Significance Of Mathematical Concepts To The Ancient Egyptian Society: Great Pyramids Of Giza

Over countless centuries, mathematics has obtained a prevailing aspect in the period of the ancient Egyptian civilisation. Mathematics has served as a surviving aspect in everyday life of Egyptian and enabled them to live in a civilised society with sufficient stability, and an extension of an aesthetic city. With Egypt's prosperity, it is predominate evidence that several centuries ago the intelligence of an Egyptian was adequate to begin the development of mathematics, then additionally comprehend challenging concepts. The utilisation of their work and records on papyri signifies their work was of some value to them and the development of the monumental structure referred to as the 'Pyramids of Giza' were on a whole other level of astounding. Therefore, this exhibits the significance of mathematics in the predynastic period of ancient Egypt.The importance of Mathematics throughout Ancient Egypt had significantly impacted the process by which certain aspects were managed. Ancient Egyptians were perhaps the earliest civilisation to function scientific arts including mathematical culture. They were able to advance in medicine, exploit in engineering, astronomy and administrative life, although without mathematics, these fundamental concepts of life were virtually inaccessible. Ancient Egyptians began to record patterns of the lunar phases, for the sole purpose of agriculture and religion. The Pharaoh's engineers utilised measurements based on body parts to measure land and buildings exceptionally early in Egyptian history, and a decimal numeric system was formed established on our ten fingers. In ancient Egypt, the production of mathematics took place in cities and the introduction of writing in Egypt in the predynastic period of 3000 BCE developed the formation of literature professionals also referred to as the 'Scribes'. The scribes developed their exceptional dexterity towards literature and were additionally able to produce fundamentals of basic mathematics. The life of a Scribe inextricably branched off the concept of mathematics, due to the evidence from a variety of sources from Egyptian Scribal culture. Trade was another characteristic where mathematics was an exemplary aspect, which allowed Egypt to flourish further and enabled Egyptians to provide essentials for their people. "There must have been a whole lot of discussion of mathematics and how to solve the problems of managing huge building projects like the Pyramids and the temples, and managing the huge workforces, and feeding them all." quoted by Eleanor Robinson a specialist in Ancient Egyptian Mathematics from Cambridge University. Moreover, this quote reveals all the concepts of how ancient Egyptians were going to manage the simplistic requirements so that their civilisation will be able to advance and flourish. Furthermore, this affirms the significance of mathematical concepts of the ancient Egyptian society, due to mathematics being the prevailing perception of the process of day-to-day life.

Egyptians were able to amplify their knowledge of mathematics and additionally were capable of recording these perceptions. Ancient Egyptians developed a decimal and numeral system, so they were able to solve mathematical problems that usually involved multiplication and fractions. Additionally, Egyptians recorded these on Mathematical Papyri, although mathematics is limited to a scarce amount of physical evidence on surviving papyri, with only six surviving texts. Although the Rhind Mathematical Papyrus and the Moscow Mathematical Papyrus are considered the most significant, substantially having the most surviving text. It is evident that observing these ancient texts; ancient Egyptians were capable of comprehending the concepts of algebra, such as the false position method and quadratic equations, and geometry, such as

determining the surface area and volume of three-dimensional shapes that were beneficial for architectural engineering. “The primitive, strictly additive, Egyptian way of computing with unit fractions had a detrimental effect throughout, even on Greek astronomy.” quoted by Otto E.Neugebauer an American-Austrian Mathematician. This quote exposes the importance of outstanding ancient Egyptian mathematics and how its exemplary value assisted societies throughout daily life. Additionally, this assures that the concepts of mathematics were of paramount significance in the Ancient Egyptian civilisation.

Mathematics was a predominant aspect throughout the ancient Egyptian society. Mathematics were recorded on papyri and were generally used by ancient Egyptian administrators and were used in different scenarios to solve practical difficulties of administrative life, for distributing food and other useful services. The most remarkable papyrus is the ‘Rhind Mathematical Papyrus’ which is dated back to 1650 BCE, more than 3360 years ago and is renowned for one of the most significant mathematical piece of evidence from ancient Egypt society. The ‘Rhind Mathematical Papyrus’ is a type of guidance manual including 84 distinct problems in arithmetic and geometry and provides explicit explanations of how multiplication and division were interpreted in the periodic life of an administrator. It additionally comprises evidence of discrete mathematical principles, including geometric means, composite and prime numbers, arithmetic and unit fractions that are situated on the representation of the Eye of Horus which was the earliest noted representative of a geometric series. An additional valuable papyrus is the ‘Moscow Mathematical Papyrus’, which chronicles back to the 19th century BCE and manifests 25 distinct problems of a related representation corresponding to the ‘Rhind Mathematical Papyrus’. The Moscow Mathematical papyrus was applied to measure the areas of fields as well as the volumes of pyramids and additional solids. The Egyptian mathematical leather roll is significant documentation that unveils the examined ways to convert a rational number into an accurate number and optimal unit fraction series from Middle Kingdom scholars. The famous Egyptian papyri texts provide multiple levels of Egyptian Mathematics including arithmetic techniques and their auxiliaries. However, Eleanor Robson states “Some of the maths is very very practical, other problems are more abstract”, which signifies the significance of mathematics during the predynastic period as the states “very very practical”. Overall, was mathematical is significant to the Ancient Egyptian civilisation in the predynastic period.

The pyramids are additional evidence of the sophistication of Egyptian mathematics. The Great Pyramid of Giza is identified as one of the ‘Seven Wonders’ of the world, and for various decades it has been argued on its logical purpose. A vast quantity of professionals theorises that the pyramids were tombs for Pharaohs, and others assume it is possibly some astronomical device or power generator. Although, in 1859 a mathematician, John Taylor examined whether a mathematical concept would illuminate off the architectural structure, and soon discovered that if one multiplies two Pi(?) with the perimeter of the Great Pyramid of Giza, it will equal the height of the Great Pyramid. With Jonh Taylor’s revelations, it exposed an extensive variety of possible concepts linking mathematics with the Pyramids. The Pyramids of Giza would have been difficult to manage the construction without the use of mathematics or architectural calculations. The monumental structure was also the first to observe the golden ratio of 1: 1.618 and is the most accurately aligned structure in existence and faces true north with only 3/60th of a degree. According to Robert Bauval, a Belgian author, lecturer, and Ancient Egypt researcher, in his book ‘The Orion Mystery’ the architectural structures referred to as the Pyramids were built to correspond with the three stars in Orion’s belt. To be able to build such an enormous construction an exceeding amount of meticulous planning is required. Scribes were predominant in the development of the pyramids as they needed to calculate the number of the

blocks necessary to produce a monument. According to National Geographic “the kind of mathematical problem recorded in Egyptian mathematical papyri, and at which Egyptian civil servants excelled” signifying the exceptional dexterity towards accommodating mathematical concepts and additionally exhibiting how mathematics assisted daily life. Therefore, this further expresses the significance of mathematics in ancient Egyptian society, essentially revealing the exceptional knowledge they adapted to construct such accuracy.

To conclude, mathematics has played a vital purpose in ancient Egyptian society, which has amplified over time and sustained sufficient stability which enabled the civilisation to advance and thrive. This is manifested through the notions of; administrative life, writing sources such as papyri and the monumental aesthetical structures including the ‘Great Pyramids of Giza’. Thus, due to the several indications of the significant role of mathematics, the significance of mathematics throughout the ancient Egyptian period is of immense value, essentially leaving Egyptians with an exceptional amount of intelligence to proceed with their day-to-day life.