

White

**Rose
Maths**

Autumn - Block 3

Shape

Overview

Small Steps

- ▶ Recognise and name 3-D shapes
- ▶ Sort 3-D shapes
- ▶ Recognise and name 2-D shapes
- ▶ Sort 2-D shapes
- ▶ Patterns with 3-D and 2-D shapes

NC Objectives

Recognise and name common 2-D shapes, including: (for example, rectangles (including squares), circles and triangles)

Recognise and name common 3-D shapes including: (for example, cuboids (including cubes), pyramids and spheres)

3-D Shapes

Notes and Guidance

Children name simple three dimensional shapes: cuboids (including cubes), cylinders, pyramids, cones and spheres. Ensure children see the shapes in a variety of orientations so they develop a deeper understanding of the shape.

Children start to consider the 2-D shapes they can see on the faces of the 3-D shapes which will support them when looking at 2-D shapes later in the block.

Mathematical Talk

What makes a shape 3-D?

Can we see any 3-D shapes in the classroom?

Can you name this 3-D shape?

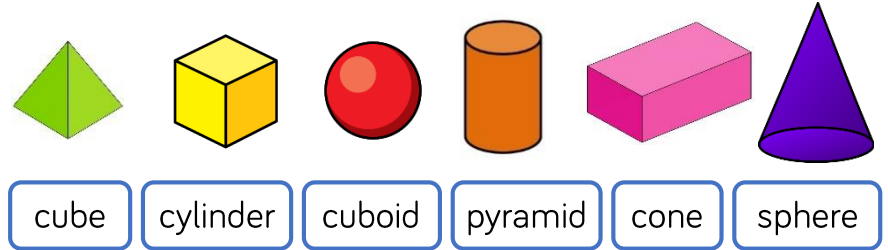
Do cubes all look the same?

Does the shape change when we turn it around?

Can you think of any everyday objects that are cones? Can you think of any everyday objects that are cubes? Can you think of any everyday objects that are ...

Varied Fluency

Match the shape to its name.



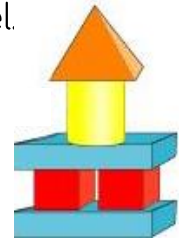
Complete the sentences to describe the model.

There are ____ cuboids.

There are ____ cylinders.

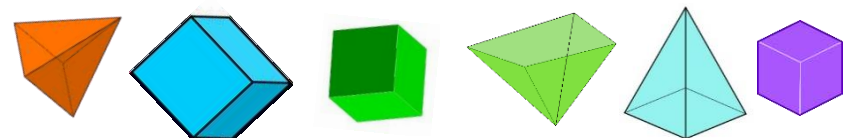
There are ____ pyramids.

There are ____ cubes.



Build your own model using 3-D shapes and ask a partner to describe it.

Circle the cubes. Tick the pyramids.



3-D Shapes

Reasoning and Problem Solving

Put a selection of 3-D shapes in a feely bag.
Choose a shape. What do you think it is?



Explain how you know.

Possible answer:

I think it is a cuboid because I cannot feel any curved surfaces but I can feel a long and smaller face.

Use 3-D shapes to build a tower.

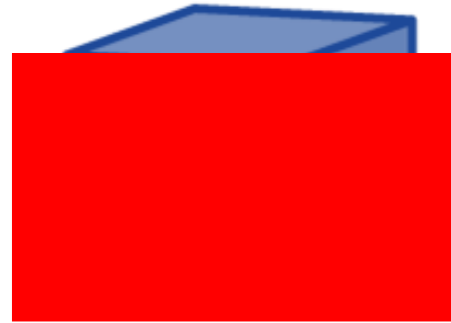
Which shapes are the best for the bottom of the tower?

Which shapes can only go on the top of the tower?

Can you use any of the shapes only in one orientation?

Children may reason about different shapes depending on if the shapes have flat or curved surfaces.

The bottom of a 3-D shape is hidden.



What shape could it be?

Explain how you know.

Possible answers:

Cube
Cuboid
Pyramid

Sort 3-D Shapes

Notes and Guidance

Children sort and group 3-D shapes according to simple properties, including type, size, colour.

They also consider sorting shapes based on whether they roll or stack. This will lead children to think about why a shape rolls (curved face) or why it will stack (flat face).

Children should recognise that the orientation of a shape does not affect its properties.

Mathematical Talk

Why is the shape the odd one out?

What is the same about the shapes? What is different?

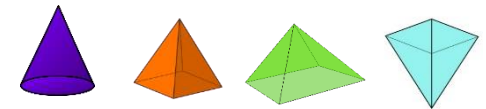
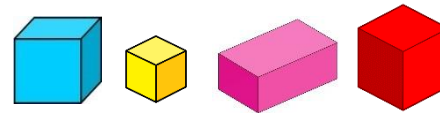
Can you find an everyday object to add to each of the groups?

How can you test if the shapes roll? What do the shapes that roll have in common?

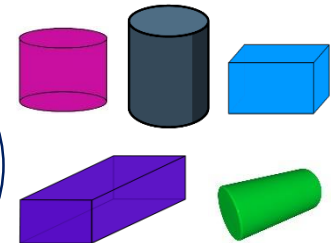
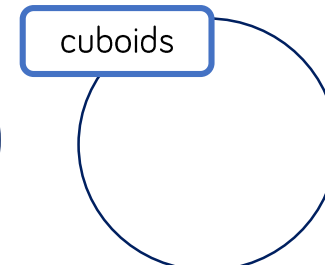
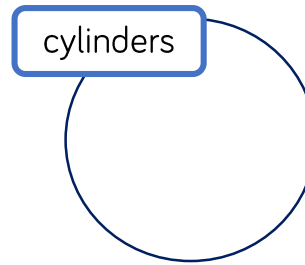
How can you test if the shapes stack? What do the shapes that stack have in common?

Varied Fluency

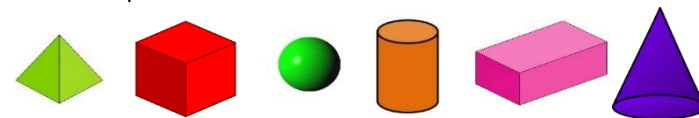
- Circle the odd one out in each group.



- Sort the shapes into the groups.



- Which shapes will roll? Circle them.
Which shapes will stack? Tick them.

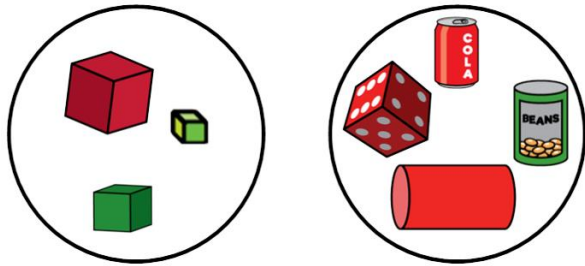


Will any of the shapes roll and stack?

Sort 3-D Shapes

Reasoning and Problem Solving

Some 3-D shapes have been sorted.



Have the shapes been sorted correctly?

Explain how you know.

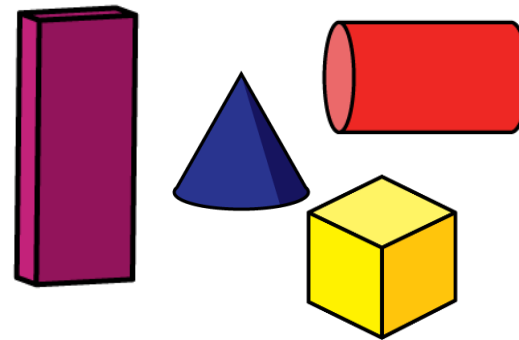
How else could the shapes be sorted?

Possible answers

The shapes have been sorted into cylinders and cubes. The dice needs to be moved.

The shapes have been sorted into colour. The green tin of beans and the red cube need to be moved.

How many ways can you sort the shapes into groups?



Possible answers:

Straight faces and curved surfaces.

Shapes with a circular face and shapes with a square face.

Big shapes and small shapes.

2-D Shapes

Notes and Guidance

Children see 2-D shapes on the surfaces of 3-D shapes.

Children can use the 3-D shapes as stencils or prints to make 2-D shapes. It is important that children see 2-D shapes are flat.

Looking at 2-D shapes, children name triangles, squares, rectangles and circles.

Mathematical Talk

What is the name of this 3-D shape?

What can you tell me about the surfaces?

What are the names of the shapes on the surfaces?

How many _____ are on the surface of this shape?

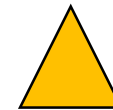
Is there more than one type of shape on the surfaces?

Where else can we see 2-D shapes around the classroom?

Varied Fluency

Choose a 3-D object. Use one of the faces as a stencil to draw around. Name the shape that you have drawn.
How many different 2-D shapes can you draw using 3-D shapes as a stencil?

Match the 2-D shapes to their names.



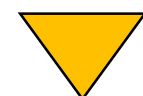
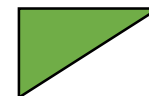
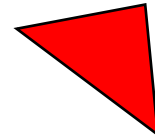
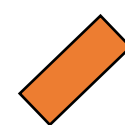
Rectangle

Circle

Square

Triangle

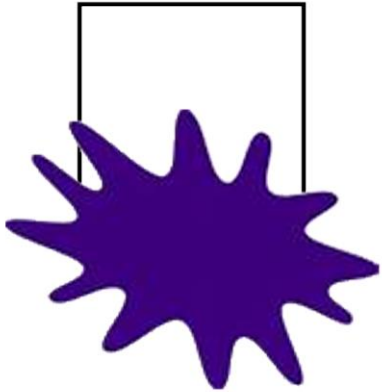
Circle the triangles, tick the rectangles and draw a circle and a square.



2-D Shapes

Reasoning and Problem Solving

Part of a shape is hidden.



What shape could it be?

Is there more than one possibility?

Explain your thinking.

It could be a square because it can have 4 sides the same length.

It could be a rectangle because it could have 2 longer sides.

Here is part of a shape.



How many different ways can you complete the shape using one or more straight lines?

Compare your shape with a partner.

What is the same and what is different?

Children could continue the shape to make a square, rectangle or triangle.

Sort 2-D Shapes

Notes and Guidance

Children sort and group 2-D shapes according to simple properties, including type, size, colour. Children should recognise that the orientation of a shape does not affect its properties.

Children consider what is the same and what is different about the shapes. Teachers highlight the similarities between squares and rectangles, however, it is not vital that children understand that a square is a type of rectangle at this stage.

Mathematical Talk

What is the name of this shape?

Can you describe the shape?

Compare your shape to a different shape – what is the same and what is different?

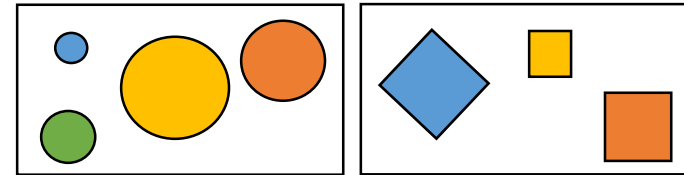
Compare your shape to other shapes with the same name – what is the same and what is different?

How have the shapes been sorted?

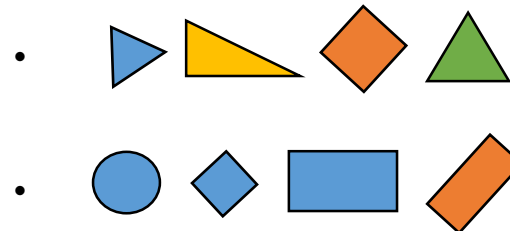
Could the shapes have been sorted in a different way?

Varied Fluency

- Go on a shape hunt around the school. Take photos of 2-D shapes then sort them by their name. Can you sort them any other way?
- How are the shapes grouped? Label each group.



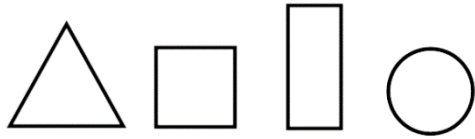
- Circle the odd one out in each group.



Sort 2-D Shapes

Reasoning and Problem Solving

Use a selection of triangles, rectangles, squares and circles.



Put your shapes into groups.

Ask a partner to label your groups.

How many different groups can you create?

Tommy says that all shapes with 4 sides are squares.

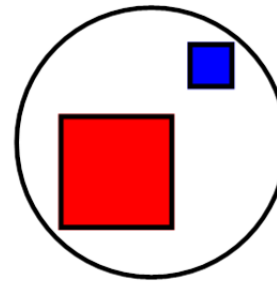
Is Tommy correct?
Prove it.

Possible ways of sorting:
Colour, name of shape, number of sides etc.

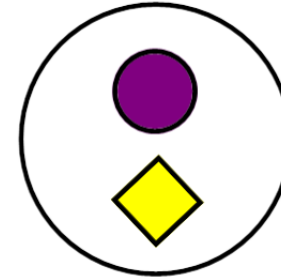
Tommy is incorrect as there are many other 4-sided shapes including rectangles.

Eva has sorted some shapes.

Squares



Not Squares



Has she sorted them correctly?
Explain how you know.

She has not sorted them correctly. The yellow shape is a square in a different orientation.

Patterns with 3-D & 2-D Shapes

Notes and Guidance

Children use 2-D and 3-D shapes to complete and make simple patterns focusing on different shapes, sizes and colours. Encourage children to say the patterns aloud, consolidating shape names. Use shapes in different orientations to reinforce children's recognition of 2-D and 3-D shapes. Children recognise the core of each pattern (which part is being repeated) and use this to continue patterns in any direction as well as around a circle.

Mathematical Talk

What is the order of the shapes in the pattern?

How can we describe the pattern?

What is the same and what is different about the patterns?

What will the next shape be?

What is the core of the pattern?

How many shapes (elements) are in each repeat?

Varied Fluency

Annie is making a pattern.

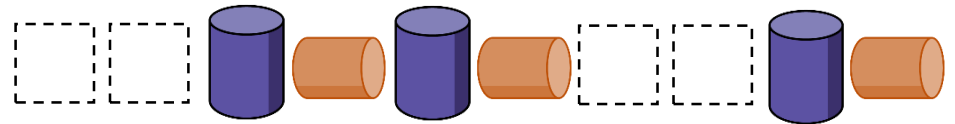


Can you say the pattern aloud? Rectangle, triangle, circle, rectangle, triangle, circle ...

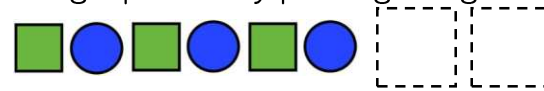
Which shape comes after the circle?

Which shape comes before the rectangle?

Name the missing shapes in each pattern.



Jack is making a pattern by printing using 3-D shapes.



Which 3-D shapes could Jack use to continue the pattern?

Can you make your own printed pattern using 3-D shapes?

Patterns with 3-D & 2-D Shapes

Reasoning and Problem Solving

Amir and Eva are making patterns.

Eva



Amir



Our patterns are exactly the same.

Eva

Our patterns are different.



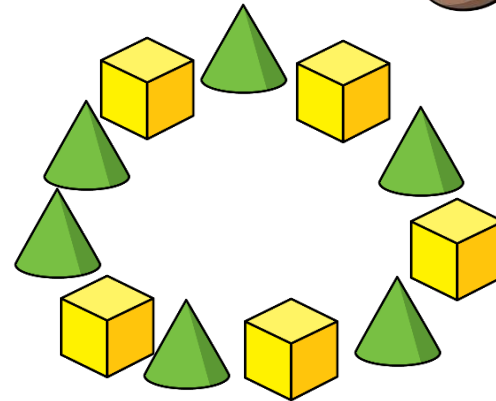
Amir

Who do you agree with?

Explain your answer.

Amir is correct because the triangle is in a different orientation.

Whitney is making a pattern in a circle.



Is Whitney's pattern correct?
Explain why.

Can you make your own circular pattern using 3-D shapes?

Whitney's pattern is incorrect. She has 2 cones together. She needs to make the circle a little bigger or smaller so the pattern continues all the way around the circle.