The mystery of Giza

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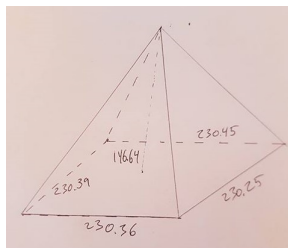

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The Great Pyramid of Giza in Cairo in Egypt, also called the Cheops Pyramid, was finished around 2560BC. It was the tallest man-made structure for over 3800 years. A sketch of the pyramid has been drawn and the following measurements are in meters.

If you take half of the perimeter of the Great Pyramid, $(230.25 + 230.36 + 230.39 + 230.45 = 921.45$ and $921.45/2 = 460.725$, and divide it by its height, the result is very close to π, namely, $\frac{460.725}{146.64} = 3.141878$. Compared to the true value of $\pi = 3.14159...$ we clearly see that the Egyptians knew at least four digits. We do not know exactly how many they knew due to physical uncertainty.

Picture of Mark at the Pyramid of Giza in April 2018.

The Egyptian *Rhind Papyrus* from around 1550 BC[1] states that $\pi \approx 3.16$ and the first theoretical calculations were carried out by Archimedes (287-212 BC). He obtained the approximation $\frac{223}{71} < \pi < \frac{22}{7}$ and thus $\pi \approx 3.14$ the first three digits of π.[2] This was over two thousand years after the Pyramids of Giza were built. So it's a mystery why and how many digits the old Egyptians really knew and why this knowledge is lost.

References

[1]: http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=110036&partId=1

[2]: http://www-groups.dcs.st-and.ac.uk/history/HistTopics/Pi_through_the_ages.html