.569 | 19.442 | 0.775 | 1.963 | 1.080 | 0.852 | 0.020 | -1 | 6.333 | 4.475 |
| 3360 | 83.517 | 18.627 | 32.296 | 29.703 | 17.771 | 19.397 | 0.770 | 1.995 | 1.151 | 0.916 | 0.023 | 1 | 6.371 | 4.488 |
| 3361 | 92.088 | 17.697 | 36.714 | 26.228 | 17.799 | 16.505 | 0.802 | 1.938 | 0.934 | 1.078 | 0.019 | 1 | 6.132 | 4.319 |
| 3362 | 97.683 | 20.856 | 37.220 | 27.892 | 19.449 | 18.182 | 0.700 | 1.804 | 1.011 | 1.070 | 0.018 | 1 | 6.605 | 4.716 |
| 3363 | 95.210 | 21.937 | 35.406 | 29.414 | 16.292 | 16.668 | 0.691 | 1.502 | 0.931 | 0.977 | 0.019 | 1 | 6.736 | 9.607 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3364 | 82.612 | 19.751 | 33.530 | 28.257 | 18.202 | 17.960 | 0.753 | 1.831 | 1.079 | 1.013 | 0.023 | 1 | 5.921 | 4.267 |
| 3365 | 97.148 | 18.420 | 33.991 | 25.528 | 17.034 | 18.263 | 0.777 | 1.916 | 1.038 | 0.933 | 0.017 | -1 | 6.684 | 4.679 |
| 3366 | 93.731 | 18.595 | 36.308 | 28.127 | 17.854 | 19.809 | 0.772 | 2.025 | 1.037 | 0.901 | 0.019 | 1 | 6.522 | 4.568 |
| 3367 | 92.229 | 17.605 | 39.371 | 26.415 | 19.072 | 19.952 | 0.820 | 2.217 | 0.991 | 0.956 | 0.019 | 1 | 5.981 | 4.153 |
| 3368 | 90.576 | 21.114 | 36.703 | 26.762 | 18.872 | 17.377 | 0.709 | 1.717 | 0.988 | 1.086 | 0.019 | 1 | 8.917 | 7.442 |
| 3369 | 90.576 | 18.324 | 36.494 | 29.243 | 19.303 | 17.335 | 0.788 | 1.999 | 1.004 | 1.114 | 0.020 | 1 | 6.413 | 4.502 |
| 3370 | 93.286 | 20.122 | 38.144 | 29.826 | 17.411 | 19.744 | 0.727 | 1.847 | 0.974 | 0.882 | 0.019 | 1 | 6.409 | 4.615 |
| 3371 | 90.837 | 19.792 | 37.075 | 27.352 | 18.778 | 16.060 | 0.743 | 1.760 | 0.940 | 1.169 | 0.019 | 1 | 6.031 | 4.362 |
| 3372 | 91.580 | 19.701 | 37.560 | 24.615 | 18.863 | 18.777 | 0.742 | 1.911 | 1.002 | 1.005 | 0.018 | 1 | 5.817 | 4.128 |
| 3373 | 85.423 | 18.772 | 33.314 | 27.863 | 19.494 | 17.431 | 0.774 | 1.967 | 1.108 | 1.118 | 0.021 | 1 | 6.161 | 4.348 |
| 3374 | 86.244 | 20.552 | 39.604 | 28.033 | 17.907 | 16.993 | 0.727 | 1.698 | 0.881 | 1.054 | 0.021 | 1 | 8.342 | 6.952 |
| 3375 | 98.242 | 18.295 | 32.617 | 28.021 | 19.694 | 16.517 | 0.783 | 1.979 | 1.110 | 1.192 | 0.018 | -1 | 7.217 | 4.982 |
| 3376 | 83.116 | 21.272 | 39.861 | 27.318 | 17.048 | 19.919 | 0.702 | 1.738 | 0.927 | 0.856 | 0.022 | 1 | 7.935 | 6.563 |
| 3377 | 94.933 | 21.513 | 37.310 | 28.302 | 19.661 | 16.765 | 0.696 | 1.693 | 0.976 | 1.173 | 0.019 | 1 | 9.510 | 7.958 |
| 3378 | 99.569 | 18.001 | 33.079 | 29.521 | 19.672 | 16.947 | 0.799 | 2.034 | 1.107 | 1.161 | 0.018 | -1 | 7.486 | 5.121 |
| 3379 | 85.598 | 19.524 | 33.362 | 28.261 | 18.018 | 17.105 | 0.757 | 1.799 | 1.053 | 1.053 | 0.021 | 1 | 6.130 | 4.418 |
| 3380 | 83.496 | 20.008 | 38.380 | 27.728 | 17.587 | 18.697 | 0.743 | 1.813 | 0.945 | 0.941 | 0.022 | 1 | 8.194 | 6.798 |
| 3381 | 80.043 | 21.530 | 36.102 | 29.138 | 18.521 | 19.562 | 0.713 | 1.769 | 1.055 | 0.947 | 0.024 | 1 | 8.459 | 7.030 |
| 3382 | 84.796 | 19.633 | 37.479 | 28.043 | 17.073 | 18.877 | 0.753 | 1.831 | 0.959 | 0.904 | 0.022 | 1 | 8.496 | 7.059 |
| 3383 | 95.506 | 21.753 | 32.940 | 25.203 | 19.361 | 17.364 | 0.685 | 1.688 | 1.115 | 1.115 | 0.017 | 1 | 6.477 | 4.687 |
| 3384 | 99.355 | 17.770 | 33.908 | 29.308 | 19.428 | 16.638 | 0.805 | 2.030 | 1.064 | 1.168 | 0.018 | -1 | 7.360 | 5.047 |
| 3385 | 96.891 | 21.896 | 39.081 | 25.866 | 16.955 | 19.553 | 0.674 | 1.667 | 0.934 | 0.867 | 0.017 | 1 | 9.183 | 7.657 |
| 3386 | 85.531 | 21.312 | 33.228 | 27.584 | 16.016 | 19.439 | 0.708 | 1.664 | 1.067 | 0.824 | 0.021 | 1 | 6.100 | 8.662 |
| 3387 | 89.508 | 21.164 | 34.248 | 24.522 | 16.249 | 16.092 | 0.704 | 1.528 | 0.944 | 1.010 | 0.019 | 1 | 5.882 | 8.407 |
| 3388 | 93.143 | 21.338 | 32.252 | 27.375 | 17.812 | 18.400 | 0.701 | 1.697 | 1.123 | 0.968 | 0.019 | 1 | 3.330 | 4.736 |
| 3389 | 84.304 | 17.819 | 36.400 | 28.154 | 19.509 | 19.476 | 0.818 | 2.188 | 1.071 | 1.002 | 0.022 | 1 | 5.877 | 4.113 |
| 3390 | 84.949 | 18.050 | 33.263 | 29.608 | 19.448 | 16.170 | 0.795 | 1.973 | 1.071 | 1.203 | 0.022 | 1 | 6.358 | 4.485 |
| 3391 | 95.597 | 17.902 | 32.448 | 27.686 | 17.622 | 18.843 | 0.805 | 2.037 | 1.124 | 0.935 | 0.018 | -1 | 7.025 | 4.831 |
| 3392 | 90.635 | 17.668 | 35.233 | 26.354 | 17.765 | 19.276 | 0.809 | 2.097 | 1.051 | 0.922 | 0.019 | 1 | 6.225 | 4.332 |

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|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|-------|-------|
| 3393 | 91.310 | 20.293 | 37.978 | 29.083 | 19.891 | 18.580 | 0.724 | 1.896 | 1.013 | 1.071 | 0.020 | 1 | 6.245 | 4.452 |
| 3394 | 93.296 | 18.860 | 34.040 | 26.310 | 16.854 | 18.992 | 0.757 | 1.901 | 1.053 | 0.887 | 0.018 | -1 | 6.443 | 4.559 |
| 3395 | 95.707 | 17.726 | 37.966 | 25.204 | 18.333 | 17.432 | 0.806 | 2.018 | 0.942 | 1.052 | 0.017 | 1 | 6.213 | 4.330 |
| 3396 | 88.424 | 19.541 | 39.690 | 27.024 | 19.605 | 16.690 | 0.749 | 1.857 | 0.914 | 1.175 | 0.020 | 1 | 5.624 | 4.038 |
| 3397 | 84.627 | 18.152 | 32.501 | 28.404 | 18.475 | 16.117 | 0.788 | 1.906 | 1.064 | 1.146 | 0.022 | 1 | 6.225 | 4.418 |
| 3398 | 95.389 | 17.603 | 38.530 | 29.867 | 17.756 | 17.707 | 0.804 | 2.015 | 0.920 | 1.003 | 0.019 | 1 | 6.651 | 4.649 |
| 3399 | 93.219 | 20.454 | 35.497 | 25.881 | 16.651 | 17.430 | 0.722 | 1.666 | 0.960 | 0.955 | 0.018 | 1 | 9.227 | 7.710 |
| 3400 | 81.425 | 18.812 | 36.475 | 25.768 | 16.437 | 17.700 | 0.781 | 1.815 | 0.936 | 0.929 | 0.022 | 1 | 7.878 | 6.547 |
| 3401 | 96.173 | 19.312 | 34.420 | 25.786 | 19.799 | 18.852 | 0.755 | 2.001 | 1.123 | 1.050 | 0.017 | 1 | 6.633 | 4.611 |
| 3402 | 98.115 | 21.039 | 39.219 | 29.684 | 17.218 | 17.503 | 0.706 | 1.650 | 0.885 | 0.984 | 0.018 | 1 | 9.856 | 8.277 |
| 3403 | 80.458 | 21.616 | 38.999 | 26.064 | 19.758 | 17.665 | 0.709 | 1.731 | 0.960 | 1.118 | 0.023 | 1 | 7.503 | 6.223 |
| 3404 | 90.371 | 18.859 | 33.458 | 25.828 | 19.656 | 18.495 | 0.771 | 2.023 | 1.140 | 1.063 | 0.019 | 1 | 6.292 | 4.393 |
| 3405 | 90.558 | 21.629 | 34.952 | 26.065 | 18.064 | 16.555 | 0.699 | 1.601 | 0.990 | 1.091 | 0.019 | 1 | 6.077 | 8.668 |
| 3406 | 97.928 | 19.679 | 33.107 | 27.648 | 17.341 | 18.449 | 0.736 | 1.819 | 1.081 | 0.940 | 0.017 | -1 | 6.978 | 4.956 |
| 3407 | 86.198 | 18.505 | 34.697 | 26.890 | 17.249 | 17.724 | 0.779 | 1.890 | 1.008 | 0.973 | 0.021 | 1 | 5.930 | 4.229 |
| 3408 | 89.317 | 18.635 | 38.522 | 24.549 | 16.446 | 19.899 | 0.768 | 1.950 | 0.943 | 0.826 | 0.019 | 1 | 5.548 | 3.953 |
| 3409 | 92.588 | 18.946 | 33.077 | 26.496 | 18.636 | 17.503 | 0.758 | 1.907 | 1.093 | 1.065 | 0.019 | 1 | 6.528 | 4.588 |
| 3410 | 88.358 | 20.230 | 36.714 | 25.375 | 16.767 | 18.996 | 0.729 | 1.768 | 0.974 | 0.883 | 0.020 | 1 | 8.507 | 7.075 |
| 3411 | 83.153 | 20.624 | 36.079 | 27.544 | 18.636 | 17.453 | 0.733 | 1.750 | 1.000 | 1.068 | 0.022 | 1 | 8.408 | 7.007 |
| 3412 | 93.138 | 18.718 | 34.569 | 24.631 | 19.280 | 18.868 | 0.775 | 2.038 | 1.104 | 1.022 | 0.018 | 1 | 6.272 | 4.367 |
| 3413 | 94.767 | 20.341 | 34.546 | 28.003 | 19.544 | 19.983 | 0.719 | 1.943 | 1.144 | 0.978 | 0.018 | 1 | 6.719 | 4.724 |
| 3414 | 87.501 | 20.851 | 37.071 | 29.463 | 16.177 | 19.480 | 0.720 | 1.710 | 0.962 | 0.830 | 0.021 | 1 | 6.147 | 8.699 |
| 3415 | 95.486 | 20.540 | 34.902 | 24.500 | 18.841 | 16.453 | 0.714 | 1.718 | 1.011 | 1.145 | 0.017 | 1 | 6.255 | 4.507 |
| 3416 | 85.029 | 18.559 | 34.514 | 27.382 | 19.420 | 19.992 | 0.787 | 2.124 | 1.142 | 0.971 | 0.021 | 1 | 5.996 | 4.202 |
| 3417 | 84.789 | 20.978 | 34.870 | 28.425 | 16.983 | 19.788 | 0.721 | 1.753 | 1.054 | 0.858 | 0.022 | 1 | 6.019 | 8.536 |
| 3418 | 85.527 | 21.599 | 38.727 | 26.741 | 19.788 | 17.618 | 0.703 | 1.732 | 0.966 | 1.123 | 0.021 | 1 | 8.149 | 6.778 |
| 3419 | 86.305 | 21.931 | 32.188 | 28.777 | 19.703 | 17.584 | 0.699 | 1.700 | 1.158 | 1.121 | 0.021 | 1 | 9.445 | 7.900 |
| 3420 | 84.006 | 18.134 | 32.288 | 25.963 | 16.418 | 18.990 | 0.786 | 1.952 | 1.097 | 0.865 | 0.021 | 1 | 5.911 | 4.188 |
| 3421 | 93.049 | 21.361 | 34.329 | 27.771 | 18.809 | 17.720 | 0.701 | 1.710 | 1.064 | 1.061 | 0.019 | 1 | 6.449 | 4.685 |

| | | | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|--------|-------|
| 3422 | 92.172 | 21.681 | 38.746 | 25.516 | 16.859 | 16.010 | 0.687 | 1.516 | 0.848 | 1.053 | 0.018 | 1 | 5.819 | 8.277 |
| 3423 | 85.161 | 19.234 | 37.223 | 29.186 | 19.476 | 18.465 | 0.764 | 1.973 | 1.019 | 1.055 | 0.022 | 1 | 5.923 | 4.216 |
| 3424 | 92.405 | 19.593 | 33.838 | 28.641 | 19.613 | 18.218 | 0.742 | 1.931 | 1.118 | 1.077 | 0.019 | 1 | 6.696 | 4.706 |
| 3425 | 80.134 | 20.178 | 36.968 | 27.468 | 18.045 | 19.089 | 0.744 | 1.840 | 1.005 | 0.945 | 0.023 | 1 | 8.008 | 6.640 |
| 3426 | 84.245 | 21.103 | 33.708 | 24.827 | 19.187 | 17.641 | 0.717 | 1.745 | 1.093 | 1.088 | 0.021 | 1 | 8.344 | 6.955 |
| 3427 | 95.553 | 21.301 | 34.559 | 27.582 | 18.324 | 18.972 | 0.696 | 1.751 | 1.079 | 0.966 | 0.018 | 1 | 6.611 | 4.767 |
| 3428 | 83.380 | 20.110 | 32.127 | 28.040 | 17.635 | 18.162 | 0.745 | 1.780 | 1.114 | 0.971 | 0.022 | 1 | 3.032 | 4.331 |
| 3429 | 84.327 | 20.354 | 33.597 | 29.611 | 18.377 | 17.212 | 0.742 | 1.749 | 1.059 | 1.068 | 0.022 | 1 | 9.222 | 7.715 |
| 3430 | 93.125 | 17.920 | 34.710 | 25.695 | 18.609 | 17.375 | 0.799 | 2.008 | 1.037 | 1.071 | 0.018 | 1 | 6.372 | 4.437 |
| 3431 | 82.424 | 17.845 | 39.015 | 26.111 | 19.829 | 16.738 | 0.822 | 2.049 | 0.937 | 1.185 | 0.022 | 1 | 5.199 | 3.699 |
| 3432 | 88.410 | 17.933 | 38.134 | 24.387 | 19.902 | 16.944 | 0.811 | 2.055 | 0.966 | 1.175 | 0.019 | 1 | 5.544 | 3.904 |
| 3433 | 89.107 | 21.902 | 32.791 | 24.211 | 19.655 | 16.914 | 0.692 | 1.670 | 1.115 | 1.162 | 0.019 | 1 | 8.850 | 7.400 |
| 3434 | 92.262 | 18.685 | 34.360 | 24.367 | 16.500 | 17.462 | 0.766 | 1.818 | 0.988 | 0.945 | 0.018 | 1 | 6.104 | 4.351 |
| 3435 | 99.664 | 20.690 | 38.674 | 26.464 | 16.484 | 18.655 | 0.705 | 1.698 | 0.909 | 0.884 | 0.017 | 1 | 9.589 | 7.992 |
| 3436 | 84.790 | 18.434 | 39.852 | 24.767 | 18.122 | 17.815 | 0.792 | 1.949 | 0.902 | 1.017 | 0.021 | 1 | 5.122 | 3.657 |
| 3437 | 90.647 | 19.171 | 35.893 | 24.449 | 19.392 | 18.028 | 0.762 | 1.952 | 1.043 | 1.076 | 0.018 | 1 | 5.903 | 4.165 |
| 3438 | 84.673 | 18.103 | 37.788 | 29.576 | 17.274 | 19.034 | 0.794 | 2.006 | 0.961 | 0.908 | 0.022 | 1 | 5.886 | 4.193 |
| 3439 | 97.604 | 21.422 | 33.886 | 29.124 | 19.199 | 16.371 | 0.699 | 1.660 | 1.050 | 1.173 | 0.018 | 1 | 10.350 | 8.698 |
| 3440 | 83.139 | 18.162 | 33.290 | 24.368 | 19.791 | 16.661 | 0.799 | 2.007 | 1.095 | 1.188 | 0.021 | 1 | 5.586 | 3.950 |
| 3441 | 85.315 | 20.096 | 36.010 | 29.925 | 18.267 | 18.894 | 0.740 | 1.849 | 1.032 | 0.967 | 0.022 | 1 | 9.078 | 7.550 |
| 3442 | 90.450 | 18.275 | 37.634 | 25.781 | 17.885 | 17.605 | 0.786 | 1.942 | 0.943 | 1.016 | 0.019 | 1 | 5.869 | 4.151 |
| 3443 | 90.525 | 19.438 | 36.265 | 26.618 | 18.797 | 17.795 | 0.747 | 1.882 | 1.009 | 1.056 | 0.019 | 1 | 6.067 | 4.315 |
| 3444 | 94.892 | 19.686 | 37.474 | 29.737 | 17.694 | 17.501 | 0.740 | 1.788 | 0.939 | 1.011 | 0.019 | 1 | 6.565 | 4.727 |
| 3445 | 97.178 | 21.449 | 33.013 | 25.903 | 17.622 | 19.862 | 0.688 | 1.748 | 1.135 | 0.887 | 0.017 | 1 | 9.998 | 8.276 |
| 3446 | 94.253 | 21.555 | 37.057 | 26.424 | 17.326 | 18.572 | 0.690 | 1.665 | 0.969 | 0.933 | 0.018 | 1 | 9.241 | 7.720 |
| 3447 | 84.151 | 19.199 | 35.693 | 26.764 | 19.513 | 18.590 | 0.767 | 1.985 | 1.068 | 1.050 | 0.022 | 1 | 5.701 | 4.051 |
| 3448 | 99.809 | 20.051 | 37.444 | 28.021 | 19.407 | 19.986 | 0.728 | 1.965 | 1.052 | 0.971 | 0.017 | 1 | 6.840 | 4.785 |
| 3449 | 85.493 | 19.291 | 32.542 | 24.569 | 16.964 | 18.787 | 0.757 | 1.853 | 1.099 | 0.903 | 0.020 | 1 | 5.796 | 4.144 |
| 3450 | 92.810 | 18.992 | 32.730 | 25.176 | 18.128 | 16.715 | 0.752 | 1.835 | 1.065 | 1.084 | 0.018 | 1 | 6.396 | 4.530 |

| | | | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|----|--------|-------|
| 3451 | 83.153 | 18.675 | 39.316 | 27.925 | 16.498 | 17.680 | 0.782 | 1.830 | 0.869 | 0.933 | 0.022 | 1 | 8.053 | 6.688 |
| 3452 | 93.466 | 21.228 | 39.258 | 28.229 | 16.792 | 18.899 | 0.699 | 1.681 | 0.909 | 0.888 | 0.019 | 1 | 9.176 | 7.669 |
| 3453 | 92.217 | 19.415 | 37.002 | 28.275 | 19.462 | 18.533 | 0.752 | 1.957 | 1.027 | 1.050 | 0.019 | 1 | 6.342 | 4.474 |
| 3454 | 82.424 | 18.387 | 37.842 | 25.190 | 19.861 | 19.699 | 0.803 | 2.151 | 1.045 | 1.008 | 0.022 | 1 | 5.213 | 3.694 |
| 3455 | 98.644 | 19.800 | 38.545 | 24.255 | 17.319 | 16.746 | 0.726 | 1.720 | 0.884 | 1.034 | 0.016 | 1 | 6.156 | 4.422 |
| 3456 | 94.762 | 18.560 | 36.986 | 24.469 | 19.503 | 19.659 | 0.783 | 2.110 | 1.059 | 0.992 | 0.017 | 1 | 6.169 | 4.285 |
| 3457 | 89.499 | 21.407 | 36.561 | 28.791 | 17.450 | 18.473 | 0.705 | 1.678 | 0.983 | 0.945 | 0.020 | 1 | 9.230 | 7.723 |
| 3458 | 86.466 | 19.541 | 33.099 | 26.349 | 16.636 | 19.567 | 0.751 | 1.853 | 1.094 | 0.850 | 0.021 | 1 | 5.991 | 4.309 |
| 3459 | 95.686 | 21.318 | 32.058 | 28.953 | 19.452 | 19.725 | 0.688 | 1.838 | 1.222 | 0.986 | 0.019 | -1 | 7.078 | 5.012 |
| 3460 | 93.417 | 20.015 | 35.717 | 25.211 | 16.480 | 17.814 | 0.731 | 1.713 | 0.960 | 0.925 | 0.018 | 1 | 9.112 | 7.596 |
| 3461 | 87.185 | 20.283 | 32.154 | 24.556 | 17.928 | 17.985 | 0.730 | 1.771 | 1.117 | 0.997 | 0.020 | 1 | 5.925 | 4.258 |
| 3462 | 82.875 | 20.300 | 37.721 | 24.515 | 18.601 | 16.250 | 0.739 | 1.717 | 0.924 | 1.145 | 0.021 | 1 | 7.625 | 6.348 |
| 3463 | 80.784 | 20.435 | 32.798 | 25.510 | 19.792 | 16.314 | 0.741 | 1.767 | 1.101 | 1.213 | 0.022 | 1 | 8.188 | 6.848 |
| 3464 | 97.468 | 21.434 | 34.555 | 28.524 | 17.457 | 18.547 | 0.696 | 1.680 | 1.042 | 0.941 | 0.018 | 1 | 10.231 | 8.525 |
| 3465 | 80.315 | 21.351 | 34.483 | 25.925 | 16.058 | 19.959 | 0.705 | 1.687 | 1.044 | 0.805 | 0.023 | 1 | 5.464 | 7.731 |
| 3466 | 91.666 | 18.214 | 36.444 | 28.781 | 17.445 | 17.058 | 0.779 | 1.894 | 0.947 | 1.023 | 0.020 | 1 | 6.388 | 4.535 |
| 3467 | 89.389 | 18.869 | 34.973 | 26.960 | 16.145 | 17.467 | 0.772 | 1.781 | 0.961 | 0.924 | 0.020 | 1 | 6.077 | 4.390 |
| 3468 | 80.775 | 21.385 | 33.616 | 27.337 | 18.451 | 16.174 | 0.726 | 1.619 | 1.030 | 1.141 | 0.023 | 1 | 8.480 | 7.103 |
| 3469 | 96.627 | 19.853 | 39.015 | 24.424 | 16.666 | 18.289 | 0.725 | 1.761 | 0.896 | 0.911 | 0.017 | 1 | 5.989 | 4.298 |
| 3470 | 82.418 | 20.980 | 34.519 | 24.723 | 19.893 | 16.185 | 0.727 | 1.720 | 1.045 | 1.229 | 0.021 | 1 | 8.004 | 6.691 |
| 3471 | 93.398 | 20.101 | 37.059 | 27.129 | 16.732 | 18.895 | 0.729 | 1.772 | 0.961 | 0.886 | 0.019 | 1 | 6.183 | 4.471 |
| 3472 | 90.518 | 18.408 | 33.037 | 26.683 | 19.272 | 17.642 | 0.783 | 2.005 | 1.117 | 1.092 | 0.019 | 1 | 6.442 | 4.492 |
| 3473 | 84.051 | 20.218 | 32.981 | 27.993 | 19.743 | 17.378 | 0.735 | 1.836 | 1.126 | 1.136 | 0.022 | 1 | 6.043 | 4.341 |
| 3474 | 81.784 | 21.694 | 32.714 | 27.644 | 17.213 | 18.209 | 0.708 | 1.633 | 1.083 | 0.945 | 0.023 | 1 | 5.902 | 8.386 |
| 3475 | 88.652 | 17.822 | 32.795 | 29.888 | 17.689 | 16.568 | 0.798 | 1.922 | 1.045 | 1.068 | 0.021 | -1 | 6.679 | 4.708 |
| 3476 | 94.696 | 21.467 | 39.968 | 24.950 | 17.017 | 18.032 | 0.685 | 1.633 | 0.877 | 0.944 | 0.017 | 1 | 8.679 | 7.238 |
| 3477 | 98.215 | 20.113 | 34.379 | 24.244 | 17.944 | 19.638 | 0.715 | 1.869 | 1.093 | 0.914 | 0.016 | -1 | 6.561 | 4.630 |
| 3478 | 80.987 | 18.101 | 34.312 | 27.830 | 18.708 | 17.589 | 0.802 | 2.005 | 1.058 | 1.064 | 0.023 | 1 | 5.756 | 4.081 |
| 3479 | 82.438 | 19.584 | 34.187 | 24.400 | 16.564 | 18.214 | 0.757 | 1.776 | 1.017 | 0.909 | 0.021 | 1 | 2.694 | 3.848 |

| | | | | | | | | | | | | | | |
|------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|---|--------|-------|
| 3480 | 89.630 | 20.802 | 35.574 | 25.132 | 19.576 | 16.058 | 0.719 | 1.713 | 1.002 | 1.219 | 0.019 | 1 | 8.656 | 7.242 |
| 3481 | 89.940 | 20.890 | 34.973 | 27.705 | 18.086 | 16.987 | 0.720 | 1.679 | 1.003 | 1.065 | 0.020 | 1 | 9.245 | 7.745 |
| 3482 | 83.320 | 18.647 | 36.112 | 25.796 | 17.224 | 18.169 | 0.780 | 1.898 | 0.980 | 0.948 | 0.021 | 1 | 5.460 | 3.913 |
| 3483 | 80.989 | 17.654 | 38.506 | 26.370 | 17.821 | 18.818 | 0.825 | 2.075 | 0.952 | 0.947 | 0.023 | 1 | 5.177 | 3.685 |
| 3484 | 87.460 | 20.375 | 38.037 | 28.079 | 19.122 | 17.567 | 0.730 | 1.801 | 0.965 | 1.088 | 0.021 | 1 | 8.649 | 7.198 |
| 3485 | 92.745 | 20.439 | 39.292 | 25.071 | 18.654 | 18.351 | 0.715 | 1.811 | 0.942 | 1.016 | 0.018 | 1 | 5.756 | 4.126 |
| 3486 | 91.645 | 17.725 | 35.427 | 25.537 | 18.644 | 16.673 | 0.807 | 1.992 | 0.997 | 1.118 | 0.019 | 1 | 6.166 | 4.314 |
| 3487 | 96.984 | 21.457 | 35.289 | 29.298 | 18.338 | 16.122 | 0.704 | 1.606 | 0.977 | 1.137 | 0.018 | 1 | 10.153 | 8.566 |
| 3488 | 83.647 | 21.924 | 37.553 | 25.746 | 17.621 | 19.038 | 0.688 | 1.672 | 0.976 | 0.926 | 0.021 | 1 | 8.017 | 6.649 |
| 3489 | 90.341 | 19.236 | 39.630 | 28.457 | 19.294 | 17.166 | 0.756 | 1.895 | 0.920 | 1.124 | 0.020 | 1 | 5.953 | 4.247 |
| 3490 | 95.898 | 19.329 | 37.088 | 27.781 | 19.389 | 18.209 | 0.751 | 1.945 | 1.014 | 1.065 | 0.018 | 1 | 6.553 | 4.601 |
| 3491 | 97.042 | 19.632 | 37.338 | 27.725 | 16.905 | 18.129 | 0.737 | 1.784 | 0.938 | 0.933 | 0.018 | 1 | 6.504 | 4.673 |
| 3492 | 84.472 | 17.811 | 35.335 | 24.443 | 16.329 | 19.083 | 0.799 | 1.988 | 1.002 | 0.856 | 0.021 | 1 | 5.487 | 3.899 |
| 3493 | 84.136 | 21.995 | 39.048 | 26.645 | 18.316 | 18.874 | 0.688 | 1.691 | 0.952 | 0.970 | 0.021 | 1 | 8.009 | 6.639 |
| 3494 | 80.579 | 21.101 | 36.440 | 29.234 | 19.921 | 19.770 | 0.719 | 1.881 | 1.089 | 1.008 | 0.024 | 1 | 8.444 | 7.003 |
| 3495 | 89.234 | 21.280 | 39.722 | 28.485 | 19.728 | 18.595 | 0.703 | 1.801 | 0.965 | 1.061 | 0.020 | 1 | 8.692 | 7.218 |
| 3496 | 94.537 | 19.072 | 34.612 | 26.085 | 17.287 | 17.948 | 0.749 | 1.847 | 1.018 | 0.963 | 0.018 | 1 | 6.444 | 4.572 |
| 3497 | 80.735 | 21.714 | 34.371 | 26.334 | 18.196 | 16.424 | 0.712 | 1.594 | 1.007 | 1.108 | 0.023 | 1 | 8.219 | 6.866 |
| 3498 | 92.265 | 20.384 | 34.344 | 27.833 | 18.240 | 17.728 | 0.724 | 1.765 | 1.047 | 1.029 | 0.019 | 1 | 6.437 | 4.639 |
| 3499 | 90.573 | 18.011 | 34.773 | 25.957 | 17.927 | 16.539 | 0.790 | 1.914 | 0.991 | 1.084 | 0.019 | 1 | 6.160 | 4.347 |
| 3500 | 84.263 | 21.867 | 39.628 | 27.445 | 16.829 | 17.009 | 0.685 | 1.547 | 0.854 | 0.989 | 0.022 | 1 | 5.483 | 7.720 |

Appendix B

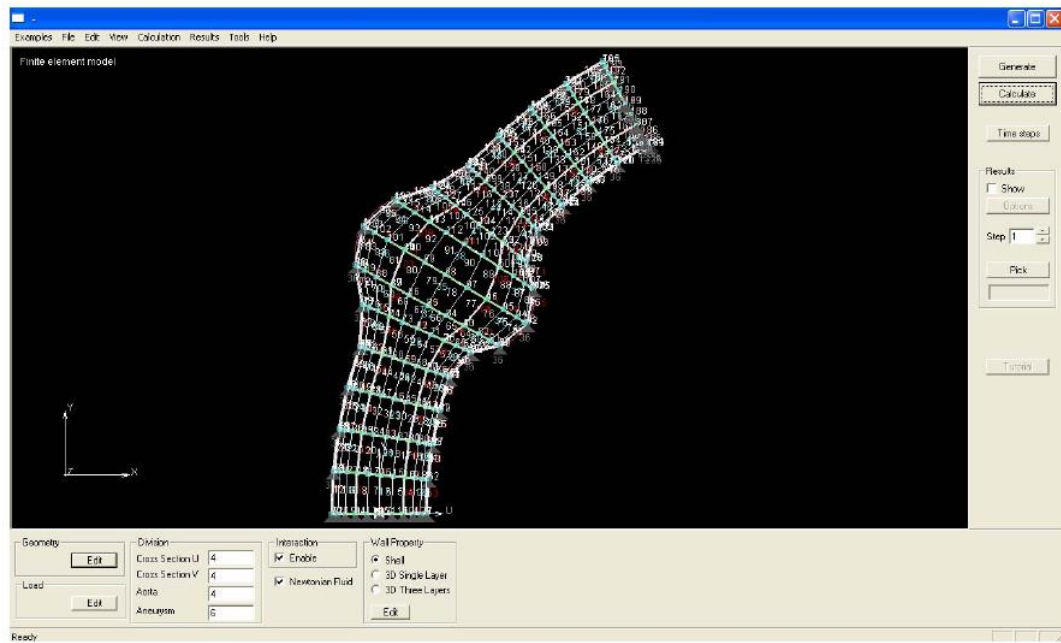
SOFTWARE FEATURES

A new version of AAACFD software has an additional option for simulation of the blood flow through deformable AAA.

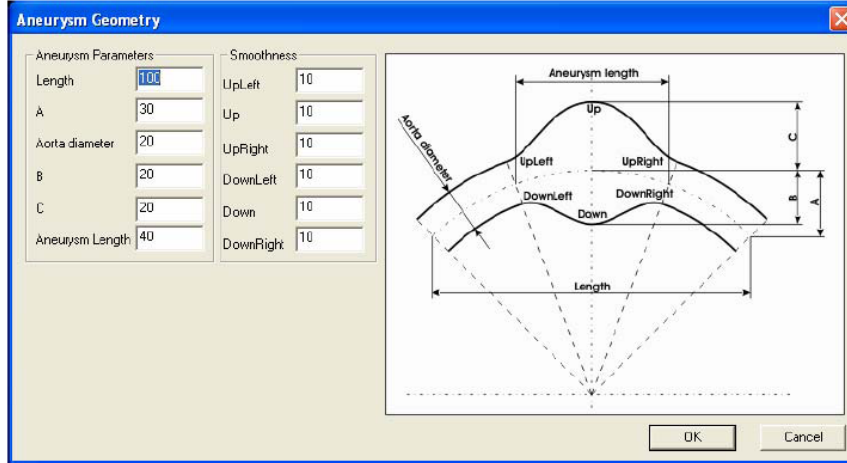
User should choose an option "Aneurysm" in the menu "Examples".



Then a main Dialog for input geometry data and other options is appeared.

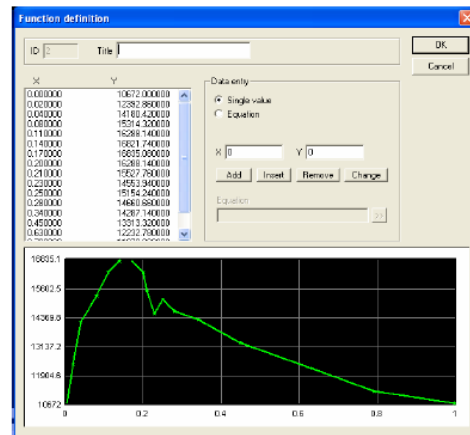
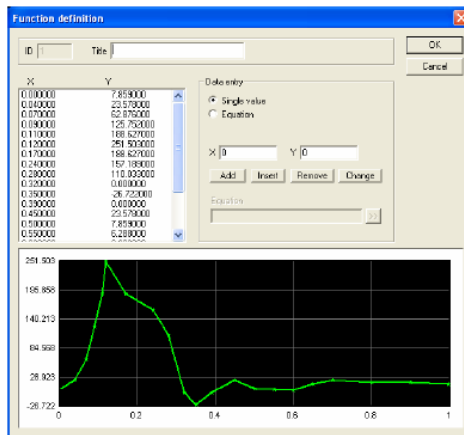
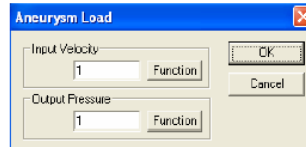


To input Basic geometrical data press button “Edit” in Geometry sub-dialog (units are in mm).

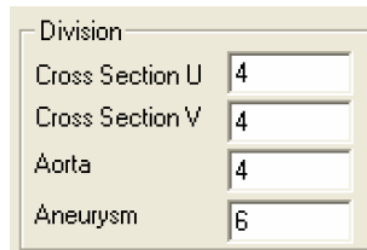


When data are prescribed use button “OK” and button “Generate” (on the right top of main display) to make a 3D finite element model.

User can define input velocity function as well as pressure output function (this is a new option which is important specially for fluid-structure interaction).

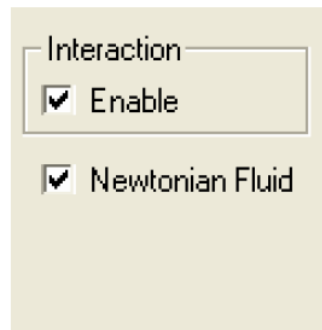


Menu for Divisions is related to the number of finite elements at each cross section as well as along the axial direction of Aorta and Aneurysm.



| Division | |
|-----------------|---|
| Cross Section U | 4 |
| Cross Section V | 4 |
| Aorta | 4 |
| Aneurysm | 6 |

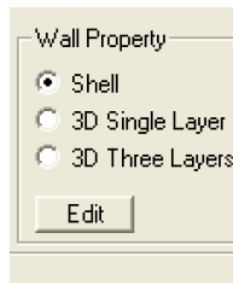
An option for the fluid-structure interaction is defined with checking of "Enable" in sub-dialog "Interaction". By default this checking box includes interaction. If user wants to run only fluid flow without interaction this checking box should be empty.



| Interaction | |
|-------------------------------------|-----------------|
| <input checked="" type="checkbox"/> | Enable |
| <input checked="" type="checkbox"/> | Newtonian Fluid |

Also checking box "Newtonian Fluid" is included by default which means that material model for blood flow is Newtonian fluid. To include Non-Newtonian material model for fluid this checking box should be empty.

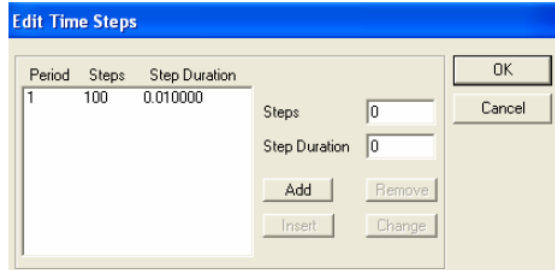
The sub-dialog "Wall Property" is used for input of wall properties.



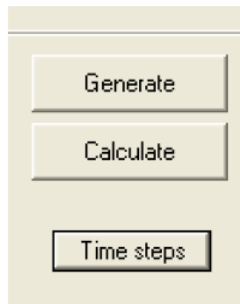
| Wall Property | |
|-------------------------------------|-----------------|
| <input checked="" type="radio"/> | Shell |
| <input type="radio"/> | 3D Single Layer |
| <input type="radio"/> | 3D Three Layers |
| <input type="button" value="Edit"/> | |

This sub-dialog has three options: 1) Shell finite elements; 2) 3D finite element single layer; and 3) 3D finite element three layers; Each of these options has a possibility on button "Edit" to input the thickness of the wall in mm, as well as material characteristics for the wall: Young's modulus, Poisson's ratio and Density. The units for Young's modulus are Pa.

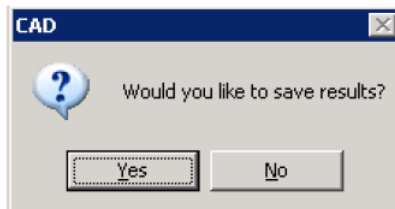
Time steps are prescribed in dialog "Time steps". Be sure to check this dialog do time steps are defined before running simulation.



Running of simulation (fluid flow only or fluid-structure interaction) is started with the button "Calculate".



After finishing the calculation there is an option for saving the results. If you do not want to save it just choose button "No".



To see the results you should choose an option "Option" in menu "Results". The results for fluid flow are: Velocity, Shear stress, Pressure and Displacement, Stress and Strain for wall solid model. Also there are a lot of options for Palette colors as well showing mesh in sub-menu "Misc".

