Reasoning and Problem Solving
Step 8: Count Faces on 3D Shapes

National Curriculum Objectives:

Mathematics Year 2: (2G2b) Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
Mathematics Year 2: (2G3) Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Identify the odd one out from 3 shapes and explain reasoning. Includes cubes, cuboids, spheres, cylinders, cones and square based pyramids.
Expected Identify the odd one out from 4 shapes and explain reasoning. Includes cubes, cuboids, spheres, cylinders, cones, triangular and square based pyramids and prisms.
Greater Depth Identify the odd one out from 4 shapes and explain reasoning. Includes cubes, cuboids, spheres, cylinders, cones, triangular and more complex pyramids and prisms with a variety of bases.

Questions 2, 5 and 8 (Reasoning)
Developing Explain if a statement about the faces of a 3D shape is correct. Includes cubes, cuboids, spheres, cylinders, cones and square based pyramids.
Expected Explain if a statement about the faces of a 3D shape is correct. Includes cubes, cuboids, spheres, cylinders, cones, triangular and square based pyramids and prisms.
Greater Depth Explain if a statement about the faces of a 3D shape is correct. Includes cubes, cuboids, spheres, cylinders, cones, triangular and more complex pyramids and prisms with a variety of bases.

Questions 3, 6 and 9 (Problem Solving)
Developing Investigate and compare the number of faces of multiple shapes. Includes 2 types of shape. Pictures of all shapes provided.
Expected Investigate and compare the number of faces of multiple shapes. Includes 3 types of shape. One picture for each type of shape provided.
Greater Depth Investigate and compare the number of faces of multiple shapes. Includes 4 types of shape. No pictures provided.
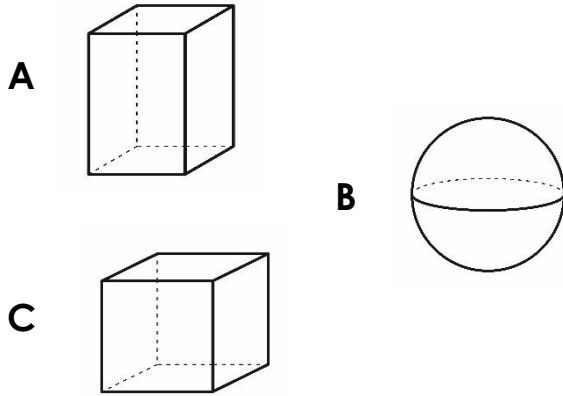
More Year 2 Properties of Shape resources.

Did you like this resource? Don't forget to review it on our website.

Count Faces on 3D Shapes
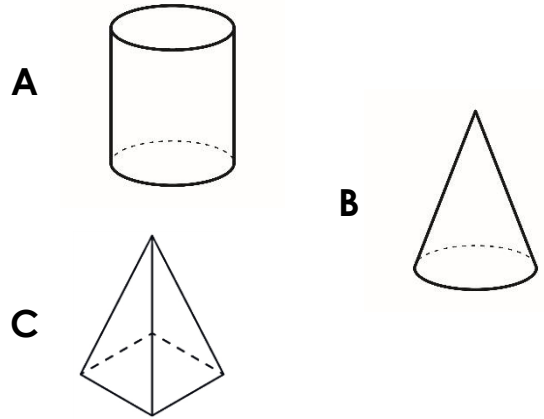
Count Faces on 3D Shapes

1a. Circle the odd one out.

A

B

C

Explain your reasoning.

R

1b. Circle the odd one out.

A

B

C

Explain your reasoning.

R

2a. Lily is thinking of a shape.

She says,

All of the faces on my 3D shape are squares.

Ben says,

The shape is a cube.

Is Ben correct? Explain your reasoning.

R

2b. Marvin is thinking of a shape.

He says,

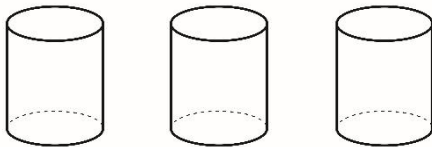All of the faces on my 3D shape are rectangles.

Alice says,

The shape is a cuboid.
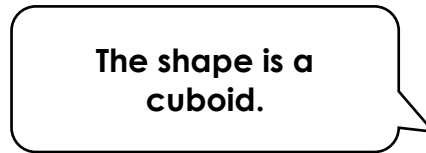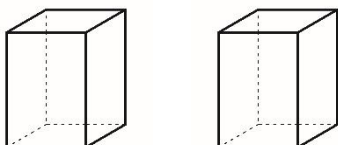
Is Alice correct? Explain your reasoning.

R

3a. Which has the most flat faces?

3 cylinders

2 cuboids

PS

3b. Which has the most flat faces?

2 cubes

3 spheres

PS

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Reasoning and Problem Solving – Count Faces on 3D Shapes – Year 2 Developing
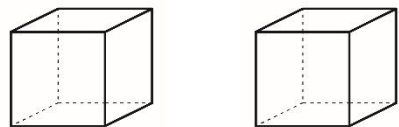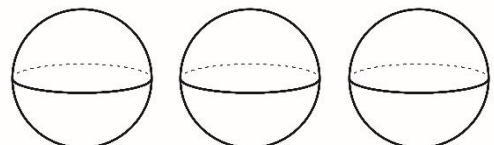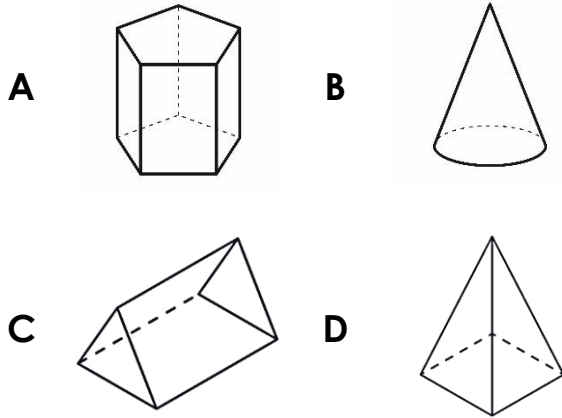
Count Faces on 3D Shapes

Count Faces on 3D Shapes

4a. Circle the odd one out.
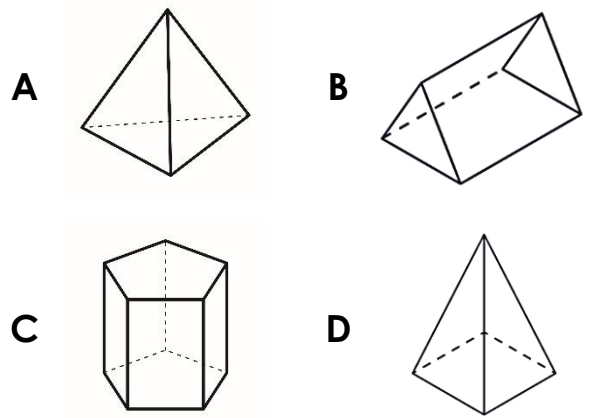
A

B

C

D

Explain your reasoning.

R

4b. Circle the odd one out.

A

B

C

D

Explain your reasoning.

R

5a. Jason is thinking of a shape.

He says,

> The faces on my 3D shape are triangles and squares.

Ellie says,

> The shape is a triangular based pyramid.

Is Ellie correct? Explain your reasoning.

R

5b. Sandy is thinking of a shape.

She says,

> The faces on my 3D shape are triangles and a pentagon.
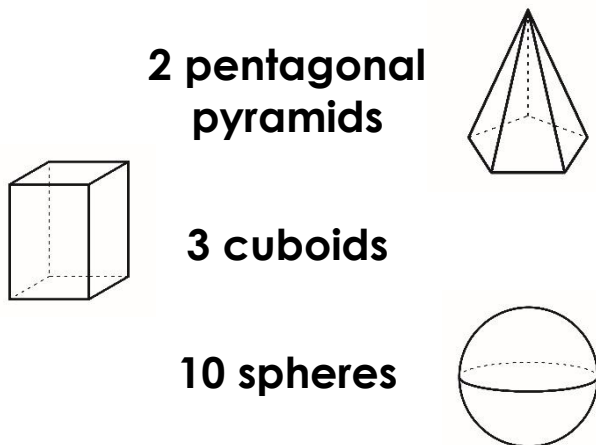
Alfie says,

> The shape is a pentagonal prism.
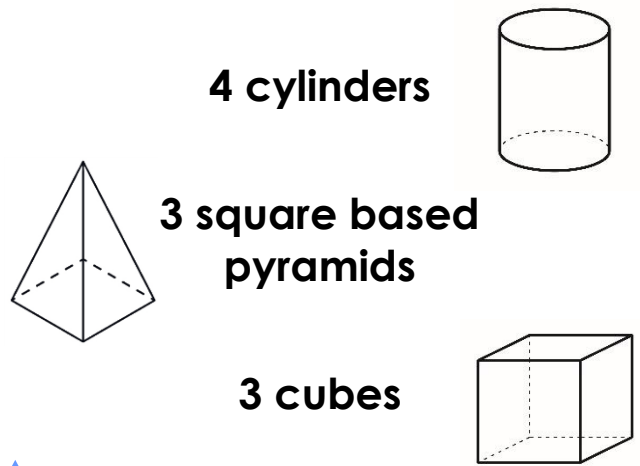
Is Alfie correct? Explain your reasoning.
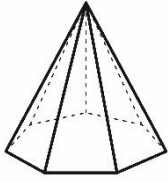
R

6a. Which has the most flat faces?

2 pentagonal pyramids

3 cuboids

10 spheres

PS

6b. Which has the most flat faces?

4 cylinders

3 square based pyramids

3 cubes
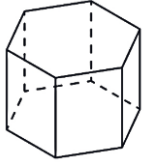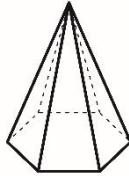
PS

7a. Circle the odd one out.
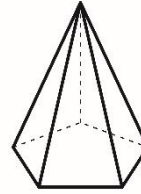
A

B

C

D

Explain your reasoning.

⭐ GD
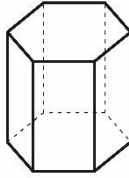
R

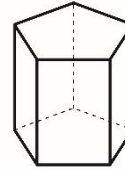**7b.** Circle the odd one out.

A

B

C

D

Explain your reasoning.

⭐ GD
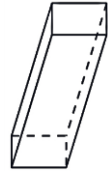
R

8a. George is thinking of a shape.

He says,

> The faces on my 3D shape are rectangles and octagons.

Mia says,

> The shape is an octagonal based pyramid.

Is Mia correct? Explain your reasoning.

⭐ GD

R

8b. Katie is thinking of a shape.

She says,

> The faces on my 3D shape are triangles and a hexagon.

Greg says,

> The shape is a hexagonal prism.

Is Greg correct? Explain your reasoning.

⭐ GD

R

9a. Which has the most flat faces?

2 hexagonal based pyramids

4 triangular prisms

3 square based pyramids

2 octagonal based pyramids

⭐ GD

PS

9b. Which has the most flat faces?

5 triangular based pyramids

12 cones

2 hexagonal prisms

8 cylinders

⭐ GD

PS

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Reasoning and Problem Solving – Count Faces on 3D Shapes – Year 2 Greater Depth

Reasoning and Problem Solving
Count Faces on 3D Shapes

Developing

1a. B. It is the only shape with a curved surface.

2a. Ben is correct because a cube has 6 square shaped faces.

3a. 2 cuboids have the most flat faces (12 in total). 3 cylinders have 6 flat faces in total.

Expected

4a. B. It is the only shape with a curved surface. The other shapes only have flat faces.

5a. Ellie is not correct because a triangular based pyramid does not have any square shaped faces.

6a. 3 cuboids have the most flat faces (18 in total).

Greater Depth

7a. D because t is the only shape with 7 flat faces or A because it is the only shape that does not have a hexagonal flat face.

8a. Mia is not correct because an octagonal based pyramid does not have any rectangular shaped faces.

9a. 4 triangular prisms have the most flat faces (20 in total).

Reasoning and Problem Solving
Count Faces on 3D Shapes

Developing

1b. C. It is the only shape without curved surfaces.

2b. Alice is correct because a cuboid has 6 rectangular faces.

3b. 2 cubes have the most flat faces (12 in total). Spheres do not have any flat faces.

Expected

4b. C. It is the only shape without a triangular face.

5b. Alfie is not correct because a pentagonal prism has 2 pentagon shaped faces and 5 rectangular shaped faces.

6b. 3 cubes have the most flat faces (18 in total).

Greater Depth

7b. C. It is the only shape with 7 flat faces. The other shapes have 6 flat faces.

8b. Greg is not correct because a hexagonal prism does not have any triangular shaped faces.

9b. 5 triangular based pyramids have the most flat faces (20 in total).

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