GCSE · Edexcel · Maths

1 hour 23 questions

Exam Questions

Volume & Surface Area

Volume / Problem Solving with Volumes / Surface Area

Easy (7 questions)	/26
Medium (10 questions)	/30
Hard (6 questions)	/32
Total Marks	**/88**

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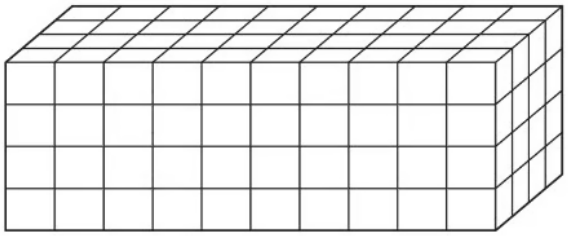
Easy Questions

1 The diagram shows a solid cuboid made of identical cubes.



NOT TO SCALE

Work out the number of cubes in the cuboid.

(1 mark)

2 A closed box in the shape of a cuboid has length 5cm, width 4 cm and height 2cm.

Calculate the volume of the box.

..... cm^3

(2 marks)

3 (a) The length of the edge of a cube is 8 cm.
Calculate the surface area of this cube.

..... cm^2

(2 marks)

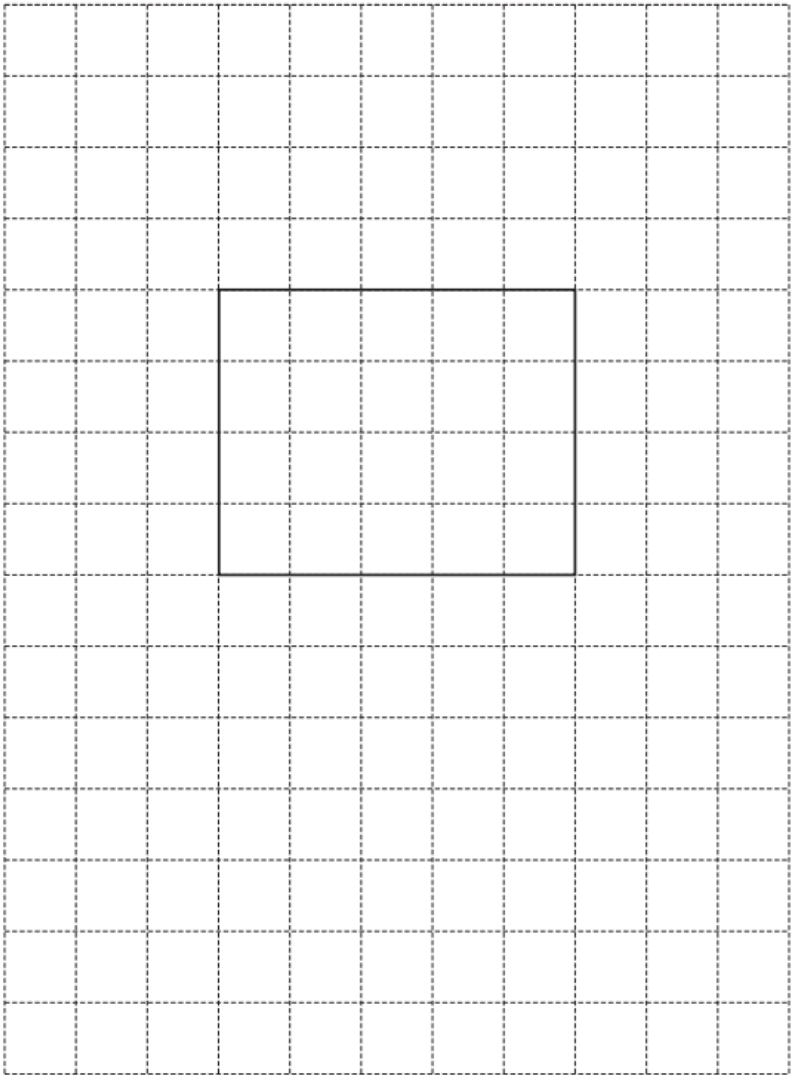
(b) A cuboid measures 5cm by 4 cm by 2cm.

i) Calculate the volume of this cuboid.
Give the units of your answer.

[3]

ii) On the 1 cm^2 grid, draw an accurate net of this cuboid.

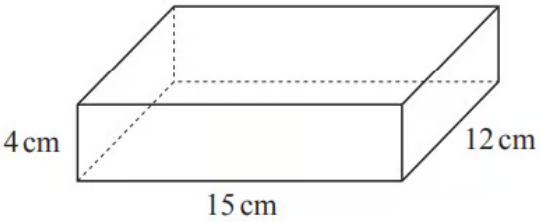
One face has been drawn for you.



[3]

(6 marks)

4



NOT TO SCALE

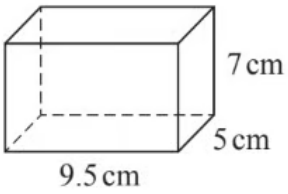
The diagram shows a cuboid measuring 15cm by 12 cm by 4 cm.

Calculate the surface area of the cuboid.

..... cm^2

(3 marks)

5 A cuboid measures 5cm by 7cm by 9.5 cm.



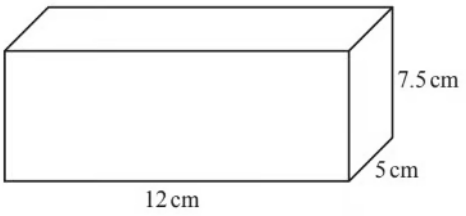
NOT TO SCALE

Work out the surface area of this cuboid.

..... cm^2

(3 marks)

6



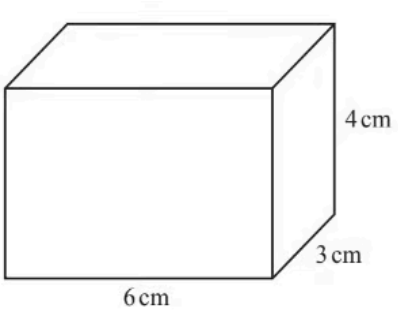
NOT TO SCALE

Calculate the total surface area of the cuboid.

.....cm^2

(3 marks)

7 The diagram shows a cuboid.



NOT TO SCALE

i) Work out the surface area of this cuboid.

..... cm^2 [3]

ii) Work out the volume of this cuboid.

..... cm^3 [2]

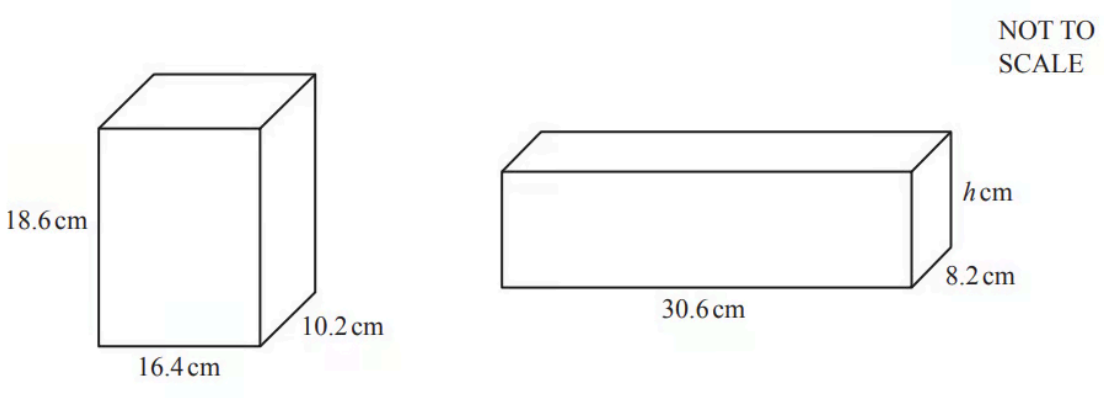
iii) Write down the dimensions of a different cuboid that has the same volume as this cuboid.

..... cm by ..... cm by ..... cm [1]

(6 marks)

Medium Questions

1 These two cuboids have the same volume.

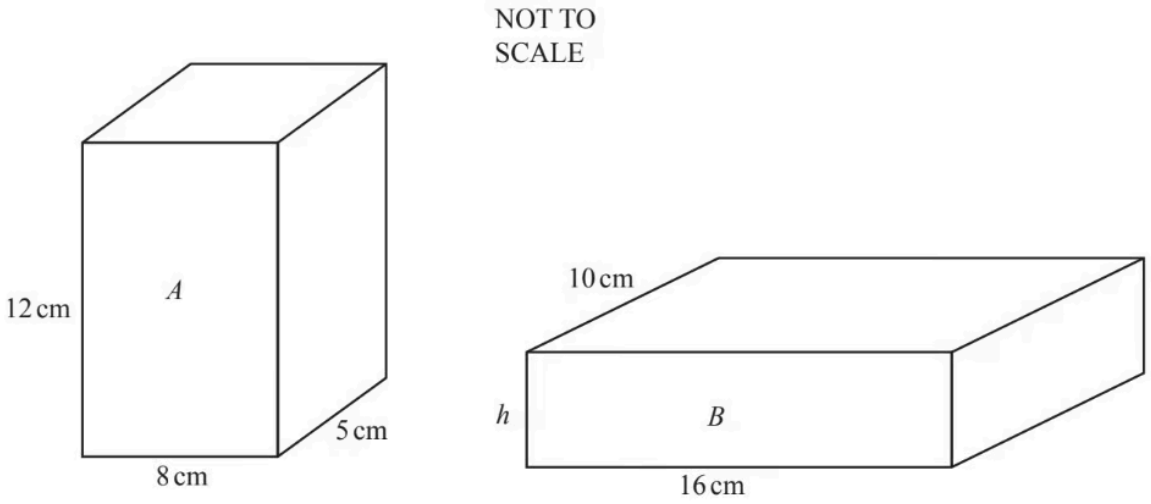


Find the value of h.

h = ...

(3 marks)

2



The diagram shows cuboid A and cuboid B.
Cuboid A has the same volume as cuboid B.

Calculate the height, h, of cuboid B.

h = ... cm

(3 marks)

3 A plant pot is a cylinder with radius 15 cm and height 24 cm.

Calculate the volume of the pot.

..... cm^3

(2 marks)

4 A cone has radius 4.5 cm and height 10.4 cm.

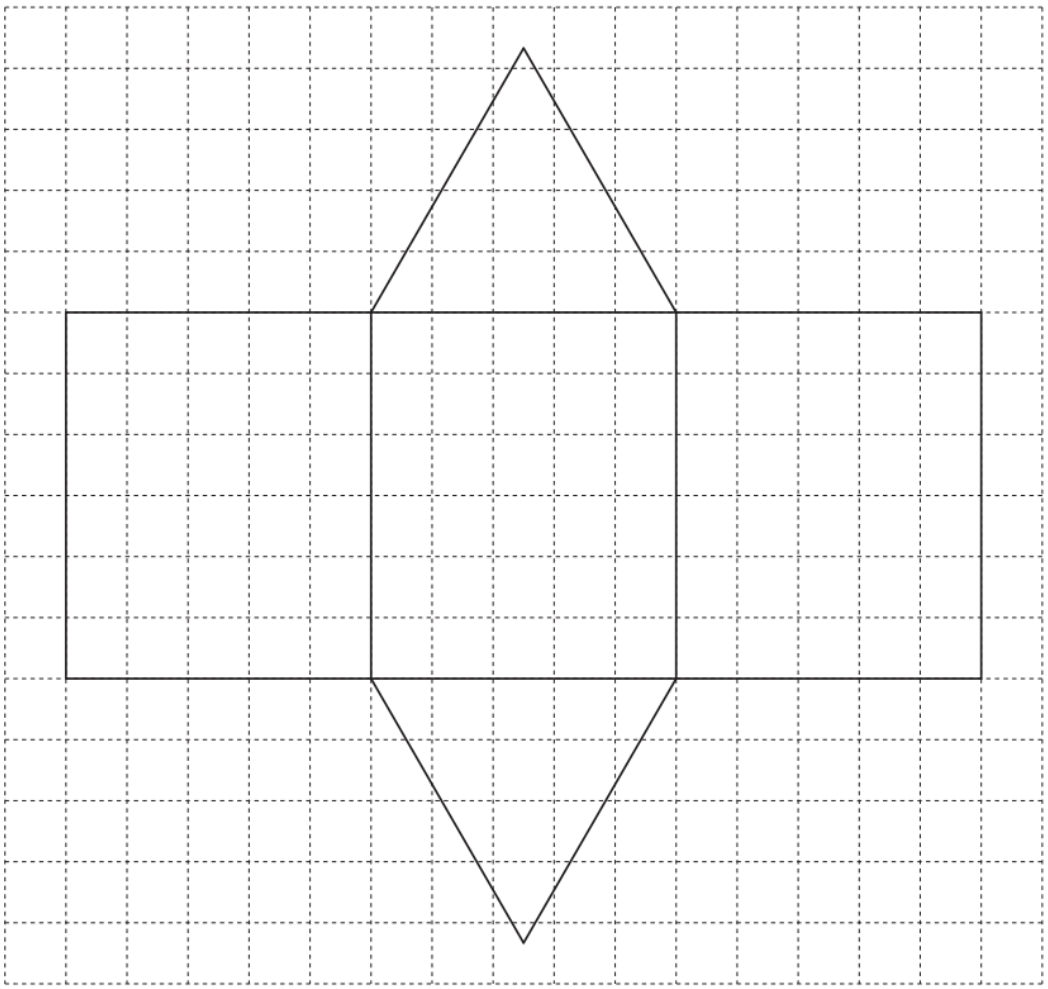
Calculate, in terms of π, the volume of the cone.

[The volume, V, of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$]

..... cm^3

(2 marks)

5 (a) The diagram shows the net of a triangular prism on a $1cm^2$ grid.



Write down the mathematical name for the type of triangle shown on the grid.

(1 mark)

(b) i) Measure the perpendicular height of the triangle.

..... cm [1]

ii) Calculate the area of the triangle.

..... cm^2 [2]

iii) Calculate the volume of the triangular prism.

..... cm^3 [2]

(5 marks)

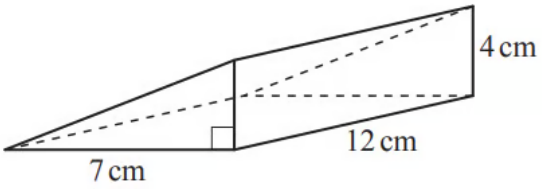
6 (a) A cube has a surface area of 384cm^2.

Find the length of one of its sides.

..... cm

(3 marks)

(b)



NOT TO SCALE

The diagram shows a right-angled triangular prism.

Work out the volume of the prism.

..... cm^3

(3 marks)

7 The radius of a sphere is 5.2cm.

Work out the surface area of this sphere.

[The surface area, A, of a sphere with radius r is $A = 4\pi r^2$.]

..... cm^2

(2 marks)

8 The volume of a cuboid is 180 cm^3.
The base is a square of side length 6cm.

Calculate the height of this cuboid.

..... cm

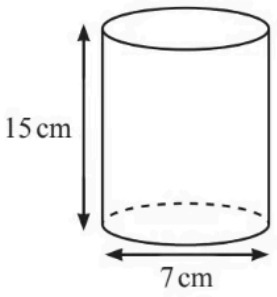
(2 marks)

9 A cylinder has a radius of 6 cm and a height of 17 cm.

Show that the volume of this cylinder is 1923 cm^3, correct to 4 significant figures.

(2 marks)

10



NOT TO SCALE

Another glass is in the shape of a cylinder.
The cylinder has height 15cm and diameter 7cm.

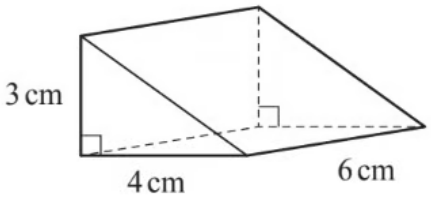
Calculate the volume of the glass.

..... cm^3

(2 marks)

Hard Questions

1 (a)

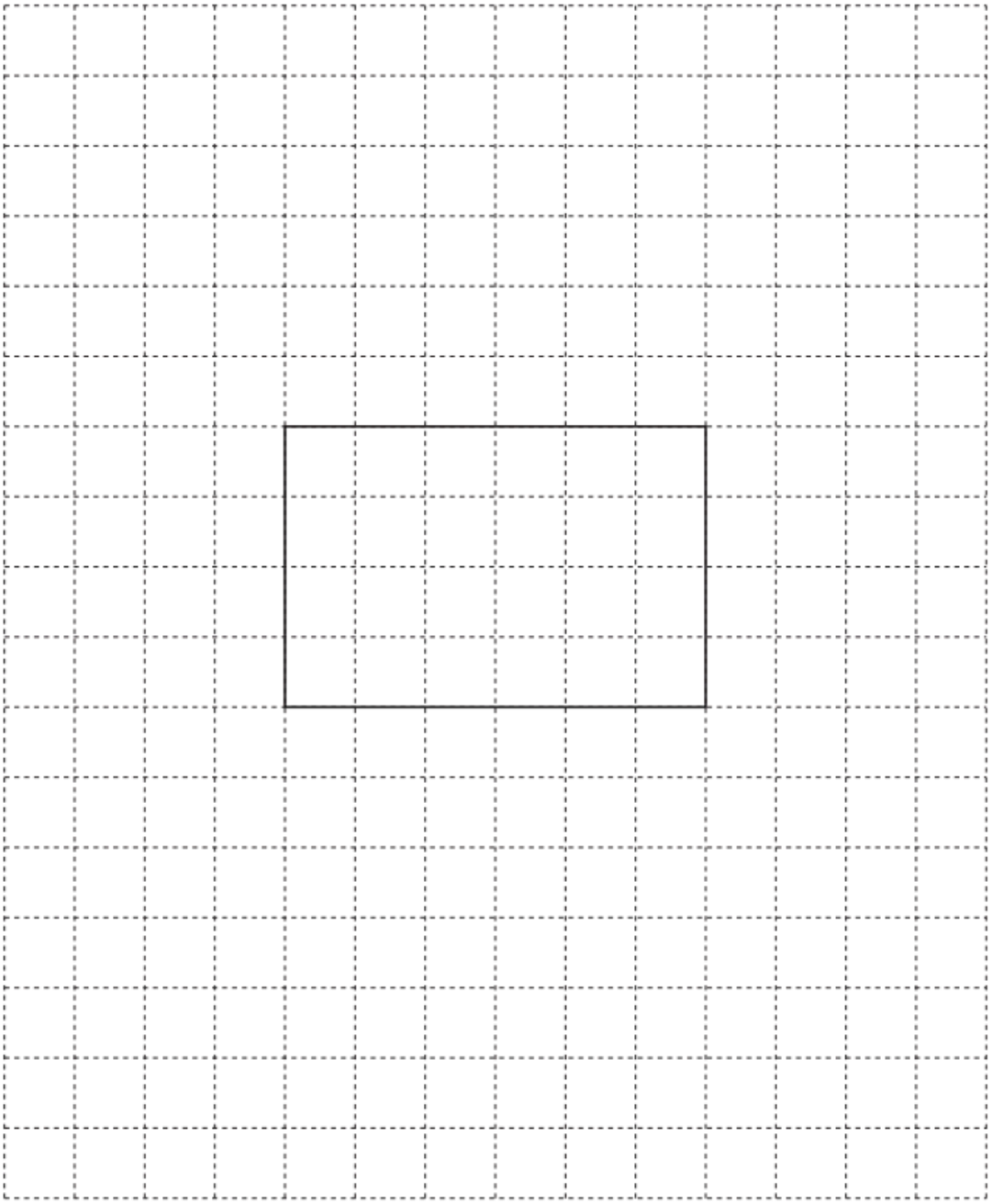


NOT TO SCALE

The diagram shows a right-angled triangular prism.

On the 1 cm^2 grid, complete the net of the prism.

One face has been drawn for you.



(3 marks)

(b) Work out the surface area of the prism.

..... cm^2

(3 marks)

(c) Work out the volume of the prism.

..... cm^3

(2 marks)

2 A solid cylinder has radius 3cm and height 4.5cm.

Calculate the **total** surface area of the cylinder.

..... cm^2

(4 marks)

3 A cube has a volume of $1000cm^3$.

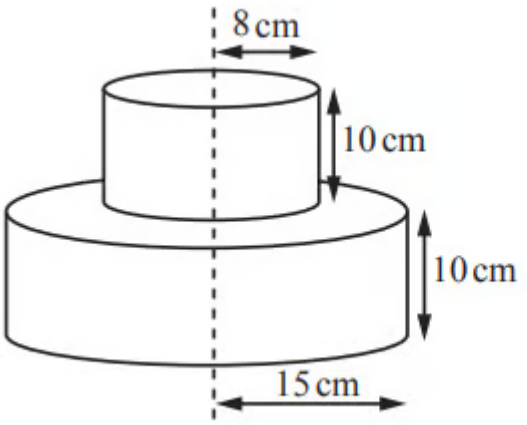
Calculate the surface area of the cube.

..... cm^2

(3 marks)

4 A cake is made by putting a small cylinder of cake on top of a large cylinder of cake.

The radius of the large cylinder is 15cm.
The radius of the small cylinder is 8cm.
The height of each cylinder is 10cm.



NOT TO SCALE

i) Calculate the total volume of the cake.

.....cm^3 [3]

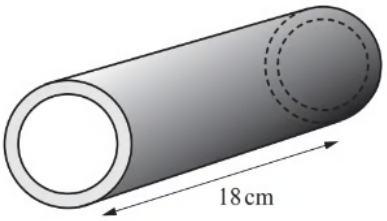
ii) Nora wraps a ribbon around the large cylinder.
The ribbon is 4 cm longer than needed to go all the way around this cylinder.

Calculate the length of this ribbon.

..... cm [3]

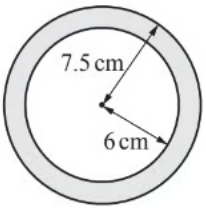
(6 marks)

5 The diagram shows a hollow metal pipe in the shape of a cylinder.



NOT TO SCALE

i) This diagram shows the cross-section of the pipe.



NOT TO SCALE

Work out the shaded area.

.....cm^2 [3]

ii) The cylinder is 18cm long.

Work out the volume of the metal.

.....cm^3 [1]

iii) Work out the curved surface area of the outside of the pipe.

.....cm^2 [3]

(7 marks)

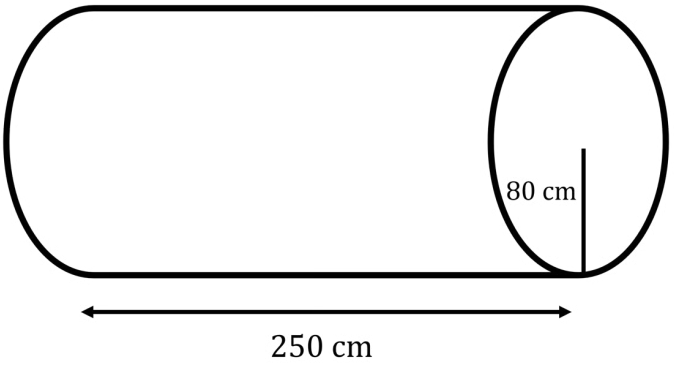
6 A water container is in the shape of a cylinder.

The tank has a radius of 80 cm and a length of 250 cm.

The tank is three quarters full of water.

A bottle holds 500 ml of water.

1 cm^3 = 1 ml



What is the greatest number of bottles that can be completely filled with water from the tank?

(4 marks)