3D Shapes

What do you need to know?

A 3D shape has three dimensions: **length, height and depth**. 2D shapes only have two dimensions: **length and height.** In other words, 2D shapes are flat but 3D shapes are not: they're like the objects you see around you every day!

Here are some of the most important 3D shapes:

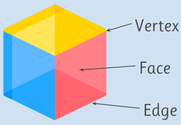
3D Shapes Vocabulary

To describe the properties of 3D shapes, you'll need to use the right vocabulary. There are three important words to learn:

Face: a face is a flat surface of a shape. If the surface is curved, it's not a face.

Edge: an edge is where two faces meet.

Vertex: a vertex is where edges meet, or a corner. The **tip of a cone** is therefore also a **vertex**! The plural of vertex is vertices.

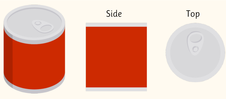


A cube has six faces, twelve edges and eight vertices.

Nets and Perspective

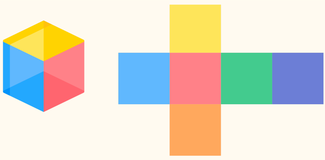
Because 3D shapes **aren't flat**, they might appear differently depending on how you look at them: this is called **perspective.**

Imagine a tin of soup, which is a cylinder shape. If you look at it from the side, it looks like a rectangle. But if you look at it from the top, it looks like a circle!



We can also see these different perspectives when we shine a light onto the object, from the top or from the side!

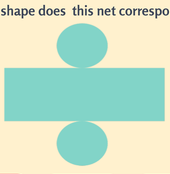
Knowing what a shape looks like from different perspectives helps you understand **nets** of 3D shapes. A **net** of a 3D shape is what it would look like if it was laid flat. For example, this is one of the nets that form a cube!

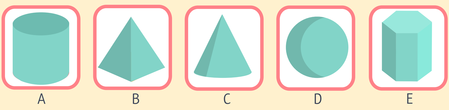


Remember: you can't see every one of the coloured sides because some of them are behind or underneath the cube!

Let's see an example of this!

Which 3D shape does this net correspond to?





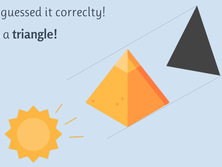
We can work this out by thinking about its properties. This net includes **circles** which means that it can't be the net of a square-based pyramid or a hexagonalprism. Their nets only contain squares and hexagons.

Now we're left with the cylinder, the cone and the sphere. Sphere have not nets, they can only be understood as 3 dimensional shapes, so we can discard it. The net has two circles, so it must correspond to the **cylinder!** Cylinders have **two** circular faces, whilst cones only have one.

Let's try something different!

In your History lesson, you've been learning about the Great Pyramid of Giza. When the sun is going down, the Pyramid is lit from the side.
What is the shape of this shadow?

You guessed it correctly!
It is a **triangle!**



This is because the net that forms a square based pyramid like the Great Pyramid of Giza is made up of **four triangles and one square!**

Remember!

A curved surface is not a face. For example, a **sphere doesn't have any faces.**
This means that **spheres don't have nets either!**