Chhetri Academy

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GCSE MATHS

Geometry and measures

Edexcel 1MA1 | Subtopic collection Topic 44

Volume and surface area

Foundation tier

Past paper question booklet

95	2010-2025	Foundation
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

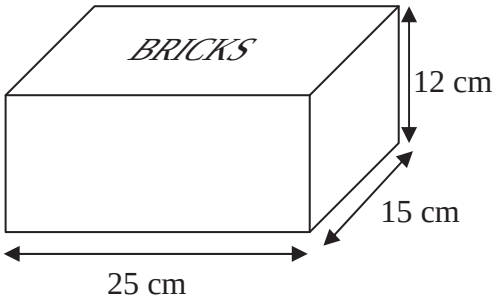
***10** A company makes building bricks for children.
The bricks are all 5 cm cubes.

The bricks are going to be packed in boxes.

John designs a box for the bricks.
The box is a cuboid.

The size of the box is 25 cm by 15 cm by 12 cm.

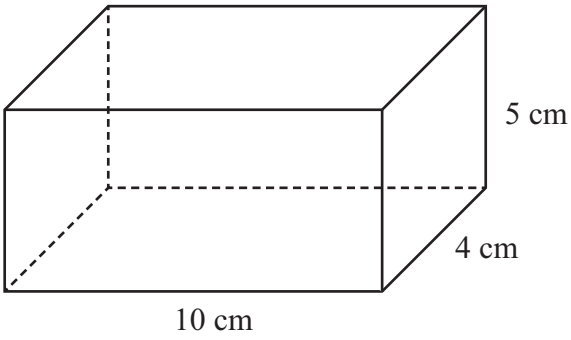
Will the box be big enough for 36 bricks?
You must give reasons for your answer.



(Total for Question 10 is 4 marks)

11 Here is a diagram of a cuboid.

Diagram **NOT** accurately drawn



(a) Write down the number of edges of the cuboid.

.....

(1)

(b) Calculate the volume of the cuboid.

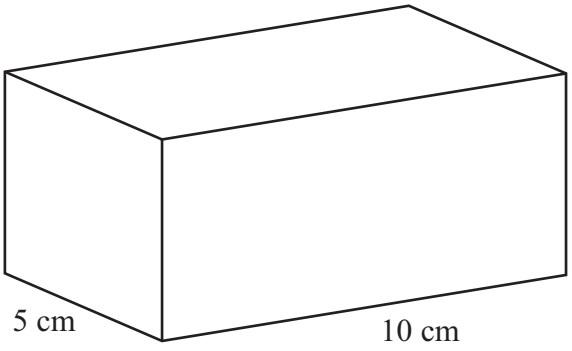
.....

(3)

(Total for Question 11 is 4 marks)

19 Here is a solid cuboid.

Diagram **NOT** accurately drawn



The cuboid has a width of 5 cm and a length of 10 cm.
The cuboid has a total surface area of 280 cm^2.

Work out the height of the cuboid.

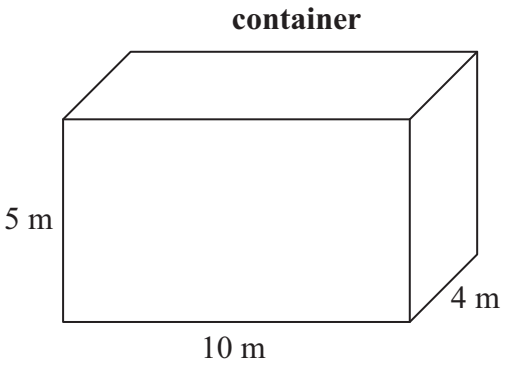
..... cm

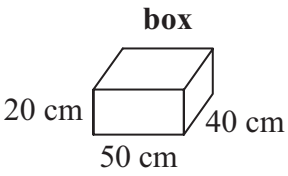
(Total for Question 19 is 4 marks)

*15 Marc drives a truck.
The truck pulls a container.
The container is a cuboid 10 m by 4 m by 5 m.



Diagram **NOT** accurately drawn





Marc fills the container with boxes.
Each box is a cuboid 50 cm by 40 cm by 20 cm.

Show that Marc can put no more than 5000 boxes into the container.

(Total for Question 15 is 4 marks)

12 Amy has some toy bricks.
Each brick is a cube of side 1 cm.

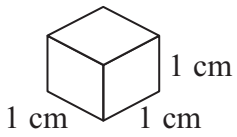
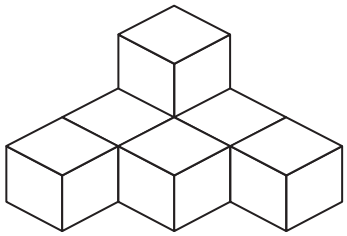


Diagram **NOT** accurately drawn

Amy uses some of the bricks to make this solid shape.



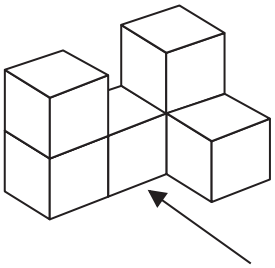
Amy adds some more of the bricks to this solid shape to make a cube of side 3 cm.

(a) How many bricks does Amy add?

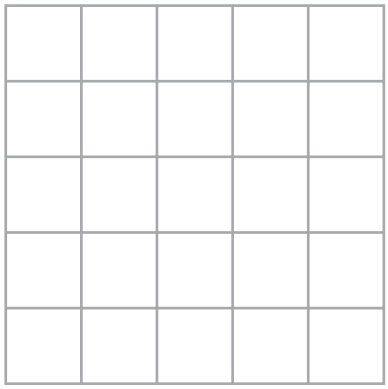
.....

(2)

Naveed uses some of the bricks to make this solid shape.



(b) On the grid below, draw the view of the solid shape from the direction shown by the arrow.

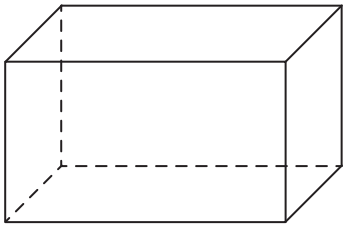


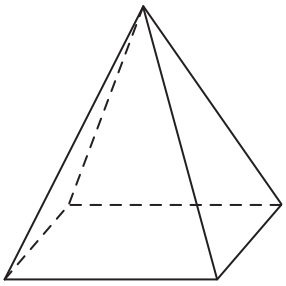
(2)

(Total for Question 12 is 4 marks)

Question 06

2 Write down the name of each of these 3-D shapes.

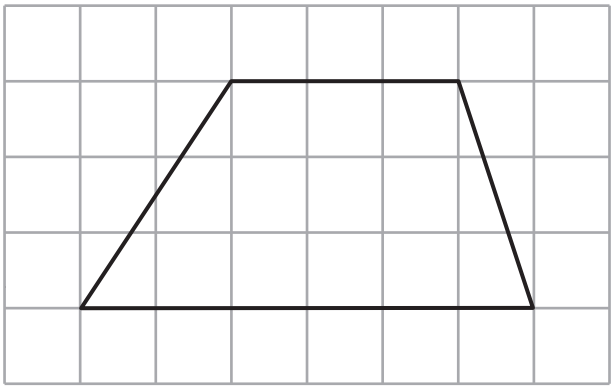




(i) ..... (ii) .....

(Total for Question 2 is 2 marks)

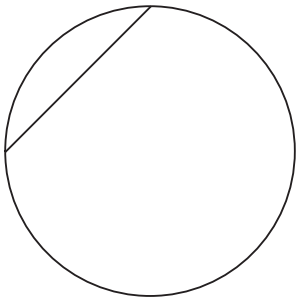
2 (a) Here is a quadrilateral.



Write down the mathematical name of this quadrilateral.

.....

(1)

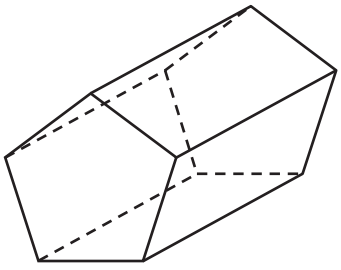


(b) Write down the mathematical name for the straight line inside this circle.

.....

(1)

(c) Here is a solid prism.



(i) Write down the number of faces.

..... faces

(ii) Write down the number of vertices.

..... vertices

(2)

(Total for Question 2 is 4 marks)

17 The diagram shows a triangular prism.

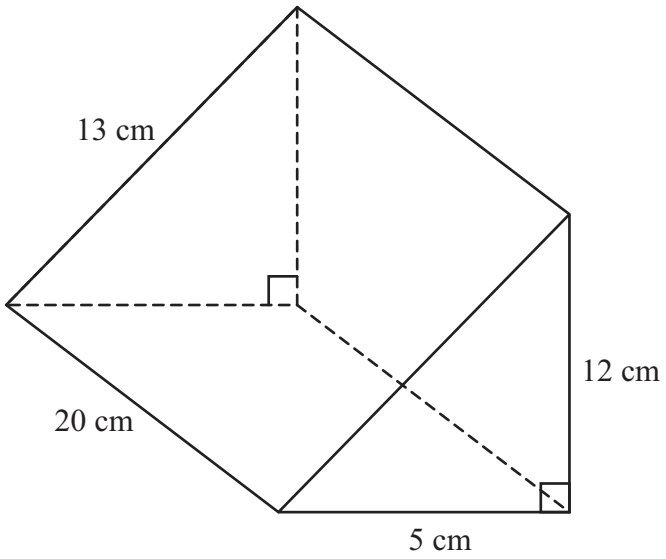


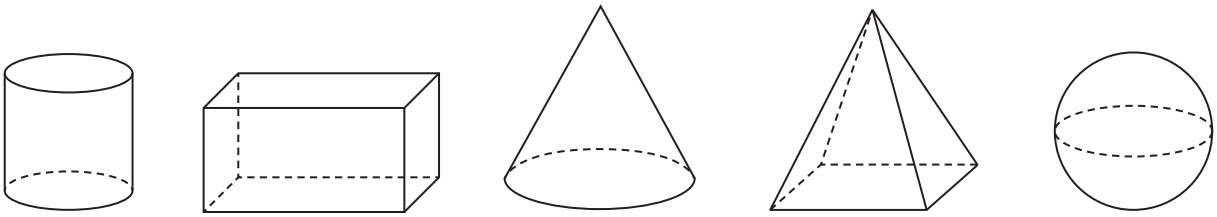
Diagram **NOT** accurately drawn

Work out the total surface area of the prism.

..... cm^2

(Total for Question 17 is 3 marks)

1 Here are some solid 3-D shapes.



A **B** **C** **D** **E**

(a) Write down the letter of the shape that is a sphere.

.....

(1)

(b) Write down the mathematical name of shape **A**.

.....

(1)

(c) How many faces does shape **B** have?

.....

(1)

(d) How many edges does shape **D** have?

.....

(1)

(Total for Question 1 is 4 marks)

27 The diagram shows a prism.

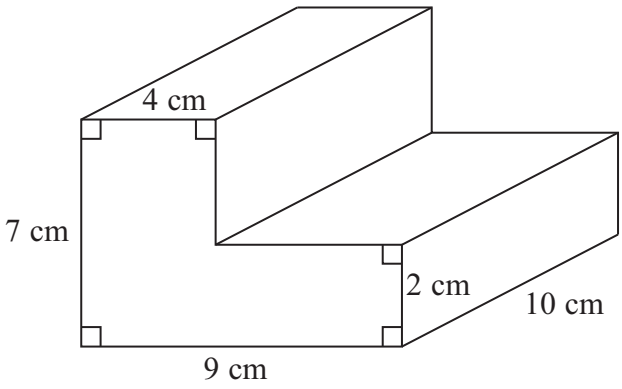


Diagram **NOT** accurately drawn

Work out the volume of the prism.

.....cm^3

(Total for Question 27 is 3 marks)

9 Here is a cuboid.

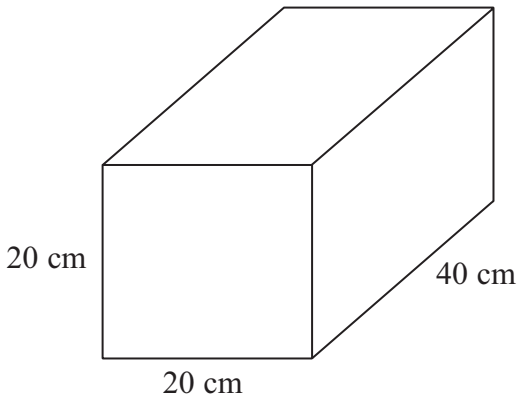


Diagram **NOT** accurately drawn

Work out the volume of the cuboid.

.....

(Total for Question 9 is 3 marks)

15 The diagram shows part of a net of a cube.



(a) Add one square to the diagram to complete the net.

(1)

Two opposite faces of the cube are to be shaded.

(b) On the diagram, shade two faces to show how this can be done.

(1)

(c) Write down the number of edges that the cube has.

.....

(1)

(Total for Question 15 is 3 marks)

11 Here is a triangular prism.

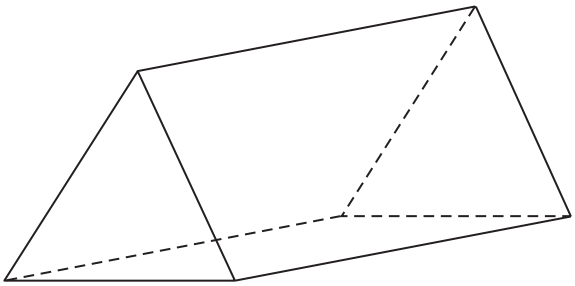


Diagram **NOT** accurately drawn

In the space below, draw a sketch of a net for the triangular prism.

(Total for Question 11 is 2 marks)

3 Write down a suitable metric unit for measuring

(a) the weight of a banana,

.....

(1)

(b) the volume of water in a fish tank,

.....

(1)

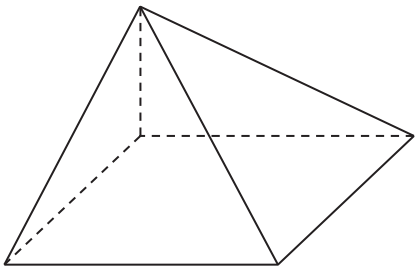
(c) the length of a lorry.

.....

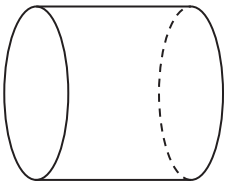
(1)

(Total for Question 3 is 3 marks)

3 Here are two 3-D shapes.



Shape A



Shape B

(a) Write down the mathematical name of

(i) Shape A,

.....

(ii) Shape B.

.....

(2)

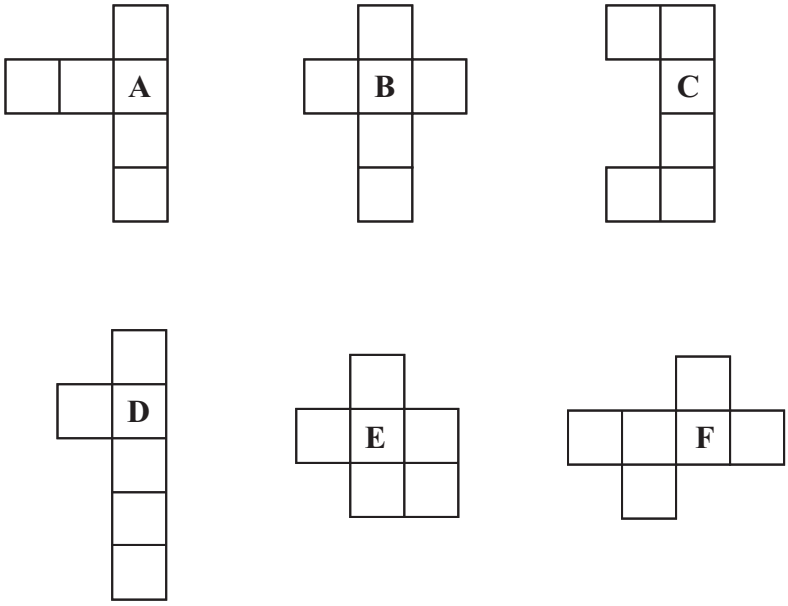
(b) Write down the number of edges that Shape A has.

.....

(1)

(Total for Question 3 is 3 marks)

8 Here are some shapes made from squares.



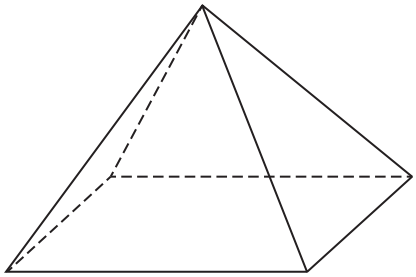
Two of these shapes are nets of a cube.

Which two shapes?

.....

(Total for Question 8 is 2 marks)

16 The diagram shows a pyramid.



(a) Write down the number of

(i) faces,

.....

(ii) edges,

.....

(iii) vertices.

.....

(3)

The base of the pyramid is a square.

(b) In the space below, draw a sketch of a net for this pyramid.

(2)

(Total for Question 16 is 5 marks)

28 Here is a solid prism.

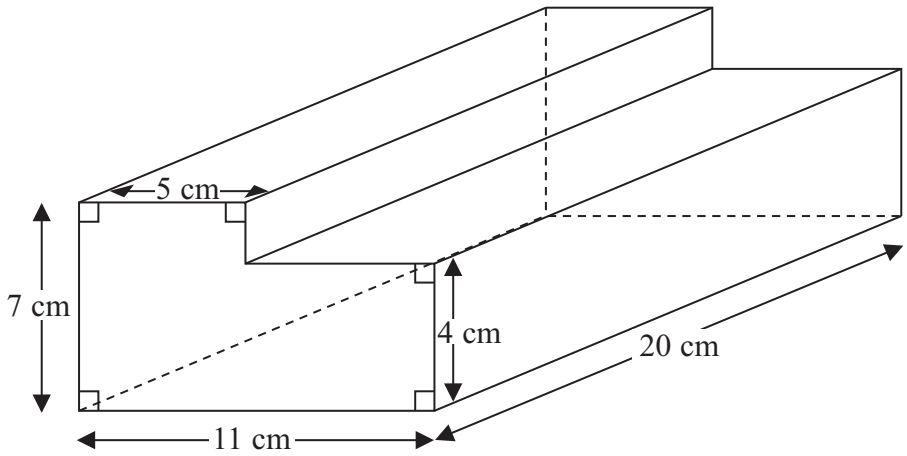


Diagram **NOT** accurately drawn

Work out the volume of the prism.

..... cm^3

(Total for Question 28 is 3 marks)

***13** An ice cream van has this price list.

Price List	
Choc Ice	£1.25
Tub	£1.15
Cone	85p

Mitch only has these three coins.
He has no other money.

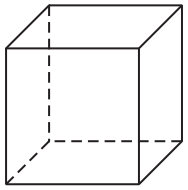


Mitch wants to buy a choc ice, a tub and 2 cones.

Has Mitch got enough money?
You must show your working.

(Total for Question 13 is 3 marks)

16 Here is a cube.

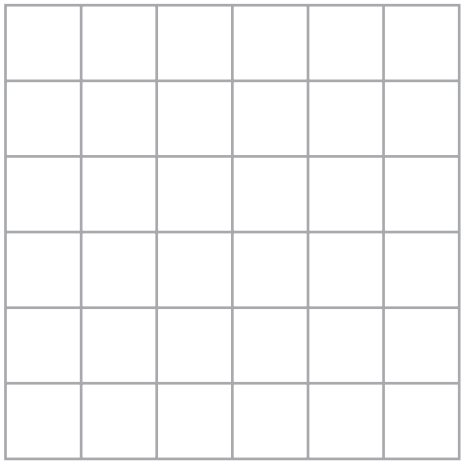


(a) How many vertices does a cube have?

.....

(1)

(b) On the grid, draw a net of a cube.



(2)

The diagram shows a cube of side 3 cm.

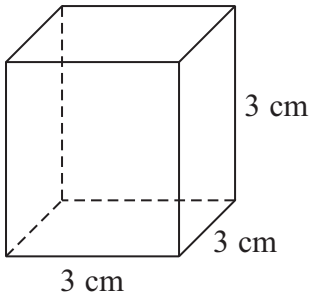


Diagram **NOT** accurately drawn

(c) Work out the total surface area of this cube.

..... cm^2

(2)

(Total for Question 16 is 5 marks)

6 (a) Write down the value of $\sqrt{49}$

.....

(1)

(b) Write down the cube of 3

.....

(1)

(Total for Question 6 is 2 marks)

11 The diagram shows a solid cuboid.

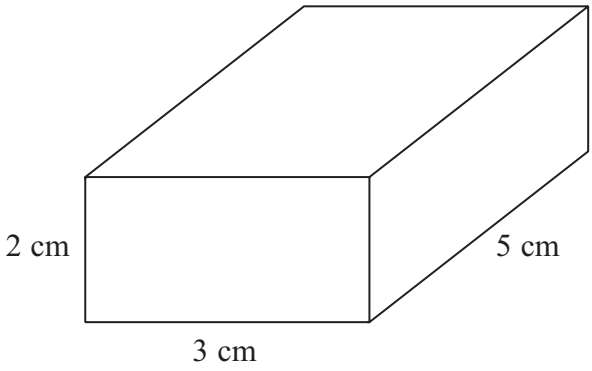


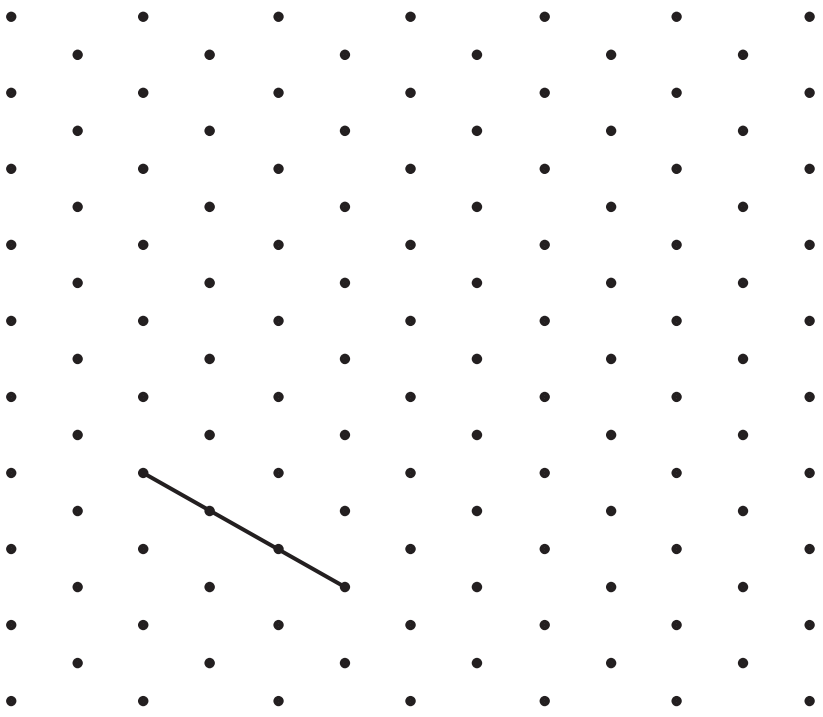
Diagram **NOT** accurately drawn

(a) Write down the number of faces the cuboid has.

.....

(1)

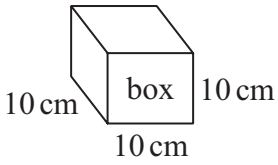
(b) On the centimetre isometric grid, make an accurate drawing of this cuboid.
One edge has been drawn for you.

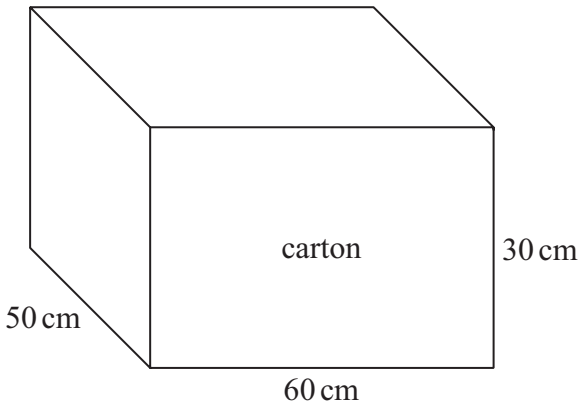


(2)

(Total for Question 11 is 3 marks)

15





Diagrams **NOT** accurately drawn

Terry fills a carton with boxes.
Each box is a cube of side 10 cm.

The carton is a cuboid with

length	60 cm
width	50 cm
height	30 cm

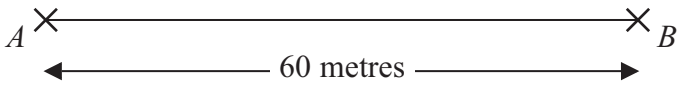
Work out the number of boxes Terry needs to fill one carton completely.

.....

(Total for Question 15 is 3 marks)

8 The diagram shows part of a road.

Diagram **NOT** accurately drawn



Jim puts a line of traffic cones on this part of the road.
He puts traffic cones every 2 metres from A to B.

Jim puts the first traffic cone at A.
He puts the last traffic cone at B.

Work out the total number of traffic cones Jim puts from A to B.

.....

(Total for Question 8 is 2 marks)

19 The diagram shows a cuboid.

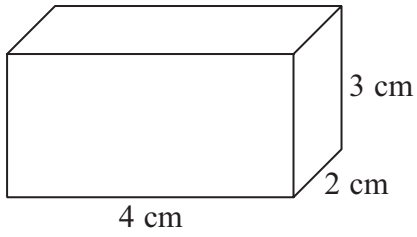
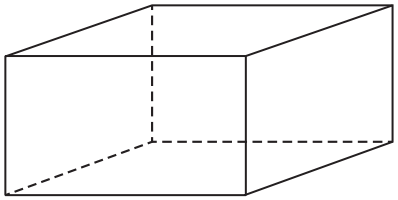


Diagram **NOT** accurately drawn

On the grid of centimetre squares, draw an accurate net for this cuboid.

(Total for Question 19 is 3 marks)

7 Here is a cuboid.



The following sentences are about cuboids.

Complete each sentence by writing the correct number in the gap.

(a) (i) A cuboid has ..... faces.

(ii) A cuboid has ..... edges.

(iii) A cuboid has ..... vertices.

(3)

Here is a different cuboid.

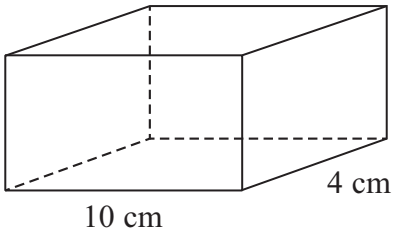


Diagram **NOT** accurately drawn

(b) Work out the volume of the cuboid.

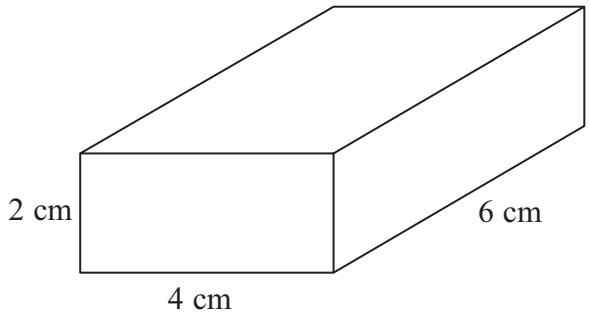
..... cm^3

(2)

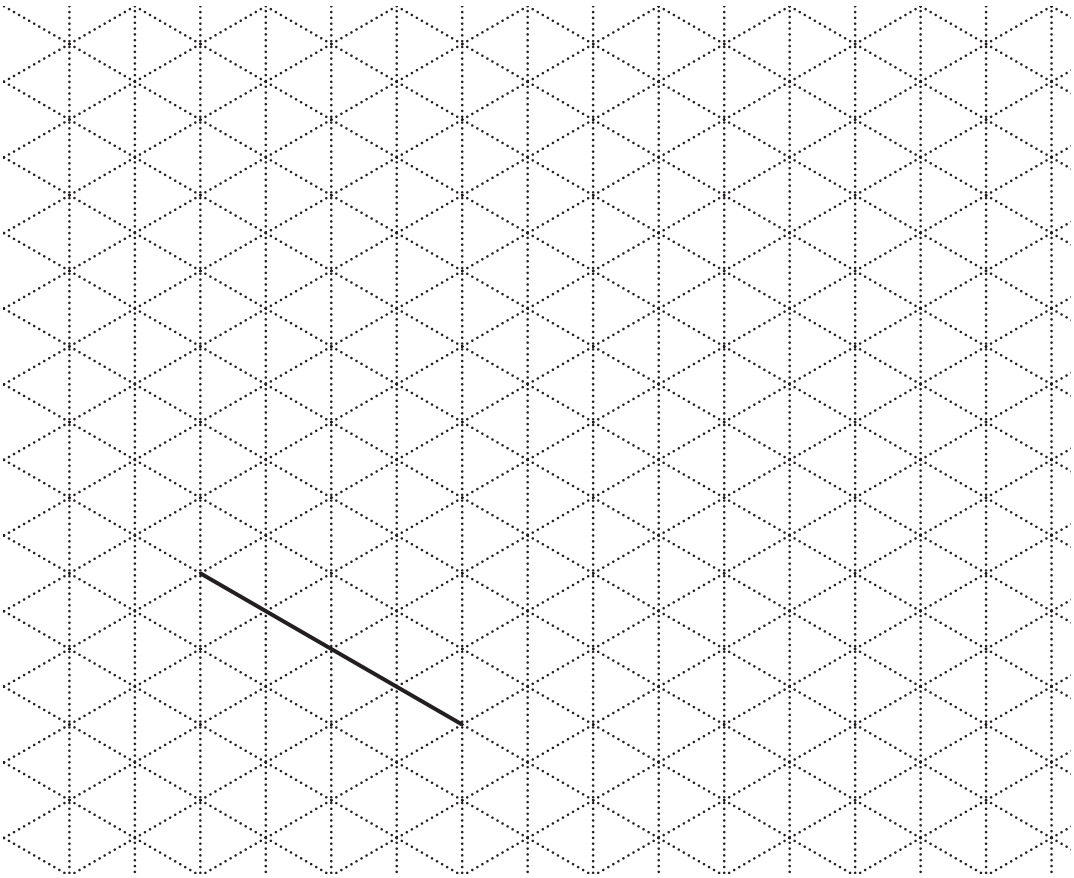
(Total for Question 7 is 5 marks)

16 Here is a box in the shape of a cuboid.

Diagram **NOT** accurately drawn



(a) Complete an accurate drawing of the cuboid on the isometric grid.
One edge of the cuboid has been drawn for you.



(2)

The box is made to hold cubes.
Each cube has edges of length 2 cm.

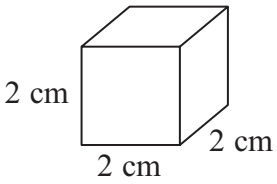


Diagram **NOT** accurately drawn

(b) Work out the largest number of cubes that can fit into the box.

.....

(2)

(Total for Question 16 is 4 marks)

20 Here is a pyramid with a square base.
The sloping faces are identical isosceles triangles.

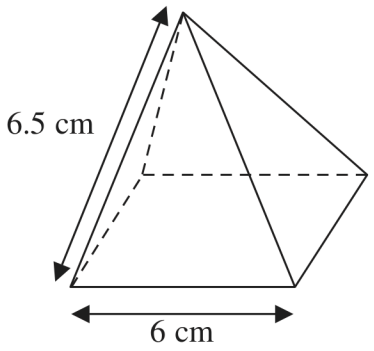
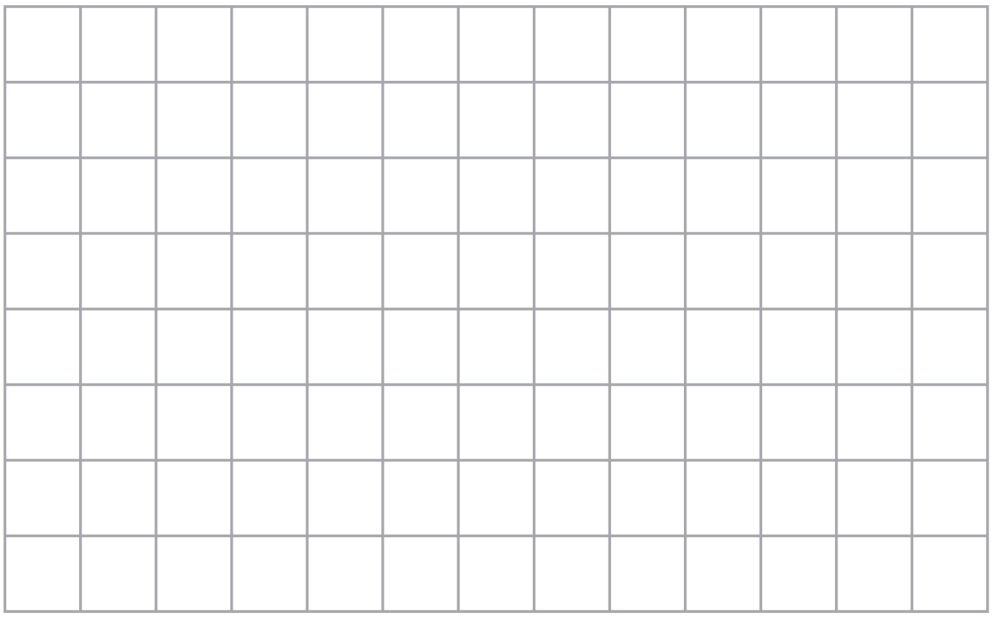


Diagram **NOT** accurately drawn

(a) Draw a full size accurate plan of the pyramid on the centimetre square grid.



(2)

(b) Using a ruler and compasses, construct an accurate drawing of one of the triangular sloping faces of the pyramid.

(3)

(Total for Question 20 is 5 marks)

15

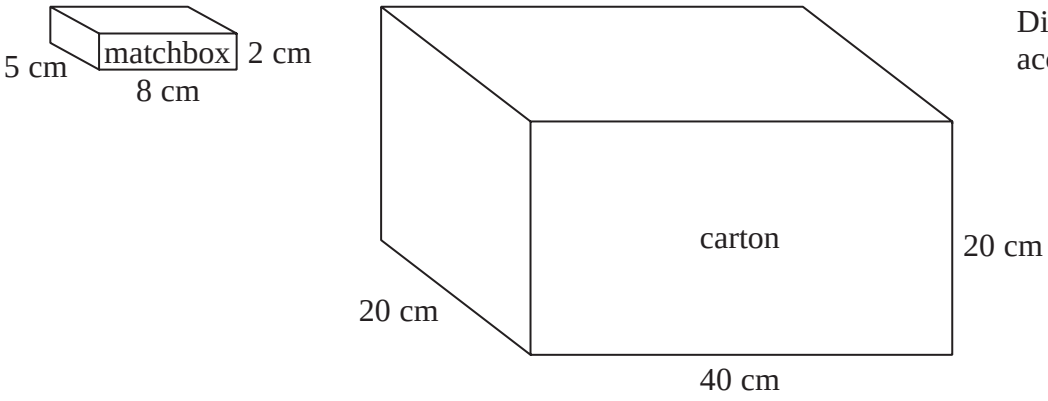


Diagram **NOT** accurately drawn

A matchbox is 5 cm by 8 cm by 2 cm.
A carton is 20 cm by 40 cm by 20 cm.

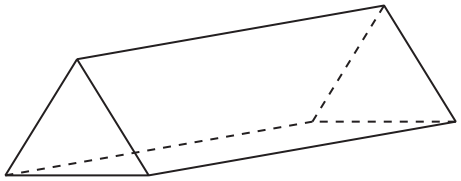
The carton is completely filled with matchboxes.

Work out the number of matchboxes in the carton.

.....

(Total for Question 15 is 3 marks)

14 Here is a triangular prism.



(a) For this prism, write down

(i) the number of edges

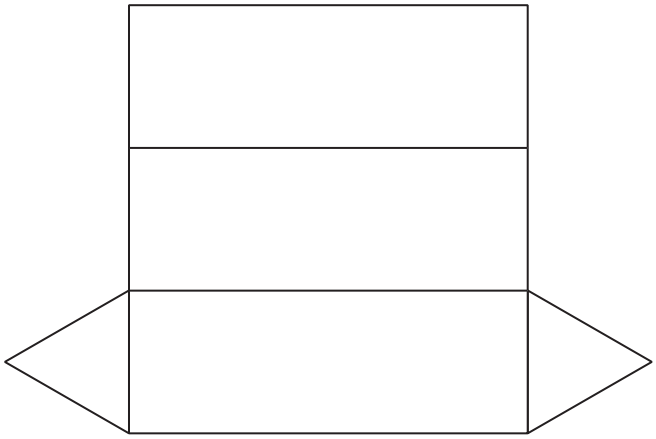
.....

(ii) the number of faces

.....

(2)

Here is a net of the triangular prism.



The net is folded to make the prism.
One other point meets at *P*.

(b) Mark this point on the net with the letter *P*.

(1)

(Total for Question 14 is 3 marks)

***13** 140 children will be at a school sports day.
Lily is going to give a cup of orange drink to each of the 140 children.
She is going to put 200 millilitres of orange drink in each cup.

The orange drink is made from orange squash and water.
The orange squash and water are mixed in the ratio 1 : 9 by volume.

Orange squash is sold in bottles containing 750 millilitres.

Work out how many bottles of orange squash Lily needs to buy.
You must show all your working.

(Total for Question 13 is 4 marks)

14 Ali has some packets.

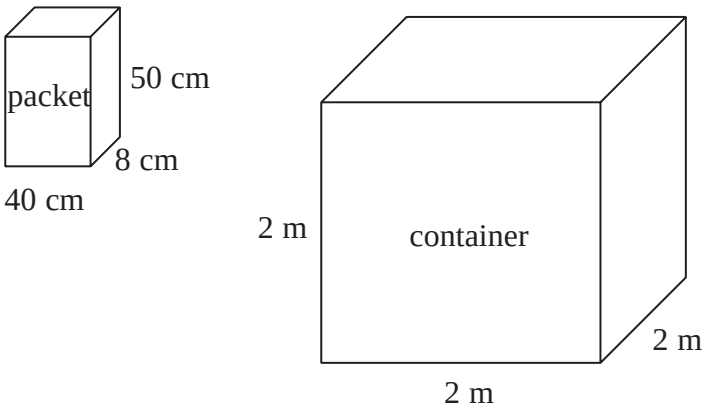


Diagram **NOT** accurately drawn

Each packet has dimensions 40 cm by 8 cm by 50 cm.

Ali fills a container with these packets.
The container is a cube of side 2 m.

Ali fills the container completely with these packets.

Work out the number of packets.

.....

(Total for Question 14 is 4 marks)

24 The diagram shows a container used to store oil.

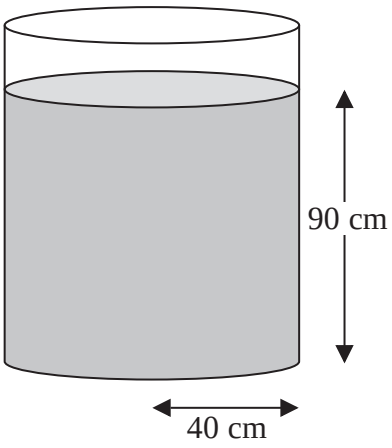


Diagram **NOT** accurately drawn

The container is in the shape of a cylinder of radius 40 cm.

The height of the oil in the container is 90 cm.

65 litres of oil are taken from the container.
1 litre = 1000 cm^3.

Work out the new height of the oil in the container.
Give your answer correct to one decimal place.

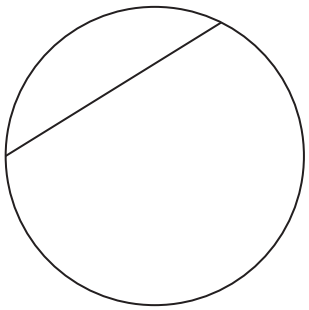
..... cm

(Total for Question 24 is 4 marks)

2 (a) In the space below, draw a sketch of a rectangle.

(1)

(b)

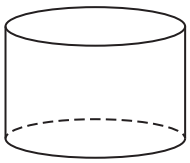


Write down the mathematical name for the straight line inside this circle.

.....

(1)

(c) Here is a solid shape.



Write down the mathematical name for this solid shape.

.....

(1)

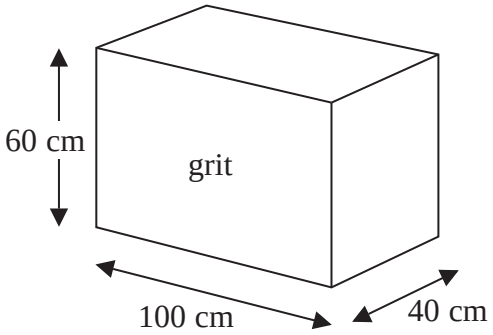
(Total for Question 2 is 3 marks)

*17 The diagram shows a box for winter grit.
The box is in the shape of a cuboid.
The box is empty.

Jon wants to fill the box with grit.
A bag of grit costs £2.50
There are 8000 cm^3 of grit in a bag.

Jon has £70 to spend on the grit.

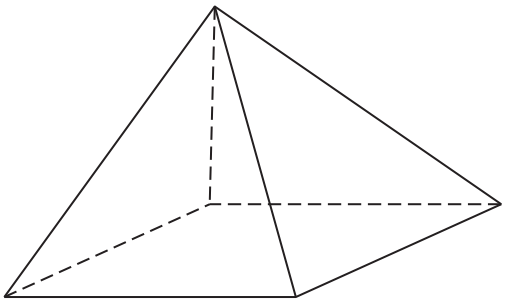
Diagram **NOT** accurately drawn



Does Jon have enough money to buy all the grit he needs to fill the box completely?

(Total for Question 17 is 5 marks)

15 The diagram shows a square-based pyramid.



In the space below, draw a sketch of a net for the square-based pyramid.

(Total for Question 15 is 2 marks)

17 The diagram shows a cuboid.

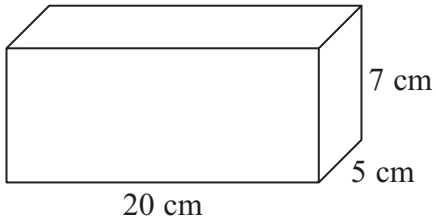


Diagram **NOT** accurately drawn

Work out the volume of the cuboid.

.....

(Total for Question 17 is 3 marks)

***14** Here is information about the maximum size of a small parcel.

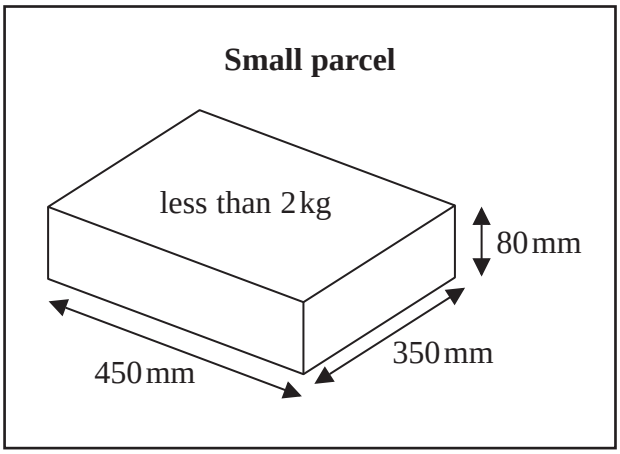


Diagram **NOT** accurately drawn

A small parcel must have

a weight less than 2 kg
and maximum dimensions 450 mm by 350 mm by 80 mm

Kamil has three boxes.
Each box weighs 600 g.
Each box is 40 cm by 21 cm by 2.5 cm.

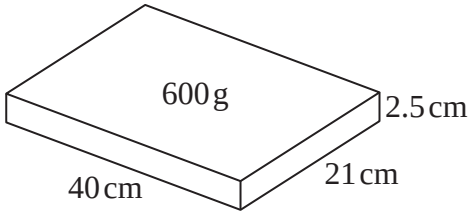
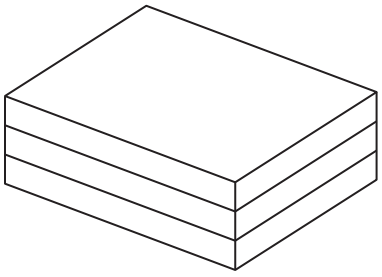


Diagram **NOT** accurately drawn

Kamil puts the three boxes together to make one parcel.



Kamil says that this parcel is a small parcel.

Is Kamil correct?
You must give reasons for your answer.

(Total for Question 14 is 4 marks)

21 Jane makes cheese.

The cheese is in the shape of a cuboid.

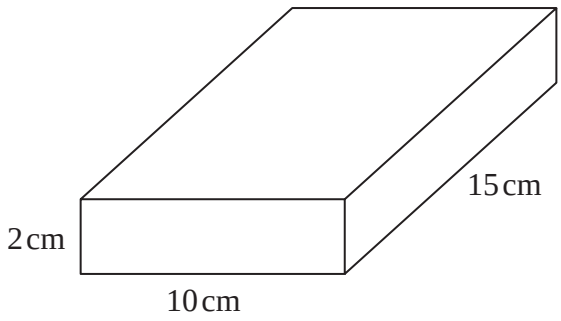


Diagram **NOT** accurately drawn

Jane is going to make a new cheese.

The new cheese will also be in the shape of a cuboid.
The cross section of the cuboid will be a 5 cm by 5 cm square.

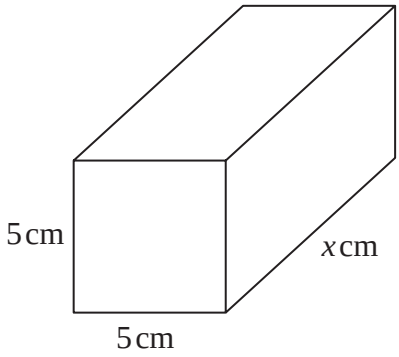


Diagram **NOT** accurately drawn

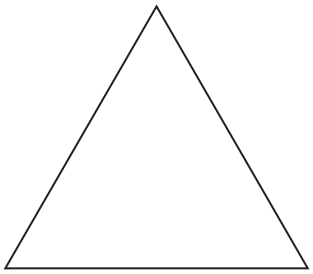
Jane wants the new cuboid to have the same volume as the 2 cm by 10 cm by 15 cm cuboid.

Work out the value of x.

.....

(Total for Question 21 is 3 marks)

2 Here is an equilateral triangle.

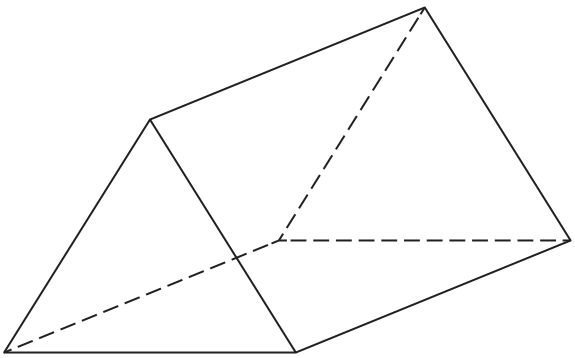


(a) Write down the order of rotational symmetry of the triangle.

.....

(1)

Here is a solid prism.



(b) (i) Write down the number of faces of the prism.

.....

(ii) Write down the number of edges of the prism.

.....

(2)

(Total for Question 2 is 3 marks)

5 Here is a solid prism.

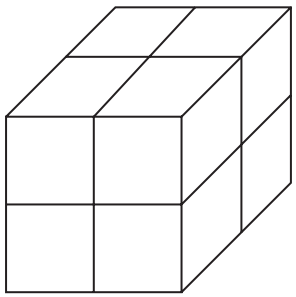


Diagram **NOT** accurately drawn

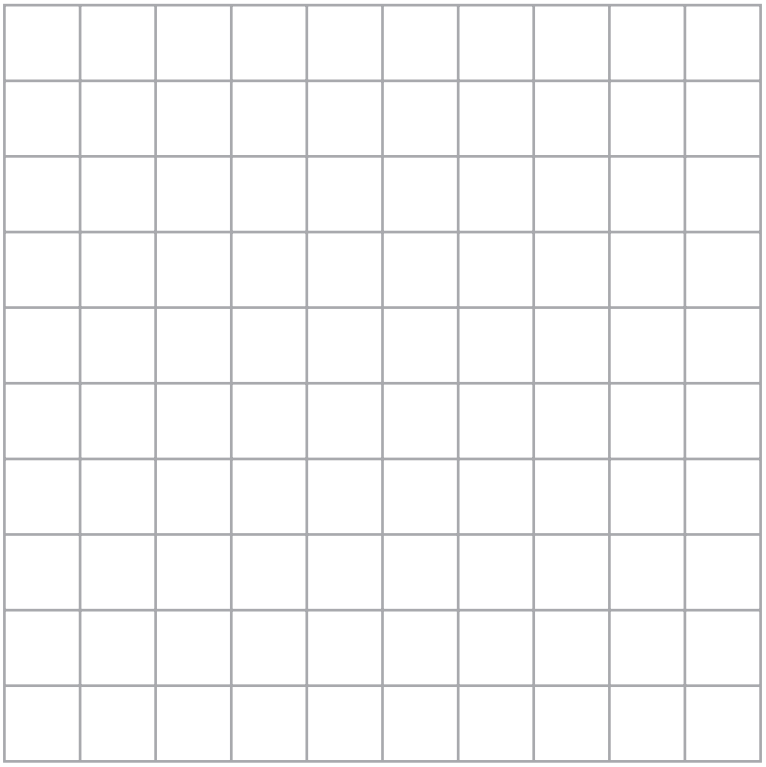
The prism is made from centimetre cubes.

(a) Write down the volume of the prism.

.....cm^3

(1)

Here is a centimetre grid.



(b) On the grid, draw a rectangle with an area of 12 cm^2.

(2)

(Total for Question 5 is 3 marks)

13 The diagram shows a cuboid.

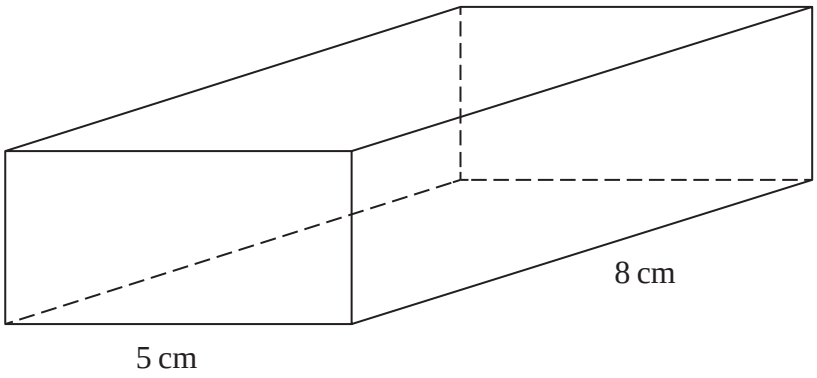


Diagram **NOT** accurately drawn

The width of the cuboid is 5 cm.
The length of the cuboid is 8 cm.

The volume of the cuboid is 120 cm^3.

Work out the height of the cuboid.

.....cm

(Total for Question 13 is 2 marks)

19 Gary's motorbike uses petrol.

Gary needs to mix oil with the petrol.
He mixes oil and petrol in the ratio 1 : 14 by volume.

Gary is going to ride his motorbike 3000 miles.
Each 20 miles he rides uses 1 litre of the oil and petrol mixture.

A 500 m*l* bottle of oil costs £3.99

Work out the total cost of the bottles of oil Gary needs to buy.
(1 litre = 1000 m*l*)

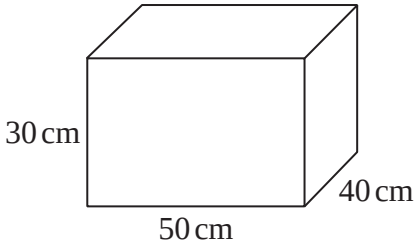
You must show all your working.

£ .....

(Total for Question 19 is 4 marks)

***23** The diagram shows a container for oil.
The container is in the shape of a cuboid.
The container is empty.

Diagram **NOT** accurately drawn



Sally has to fill the container with oil.
A bottle of oil costs £3.50
There are 3000 cm^3 of oil in each bottle.

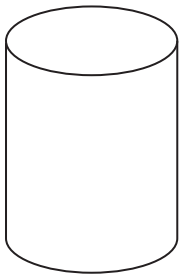
Sally must **not** spend more than £60 buying the oil.

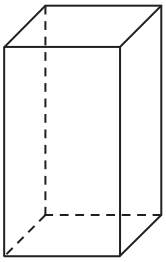
Can Sally buy enough oil to fill the container?
You must show all your working.

(Total for Question 23 is 4 marks)

Question 45

1 Write down the mathematical name of each of these 3-D shapes.



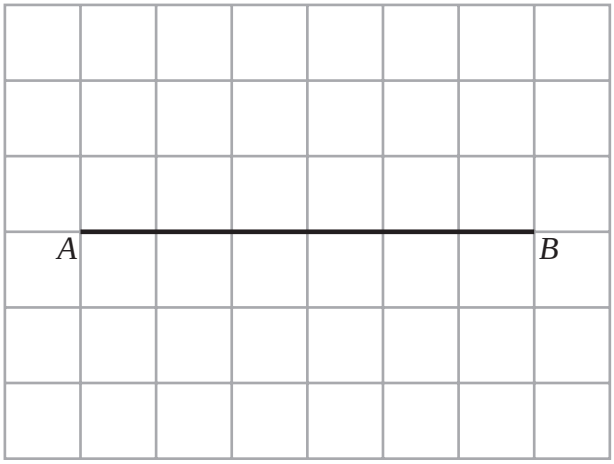


(i) .....

(ii) .....

(Total for Question 1 is 2 marks)

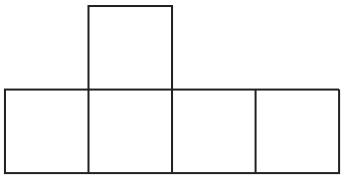
10 The line *AB* is drawn on a grid of centimetre squares.



(a) On the grid, draw a line that is parallel to the line *AB*.

(1)

The diagram shows an incomplete net of a cube.



(b) On the diagram, complete a net for the cube.

(1)

(Total for Question 10 is 2 marks)

25 The diagram shows a container.

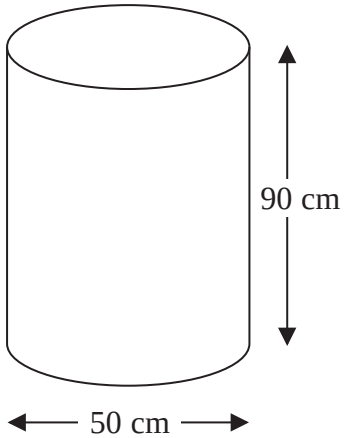


Diagram **NOT** accurately drawn

The container is in the shape of a cylinder.
The container is empty.

Jacques has a bucket.
He is going to use the bucket to fill the container with water.

The bucket holds 10 litres of water.

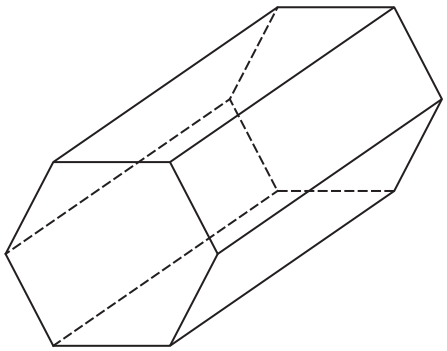
How many buckets of water does Jacques need to fill the container?
You must show your working.

(1 litre = 1000 cm^3)

.....

(Total for Question 25 is 4 marks)

19 The diagram shows a prism.



(a) (i) Write down how many vertices the prism has.

.....

(ii) Write down how many faces the prism has.

.....

(2)

The cross section of the prism is a regular hexagon.

(b) In the space below, sketch a net of the prism.

(2)

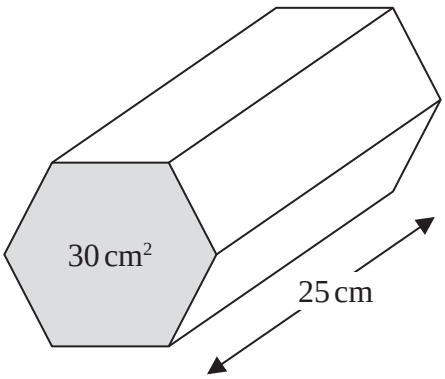


Diagram **NOT** accurately drawn

The area of the cross section of the prism is 30 cm^2.
The length of the prism is 25 cm.

(c) Work out the volume of the prism.

.....

(3)

(Total for Question 19 is 7 marks)

***15**

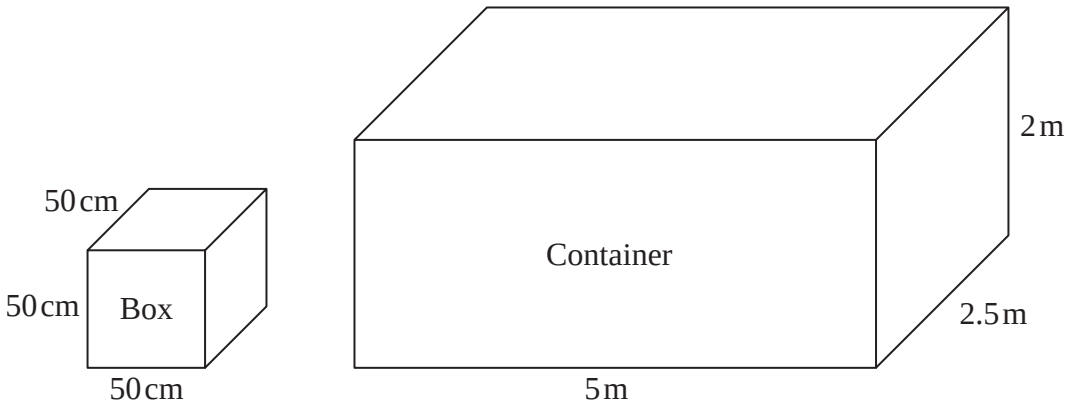


Diagram **NOT** accurately drawn

Chao transports microwave ovens from China to the UK.

He puts each microwave oven in a box.
Each box is a cube of side 50 cm.

He then puts each box in a container.
Each container is a cuboid of size 5 m by 2.5 m by 2 m.

Chao has 500 boxes.
He has 3 containers.

Will the 500 boxes fit into these 3 containers?

(Total for Question 15 is 4 marks)

***21** The diagram shows the surface of a pond in the shape of a circle.

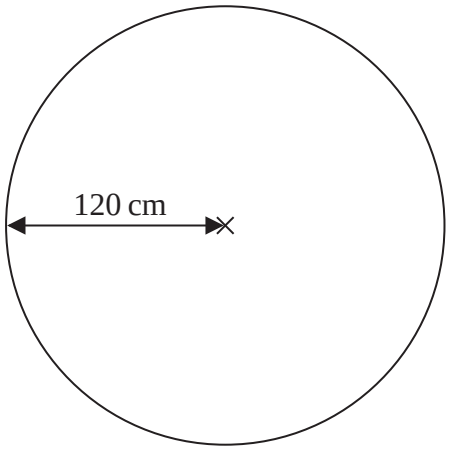


Diagram **NOT** accurately drawn

The circle has a radius of 120 cm.

Mark wants to put 20 fish into the pond.
There needs to be a surface area of 1800 cm^2 for each fish.

Show that the surface of the pond is large enough for Mark to put 20 fish into the pond.

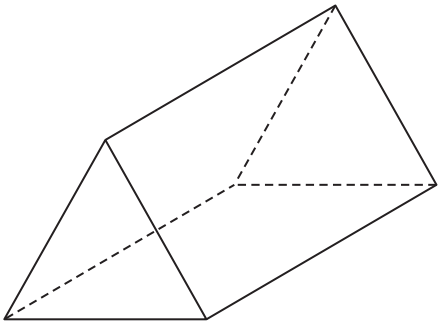
(Total for Question 21 is 4 marks)

3 Complete the table by writing a suitable **metric** unit for each measurement.

The volume of water in a glass	250 .....
The distance from London to Brighton	74 .....
The weight of a bus	12 .....

(Total for Question 3 is 3 marks)

16 The diagram shows a prism.



(a) Write down the number of vertices of the prism.

.....

(1)

The cross section of the prism is an equilateral triangle.

(b) In the space below, draw a sketch of a net for this prism.

(2)

(c) In the space below, draw accurately an equilateral triangle of side 6.5 cm.

(2)

(Total for Question 16 is 5 marks)

18

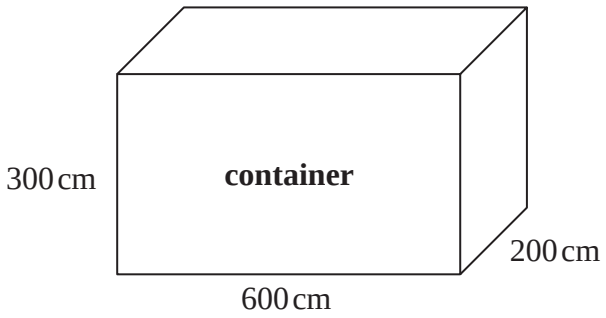
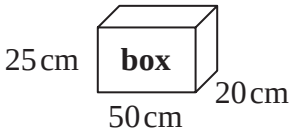


Diagram **NOT** accurately drawn



A company packs boxes into a container.

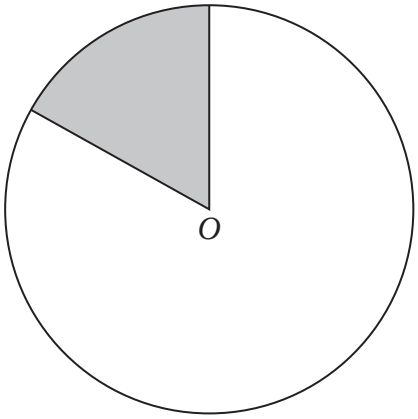
The container is a cuboid, 600 cm by 300 cm by 200 cm.
Each box is a cuboid, 50 cm by 25 cm by 20 cm.

Work out the largest number of boxes that can be packed into the container.

.....

(Total for Question 18 is 3 marks)

6 Here is a circle, centre O.

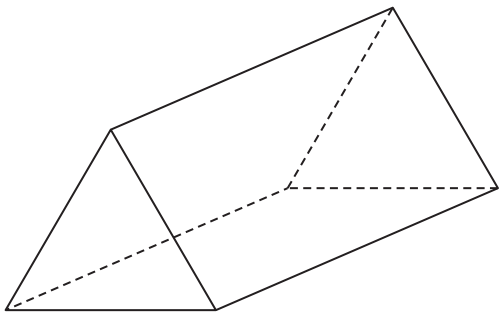


(a) Write down the mathematical name for the shaded region.

.....

(1)

Here is a 3-D shape.



(b) (i) Write down the mathematical name for the shape.

.....

(ii) How many faces does the shape have?

.....

(iii) How many vertices does the shape have?

.....

(3)

(Total for Question 6 is 4 marks)

18 Here is a prism.

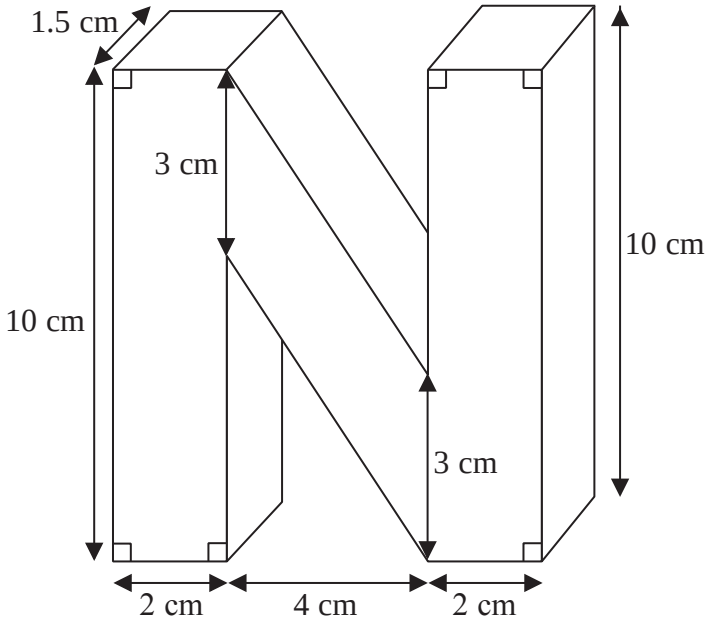


Diagram **NOT** accurately drawn

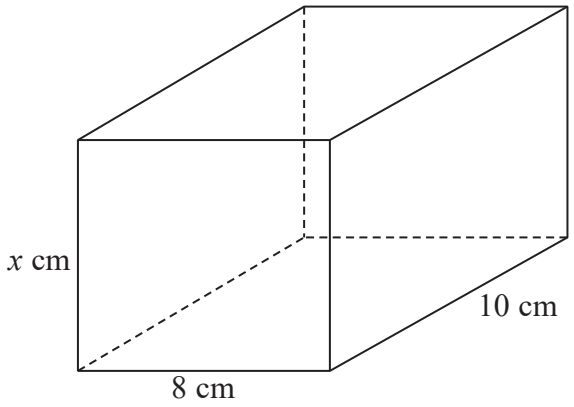
Work out the volume of the prism.

.....cm^3

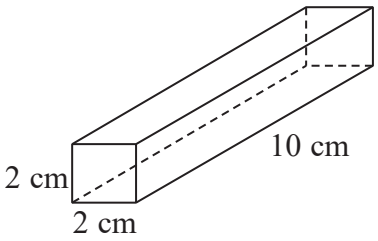
(Total for Question 18 is 4 marks)

18 Josef puts wooden blocks into boxes.

Diagram **NOT** accurately drawn



Box



Block

Each box is a cuboid x cm by 8 cm by 10 cm.
Each block is a cuboid 2 cm by 2 cm by 10 cm.

24 blocks completely fill a box.

Work out the value of x.

$x =$ .....

(Total for Question 18 is 4 marks)

23 Frances grows plants in a container.
Each of the 5 faces of the container is made of glass.

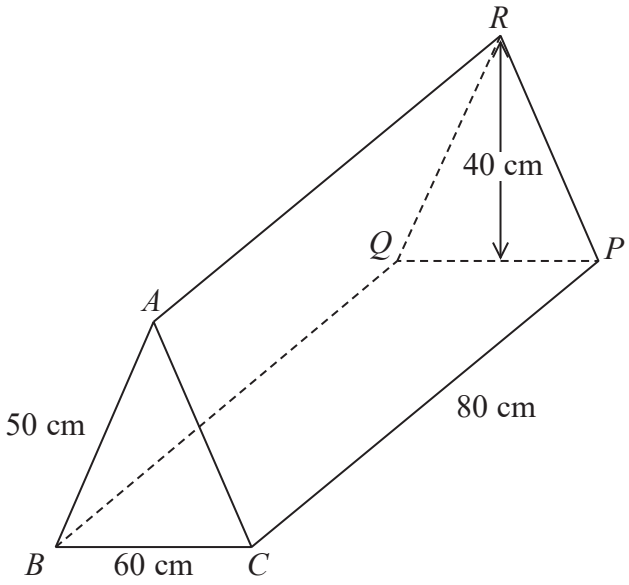


Diagram **NOT** accurately drawn

The container is in the shape of a prism.
The cross section of the prism is an isosceles triangle with height 40 cm.

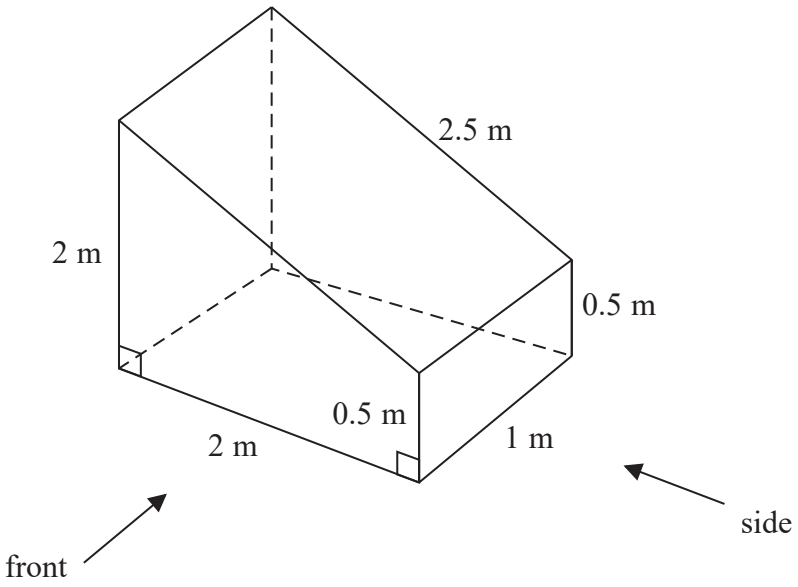
$BC = 60$ cm
$AB = AC = 50$ cm
$CP = 80$ cm

Work out the total area of glass needed to make the container.

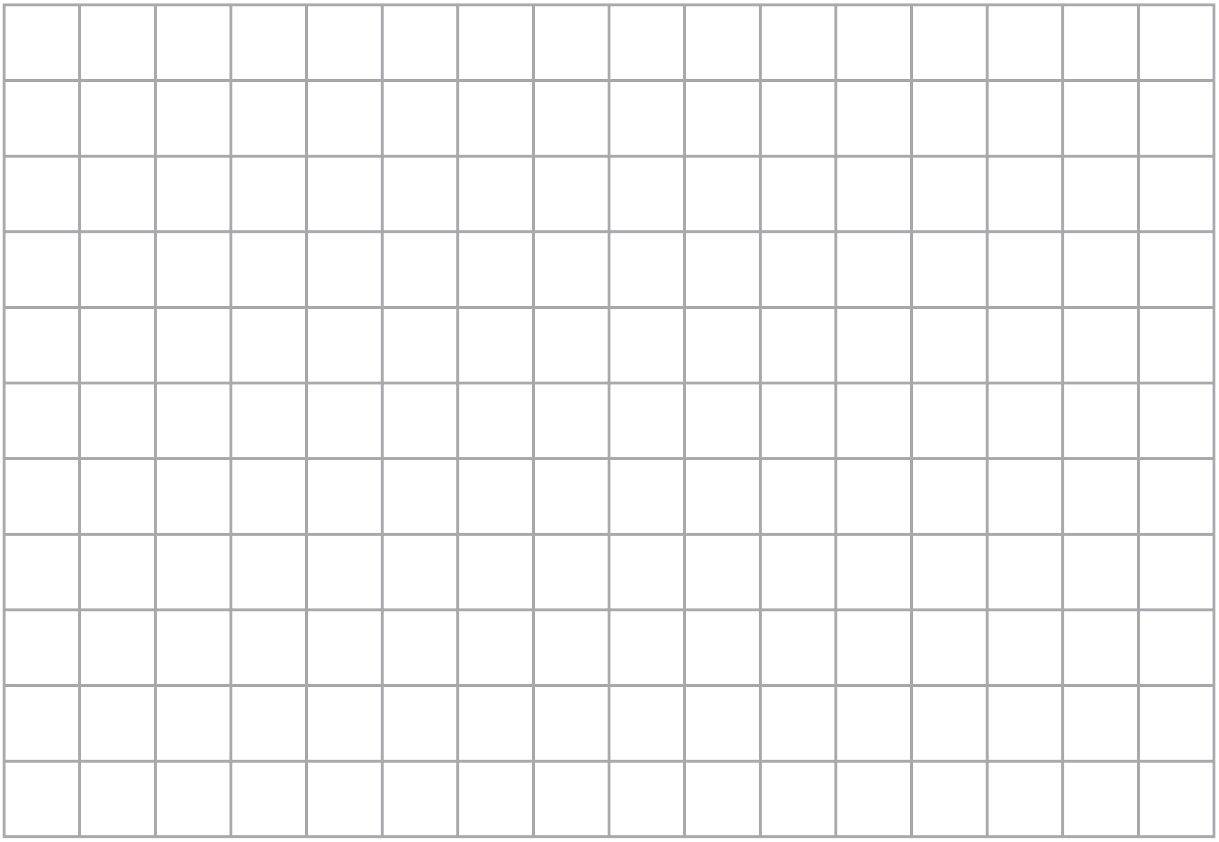
.....cm^2

(Total for Question 23 is 3 marks)

19 The diagram shows a prism with a cross section in the shape of a trapezium.

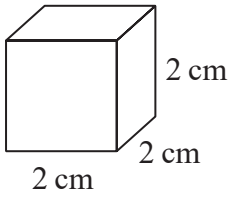


On the centimetre grid below, draw the front elevation and the side elevation of the prism.
Use a scale of 2 cm to 1 m.



(Total for Question 19 is 4 marks)

12 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 12 is 5 marks)

20 The density of apple juice is 1.05 grams per cm^3.

The density of fruit syrup is 1.4 grams per cm^3.

The density of carbonated water is 0.99 grams per cm^3.

25 cm^3 of apple juice are mixed with 15 cm^3 of fruit syrup and
280 cm^3 of carbonated water to make a drink with a volume of 320 cm^3.

Work out the density of the drink.
Give your answer correct to 2 decimal places.

..... g/cm^3

(Total for Question 20 is 4 marks)

Question 61

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

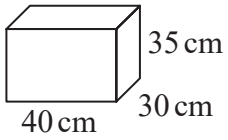
Work out the volume of the cube.

..... cm^3

(Total for Question 13 is 4 marks)

16 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 16 is 5 marks)

Question 63

November 2017 | 1MA1/3F | Original Q21

21 A gold bar has a mass of 12.5 kg.

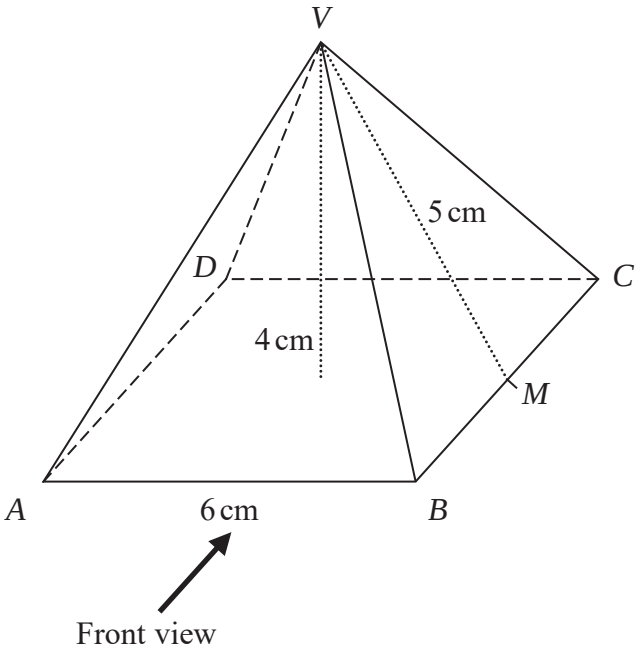
The density of gold is 19.3 g/cm^3

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

..... cm^3

(Total for Question 21 is 3 marks)

23 Here is a solid square-based pyramid, *VABCD*.



The base of the pyramid is a square of side 6 cm.
The height of the pyramid is 4 cm.
M is the midpoint of *BC* and *VM* = 5 cm.

(a) Draw an accurate front elevation of the pyramid from the direction of the arrow.

(2)

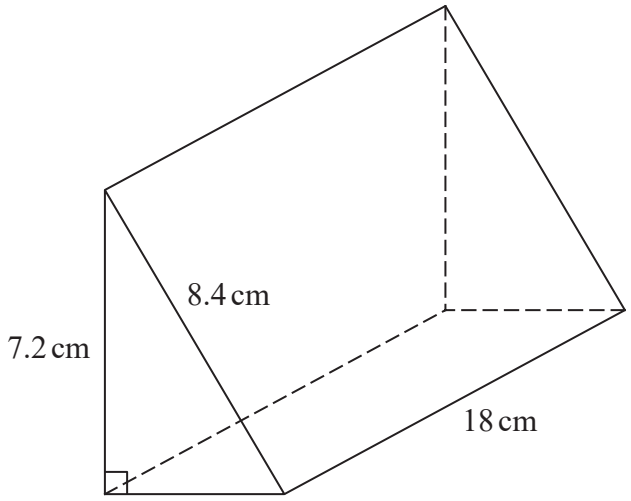
(b) Work out the total surface area of the pyramid.

.....

(4)

(Total for Question 23 is 6 marks)

26 Here is a triangular prism.

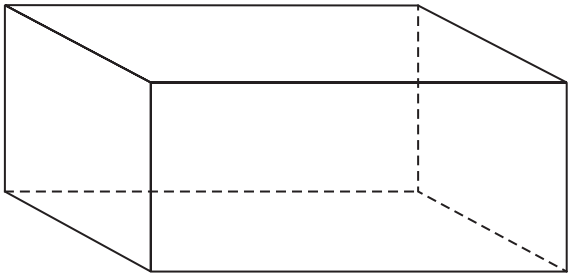


Work out the volume of the prism.
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 26 is 5 marks)

5 Here is a 3-D shape.



(a) Write down the name of this 3-D shape.

.....

(1)

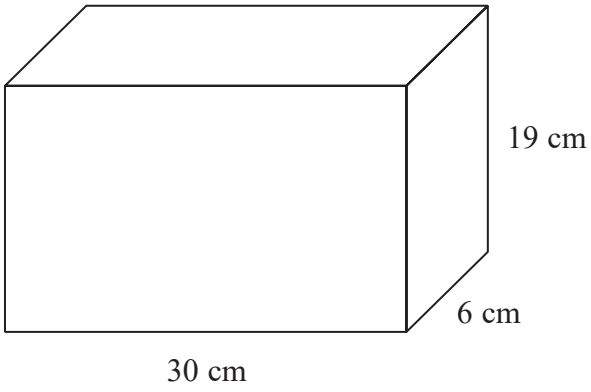
(b) Write down the number of edges of this 3-D shape.

.....

(1)

(Total for Question 5 is 2 marks)

23 A container is in the shape of a cuboid.



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

A cup holds 275 m*l* of water.

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

.....

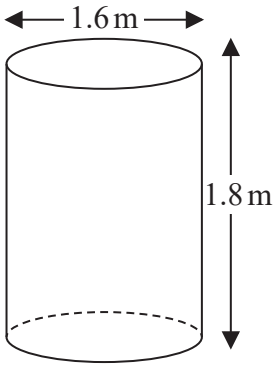
(Total for Question 23 is 4 marks)

29 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.

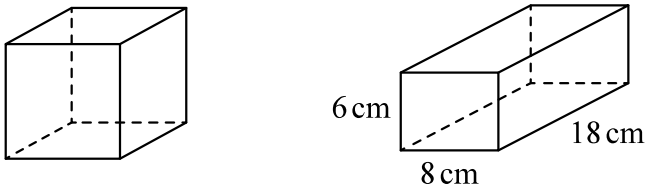
Jeremy has 7 tins of paint.
Each tin of paint covers 5 m^2

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



(Total for Question 29 is 5 marks)

29 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.

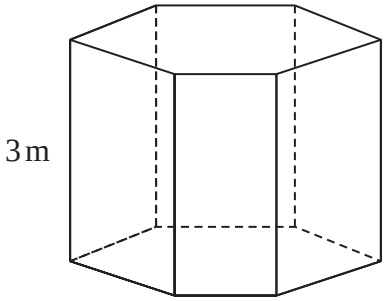
Janet says,

"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 29 is 5 marks)

27 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

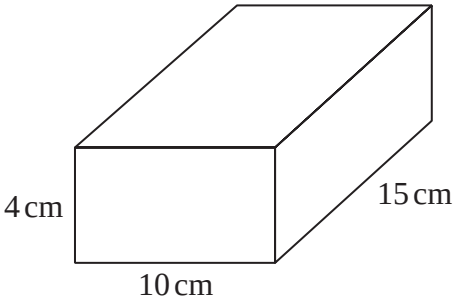
The pressure on the floor due to the prism is 75 newtons/m^2

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

..... newtons

(Total for Question 27 is 3 marks)

11 Here is a cuboid.

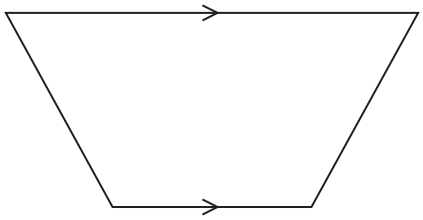


Work out the volume of the cuboid.

.....

(Total for Question 11 is 3 marks)

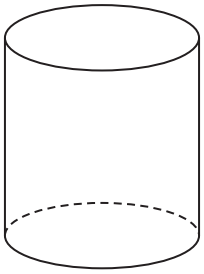
6 (a) Write down the mathematical name of this quadrilateral.



.....

(1)

(b) Write down the mathematical name of this 3-D shape.

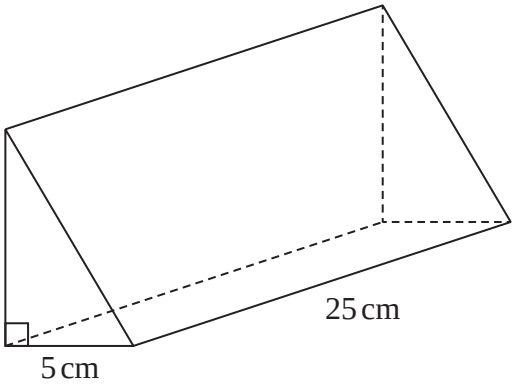


.....

(1)

(Total for Question 6 is 2 marks)

25 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

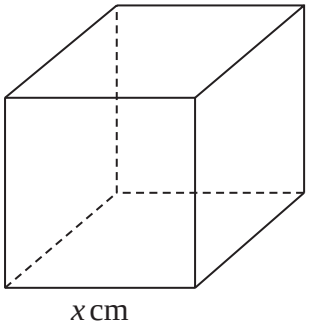
The prism has length 25 cm
The prism has volume 750 cm^3

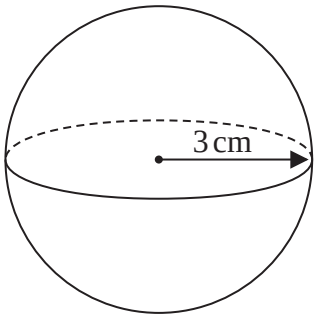
Work out the height of the prism.

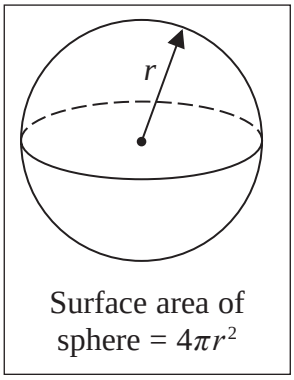
..... cm

(Total for Question 25 is 3 marks)

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





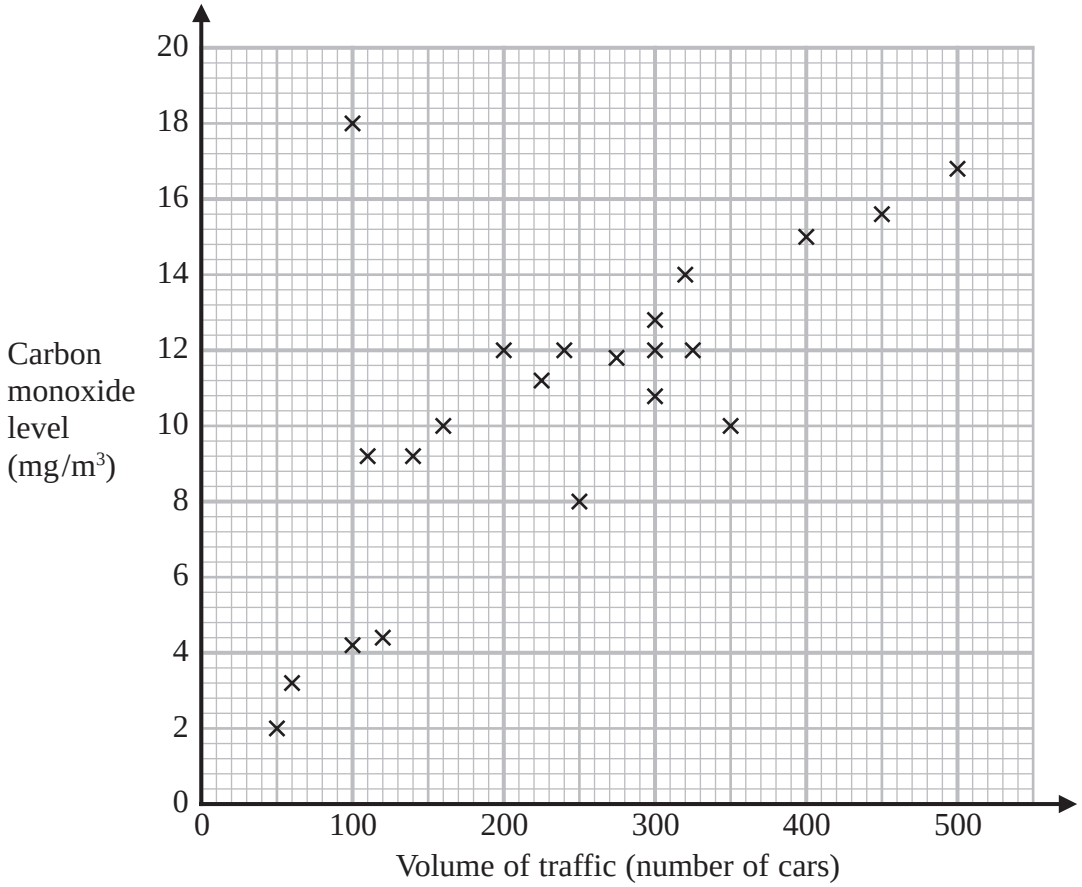


The surface area of the cube is equal to the surface area of the sphere.

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

(Total for Question 26 is 4 marks)

21 The scatter graph shows information about the volume of traffic and the carbon monoxide level at a point on a road each day for 22 days.



One point is an outlier.

(a) Write down the coordinates of this point.

(..... , ...)

(1)

For another day, 370 cars pass the point on the road.

(b) Estimate the carbon monoxide level for this day.

..... mg/m³

(2)

Alfie says,

"Because there is an outlier, there is no correlation."

(c) Is Alfie correct?
You must give a reason for your answer.

.....

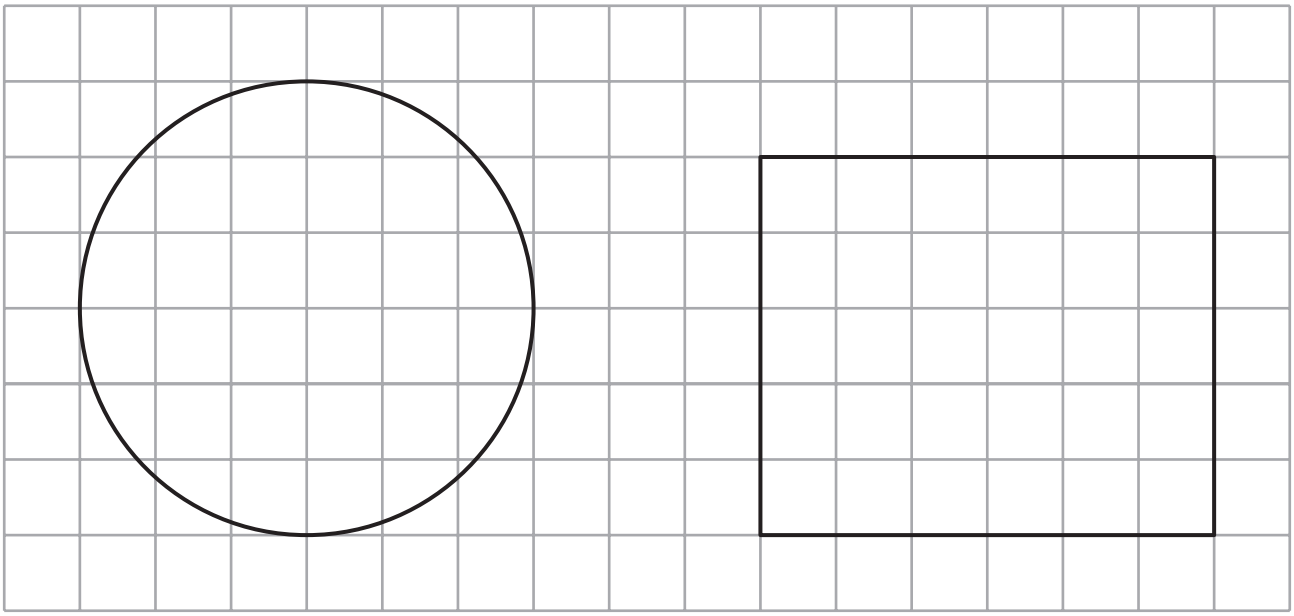
.....

.....

(1)

(Total for Question 21 is 4 marks)

22 The centimetre grid shows the plan and the front elevation of a cylinder.



Plan

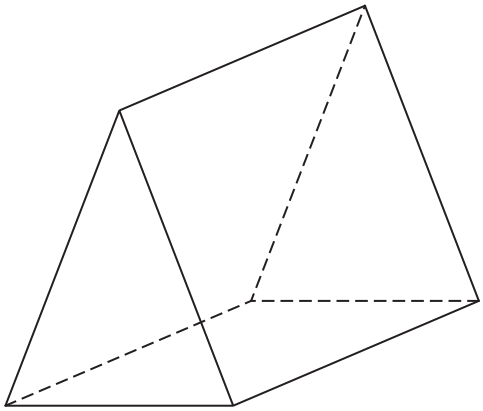
Front elevation

Work out the volume of the cylinder.
Give your answer in terms of π

..... cm^3

(Total for Question 22 is 3 marks)

9 The diagram shows a solid triangular prism.



(a) Write down the number of faces of the prism.

.....

(1)

(b) Write down the number of edges of the prism.

.....

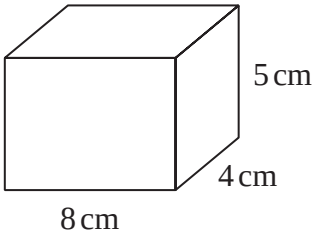
(1)

(Total for Question 9 is 2 marks)

Question 78

November 2022 | 1MA1/3F | Original Q11

11 Here is a cuboid.

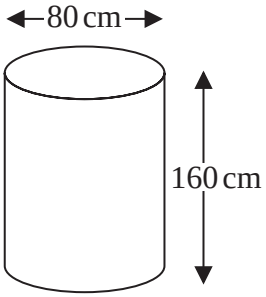


Work out the volume of the cuboid.

..... cm^3

(Total for Question 11 is 2 marks)

24 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 litre = 1000 cm^3

Has Karina enough fertiliser for the 4 tanks?
You must show how you get your answer.

(Total for Question 24 is 4 marks)

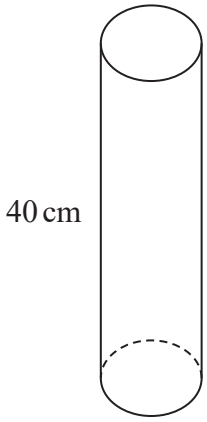
22 A cube has a total surface area of $150\,cm^2$

Work out the volume of the cube.

..... cm^3

(Total for Question 22 is 4 marks)

27 The diagram shows a solid cylinder on a horizontal floor.



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

The cylinder has a

volume of $1200\,\text{cm}^3$
height of 40 cm.

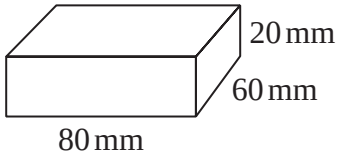
The cylinder exerts a force of 90 newtons on the floor.

Work out the pressure on the floor due to the cylinder.

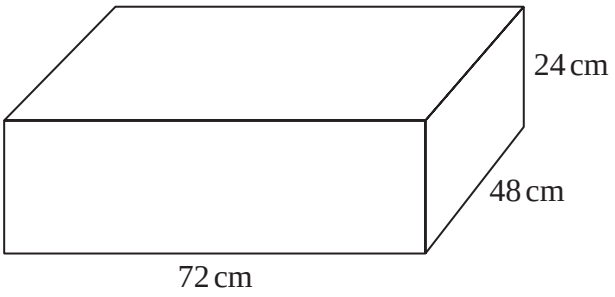
..... newtons/cm^2

(Total for Question 27 is 3 marks)

14 Packets of sweets are put into boxes.



Packet



Box

Each packet is a cuboid, 80 mm by 60 mm by 20 mm.
Each box is a cuboid, 72 cm by 48 cm by 24 cm.

Work out the greatest number of packets that can be put into each box.

.....

(Total for Question 14 is 4 marks)

Question 83

27 A solid cuboid is made of metal.

The metal has a density of $9\,g/cm^3$
The volume of the cuboid is $72\,cm^3$

Work out the mass of the cuboid.

..... g

(Total for Question 27 is 2 marks)

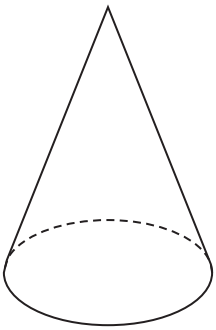
25 A piece of glass has a mass of 27 g and a volume of 10 cm^3

Work out the density of the piece of glass.

..... g/cm^3

(Total for Question 25 is 2 marks)

7 Here is a 3-D shape.



(a) Write down the name of this 3-D shape.

.....

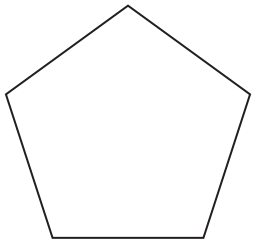
(1)

(b) In the space below, draw a sketch of a triangular prism.

(1)

(Total for Question 7 is 2 marks)

10 Here is a polygon.

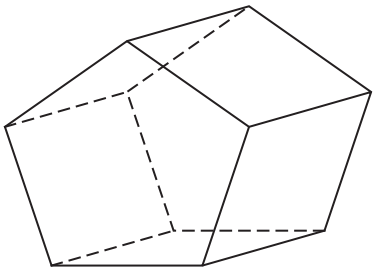


(a) Write down the mathematical name of this polygon.

.....

(1)

Here is a prism.



Each edge of the prism has a length of 7.5 cm.

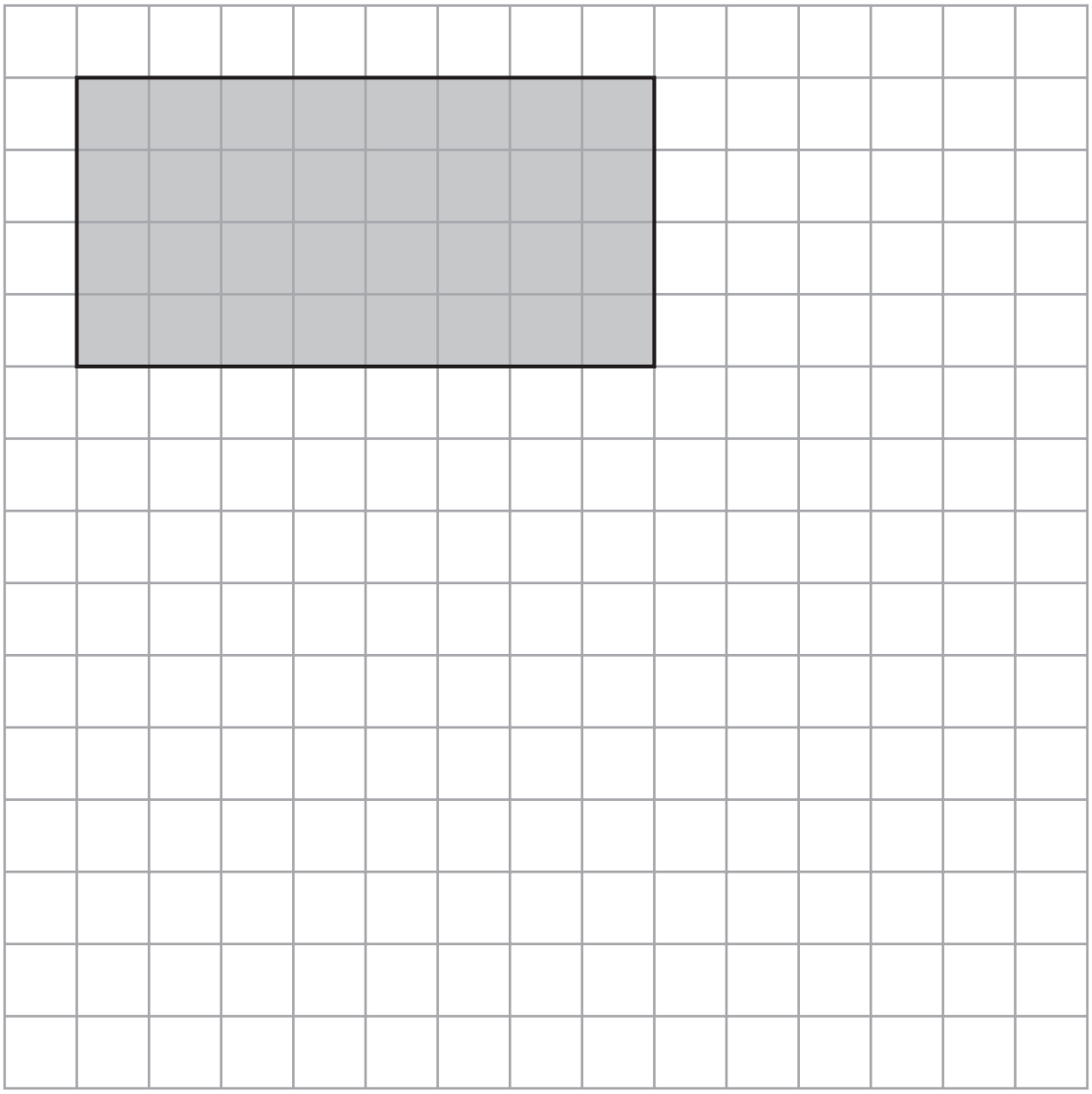
(b) Work out the total length of the edges of the prism.

..... cm

(2)

(Total for Question 10 is 3 marks)

19 The front elevation of a cuboid is shown on the centimetre grid below.

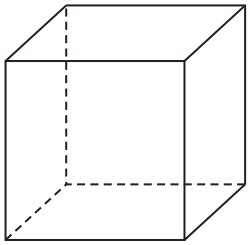


The volume of the cuboid is $224\,cm^3$

On the grid, draw the plan of the cuboid.

(Total for Question 19 is 3 marks)

27 The diagram shows a solid cube placed on a horizontal table.



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

The pressure on the table due to the cube is 3.5 newtons/cm^2
The force exerted by the cube on the table is 504 newtons.

Show that the total surface area of the cube is less than 900 cm^2

(Total for Question 27 is 3 marks)

26 Habib has two identical tins.

He puts 600 grams of flour into one of the tins.
The flour fills the tin completely.
The density of the flour is $0.6\,g/cm^3$

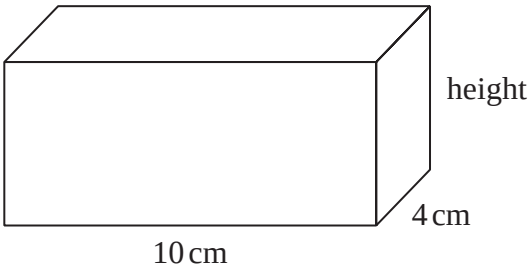
Habib puts 600 grams of salt into the other tin.
The salt does **not** fill the tin completely.
The volume of the space in the tin that is **not** filled with salt is $700\,cm^3$

Work out the density of the salt.
You must show all your working.

..... g/cm^3

(Total for Question 26 is 4 marks)

14 Here is a cuboid of length 10 cm and width 4 cm.



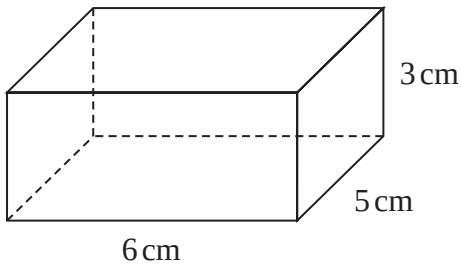
The cuboid has a volume of 200 cm^3

(a) Work out the height of the cuboid.

..... cm

(2)

Here is a different cuboid.



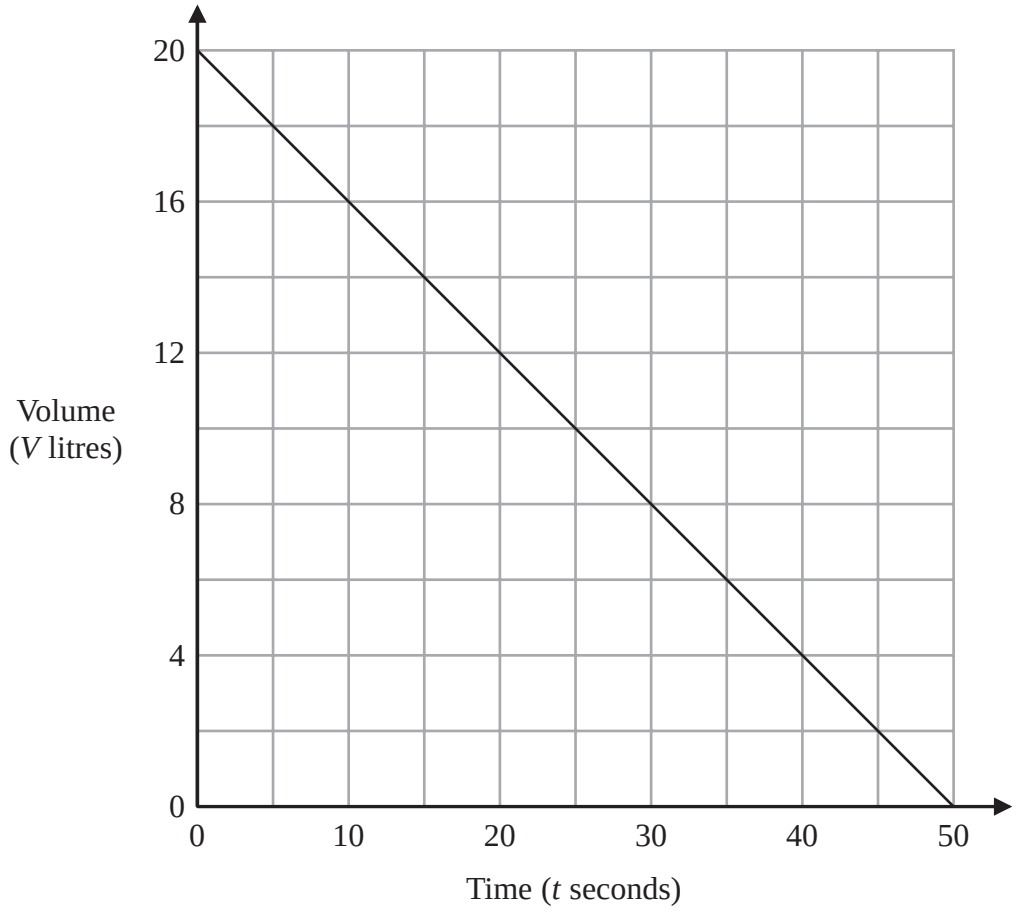
(b) Work out the total surface area of this cuboid.

..... cm^2

(3)

(Total for Question 14 is 5 marks)

24 The graph shows the volume of water, V litres, in a tank at time t seconds.



What does the gradient of this graph represent?

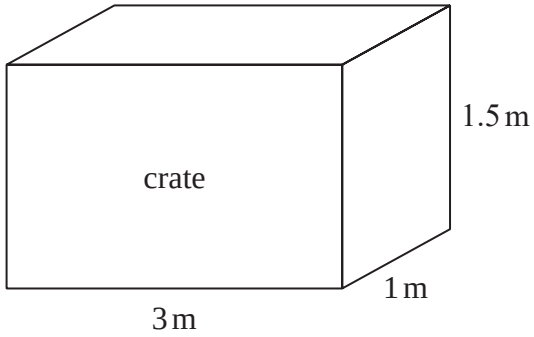
.....

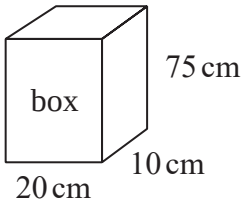
.....

.....

(Total for Question 24 is 1 mark)

13 The diagram shows a crate and a box.





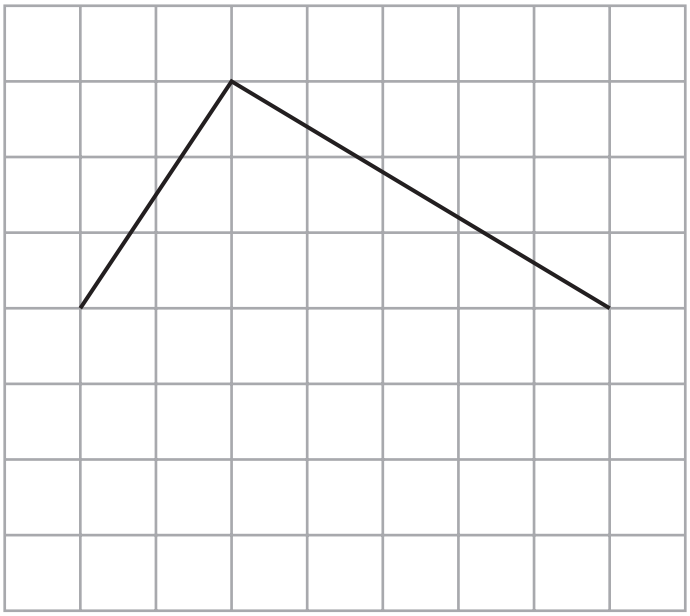
The crate is 3 m by 1 m by 1.5 m.
The crate is completely filled with boxes.
Each box is 20 cm by 10 cm by 75 cm.

Work out the number of boxes in the crate.

.....

(Total for Question 13 is 4 marks)

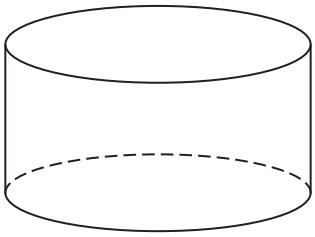
8 The diagram shows two sides of a kite.



(a) On the grid, complete the kite.

(1)

(b) What is the mathematical name of this solid shape?



.....

(1)

(Total for Question 8 is 2 marks)

18 A cube has a volume of $512\,cm^3$

Work out the surface area of the cube.

..... cm^2

(Total for Question 18 is 3 marks)

27 Metal rods are made from steel with density $8\,g/cm^3$
Each metal rod has a volume of $1500\,cm^3$

The maximum mass of metal rods that can be put on a trolley is 300 kg.

Work out the greatest number of metal rods that can be put on the trolley.

.....

(Total for Question 27 is 3 marks)