

Geometry

Selected National Curriculum Programme of Study Statements


Pupils should be taught to:

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects
- order and arrange combinations of mathematical objects in patterns and sequences

The Big Ideas

It is not uncommon for pupils to say that this \square is a square and this \diamond is not, or that something like this \triangle is a triangle.

It is important for pupils to know what the properties are that make up certain shapes, and for them not to just learn the names of typical proto looking shapes.

It is helpful to think about non examples of shapes. For example, why this is not a triangle: 

Recognising pattern and generalising structures and relationships are key elements for laying the foundations for later work in algebra.

Mastery Check

Please note that the following columns provide indicative examples of the sorts of tasks and questions that provide evidence for mastery and mastery with greater depth of the selected programme of study statements. Pupils may be able to carry out certain procedures and answer questions like the ones outlined, but the teacher will need to check that pupils really understand the idea by asking questions such as 'Why?'; 'What happens if ...?'; and checking that pupils can use the procedures or skills to solve a variety of problems.

Mastery

Carry out activities that direct pupils' attention to properties and do not just ask them to state the name of shapes in order to allow them to demonstrate mastery.

Asking questions like 'How do you know the shape is a triangle?' can also support pupils to develop mastery of this topic.

Mastery with Greater Depth

Cut a square piece of paper as shown. Rearrange the pieces to make different shapes. What different shapes can you make?



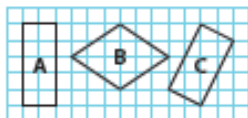
Describe the properties of the shapes you make.

Can you make some shapes which have at least one line of symmetry?

Mastery

Captain Conjecture says, 'All of these shapes are rectangles because they have four sides.'

Do you agree?



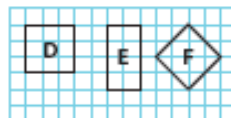
Explain your reasoning.



Mastery with Greater Depth

Captain Conjecture says, 'All of these shapes are rectangles because they have four sides.'

Do you agree?



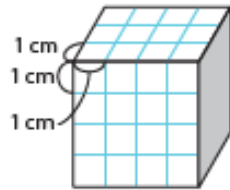
Explain your reasoning.

Children should appreciate that a square is a rectangle because it has 4 right angles and opposite sides are of equal length.

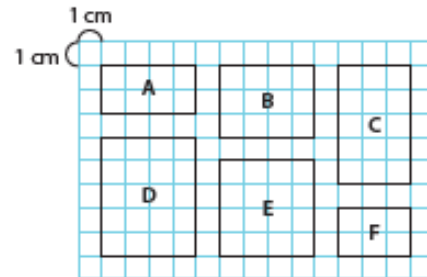


Mastery

We are going to make a box as shown.

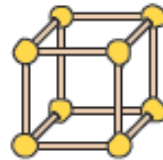


Which quadrilaterals shown below do we need?
How many of each do we need?



Mastery with Greater Depth

Jack has made a cube using 12 sticks and 8 balls of modelling clay.



What shape could he make with:

6 sticks and 4 balls of clay?

4 long sticks, 8 short sticks 8 balls of clay?

Fill in the missing shape to complete the pattern.



Explain your reasoning.

Fill in the missing shape to complete the pattern.



If the pattern continued what would the tenth shape be?

Explain your reasoning.