



## Representing 3-D shapes

- Drawing solid shapes on plain paper
- Drawing solid shapes on isometric paper

Keywords

You should know

explanation 1a

explanation 1b

**1** Write down the more usual name for each of these.

**a** A circular-based pyramid

**b** A rectangular prism

**c** A circular prism

**d** A triangular-based pyramid

**2** Match each shape to its label.

Cone

Cylinder

Square-based pyramid

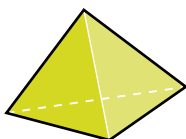
Cube

Triangular prism

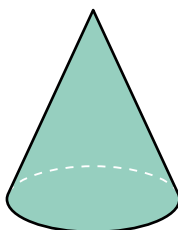
Cuboid

Tetrahedron

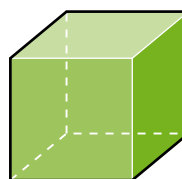
**a**



**b**



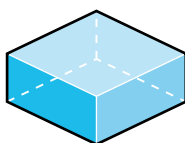
**c**



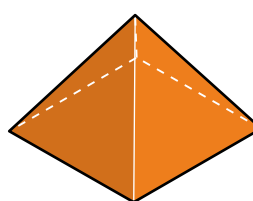
**d**



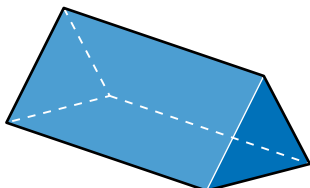
**e**



**f**

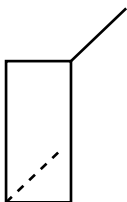


**g**

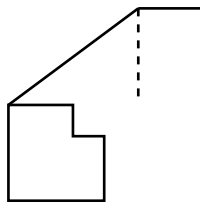


- 3** Here are some partly completed sketches of 3-D objects. Copy and complete them.

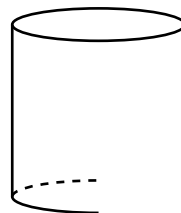
**a**



**b**



**c**

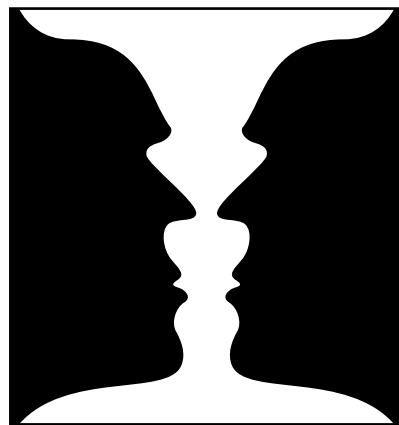


- 4** Look at the picture.

Can you see two faces?

Can you see a vase?

Can you switch between the two views?

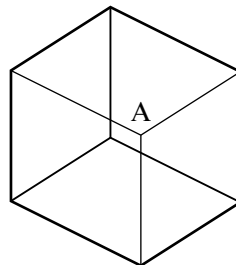


- 5** Look at this diagram representing a shape made from glass so that you can see all of its edges.

It is actually a flat pattern of lines but try to visualise

- a cuboid with the vertex at A closest to you
- a cuboid with the vertex at A furthest from you

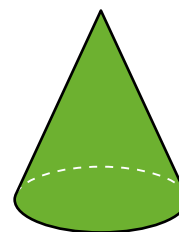
The hard part is to try to switch between the two possible views!



- a** Copy the diagram but replace three of the solid lines with dotted lines to represent a cuboid with the vertex at A closest to you.
- b** Make another copy of the diagram but, this time, replace three different solid lines with dotted lines to represent a cuboid with the vertex at A furthest from you.

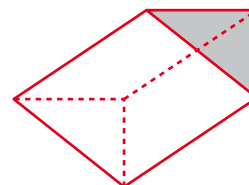
- 6** This diagram represents a cone positioned slightly below your point of view.

Copy the diagram but make one change so that your point of view is slightly below the cone.



- 7** Look at this diagram representing a prism.

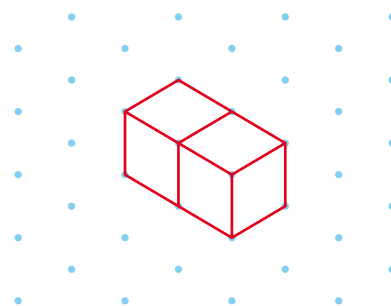
- a** Does the shaded end appear closer or further away than the unshaded end?  
**b** Copy the diagram but change which lines are dotted so that the opposite end of the prism appears closer.



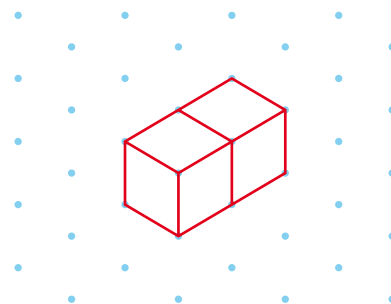
### explanation 2

- 8** This diagram shows two cubes drawn on isometric dotted paper.

- a** Copy the diagram and add an extra cube to make a block of three cubes in a straight line.  
**b** Is it easier to add the extra cube to the near end or the far end? Explain why.

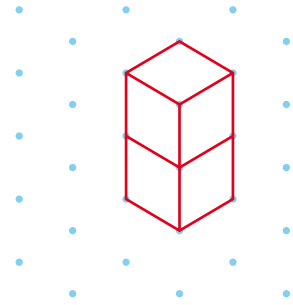


- 9 a** Copy this diagram and add an extra cube to make three cubes in a straight line.  
**b** Is it easier to add the extra cube to the near end or the far end?



- 10** This diagram shows one cube stacked on top of another.

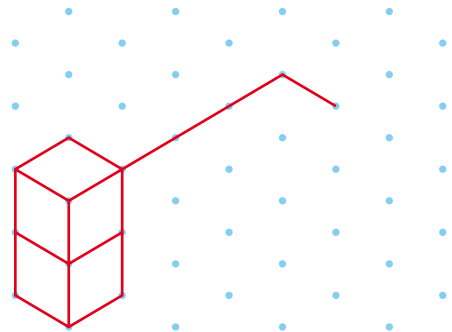
- a** Copy the diagram and add a third cube to the stack.  
**b** Is it easier to add the third cube above or below the two cubes shown?



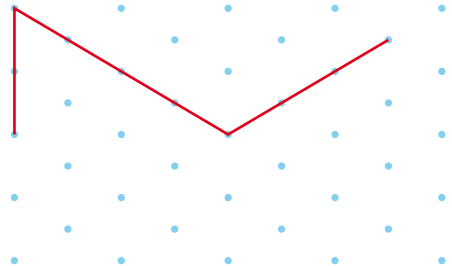
- 11** Eight cubes can be placed together to make a larger cube. Show how this would look on isometric paper.

Use your answers to questions 8, 9 and 10 to plan the order in which you draw the cubes.

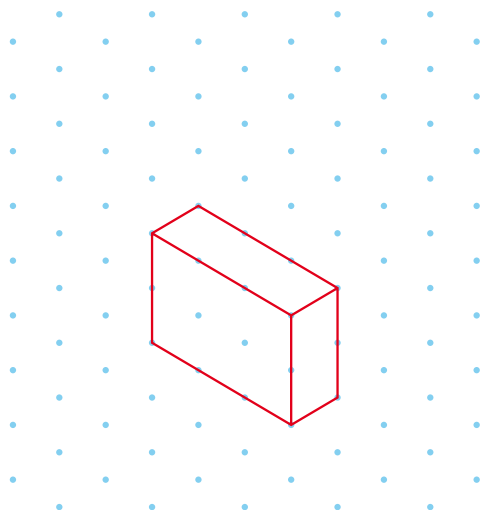
- 12** Copy and complete this diagram to represent two layers of six cubes.



- 13** Copy and complete this drawing of a cuboid measuring  $4\text{ cm} \times 3\text{ cm} \times 2\text{ cm}$ .



- 14** Use isometric paper to draw a cuboid with twice the dimensions of the one shown in the diagram below.



- 15** The diagram below shows shape A and a partly completed shape B. The two shapes fit together to make a cuboid.

- a** Copy and complete shape B.
- b** Draw shape A with shape B in position to make the cuboid.
- c** What are the dimensions of the cuboid?

