A fascinating fact file and learn-it-yourself project book

Peter Mellett
LEARN ABOUT

PYRAMIDS

PETER MELLETT

MY FATHER'S WORLD®
PYRAMIDS

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WHAT ARE PYRAMIDS?

SHUT your eyes and say the word *pyramid* to yourself several times. Exactly what picture comes into your mind? Perhaps you start to think about the huge stone shapes and buildings that stand by the great river Nile in Egypt or stand in parts of Central America. It may be that you remember seeing some kind of pyramid shape at the top of a modern skyscraper. Perhaps you have looked through a microscope at tiny, pyramid-shaped crystals in a science class at school. As you can see, there are many, many different kinds of pyramids all around us. Some pyramids are made by people and others are natural, but they all have one thing in common—the same special shape. All pyramids stand on a flat base and have flat, sloping sides that are called faces. These sloping faces are always triangular in shape, and they meet at one point at the top of the pyramid. So, when you hear the word *pyramid*, the first thing to think about is this special shape.

The *Giza pyramids*

These pyramids have stood by the Nile in northern Egypt for 4,600 years. They were built as tombs for great kings and queens. The estates were once covered in smooth stone, but robbers have taken the stones.

The most common kind of pyramid has a square, flat base and four sloping, triangular sides. Most of the pyramid-shaped buildings constructed during the last 5,000 years have this shape.
Temple II, Tikal, Guatemala
This pyramid is in Central America, on the other side of the world from Egypt. It has steps up the outside and a temple at the top. Most Central American pyramids were built between 600 and 1,500 years ago.

Canary Wharf, London
This tower was built during the 1990s and has a pyramid at the top. It forms a striking landmark that can be seen for miles. The pyramid shape is simple and dramatic. This means that it catches your attention. It has been used by many modern architects.

Spinel crystal
Not all pyramids are made by people. There are also pyramids in the natural world. This crystal is shaped like a pyramid. It is made of a mineral called spinel and is formed over many years, deep underground. Natural crystals also occur in other shapes. Salt crystals, for example, are cubes.

FACT BOX
- Egyptian pyramids were built from millions of stone blocks, or mud bricks encased in stone.
- Most Central American pyramids have a core of rubble, with stone blocks on the outside.
- Egyptian pyramids were built as tombs. Most Central American ones were used as temples.
PYRAMIDS AND MATH

The kind of math that involves studying shapes is called geometry. Solid geometrical shapes include cubes, cones, spheres, cylinders—and pyramids. There is a whole family of different shapes that we can call pyramids. The simplest members of this family are pyramids with just four faces. They stand on a triangular base and have three other triangular faces. These pyramids are called tetrahedrons. The next members of the family have a total of five faces—they stand on a square base and have four triangular faces. These pyramids are called square pyramids. You can make other pyramid shapes by adding more sides to the base and more triangular faces. You could make a pyramid with hundreds of faces, but most natural pyramids and pyramids built by people are either tetrahedrons or square-based. Every pyramid has two important measurements that describe its shape. The base length measures along one side of the base. The vertical height measures straight upward—from the middle of the base to the point at the top.
**Height and base**

Make a square pyramid and a tetrahedron from straws and re-usable adhesive. Now try measuring them to learn about their shapes. It is easier to measure their height if you place the ruler in the center of the base.

**Volumes of pyramids**

The volume of a shape is the amount of space inside it. Make a straw cube. Now make a square-based pyramid with a base size and height the same as your cube. The volume of the cube should be three times the volume of the pyramid.

**Tessellation**

Some pyramid shapes tessellate (fit together without any gaps). Experiment with small cardboard pyramids you have made yourself or with the pyramid shapes from egg cartons.
The ancient pyramids are some of the greatest secrets of the world. Learn About Pyramids lets you step inside these structures and unlock all sorts of fascinating secrets about the lives of the people who made them. Take a journey from the fertile River Nile in Egypt to the floating island of Tenochtitlán in Mexico to discover just how many different types of pyramids there have been over the centuries. Learn about pyramid wonders of the modern world, find out which pyramid shapes occur in nature and explore how pyramid shapes have all kinds of unique properties and uses.

- 19 informative sections on pyramid builders from all around the world
- 25 exciting projects, from writing in hieroglyphs to growing your own pyramid crystals
- Over 250 full-color photographs and explanatory illustrations
- Ideal for 8- to 12-year-olds to use at home or school