



1

Name the solid in each case.

- a. The plan is a circle. The front elevation and the side elevation are both rectangles.
- b. The plan is a square. The front elevation and the side elevation are both triangles.

(2 marks)

a)

circle from above, rectangles from the sides

cylinder

b)

square from above, triangles from the sides

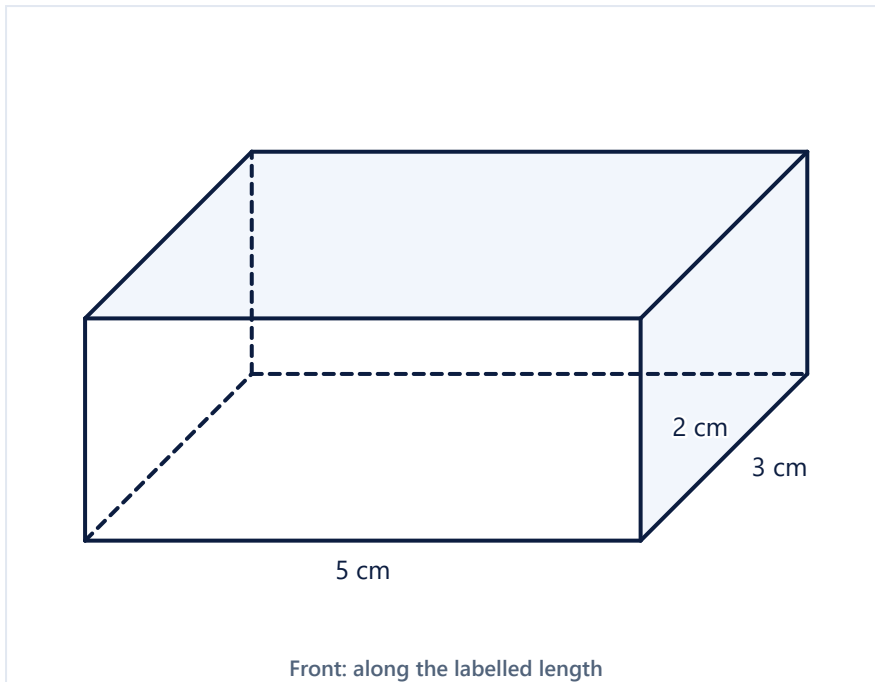
a) cylinder b) square-based pyramid

2

A solid cuboid is 5 cm long, 3 cm wide and 2 cm high.

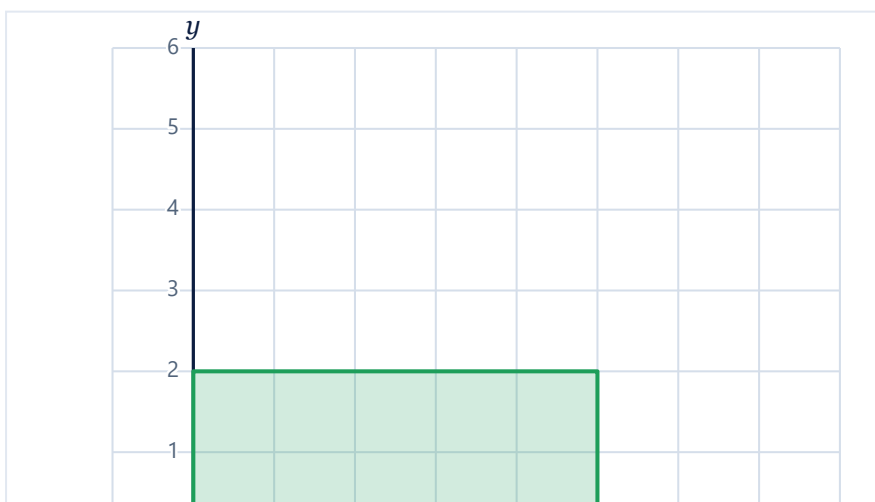
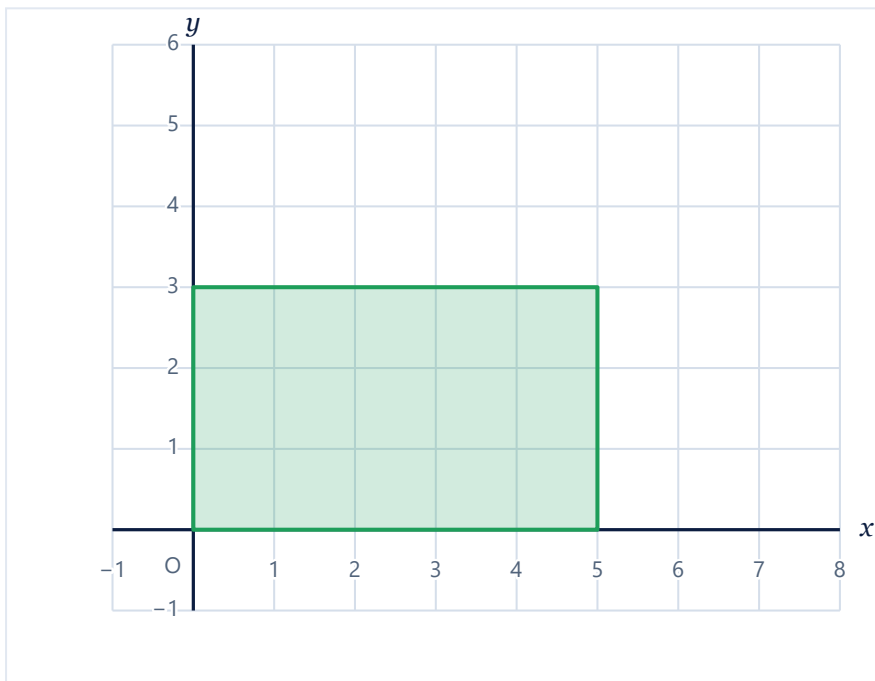
On centimetre-squared paper, draw

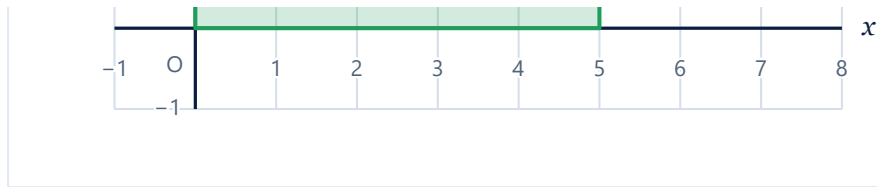
- a. the plan of the cuboid
- b. the front elevation of the cuboid, seen with the 5 cm edge facing you.



Given solid

(2 marks)





Front elevation

The plan is the view from directly above, so it shows the length and the width: a 5 cm by 3 cm rectangle

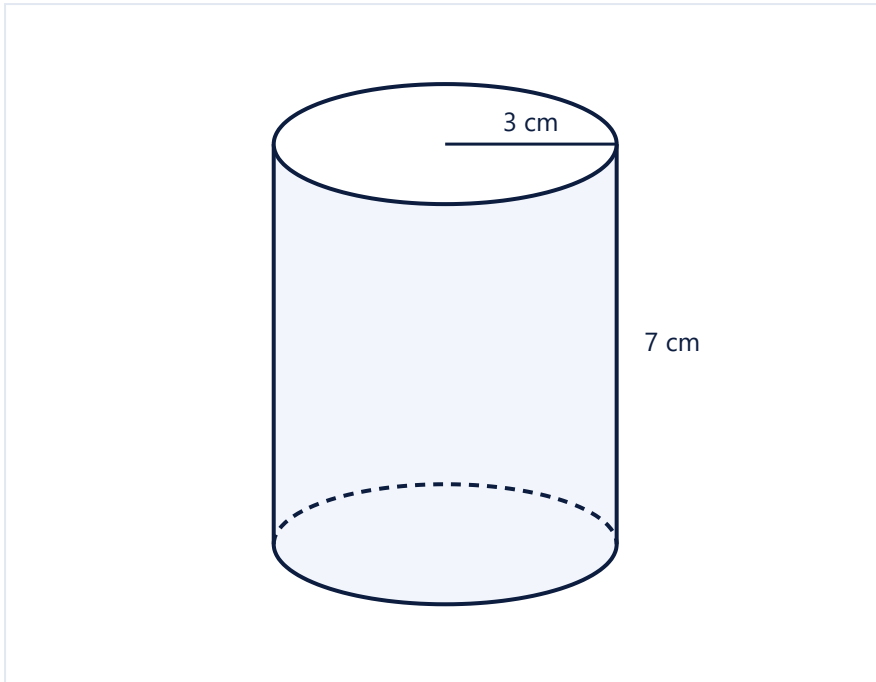
The front elevation is the view from the front, so it shows the length and the height: a 5 cm by 2 cm rectangle

3

A solid cylinder has radius 3 cm and height 7 cm. It stands on one of its circular faces.

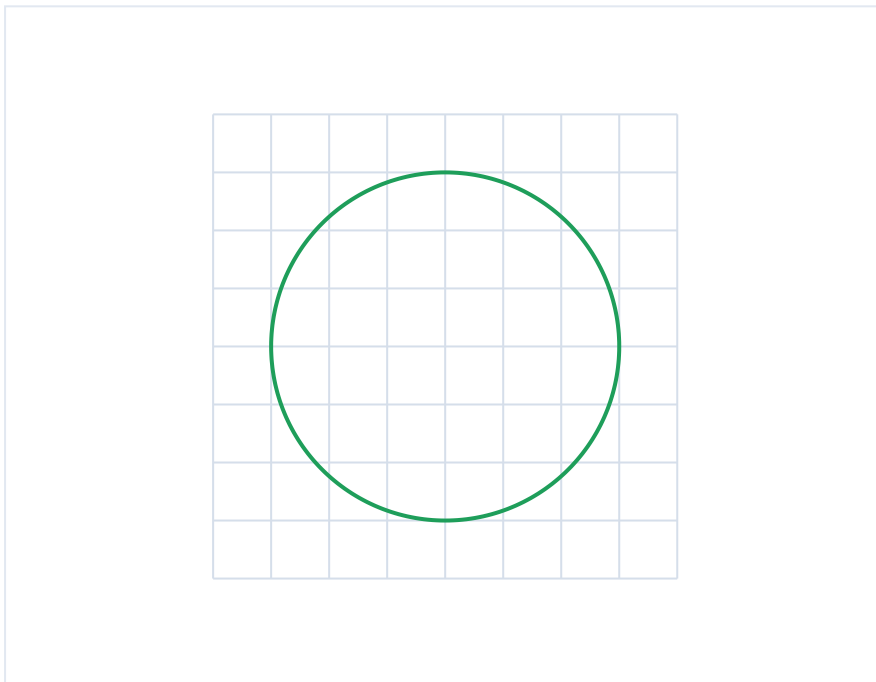
Draw

- a. the plan of the cylinder
- b. the front elevation of the cylinder.

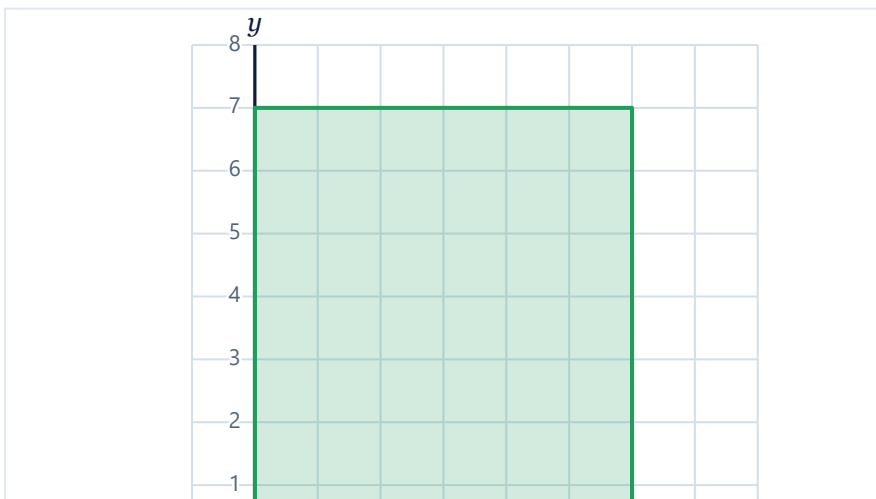


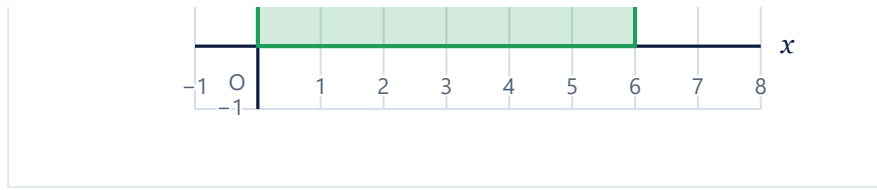
(2 marks)

Given solid



Plan





Front elevation

From above, a cylinder standing on its circular face looks like a circle of radius 3 cm

From the front, it looks like a rectangle

the width is the diameter, $2 \times 3 = 6$ cm, and the height is 7 cm

4

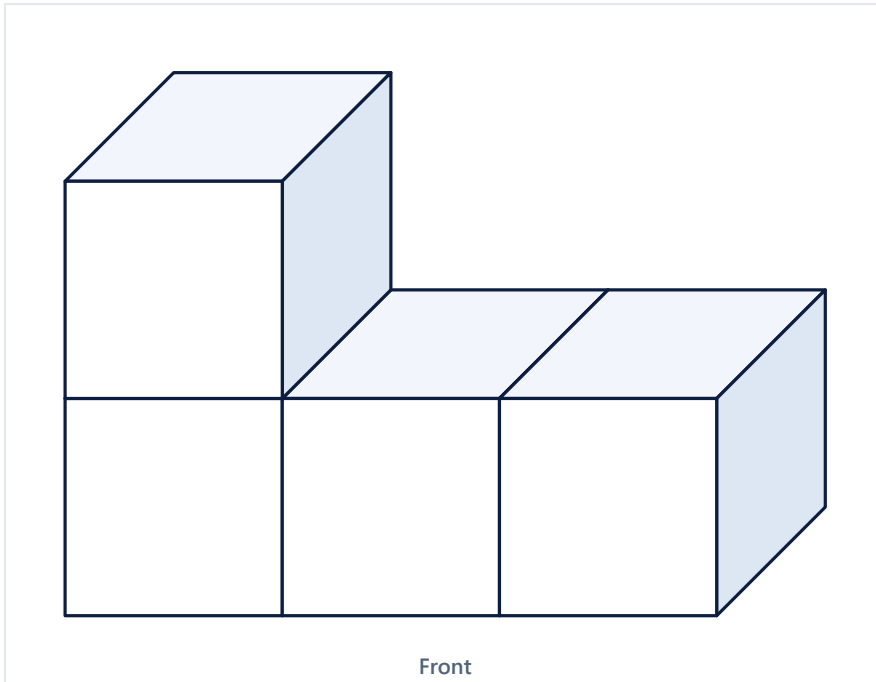
A solid is made from four centimetre cubes.

Three of the cubes are in a row on a table. The fourth cube sits on top of the left-hand cube.

The long side of the row faces you.

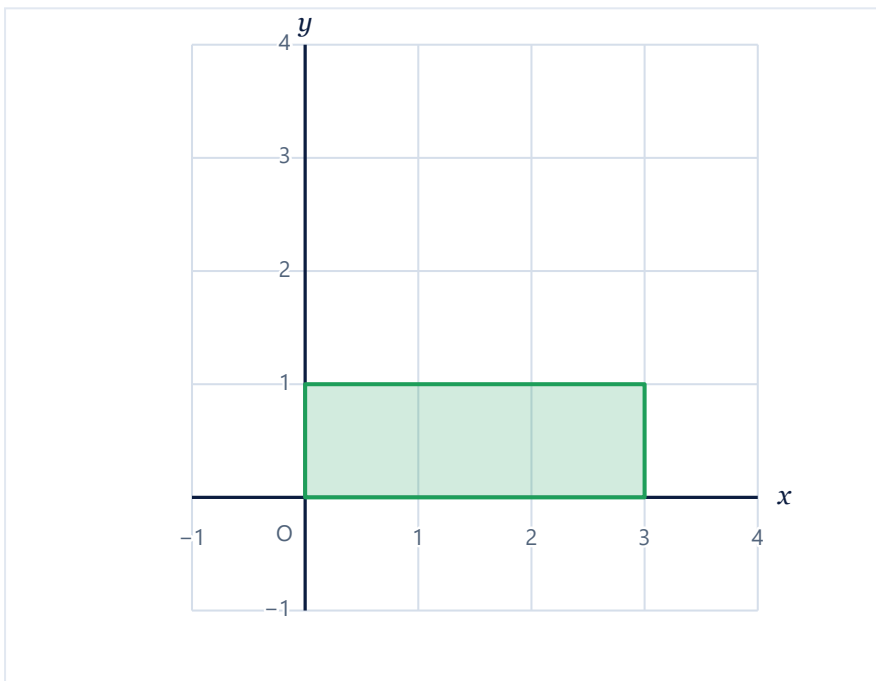
On centimetre-squared paper, draw

- a. the front elevation of the solid
- b. the plan of the solid.

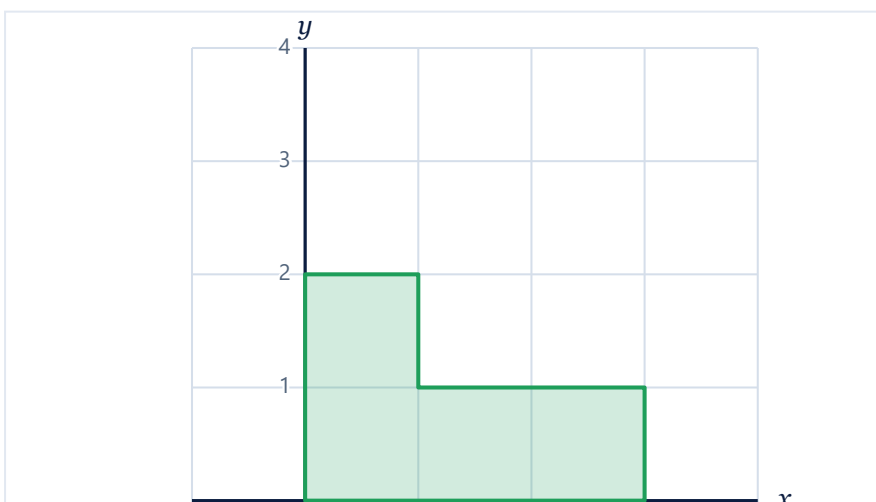


Given solid

(2 marks)



Plan





Front elevation

From the front you see all three cubes of the row, plus the extra cube on top at the left: an L shape made of 4 squares

From above you see one square for each column of cubes: the stacked cube is directly over the left cube, so the plan is just a row of 3 squares

5

A cuboid is 5 cm long, 3 cm wide and 2 cm high. It stands on a table on its 5 cm by 3 cm face. The front of the cuboid is a 5 cm by 2 cm face.

- Write down the width and height of the front elevation.
- Write down the dimensions of the plan.
- Work out the area of the side elevation.

(3 marks)

a)

front face: 5 cm wide, 2 cm high

b)

from above: 5 cm by 3 cm

c)

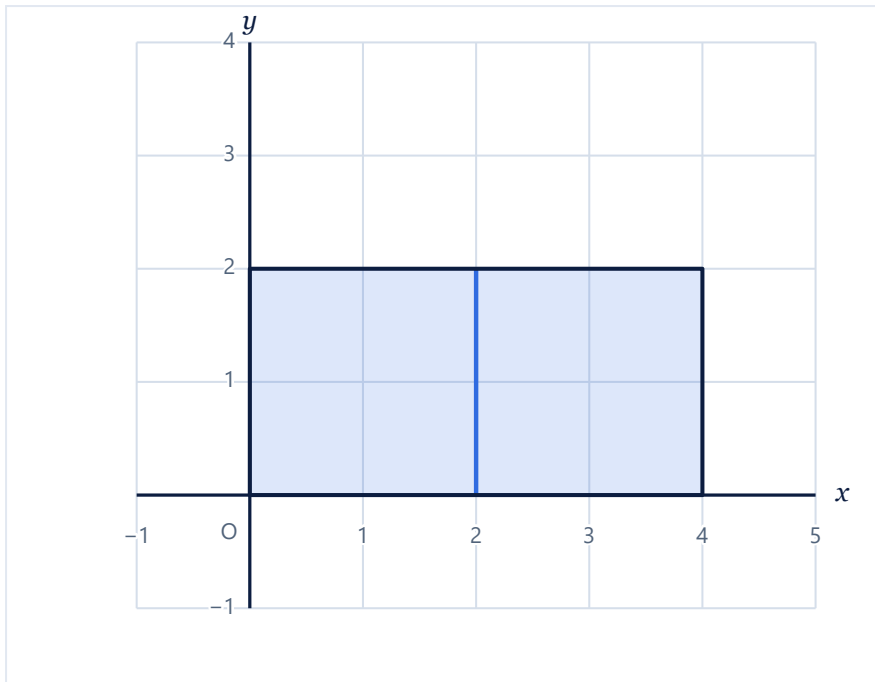
side: 3 cm by 2 cm

$$3 \times 2 = 6 \text{ cm}^2$$

a) 5 by 2 b) 5 by 3 c) 6 cm²

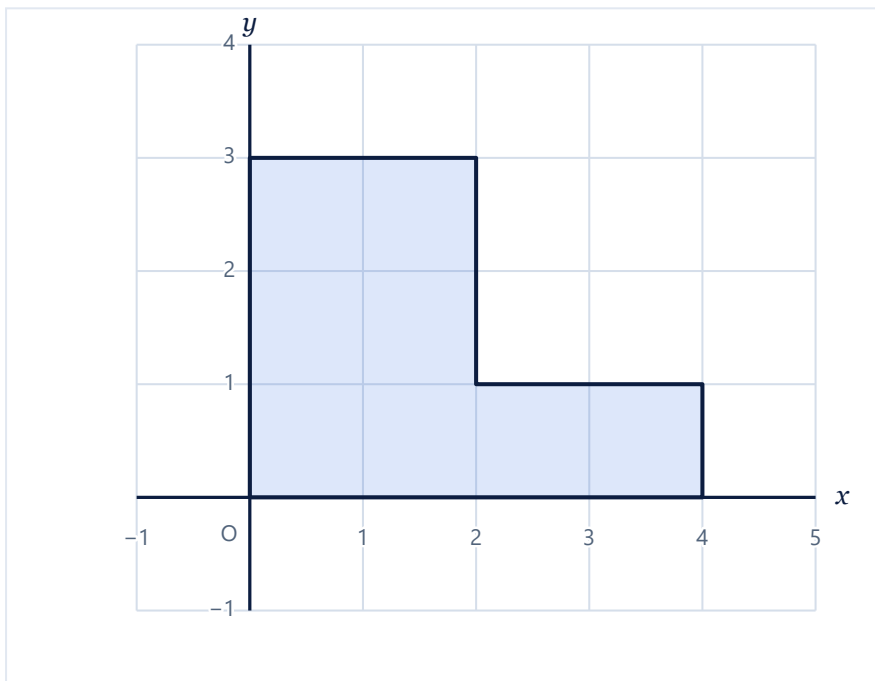
6

The diagram shows the plan and the front elevation of a prism, drawn on centimetre-squared paper.
Draw the side elevation of the prism, seen from the right-hand side.

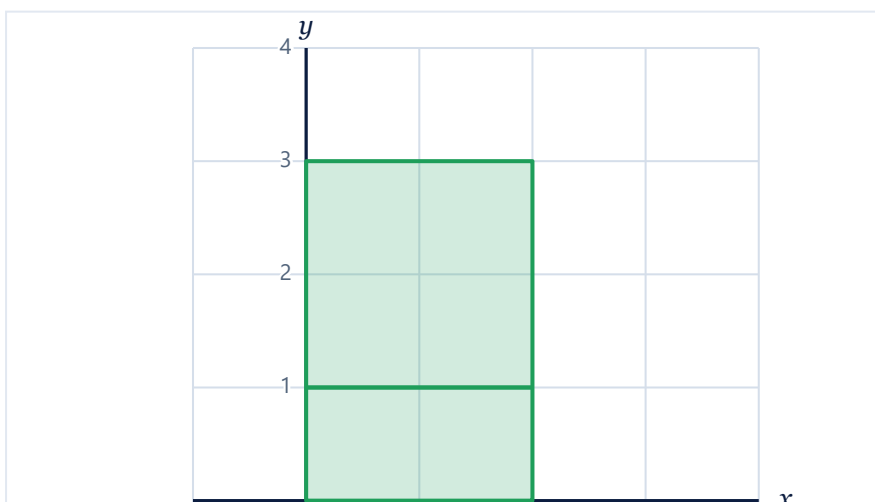


(2 marks)

Given plan



Given front elevation





Right elevation

The plan shows the prism is 4 cm long and 2 cm deep

The front elevation shows the left half is 3 cm tall and the right half is 1 cm tall, and this step runs the full depth of the prism

From the right you see the depth (2 cm) as the width. The nearest part is 1 cm tall but the taller part behind rises to 3 cm, so the outline is a 2 cm by 3 cm rectangle with a line at height 1 cm showing the step

7

The plan of a solid is a circle. The front elevation and the side elevation of the solid are both isosceles triangles.

a. Write down a possible name of the solid.

The plan, the front elevation and the side elevation of a different solid are all squares of the same size.

b. Write down a possible name of this solid.

(2 marks)

a) One solid with these views is a right circular cone: its plan is a circle and its front and side outlines are isosceles triangles

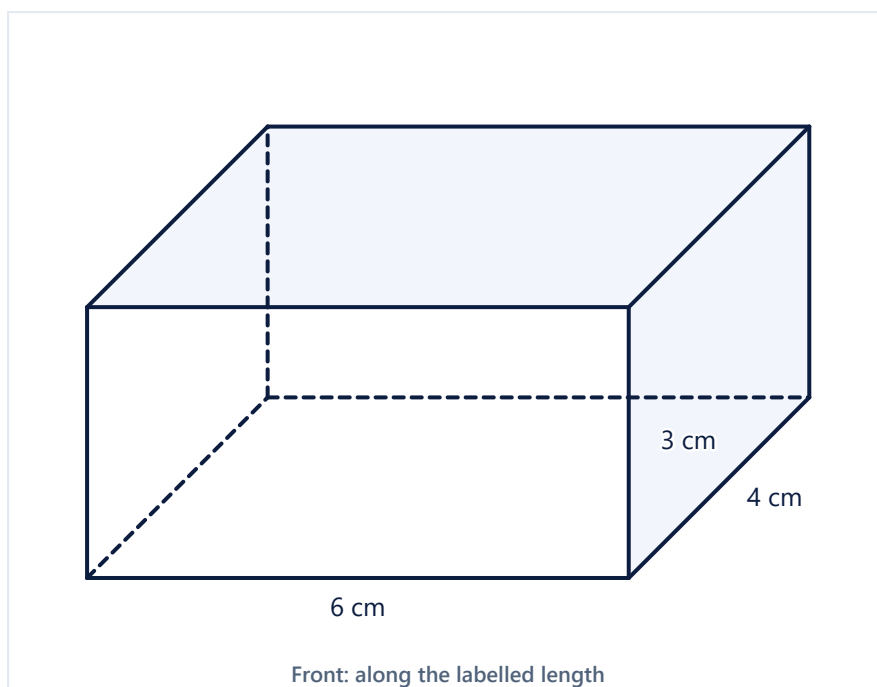
b) A cube has three square views of the same size, so it is a valid example. These outlines alone do not prove that every hidden part of an unknown solid has the shape of a cube

8

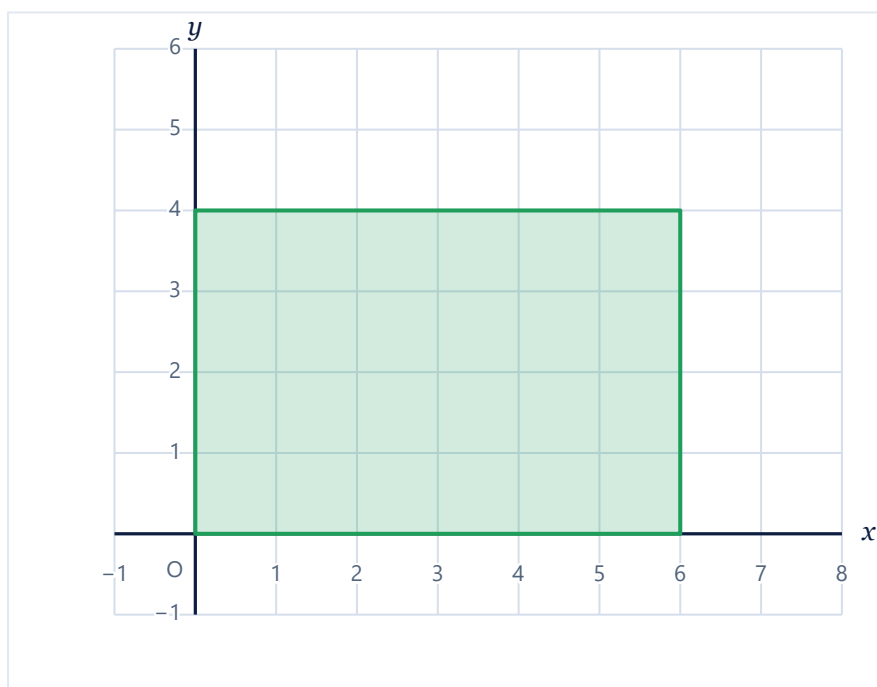
A solid cuboid is 6 cm long, 4 cm wide and 3 cm high.

Priya draws the front elevation of the cuboid, seen with the 6 cm edge facing her, as a rectangle 6 cm by 4 cm.

- Explain why Priya's front elevation is wrong.
- On centimetre-squared paper, draw the plan of the cuboid.



Given solid



Plan

(3 marks)

a) A front elevation shows the length and the height of the cuboid. The height is 3 cm, not 4 cm, so the rectangle should be 6 cm by 3 cm. Priya has drawn the plan measurement (width) instead of the height

b) The plan is the view from above, showing length and width:
a 6 cm by 4 cm rectangle

- 9 A solid cylinder has radius 4 cm and height 10 cm. It stands upright on a table.
Work out the area of its plan. Give your answer to 1 decimal place.

(3 marks)

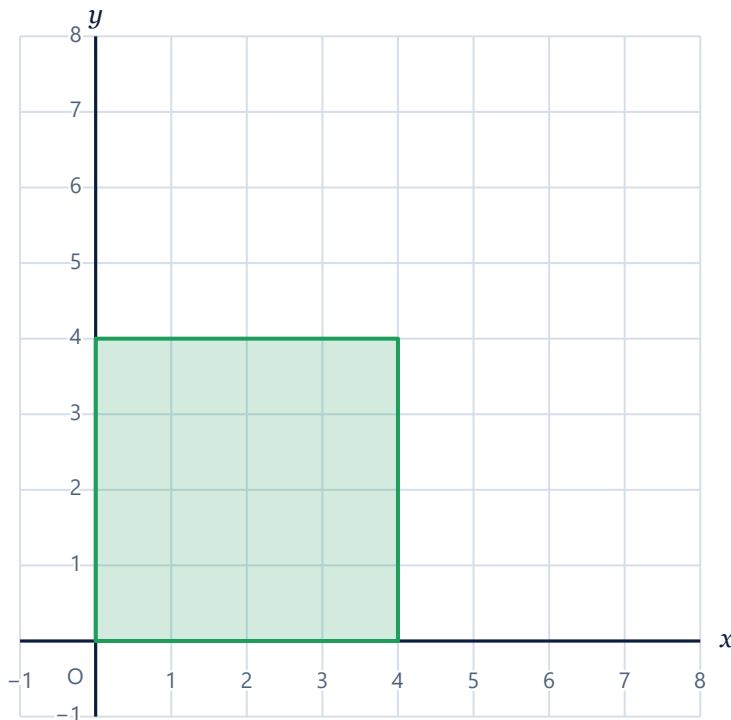
Plan = view from above = a circle

$$A = \pi r^2$$

$$= \pi \times 4^2 = 16\pi$$

$$50.3 \text{ cm}^2$$

- 10 A solid cuboid has volume 48 cm^3 and height 3 cm.
The plan of the cuboid is a square.
On centimetre-squared paper, draw the plan of the cuboid, full size.



(3 marks)

Volume = area of plan $\times$ height, so the area of the plan = $48 \div 3$
 $= 16 \text{ cm}^2$

The plan is a square of area 16 cm^2 , so each side is $\sqrt{16} = 4 \text{ cm}$

Draw a 4 cm by 4 cm square

a 4 cm by 4 cm square

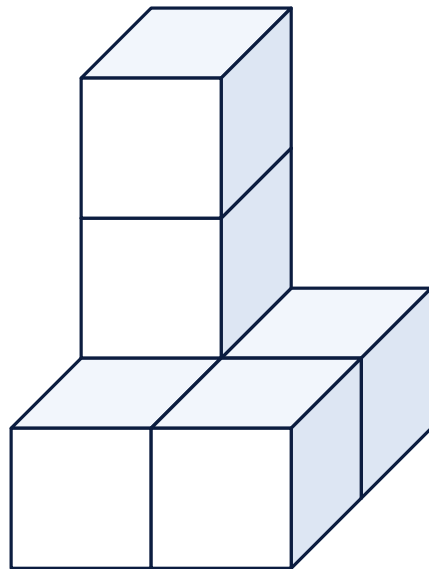
11

A solid is made from six centimetre cubes.

Four cubes form a 2 by 2 square layer on a table. Two more cubes are stacked on top of the back-left cube, making a column 3 cubes tall.

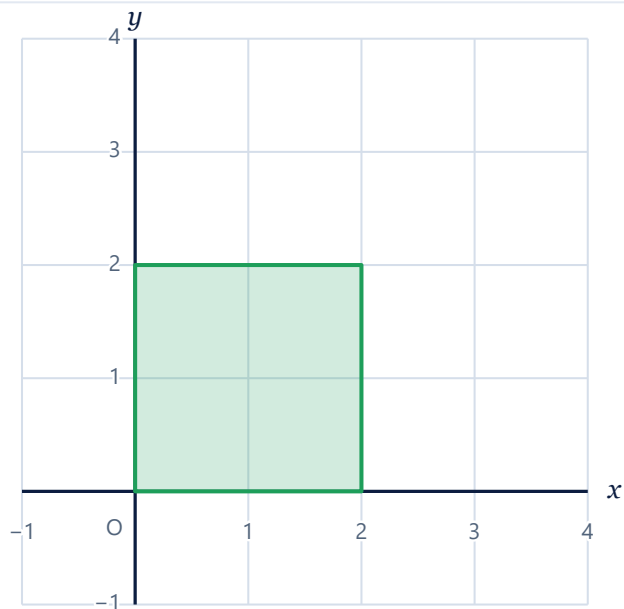
On centimetre-squared paper, draw

- a. the plan of the solid
- b. the front elevation of the solid
- c. the side elevation of the solid, seen from the left.



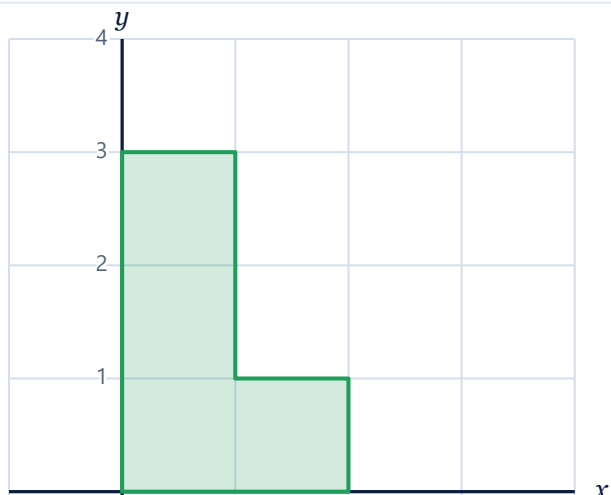
Front

Given solid



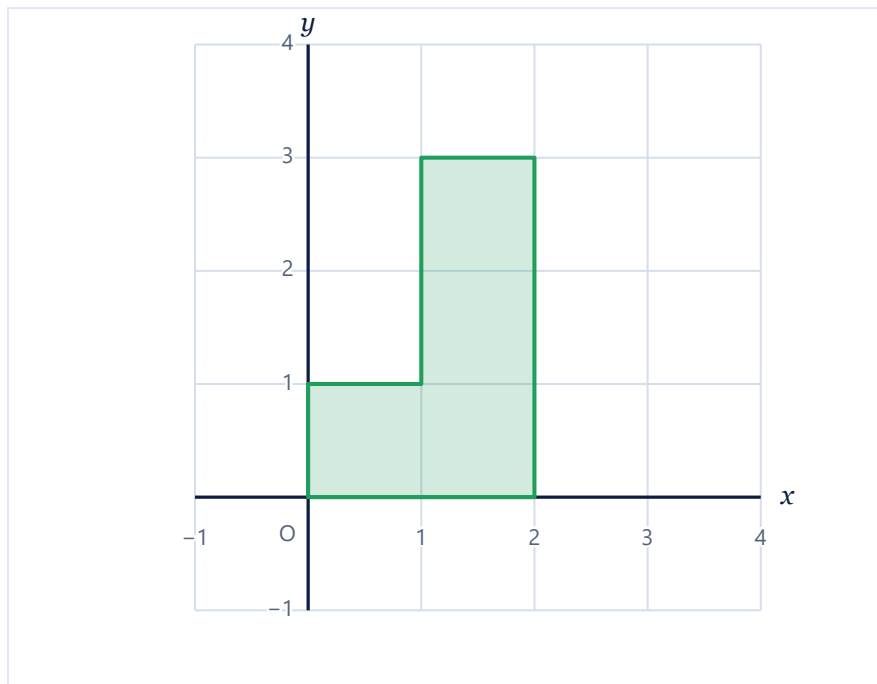
(3 marks)

Plan





Front elevation



Left elevation (front at left)

- a) From above there is a cube (or column) in each of the four positions, so the plan is a 2 by 2 square
- b) From the front, the left side has a column 3 cubes tall behind a single cube, so the outline on the left is 3 squares tall; the right side is 1 square tall. This gives an L shape
- c) From the left, the back position is 3 cubes tall and the front position is 1 cube tall, giving the same L shape with the tall column at the back