Reasoning and Problem Solving
Step 8: Recognise and Describe 3D Shapes

National Curriculum Objectives:

Mathematics Year 3: (3G3b) Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Decide whether two statements are always true, sometimes true or never true. May involve the number of faces, edges and vertices in cubes, cuboids, cylinders, spheres, cones and square based pyramids.
Expected Decide whether two statements are always true, sometimes true or never true. May involve the number of edges, vertices and faces in cubes, cuboids, cylinders, spheres, cones triangular and square based pyramids and triangular prisms.
Greater Depth Decide whether three statements are always true, sometimes true or never true. Involves the number of edges, vertices and faces in cubes, cuboids, cylinders, spheres, cones and various pyramids and prisms.

Questions 2, 5 and 8 (Reasoning)
Developing Decide which of three shapes is the odd one out. Explain why, considering the number of faces, edges and vertices in cubes, cuboids, cylinders, spheres, cones and square based pyramids.
Expected Decide which of three shapes is the odd one out. Explain why, considering the number of faces, edges and vertices in cubes, cuboids, cylinders, spheres, cones, triangular and square based pyramids and triangular prisms.
Greater Depth Decide which of three shapes could be the odd one out. Explain why, considering the number of faces, edges and vertices in cubes, cuboids, cylinders, spheres, cones and various pyramids and prisms. Some shapes may not be presented in standard orientation.

Questions 3, 6 and 9 (Problem Solving)
Developing Find all of the possible equations using four statements and a comparison symbol. Involves the number of faces, edges and vertices in cubes, cuboids, cylinders, spheres, cones and square based pyramids.
Expected Find all of the possible equations using four statements and a comparison symbol. Involves the number of edges, vertices and faces in cubes, cuboids, cylinders, spheres, cones triangular and square based pyramids and triangular prisms.
**Greater Depth** Find all of the possible equations using five statements and a comparison symbol. Involves the number of edges, vertices and faces in cubes, cuboids, cylinders, spheres, cones, various pyramids and prisms. Some shapes may not be presented in standard orientation.

More Year 3 Properties of Shapes resources.

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

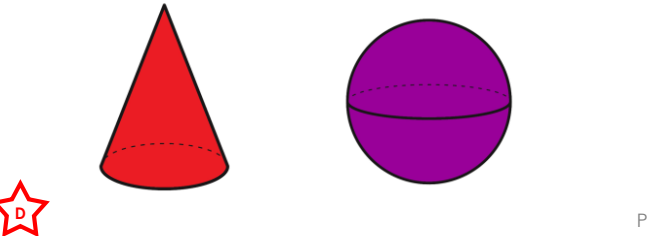# Recognise and Describe 3D Shapes

Recognise and Describe 3D Shapes

1a. Are the following statements always true, sometimes true or never true?

A) A cube has 8 faces.
B) A square based pyramid has 4 triangular faces.
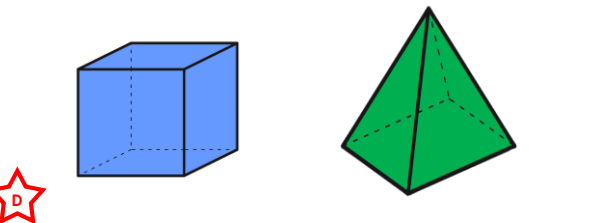
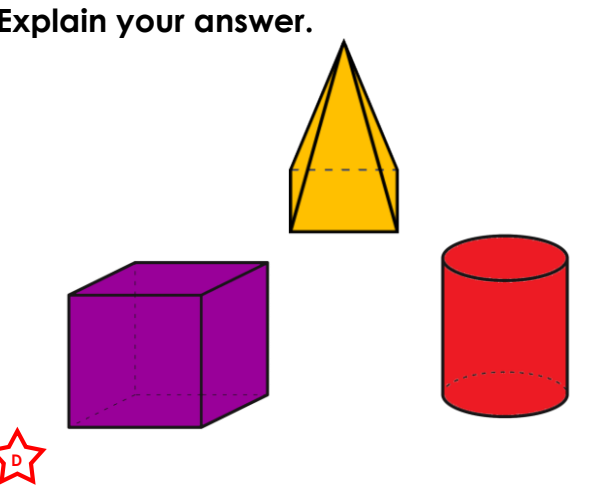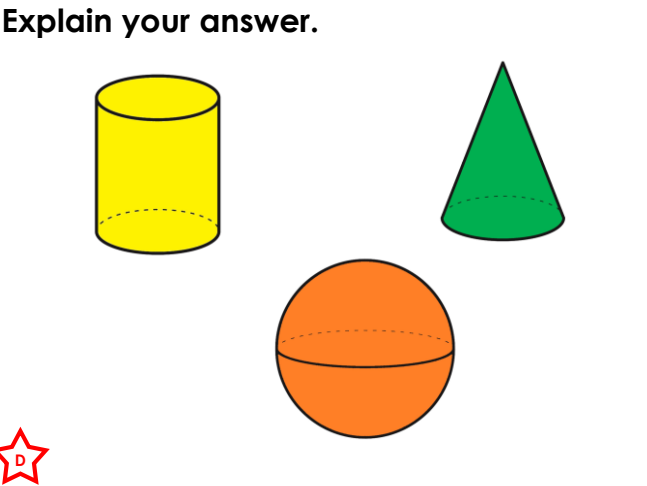**1b.** Are the following statements always true, sometimes true or never true?

A) A cone has one circular face.
B) A sphere has no vertices.

2a. Which shape is the odd one out? Think about edges, vertices and faces.

Explain your answer.

2b. Which shape is the odd one out? Think about edges, vertices and faces.

Explain your answer.

3a. Use the cards below to make as many correct statements as you can.

> 1. The number of edges on a cube.

> 2. The number of faces on a cuboid.

> 3. The number of vertices on a cylinder.

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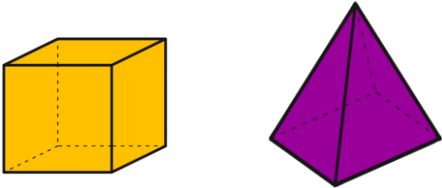
3b. Use the cards below to make as many correct statements as you can.

> 1. The number of edges on a square based pyramid.

> 2. The number of triangular faces on a square based pyramid.

> 3. The number of curved edges on a cone.

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Reasoning and Problem Solving – Recognise and Describe 3D Shapes – Year 3 Developing

4a. Are the following statements always true, sometimes true or never true?
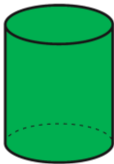
A) A cube has an equal amount of faces to a cuboid.
B) A square based pyramid has 4 triangular faces.

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4b. Are the following statements always true, sometimes true or never true?
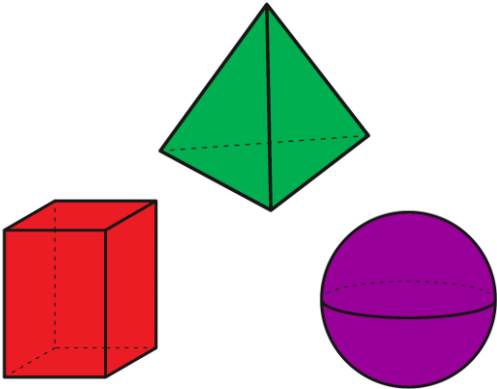
A) A cylinder has one circular face.
B) A cylinder has 1 vertex.

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5a. Which shape is the odd one out? Think about edges, vertices and faces.
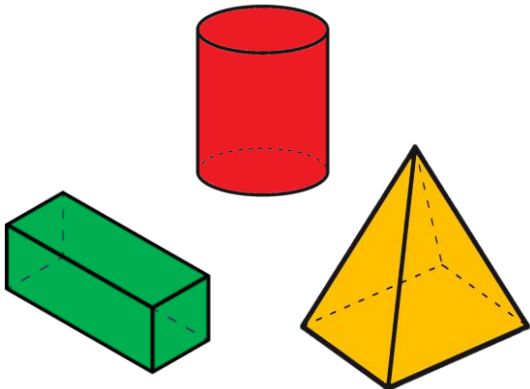
Explain your answer.

R

5b. Which shape is the odd one out? Think about edges, vertices and faces.

Explain your answer.

R

6a. Use the cards below to make as many correct statements as you can.

1. The number of faces on a cube.

2. The number of vertices on a cuboid.

3. The number of curved edges on a cylinder.

4. The number of vertices on a triangular prism.

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PS

6b. Use the cards below to make as many correct statements as you can.

1. The number of faces on a square based pyramid.

2. The number of vertices on a sphere.

3. The number of edges on a triangular prism.

4. The number of vertices on a cone.

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Reasoning and Problem Solving – Recognise and Describe 3D Shapes – Year 3 Expected

7a. Are the following statements always true, sometimes true or never true?

A) A cuboid has more square faces than a square based pyramid.
B) A pyramid has the same amount of vertices as faces.
C) A pentagonal prism has one more pentagonal face than a pentagonal based pyramid.

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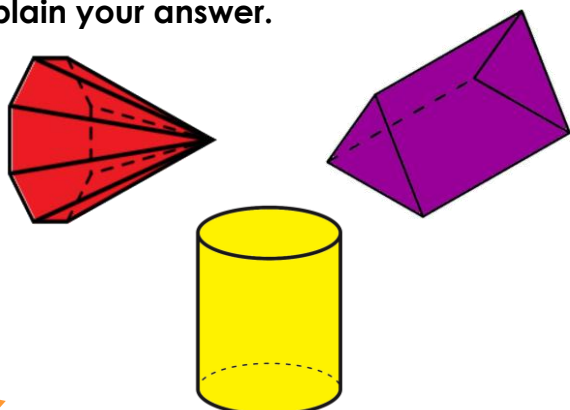**7b.** Are the following statements always true, sometimes true or never true?

A) An octagonal prism has 8 equal rectangular faces.
B) Shapes with a curved surface have a circular face.
C) A hexagonal prism has more edges than faces.

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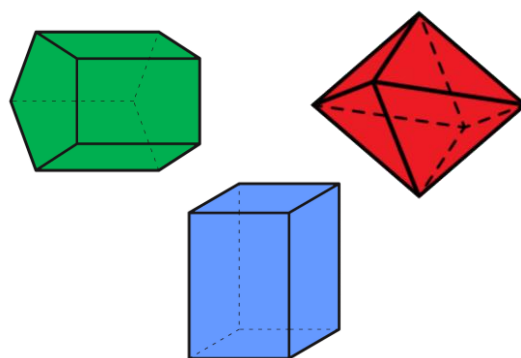**8a.** Which shapes could be the odd one out? Think about edges, vertices and faces.

Explain your answer.

R

8b. Which shapes could be the odd one out? Think about edges, vertices and faces.

Explain your answer.

R

9a. Use the cards below to make as many correct statements as you can.

> 1. The number of vertices in three square based pyramids.

> 2. The number of edges in a pentagonal prism.

> 3. The number of vertices in a cuboid.

> 4. The number of rectangular faces in an octagonal prism.

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9b. Use the cards below to make as many correct statements as you can.

> 1. The number of edges in two triangular based pyramids.

> 2. The number of vertices in a hexagonal prism.

> 3. The number of vertices in a cone.

> 4. The number of edges in a cuboid.

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Reasoning and Problem Solving
Recognise and Describe 3D Shapes

Developing
1a. A. Never true; B. Always true
2a. Various possible answers, for example: The cylinder is the odd one out as it the only one with a curved surface. Accept any answer which accurately explains which shape is the odd one out.
3a. 3 < 2; 3 < 1; 2 < 1

Expected
4a. A. Always true; B. Always true
5a. Various possible answers, for example: The triangular based pyramid is the odd one out as it the only one with triangular shaped faces. Accept any answer which accurately explains which shape is the odd one out.
6a. 2 > 1; 2 > 3; 2 > 4; 1 > 3; 4 > 3

Greater Depth
7a. A. Sometimes true; B. Always true; C. Always true
8a. Various possible answers, for example: The octagonal pyramid is the odd one out as it the only one with 9 faces. Accept any answer which accurately explains which shape is the odd one out.
9a. 1 > 3; 1 > 4; 2 > 3; 2 > 4

Developing
1b. A. Always true; B. Always true
2b. Various possible answers, for example: The cylinder is the odd one out as it the only one with 2 faces. Accept any answer which accurately explains which shape is the odd one out.
3b. 1 > 2; 1 > 3; 2 > 3

Expected
4b. A. Never true; B. Never true
5b. Various possible answers, for example: The cylinder is the odd one out as it the only one with no vertices. Accept any answer which accurately explains which shape is the odd one out.
6b. 4 < 1; 4 < 3; 1 < 3; 2 < 1; 2 < 3

Greater Depth
7b. A. Always true; B. Sometimes true; C. Always true
8b. Various possible answers, for example: The pentagonal prism is the odd one out as it is the only one with an odd number of faces. Accept any answer which accurately explains which shape is the odd one out.
9b. 3 < 1; 3 < 2; 3 < 4; 2 = 1; 4 = 1

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