

# Y5 - Geometry

In Year 5, children are taught the following about **geometry**:

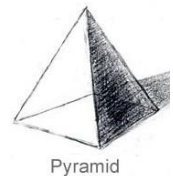
**Shape:** Children must be able to identify 3D shapes, including cubes and cuboids, from 2D representations. They must also be able to distinguish between regular and irregular polygons by reasoning about their sides and angles. There is a specific focus on rectangles too, where children must use their properties to find missing lengths and angles.

**Angles:** Children are expected to identify angles on a point or a straight line, using their knowledge that a whole turn is  $360^\circ$ , a straight line is  $180^\circ$  and that a right angle is  $90^\circ$ . They should be able to say whether an angle is obtuse, acute or reflex, and then estimate their actual size. Finally, they are taught to draw and measure angles using a protractor as well.

**Position and Direction:** Children must be able to identify, describe and represent the position of a shape following a translation or a reflection using the appropriate language.

## Activities & Games!

★★ **Drawing shapes:** Have a go at drawing various 3D shapes on paper. Tracing shapes you find on the internet will help you initially, but see if you can draw some on your own too. This [isometric paper](#) might help you.



★ **What shape am I?** a) My faces are made up of a square and four triangles; b) My faces are made up of rectangles and triangles. Can you name these shapes? Ask a grown up to give you some more.

★★★ **Visualise:** a) A square based pyramid is put on top of a cube so that it fits perfectly. How many 2D shapes can you now see and what are they? b) A tetrahedron and a triangular prism are fit perfectly together. How many 2D shapes can you now see and what are they?

★★ **Rectangles:** A rectangular classroom has a perimeter between 20 and 25 cm. What could the dimensions be? Another rectangular classroom has an area between 20 and 25 cm. What could the dimensions of this classroom be? The last classroom is made up of a square and a rectangle. The perimeter is 70m and the area of the square is  $121\text{m}^2$ . What is the area of the rectangle?



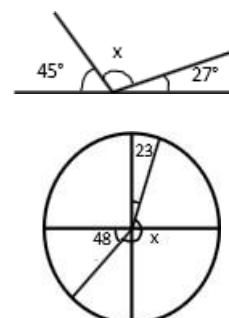
★★ **Polygons:** Are these sometimes, always or never true: The number of equal angles is the same number of equal sides in a regular polygon? All the angles are equal in a regular polygon so that must mean a rectangle is a regular polygon? Discuss these with a grown up; remember to explain your reasoning.

★★ **Translations:** A rectangle is translated 3 squares up and two squares to the left. Three of the coordinates of the translated rectangle are: (5, 7) (10, 14) (10, 7). What are the coordinates of the original rectangle?

★ **Reflections:** True or False? Reflecting a shape changes the dimensions. Use diagrams to prove your thinking.

★ **Angles:** Work out the missing angles on these diagrams:

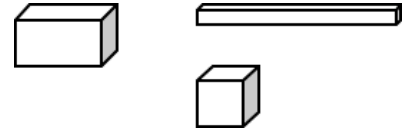
★★★ **Crack the code:** The code for the lock is 50, 25, 75, 0, 50. Write instructions of the turns in degrees that you must make to open the lock.



# Going deeper...

## All wrapped up!

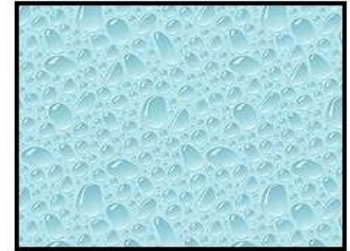
A cuboid has 6 faces; each face is a rectangle (including squares); each face is paired with one the same on the opposite side and all the angles are 90 degrees. They might look like these:



Now imagine that you have some wrapping paper. For ease, work on the basis that this wrapping paper is A3 in size (40cm by 30cm).

You need to wrap a cuboid with this wrapping paper, but the challenge is to find the largest cuboid that can be covered completely with the A3 sheet. Beware - you will probably want to stick to whole numbers of centimetres! Rather than wrapping the cuboid like we might do a birthday present, let's think about it as if we're trying to have as little overlap as possible.

You might want to do this practically, or you may use diagrams or even a spreadsheet - it is up to you.



## Wonderful websites

[Air Nets](#)

[Transformations](#)

[Estimating Angles](#)

[Shape Block](#)

[Fault-free Rectangles](#)

[3D Shapes](#)

[Measuring Angles](#)

[Canoeing!](#)

Whilst it can be very tempting to encourage your child to have a go at the more challenging activities, it is far better to work with them at a level they feel confident with. Significant and regular practise of even the most basic skills outlined in this document will lead to a much deeper understanding and greater proficiency, and ultimately a much more pleasant 'homework' experience for you and your child!