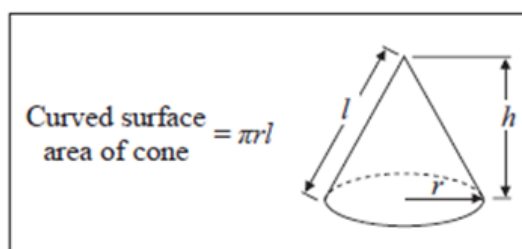
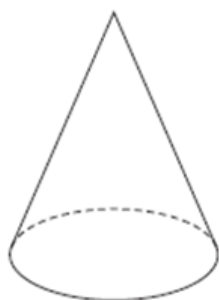


QUESTION 1

The diagram shows a cone.



The radius of the base of the cone is $\frac{5}{12}$ of the height of the cone.

The total surface area of the cone is $90\pi \text{ cm}^2$

Work out the height of the cone.

..... cm

(4 marks)

QUESTION 2

A solid cuboid has a volume of 84 cm^3

The cuboid has a total surface area of 118 cm^2

The length of the cuboid is 6 cm.

The width of the cuboid is greater than the height of the cuboid.

Work out the height of the cuboid.

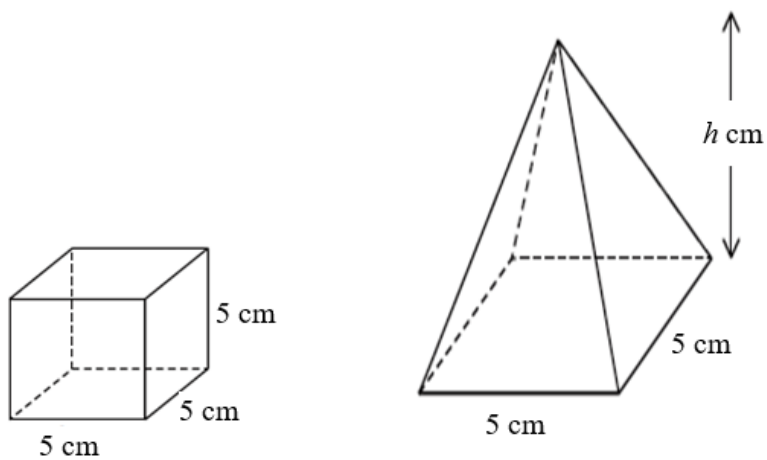
You must show all your working.

..... cm

(5 marks)

QUESTION 3

The diagram shows a cube and a square-based pyramid.

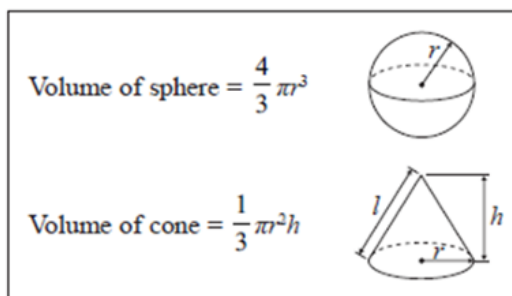


The volume of the cube is equal to the volume of the pyramid.

Work out the perpendicular height, h cm, of the pyramid.

..... cm

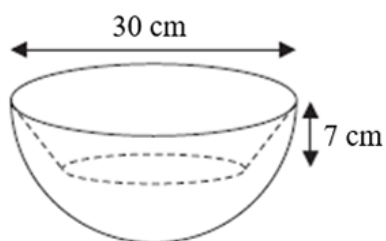
(3 marks)

Question 4

The diagram above shows a frustum **F** of a cone.

The frustum is made by removing a cone with height 14 cm from a solid cone with height 21 cm and base diameter 30 cm.

The solid **S** is made by removing **F** from a solid hemisphere as shown in the diagram below.



The hemisphere has diameter 30 cm.

Calculate the volume of solid **S**.

Give your answer correct to 4 significant figures.

.....**(4)**

Question 5

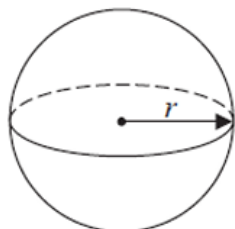
A cube has a total volume of 64 cm^3

Work out the surface of the cube.

.....(4)

Question 6

Here is a sphere.



Surface area of sphere = $4\pi r^2$

$\frac{5}{8}$ of the surface area of this sphere is $375\pi \text{ cm}^2$

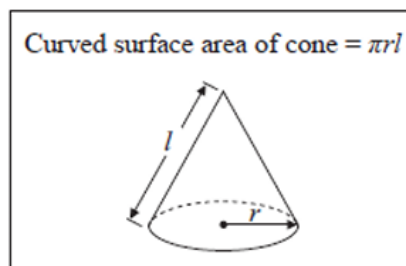
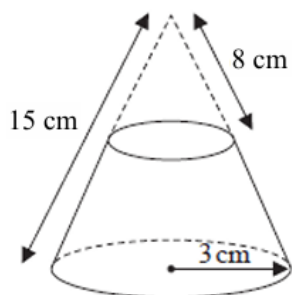
Find the diameter of the sphere.

Give your answer in the form $a\sqrt{b}$ where both a and b are integers.

..... cm (4)

Question 7

A solid frustum is made by removing a small cone from a large cone as shown in the diagram.



The slant height of the small cone is 8 cm.

The slant height of the large cone is 15 cm.

The radius of the base of the large cone is 3 cm.

Calculate the total surface area of the frustum.

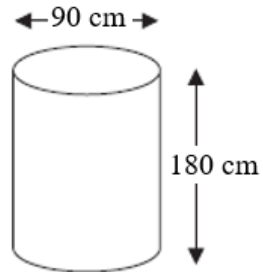
Give your answer correct to 3 significant figures.

..... cm² **(5)**

Question 8

Catriona has 6 tanks in her laboratory.

Each tank is a cylinder with diameter 90 cm and height 180 cm.



The 6 tanks are to be filled completely with a mixture of acid and water.

The acid has to be mixed with water in the ratio 1 : 50 by volume.

Catriona has 60 litres of acid.

1 litre = 1000 cm³

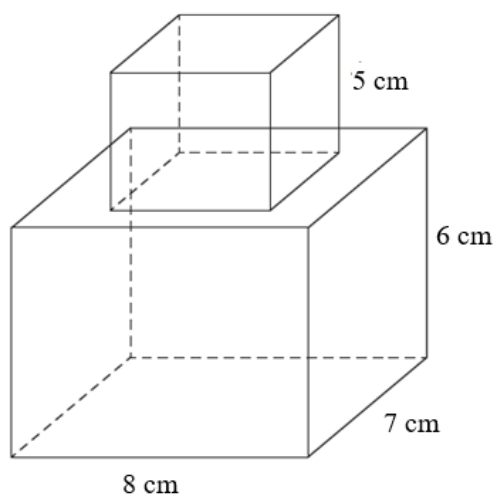
Has Catriona enough acid for the 6 tanks?

You must show how you get your answer.

(4 marks)

Question 9

A cube is placed on top of a cuboid, as shown in the diagram, to form a solid.



The cube has edges of length 5 cm.

The cuboid has dimensions 8 cm by 7 cm by 6 cm.

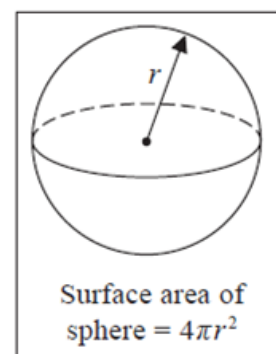
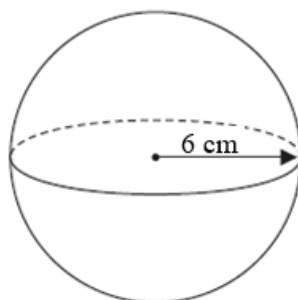
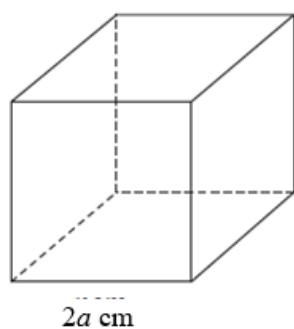
Work out the total surface area of the solid.

..... cm²

(3 marks)

Question 10

The diagram shows a cube with edges of length $2a$ cm and a sphere of radius 6 cm.



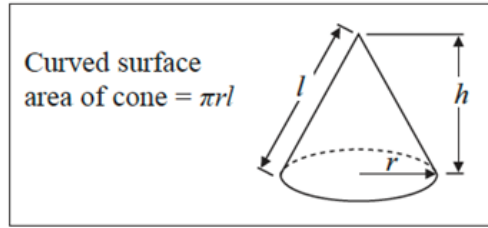
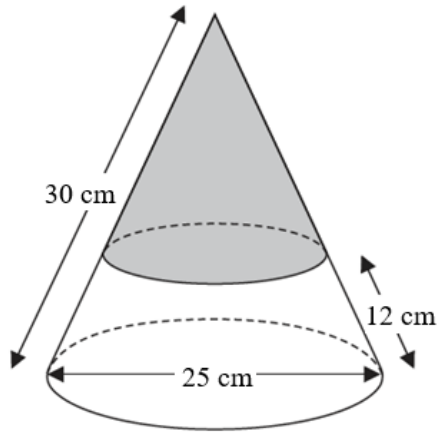
The surface area of the cube is equal to the surface area of the sphere.

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

(4 marks)

QUESTION 11

The diagram represents a solid cone.



The cone has a base diameter of 25 cm and a slant height of 30 cm.

A circle is drawn around the surface of the cone at a slant height of 12 cm above the base. The curved surface of the cone above the circle is painted grey.

Work out the area of the curved surface of the cone that is **not** painted grey.

Give your answer as a multiple of π

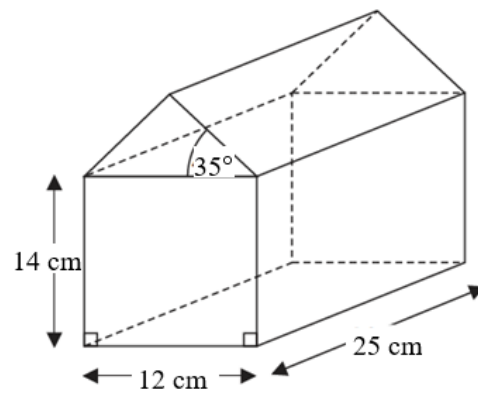
You must show all your working.

..... cm²

(4)

QUESTION 12

The diagram shows a prism.



The cross section of the prism has exactly one line of symmetry.

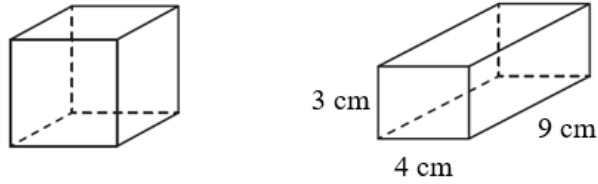
Work out the volume of the prism.

Give your answer correct to 3 significant figures.

-----**(5)**

Question 13

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.

Amy says,

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

Is Amy correct?

You must show how you get your answer.

(5)

