

How big is the Great Pyramid?



The Great Pyramid of Giza, the oldest of the seven wonders of the ancient world as well as the only one still standing, was built roughly 4500 years ago. It took thousands of slaves twenty years to complete.

The following measurements are approximate – stones vary in type, size and density, and weathering has reduced the size by several metres since the pyramid was first built.

- For thousands of years, the pyramid was the tallest structure in the world, standing at 146m high.
- The shape is a square-based pyramid, and the sides of the base are 230m long.
- The main building material was limestone, which has a density of roughly 2700kg/m³.
- The structure is almost all solid stone, but roughly 15% of the pyramid is corridors and chambers.
- The pyramid contains roughly 2.3 million blocks of stone.

Using the following formulae, calculate the weight of the Great Pyramid of Giza:

- $Volume\ of\ a\ pyramid = \frac{Area\ of\ base \times Height}{3}$
- $Weight = Density \times Volume$

Extension:

Can you calculate the average weight of one block of stone?

Can you calculate the average volume of one block?

How many blocks would need to be moved every hour in order to complete this project in 20 years?