

Ancient Egyptian Architecture

Imhotep was a famous ancient Egyptian architect (someone who designs buildings) who lived over four and a half thousand years ago.

Egyptians said he had invented building pyramids for the tomb of the pharaoh Djoser.

This is the step pyramid that Imhotep built. Before this, Egyptian kings or pharaohs were buried in mastaba tombs which were flat-roofed, square buildings. Djoser wanted a more impressive tomb so Imhotep put six mastabas one on top of each other. Each one slightly smaller than the other. If you look at the size of the people, you can see just how big this pyramid is.



Find out more about Imhotep here:

http://www.bbc.co.uk/history/historic_figures/imhotep.shtml

When you are building a pyramid (or any building) you need to be able to draw straight lines, draw a circle and work out if walls are vertical (that means that they go straight up and down).

Your Challenge:

Find a shoe with laces.

Now your task is to work out how to use that shoe to help you to 1) draw a straight line, 2) draw a perfectly round circle and 3) work out if walls in your house are vertical (go straight up and down).

Rules:

1. You can't use a ruler, but you will need a shoe, pencil, paint, string and paper
2. Asking a grown up to tell you the answer is cheating.

Clue: you can take the lace out of the shoe.

Another clue: Gravity might help with your third task

What do you think? How do you think we can do this?

When you've had a think, have a look at the answers.

Answers:

1) How to draw a straight line.

Take the lace from the shoe.

Pull it tight, it goes in a perfectly straight line. Egyptians used ropes pulled tight when they were laying out the base of a building. They called this “stretching the cord” or “*pjed shes*”.

They also used this to make straight lines on the walls of tombs to help them when they were painting it. They would dip the rope in paint and then stretch it tight before pushing it against the wall to make a straight line on the wall.

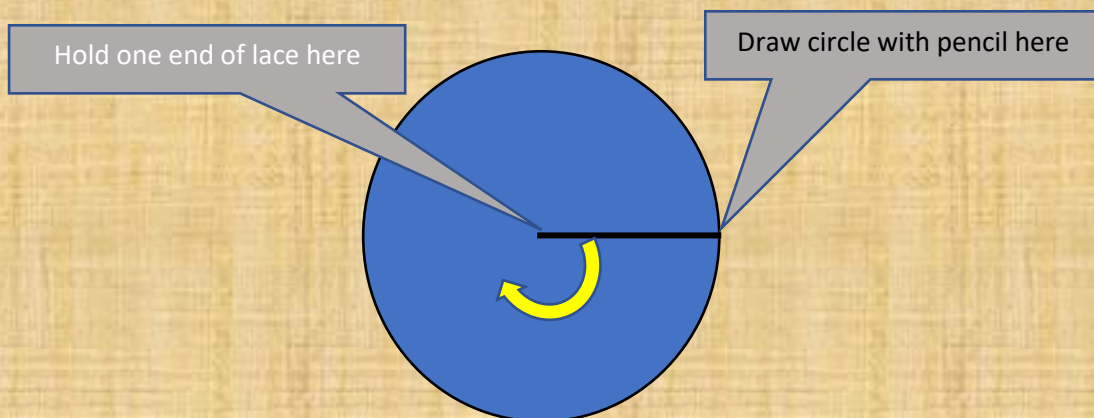
Activity:

Take a piece of string, carefully dip it in paint and then try and make a straight line on your piece of paper. See you don't need a ruler! (If you don't have paint, hold the string tightly and ask someone else to draw the line along the string).

Tip: Don't try putting straight lines of paint on the wall – grown ups might get cross!

2) How to draw a circle.

Use the lace again. Hold one end tight in the middle of a big bit of paper and tie a pencil to the other end. Now pull the lace tight as you draw a line in the paper. If you keep on drawing all the way round, you'll end up with a perfect circle!



3) Vertical Walls.

In order to check if walls are vertical, tie one end of the shoe lace to the shoe. Now hold the lace and let the shoe hang down. The line that the lace makes will always be perfectly vertical. Try holding the lace and standing on one leg... it's still straight up and down. Try holding the lace and making a funny face... still the same.

Why is that?

Gravity is an invisible force that pulls everything downwards. If you jump up in the air, you the fall back down.

Gravity is pulling the shoe straight down and the lace makes a vertical line from your hand to the shoe. Now you can hold the lace next to the wall and see if the line of the lace matches the wall.

Now find five other things in your house that have vertical sides.

More Activities:

Is it flat?

Now you know how to test if things are vertical, the next step is to make sure surfaces are horizontal (flat sideways).

Find:

A piece of cardboard about A4 size (size of paper in a computer printer)

String

Something small and heavy you can tie to string (lump of blu-tac works well)

Cut the cardboard into a capital A shape:



You must make sure both sides of the “a” are exactly the same. THIS IS REALLY IMPORTANT.

The easiest way is to take a piece of paper, fold it in half and then cut out one side of the “A” shape. When you unfold it, you should have a complete template for your cardboard.

Then make a small hole in the cardboard directly above the middle of the top of the “A”. Put one end of the string through the hole and tie a knot so it stays in place.

Now tie your weight to the other end of the string.

When the two legs of the “A” are horizontal, the string will hang down across the middle of the “A”.

