

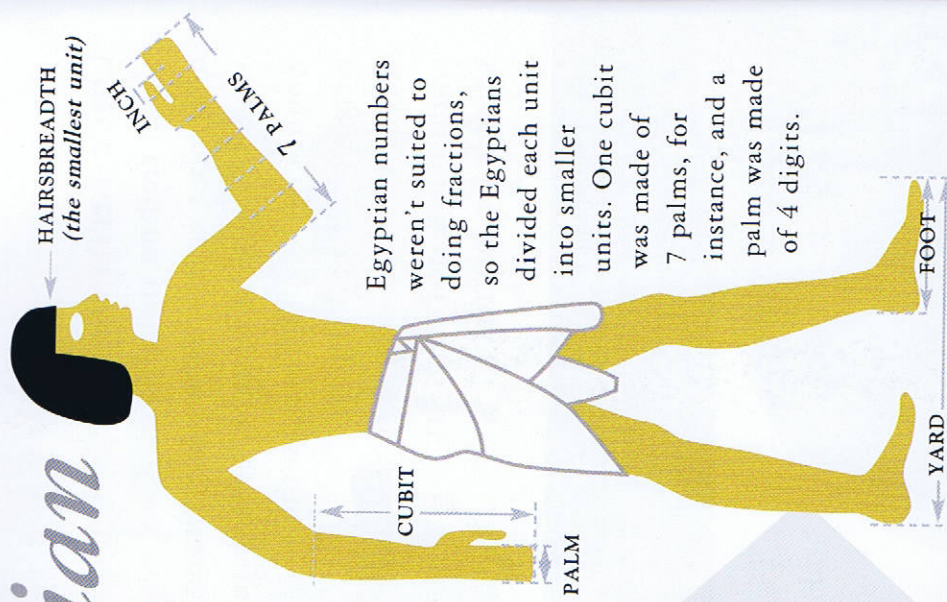
Work like an Egyptian

The ancient Egyptians farmed the thin ribbon of green land by the River Nile, which crosses the Sahara Desert.



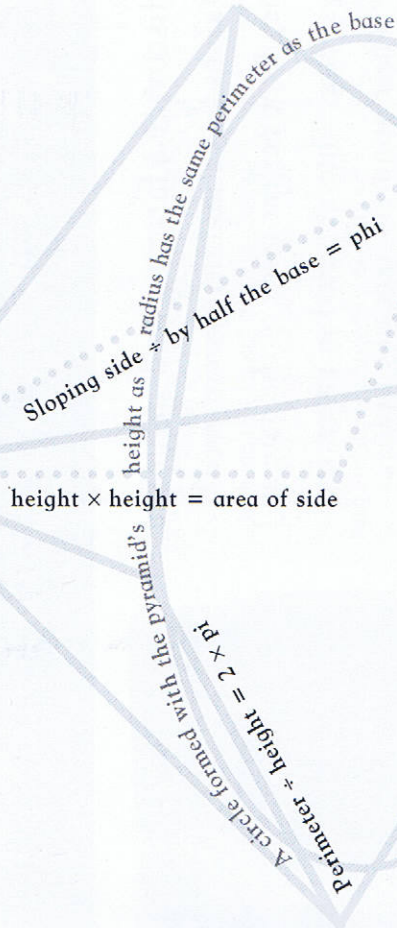
The Nile used to flood every summer, washing away fields and ditches. Year after year, the Egyptians had to mark out their fields anew. And so they became expert surveyors and timekeepers, using maths not just for counting but for measuring land, making buildings, and tracking time.

To measure anything – whether it's time, weight, or distance – you need units. The Egyptians based their units for length on the human body. Even today, some people still measure their height in "feet".



Egyptian numbers weren't suited to doing fractions, so the Egyptians divided each unit into smaller units. One cubit was made of 7 palms, for instance, and a palm was made of 4 digits.

Without maths, the pyramids would never have been built



It was their skill at maths that enabled the Egyptians to build the pyramids. The Great Pyramid of Khufu is a mathematical wonder. Built into its dimensions are the sacred numbers pi and phi, which mystified the mathematicians of ancient Greece (see pages 36 and 44 for more about pi and phi). Maybe this is just a coincidence, but if it isn't, the Egyptians were very good at maths indeed. Two million blocks of stone were cut by hand to make this amazing building – enough to make a 2 metre (7 ft) wall from Egypt to the North Pole. It was the largest and tallest building in the world for 3500 years, until the Eiffel Tower topped it in 1895.

TAMING TIME

Knowing when the Nile was going to flood was vital to the Egyptian farmers. As a result, they learned to count the days and keep careful track of the date. They used the Moon and stars as a calendar.



When the star Sirius rose in summer, they knew the Nile was about to flood. The next new Moon was the beginning of the Egyptian year.

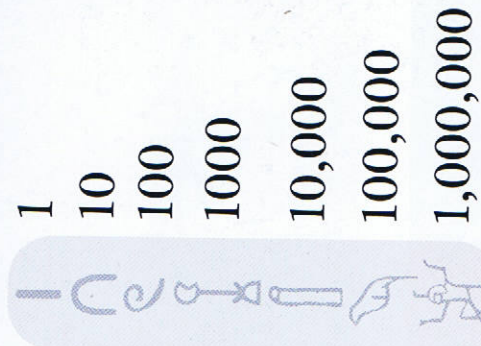


Egyptians also used the Sun and stars as clocks. They divided night and day into 12 hours each, though the length of the hours varied with the seasons. Thanks to the Egyptians, we have 24 hours in a day.

EGYPTIAN numbers

3000-1000 BC

Egyptians counted in base 10 and wrote numbers as little pictures, or "hieroglyphs". Simple lines stood for 1, 10, and 100. For 1000 they drew a lotus flower, 10,000 was a finger, 100,000 was a frog, and a million was a god.



The hieroglyphs were stacked up in piles to create bigger numbers. This is how the Egyptians wrote 1996:



While hieroglyphs were carved in stone, a different system was used for writing on paper.

Egyptian numbers were fine for adding and subtracting, but they were hopeless for multiplying.

To get round this, the Egyptians devised an ingenious way of multiplying by doubling. Once you know this trick, you can use it yourself.

Say you want to know 13×23 . You need to write two columns of numbers. In the left column, write 1, 2, 4, and so on, doubling as much as you can without going past 13. In the right column, start with the second number. Double it until the columns are the same size. On the left, you can make 13 only one way ($8+4+1$), so cross out the other numbers. Cross out the corresponding numbers on the right, then add up what's left.

13	×	23	
1		23	
2		46	
4		92	
8		184	+
13		299	