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## **MATHEMATICS IN ANCIENT EGYPT AND THE RHIND PAPYRUS**

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**Annotation:** The article is devoted to the state and development of mathematics in Ancient Egypt. The oldest ancient Egyptian mathematical texts by the beginning of the 2nd millennium BC e. Mathematics was then used in astronomy, navigation, land surveying, in the construction of buildings, dams, canals and fortifications. Cash settlements, like money itself, were not in Egypt. Egypt was written on papyrus, which retains poorly, and therefore our knowledge of the mathematics of Egypt is less than that of the mathematics of Babylon or Greece. It was probably better developed than can be imagined based on the documents that have come down to us - it is known that Greek mathematicians learned from the Egyptians.

The first people used mathematics very simply and intuitively. The first humans realized that if they carved a solid object in a triangle shape, it could be used to kill other living things. Cutting and piercing tools are made sharp so that with less pressure it will be easier to cut things,  $\text{Pressure} = \text{Force}/\text{Area}$ . These and such examples revealed a truth, geometry and mind capacity determined who survived in the wild. Carnivores had sharp teeth, herbivores had fast legs or horns and perfect camouflages, but humans had nothing like those talent or skin, they have to trust self mind capacities. Our first argument about the mathematics and geometry come from Herodotus and papyrus papers.

There are 2 idea about how born math in Egypt the first. The first one and know to everybody “Nile river flood”, the Nile is about 6,650 km long, basin size 3,400,000 km<sup>2</sup>, width maximum 2.8 km, depth average 8—11 m and those numbers are very useful for settle near the river but the annual flooding of the Nile river is most problem for folk. The annual flooding of the Nile River erased boundraies between different plots of land on the river front. This required the Egyptians to apply geometry to measure the land on the flood plain to determine who owned which land. This river front property was used for agriculture and people were taxed based on their area of the land they farmed. So it was vital to accurately perform this surveying. That’s why the government must find old borders and give them back to their owners. The mathematicians appointed by

the king every year re-invented the old boundaries, and this was, according to the Herodotus, where mathematics first evolved.

The second argument comes from Aristotle. He supports an idea he came up with. Emergence of mathematics and geometry for Aristotle was not related to the floods of the river, according to him math and geometry were born out of the boredom of clergy and priests. Most accepted among these arguments is the Herodotus idea. Today many scholars thinking like him. Another source of ours is papyrus papers, Egyptian mathematicians wrote many mathematical operations on these papers on mathematics and geometry, and mathematicians used papyrus paper when calculating the Nile. These papyrus are the first math and geometry books in the world, and we can understand what mathematicians knew at the 2000 B.C century. As far as we know one of the most important first mathematicians was Ahmes. He wrote the Rhind mathematical papyrus, a work of ancient Egyptian mathematics that dates to approximately 1550 BC, he is earliest contributor to mathematics whose name is known. Rhind mathematical papyrus consist of:

Book 1 about arithmetic and algebra, first part of the rhind papyrus consists of reference tables and a collection of 21 arithmetic and 20 algebraic problems. the first part of the book is taken up by the  $2/n$  table. The fractions  $2/n$  for odd  $n$  ranging from 3 to 101 are expressed as sums of unit fraction.

Book 2 about geometry, being problems 41-59, 59B and 60, consists of geometry problems. \*find the volume of a cylindrical granary of diameter 9 and height. Take away  $1/2$  of 9, the remainder is 8. Multiply 8 times 8; it makes 64. Multiply 64 times 10; it makes 640 cubed cubits. add  $1/2$  of it to it; it makes 960, its contents in khar. Take  $1/20$  of 960, namely 48. 4800 hekal of grain will go into it. As explained in the introduction (pages 35-36), the Ahmes, in order to obtain the volume of the cylinder, subtracts from the diameter its  $y$ , squares the remainder, and multiplies by the altitude. In this way he finds that 640 is the contents of the granary in cubed cubits. This and such examples show us that, regardless of ancient Egypt and Greek nations, people at that time knew more than we think now.

Book 3 about the miscellany; the third part of the papyrus consists of the remainder of the 91 problems, being 61, 61B, 62-82, 82B, 83-84, and “numbers” 85-87, which are items that are not mathematical in nature. This final section contains more complicated tables of data (which frequently involve horus eye fractions), several papyrus problems which are elementary algebraic problems concerning food preparation.

As far as we know, the rhind papyrus is the first mathematical and geometric book in the world. British museum preserves this ancient work today. Egyptians made a great contribution to the development of mathematics at a basic level. British mathematician Marcus du Sautoy says “the most important concepts of mathematics, place and quantity, are physically embedded

in our brains.” Even animals have a sense of number and distance, We know. They don’t learn this; they “know” by birth. The Egyptians, who started to measure time, also recorded the changes experienced at certain time intervals. For example, they knew the phases of the Moon and the time elapsed between two phases. Ancient Egypt could undoubtedly make mathematics understandable to us, and that people helped us better understand the origin of mathematics. Mathematics in ancient Greek comes with “learn”, and for us we cannot slow down or stop learning ant subject, as the ancient Greeks said, we should never stop learning.

References:

1. <http://www.math.stonybrook.edu>
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**УСТРАНЕНИЕ ПОЛИОМЕЛИТА В АФГАНИСТАНЕ**

Азизи Фати Рахман, Афганистан

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**Annotation:** Poliomyelitis is a life-threatening disease caused by poliovirus types 1, 2 and 3 (three related enteroviruses). The virus is spread from person to person and can infect a person's spinal cord, causing paralysis. In developing countries, 65–75% of polio cases affects children under 3 years of age and 95% of children under 5 years of age. Paralysis is permanent, although some recovery is possible. No medicine.

Афганистан и Пакистан – единственные две страны в мире, которые все еще остаются эндемичными по полиомиелиту.

В Афганистане, несмотря на усилия программы по достижению статуса страны свободной от полиомиелита, наоборот число заболеваний распространяется повторно и увеличивается в провинциях, которые давно были свободны от полиомиелита.

К концу 2020 года почти 16 провинций были инфицированы 56 случаями глобального полиовируса типа 1 ДПВ (дикий полиовирус 1). Горячей точкой циркуляции и передачи полиомиелита являются южные и юго-восточные регионы, на которые приходится 66% всех случаев заболеваний в стране в прошлом году.