

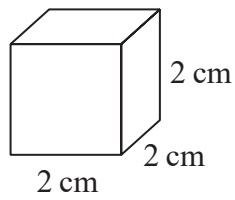
1 The total surface area of a cube is 294 cm^2 .

Work out the volume of the cube.

..... cm^3

(Total for Question 1 is 4 marks)

- 2 The diagram shows a cube of side length 2 cm.



Vera says,

“The volume of any solid made with 6 of these cubes is 48 cm^3 ”

- (a) Is Vera correct?

You must show your working.

(2)

- (b) (i) Draw a cuboid that can be made with 6 of these cubes.
Write the dimensions of the cuboid on your diagram.

(1)

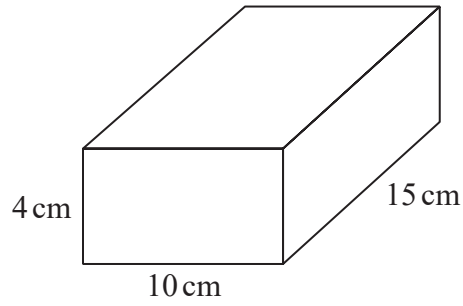
- (ii) Work out the surface area of your cuboid.

..... cm^2

(2)

(Total for Question 2 is 5 marks)

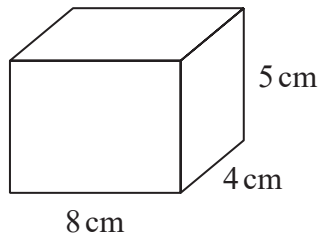
3 Here is a cuboid.



Work out the volume of the cuboid.

.....
(Total for Question 3 is 3 marks)

4 Here is a cuboid.

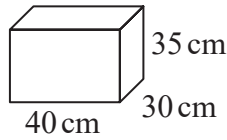


Work out the volume of the cuboid.

..... cm³
(Total for Question 4 is 2 marks)

5 Chloe has a van.

She is going to use the van to deliver boxes.
Each box is a cuboid, 40 cm by 30 cm by 35 cm.



The space for boxes in the van has

- maximum length 2.4 m
- maximum width 1.5 m
- maximum height 1.4 m

The space for boxes is empty.
Chloe wants to put as many boxes as possible into the van.

She can put 3 boxes into the van in one minute.
Assume that the space for boxes is in the shape of a cuboid.

(a) Work out how many minutes it should take Chloe to put as many boxes as possible into the van.

..... minutes
(4)

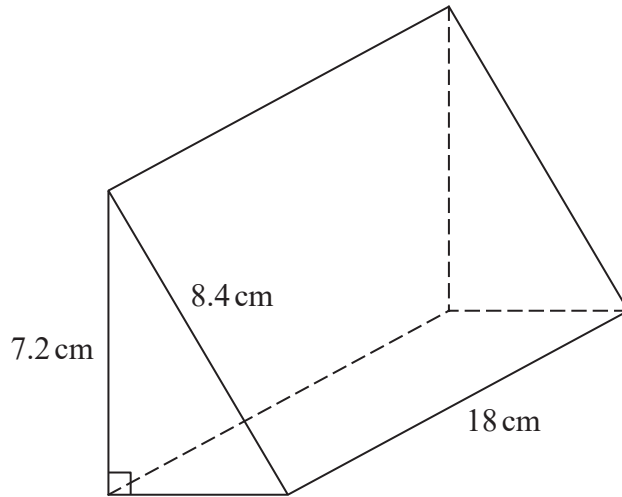
The space for boxes might **not** be in the shape of a cuboid.

(b) Explain how this could affect the time it would take Chloe to put as many boxes as possible into the van.

.....
.....
(1)

(Total for Question 5 is 5 marks)

6 Here is a triangular prism.

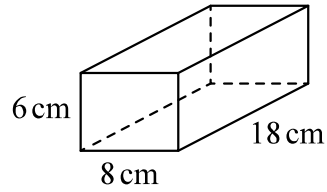
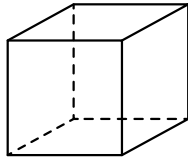


Work out the volume of the prism.
Give your answer correct to 3 significant figures.

..... cm³

(Total for Question 6 is 5 marks)

7 The diagram shows a cube and a cuboid.



The total surface area of the cube is equal to the total surface area of the cuboid.

Janet says,

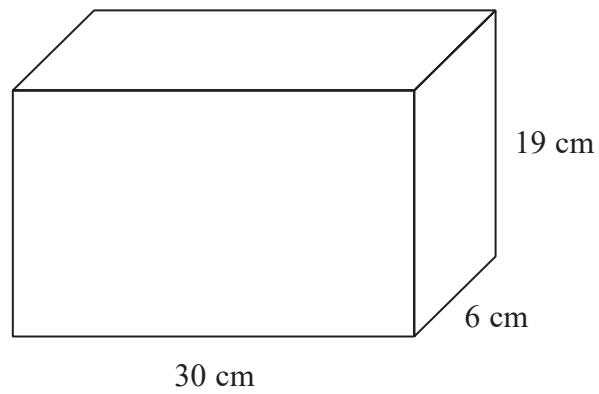
“The volume of the cube is equal to the volume of the cuboid.”

Is Janet correct?

You must show how you get your answer.

(Total for Question 7 is 5 marks)

- 8 A container is in the shape of a cuboid.



The container is $\frac{2}{3}$ full of water.

A cup holds 275 ml of water.

What is the greatest number of cups that can be completely filled with water from the container?

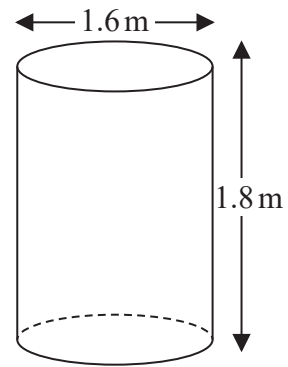
.....
(Total for Question 8 is 4 marks)

9 Jeremy has to cover 3 tanks completely with paint.

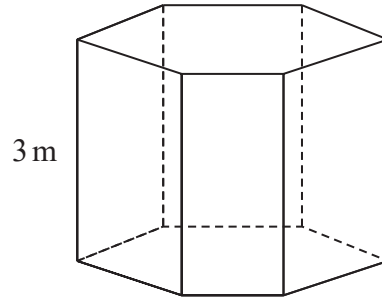
Each tank is in the shape of a cylinder with a top and a bottom.
The tank has a diameter of 1.6 m and a height of 1.8 m.

Jeremy has 7 tins of paint.
Each tin of paint covers 5 m^2

Has Jeremy got enough paint to cover completely the 3 tanks?
You must show how you get your answer.



10 The diagram shows a prism placed on a horizontal floor.



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

The prism has height 3 m
The volume of the prism is 18 m^3

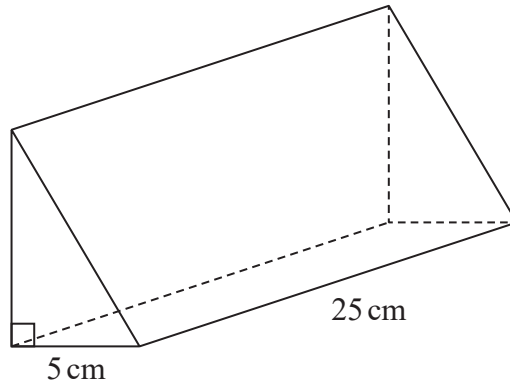
The pressure on the floor due to the prism is 75 newtons/m^2

Work out the force exerted by the prism on the floor.

..... newtons

(Total for Question 10 is 3 marks)

11 The diagram shows a prism.



The cross section of the prism is a right-angled triangle.
The base of the triangle has length 5 cm

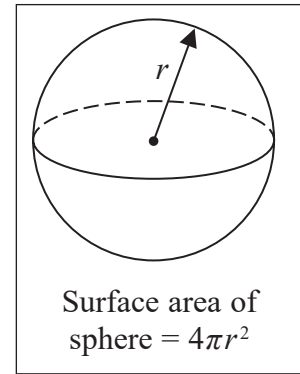
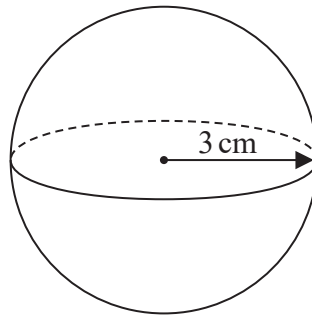
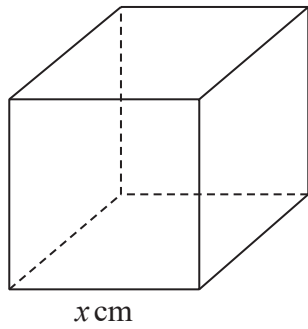
The prism has length 25 cm
The prism has volume 750 cm^3

Work out the height of the prism.

..... cm

(Total for Question 11 is 3 marks)

12 The diagram shows a cube with edges of length x cm and a sphere of radius 3 cm.



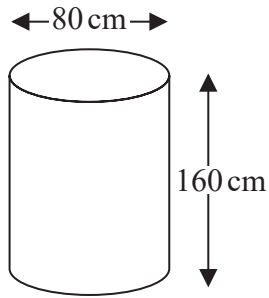
The surface area of the cube is equal to the surface area of the sphere.

Show that $x = \sqrt{k\pi}$ where k is an integer.

(Total for Question 12 is 4 marks)

13 Karina has 4 tanks on her tractor.

Each tank is a cylinder with diameter 80 cm and height 160 cm.



The 4 tanks are to be filled completely with a mixture of fertiliser and water.

The fertiliser has to be mixed with water in the ratio 1 : 100 by volume.

Karina has 32 litres of fertiliser.

$$1 \text{ litre} = 1000 \text{ cm}^3$$

Has Karina enough fertiliser for the 4 tanks?

You must show how you get your answer.

(Total for Question 13 is 4 marks)