1 A box is to be filled with cartons.

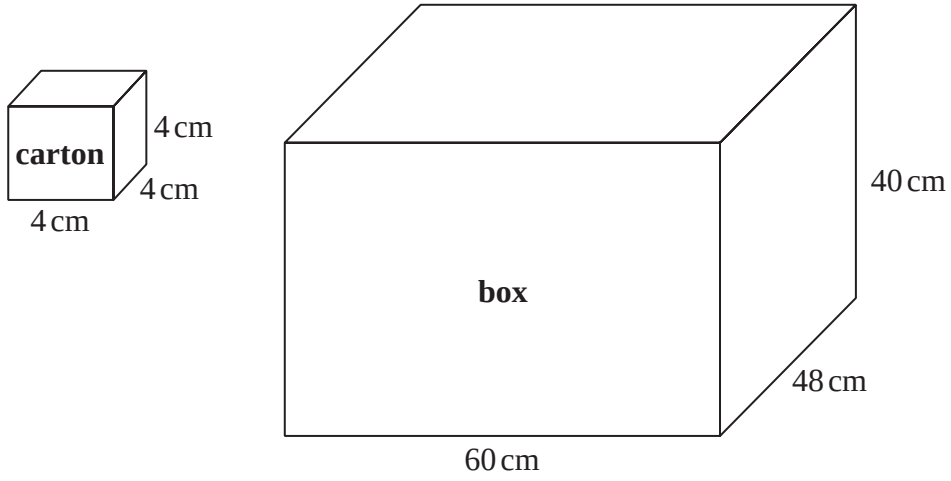


Diagram **NOT** accurately drawn

Each carton is a cube that measures 4 cm by 4 cm by 4 cm.
The box is a cuboid that measures 60 cm by 48 cm by 40 cm.

Work out the number of cartons that can completely fill the box.

.....

(Total for Question 1 is 3 marks)

2 The diagram shows a solid cylinder with radius 3 m.

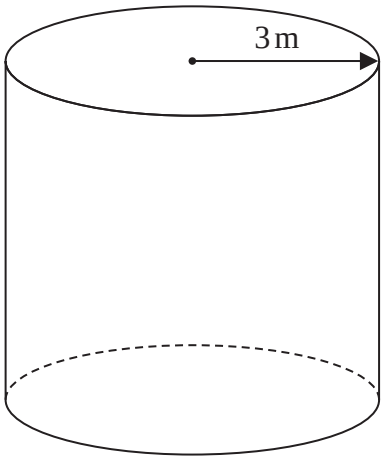


Diagram **NOT** accurately drawn

The volume of the cylinder is 72π m^3

Calculate the **total** surface area of the cylinder.
Give your answer correct to 3 significant figures.

.....m^2

(Total for Question 2 is 5 marks)

3 Here is a triangular prism.

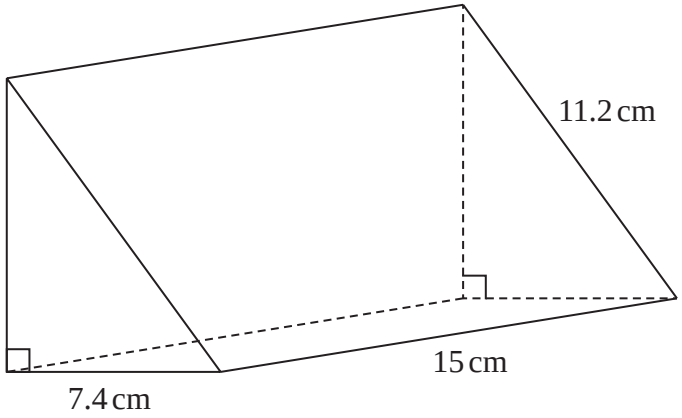


Diagram **NOT** accurately drawn

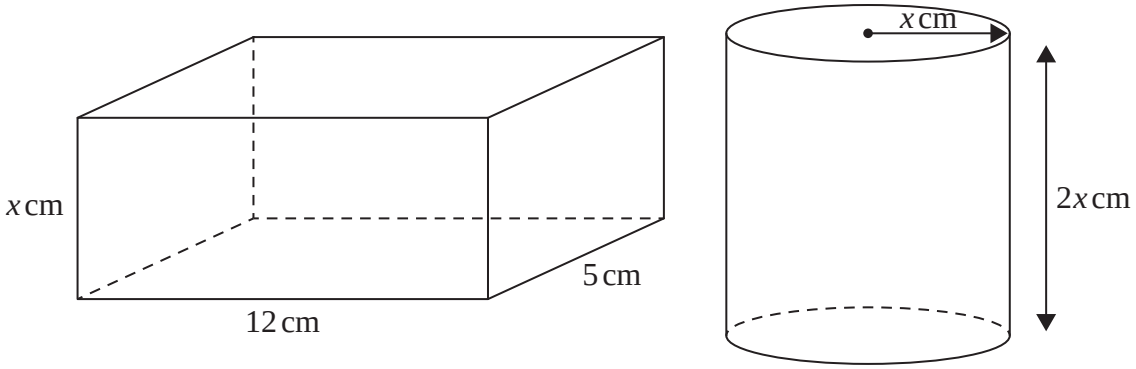
Work out the volume of the prism.
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 3 is 5 marks)

4 The diagram shows a cuboid and a cylinder.

Diagram **NOT** accurately drawn



The dimensions of the cuboid are x cm by 12 cm by 5 cm.
The volume of the cuboid is 270 cm^3

The radius of the cylinder is x cm.
The height of the cylinder is $2x$ cm.

(a) Work out the volume of the cylinder.
Give your answer correct to the nearest whole number.

..... cm^3

(3)

(b) Change 1 m^3 to cm^3

..... cm^3

(1)

(Total for Question 4 is 4 marks)

5 The diagram shows a container for water in the shape of a prism.

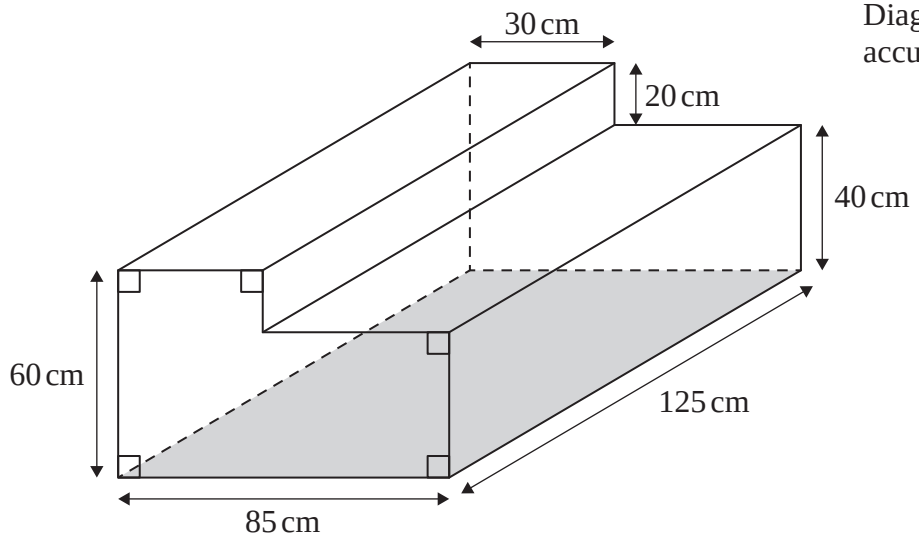


Diagram **NOT** accurately drawn

The rectangular base of the prism, shown shaded in the diagram, is horizontal.
The container is completely full of water.

Tuah is going to use a pump to empty the water from the container so that the volume of water in the container decreases at a constant rate.

The pump starts to empty water from the container at 10 30 and at 12 00 the water level in the container has dropped by 20 cm.

Find the time at which all the water has been pumped out of the container.

.....

(Total for Question 5 is 4 marks)

6 The diagram shows a cuboid.

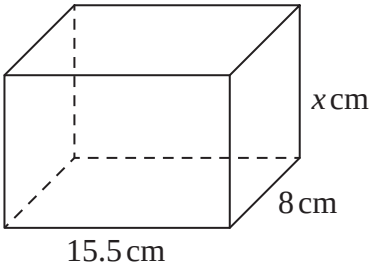


Diagram **NOT** accurately drawn

The volume of the cuboid is 806 cm^3

(b) Work out the value of x.

x = ...

(3)

(Total for Question 6 is 3 marks)

7 The diagram shows a solid wooden cuboid.

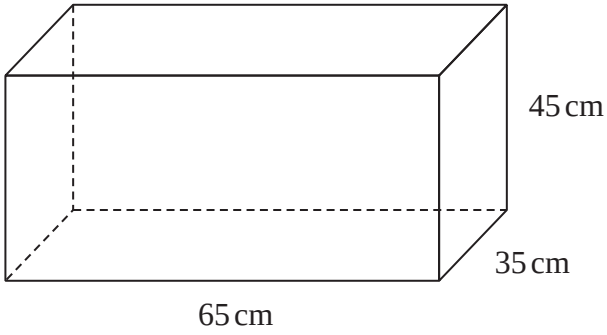


Diagram **NOT** accurately drawn

The cuboid measures 65 cm by 35 cm by 45 cm.

A machine cuts the cuboid to make cubes.
Each cube has edges of length 5 cm.

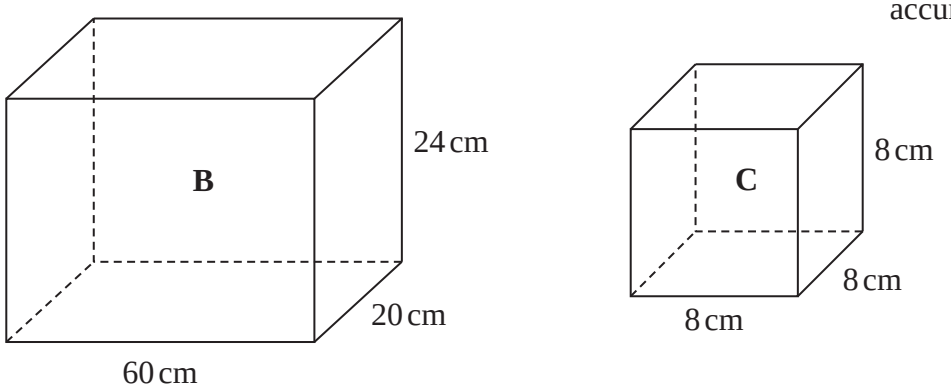
Work out the maximum number of cubes that can be made from the cuboid.

.....

(Total for Question 7 is 3 marks)

8 The diagram shows a box **B** and a carton **C**

Diagram **NOT** accurately drawn



The box **B** is in the shape of a cuboid.
Each carton **C** is in the shape of an 8 cm cube.

Martha is going to put as many of the cartons as possible into the box.
She has enough cartons to do this.

Martha will then fill the remaining space inside the box with packing material.

Work out the volume of the space inside the box that Martha will fill with packing material.

..... cm^3

(Total for Question 8 is 5 marks)

9

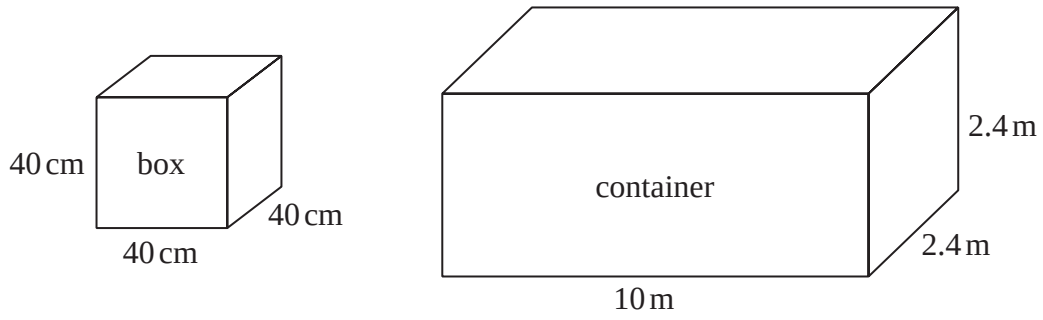


Diagram **NOT** accurately drawn

Tom puts boxes into a shipping container.

The container is a cuboid 10 metres by 2.4 metres by 2.4 metres.
Each box is a cube of side 40 centimetres.

Work out the greatest number of these boxes that Tom can put into the container.

.....

(Total for Question 9 is 3 marks)

10 The diagram shows a solid triangular prism.

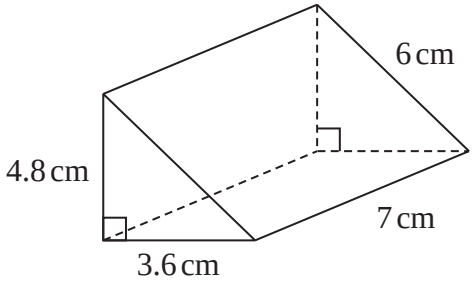


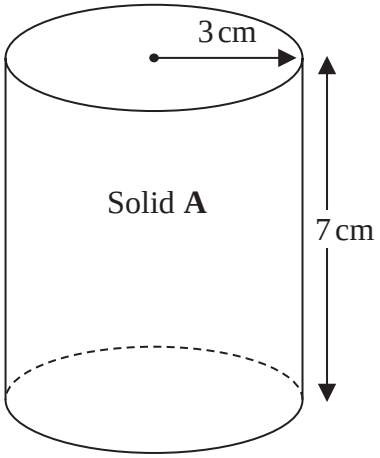
Diagram **NOT** accurately drawn

Work out the **total** surface area of the triangular prism.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 10 is 3 marks)

11 The diagram shows two solids, **A** and **B**, made from two different metals.



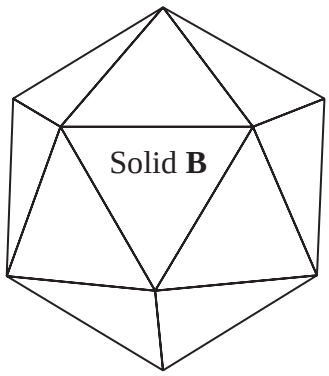


Diagram **NOT** accurately drawn

Solid **A** is in the shape of a cylinder with radius 3 cm and height 7 cm
Solid **A** has a mass of 2000 g

Solid **B** has a mass of 3375 g
Solid **B** has a volume of 450 cm^3

All of the metal from Solid **A** and Solid **B** is melted down to make a uniform Solid **C**

Given that there is no change to mass or volume during this process

work out the density of Solid **C**
Give your answer correct to one decimal place.

..... g/cm^3

(Total for Question 11 is 3 marks)

12 The diagram shows a solid prism.

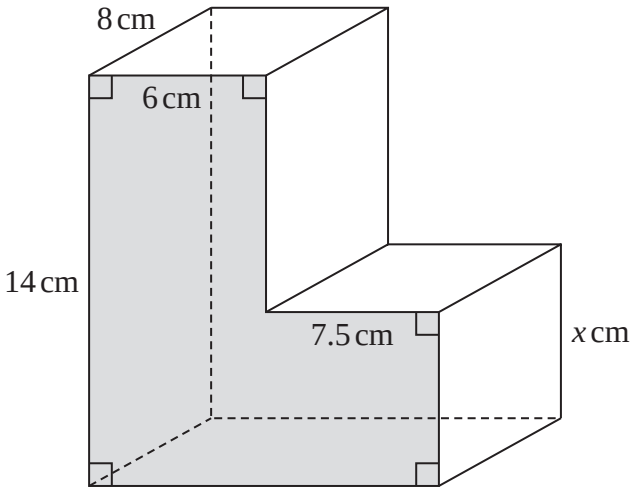


Diagram **NOT** accurately drawn

The cross section of the prism is shown shaded.

The volume of the prism is 924 cm^3

Work out the value of x

x = ...

(Total for Question 12 is 4 marks)

13 The diagram shows a rectangular sheet of metal *ABCD*

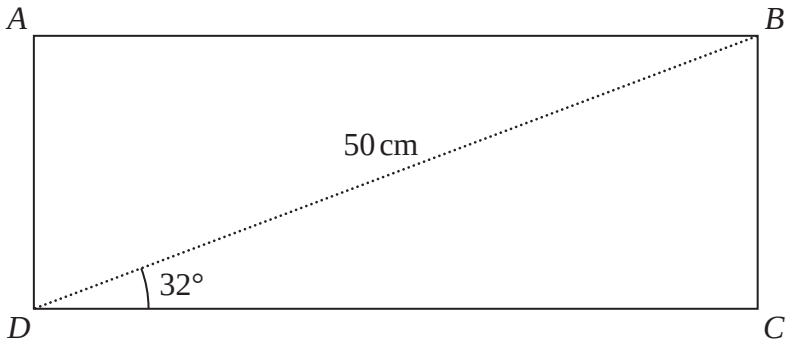


Diagram **NOT** accurately drawn

BD = 50 cm and angle *BDC* = 32°

Nasser joins side *AD* to side *BC* to form a cylinder.

BC is the height of the cylinder.
DC is the circumference of the cross section of the cylinder.

Work out the volume, in cm^3, of the cylinder.
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 13 is 6 marks)

14 The diagram shows a cuboid.

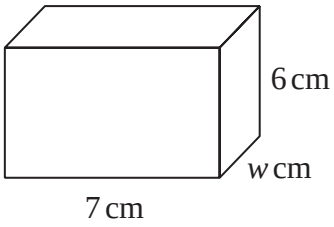


Diagram **NOT** accurately drawn

The volume of the cuboid is $231\,cm^3$

(b) Calculate the value of w

w = ...

(2)

(Total for Question 14 is 2 marks)