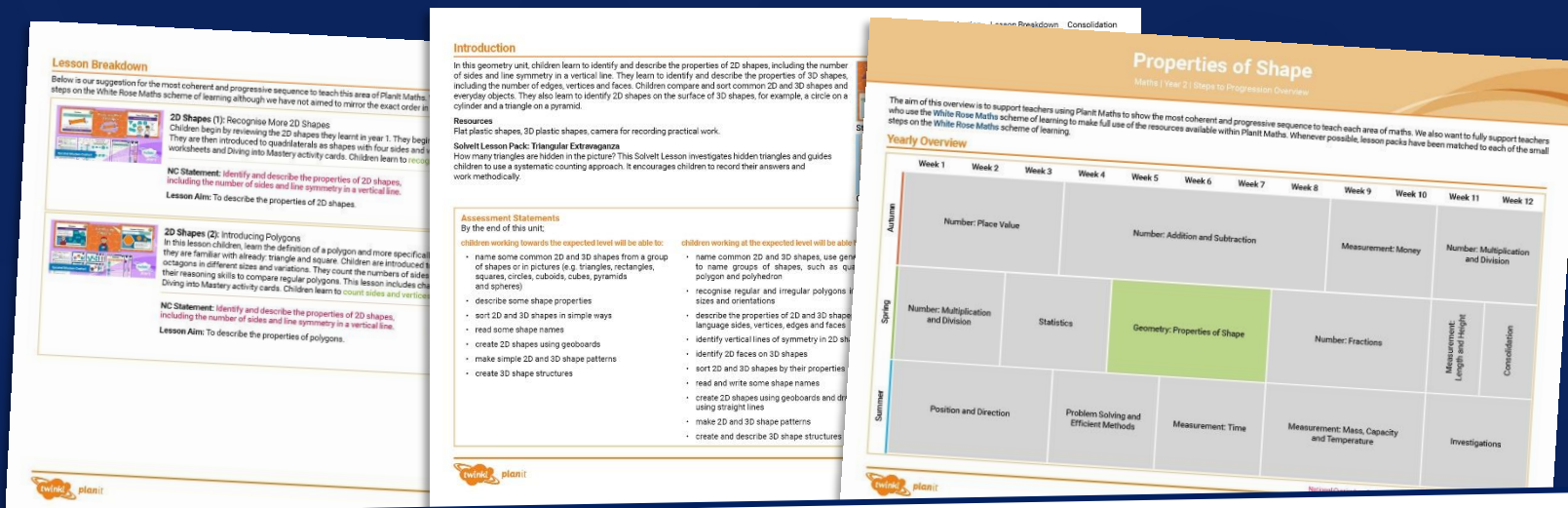




Maths

Properties of Shape

Need a coherently planned sequence of lessons to complement this resource?



See our [Properties of Shapes Steps to Progression](#) document.

Twinkl Planit is our award-winning scheme of work with over 4000 resources.



Sort 3D Shapes



Aim

- To sort 3D shapes according to their properties.

Success Criteria

- I can describe the properties of 3D shapes.
- I can use a Venn diagram to sort 3D shapes.
- I can choose my own criteria to sort 3D shapes.

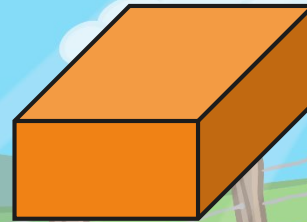
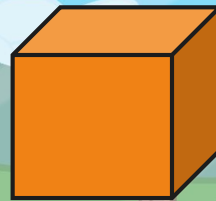
Remember It



Compare the 3D Shapes.

What is the same?

They both have:
6 faces
12 straight edges
8 vertices



What is different?

The cube has square faces.
This cuboid has 6 rectangular faces.

The edges on the cube are the same length.
The edges of this cuboid are different lengths.

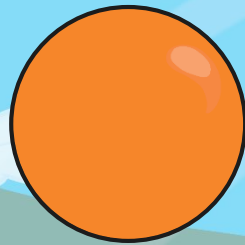
Remember It



Compare the 3D Shapes.

What is the same?

They both have
1 curved surface.



What is different?

The sphere has no edges.
The cylinder has 2 curved edges.

The sphere has no faces.
The cylinder has 2 circular faces.

Remember It



Compare the 3D Shapes.

What is different?

What is the same?

Both shapes have triangular faces.

Both shapes have straight edges.

Both shapes have vertices.

The triangular-based pyramid has 4 triangular faces.

The triangular prism has 2 triangular faces and 3 rectangular faces.

The triangular-based pyramid has 4 vertices.
The triangular prism has 6 vertices.

The triangular-based pyramid has 6 edges.
The triangular prism has 9 edges.

Remember It



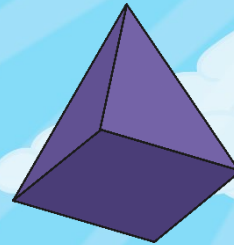
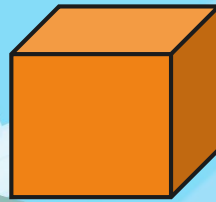
Compare the 3D Shapes.

What is the same?

Both shapes have at least 1 square face.

Both shapes have straight edges.

Both shapes have vertices.



What is different?

Cubes have 6 square faces.

The square-based pyramid has 1 square face and 4 triangular faces.

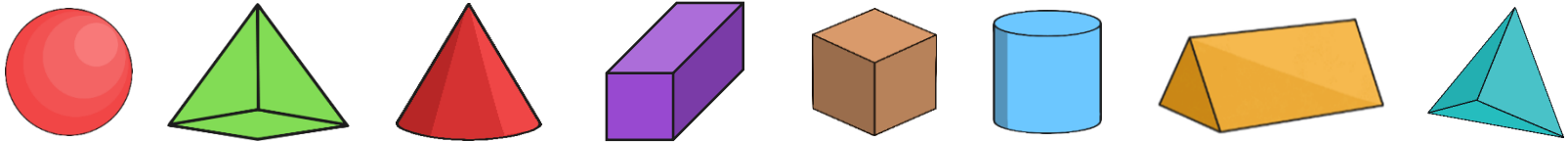
Cubes have 12 edges.

Square-based pyramids have 8 edges.

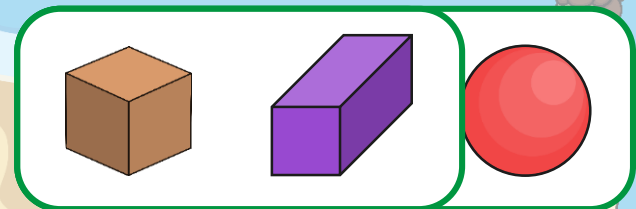
Find It



Can you find the 3D shapes to match the clues?



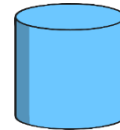
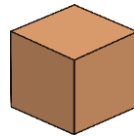
They have more than 7 vertices.



Sorting 3D Shapes



Can you sort these 3D shapes into the 2 sets?



**at least
1 circular face**

**at least
1 triangular face**

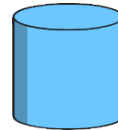
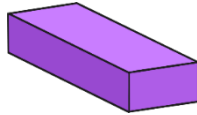
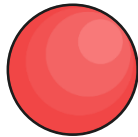
Which shape didn't belong in either set?

Can you explain why?

Sorting 3D Shapes

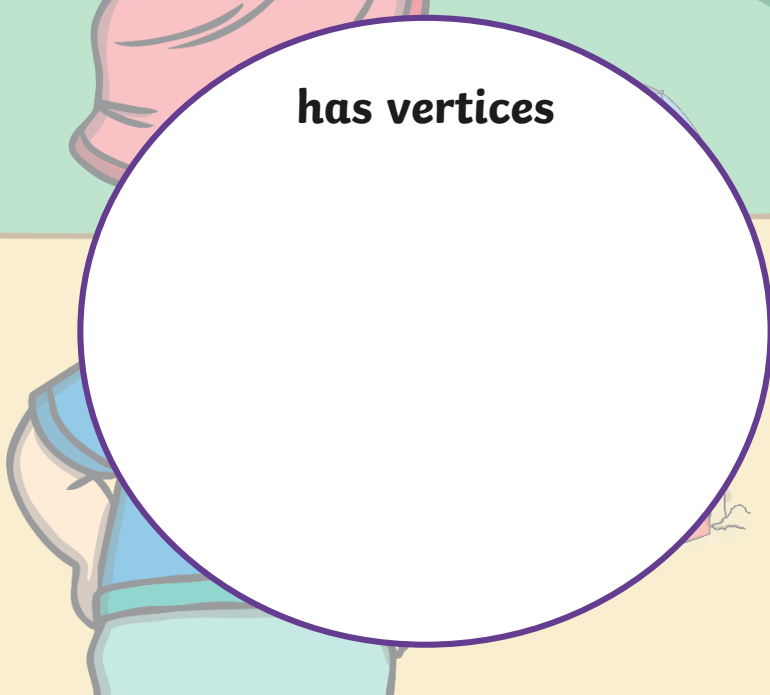


Can you sort these 3D shapes into the 2 sets?



has vertices

has no vertices

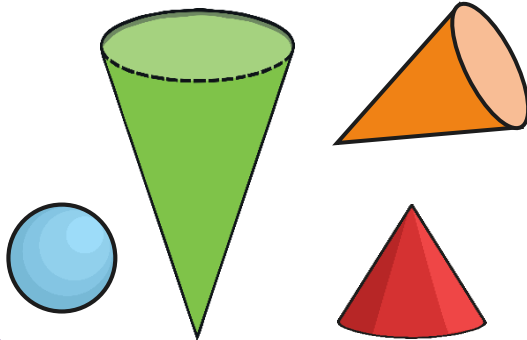


Sorting 3D Shapes

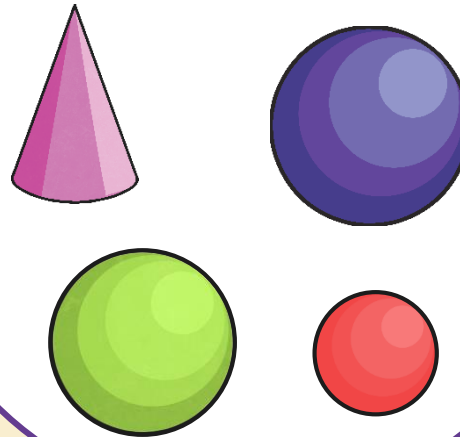


These 3D shapes have been sorted into 2 sets.

Cones



Spheres



Are they sorted correctly?

Can you explain why?

What would you change?

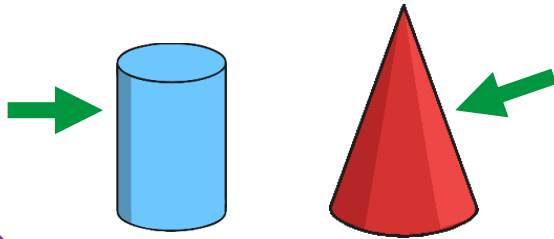
Sorting 3D Shapes



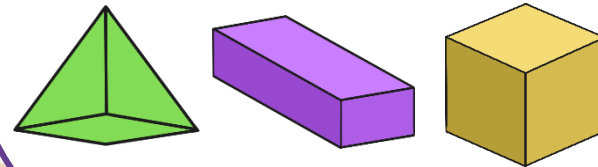
These 3D shapes have been sorted into 2 sets.

How could they have been sorted?

curved surfaces



no straight surfaces



Can you find another way to describe how these 3D shapes have been sorted?

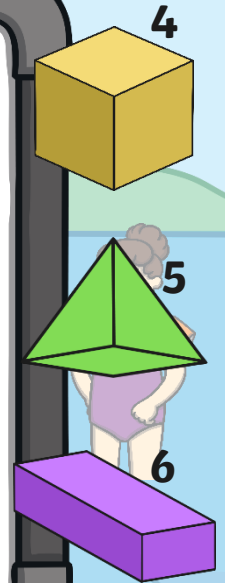
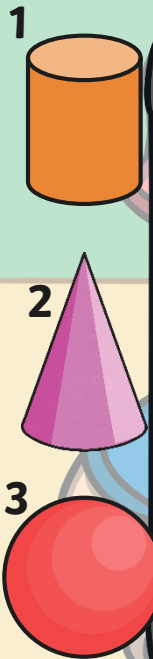
Sorting 3D Shapes



Draw two circles on your whiteboard.

Find a way to sort the 3D shapes.

Explain how you sorted the 3D shapes.



faces

edges

vertices

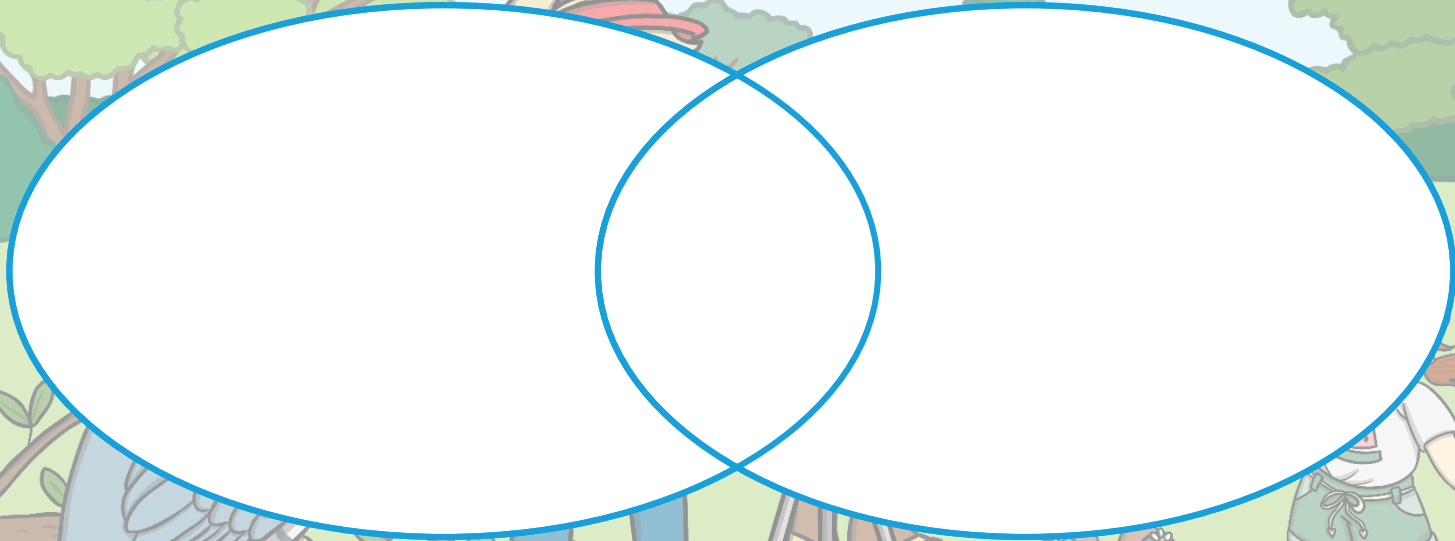
surfaces

curved straight

Venn Diagram



The set rings, or sorting rings you have been using are also known as Venn diagrams.



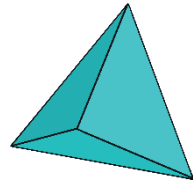
What do you think this middle part is for?

Venn Diagram

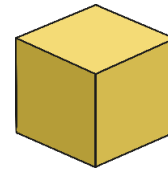


Why do you think the square-based pyramid is in the middle?

at least
1 triangular face



at least
1 square face



The square-based pyramid has both a square face and triangular faces so it belongs in both sets. It goes in the middle so it is in both rings at the same time.

Venn Diagram



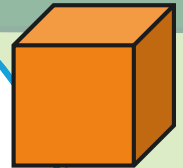
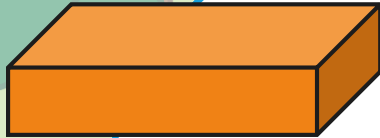
Use the Venn diagram to sort these 3D shapes.

Which shape will you place in the middle?

Can you explain why?

at least
1 square face

at least
1 rectangular face



One cuboid has both square and rectangular faces so it belongs in both sets and needs to go in the middle.

Why did the cylinder stay outside of the rings?

Venn Diagram



Find different ways to sort the 3D shapes.

Which shape will you place in the middle?

Can you explain why?

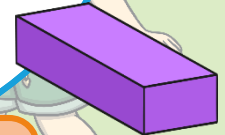
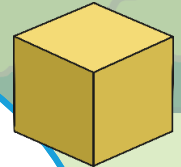
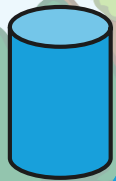
?

?

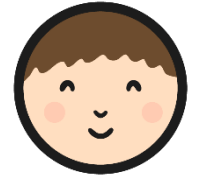
Can you explain how you sorted them?

Do any of the shapes belong in both sets?

Are there any shapes that don't belong in either set?
Where would we place those?



Branching Out



Sorting 3D Shapes

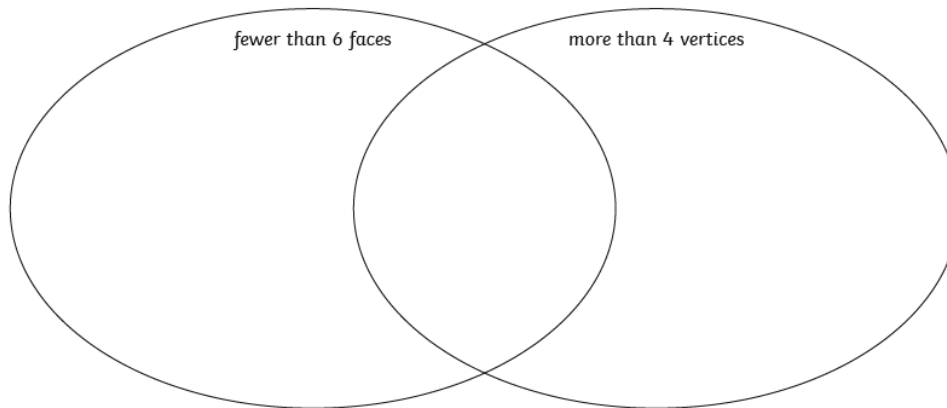
To sort 3D shapes according to their properties.

Sorting 3D Shapes

To sort 3D shapes according to their properties.

Cut out the pictures of 3D shapes and stick them in the correct space on the Venn diagram.

The 3D shapes that don't belong to either set can be stuck onto the space outside of the Venn diagram.



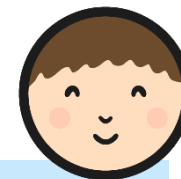
es

on the Venn diagram.

space outside of the Venn diagram.

angular faces

Diving into Mastery



Dive in by completing your own activity!



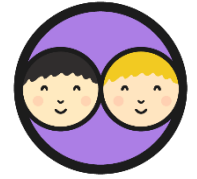
Sort 3D Shapes

How might you sort these objects?

Label each group.

The activity card features a purple header with a submarine icon. Below the header is a question box. The main area contains a grid of 11 3D objects: a yellow pyramid, a colorful beach ball, a box of Pop3, a blue cylinder, a green cube, a can of beans, a Rubik's cube, a red ball, a pencil sharpener, and a blue cube. At the bottom is a label box.

Sorting Challenge



These objects represent different 3D shapes.
How would you group them?



Use these words
to help you:

faces

vertices

edges

curved

flat

Can you think of another way?

Aim



- To sort 3D shapes according to their properties.

Success Criteria

- I can describe the properties of 3D shapes.
- I can use a Venn diagram to sort 3D shapes.
- I can choose my own criteria to sort 3D shapes.

