1
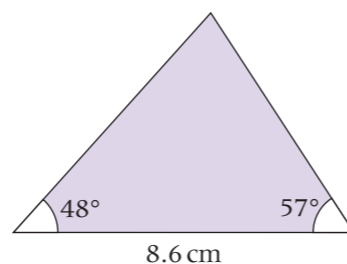

Diagram **NOT** accurately drawn

48°   57°

8.6 cm

Calculate the area of the triangle.
Give your answer correct to 3 significant figures.

.... cm^2

(Total 4 marks)

2

C

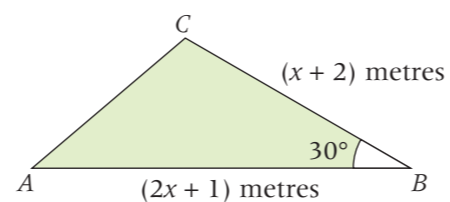$(x + 2)$ metres

30°

A $(2x + 1)$ metres B

Diagram **NOT** accurately drawn

$AB = (2x + 1)$ metres.
$BC = (x + 2)$ metres.
Angle $ABC = 30°$.

The area of the triangle ABC is 3 m^2.
Calculate the value of x.

Give your answer correct to 3 significant figures.

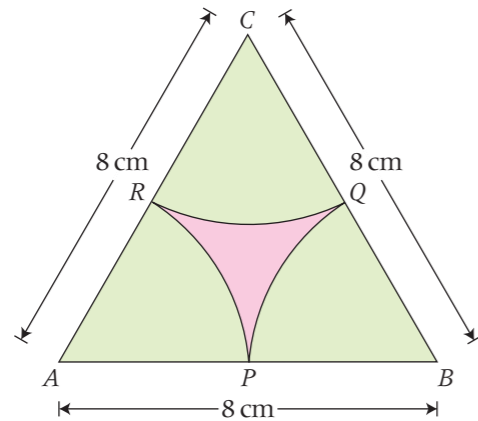........................

(Total 5 marks)

3

Diagram **NOT** accurately drawn

ABC is an equilateral triangle of side 8 cm.
With the vertices *A*, *B* and *C* as centres, arcs of radius 4 cm are drawn to cut the sides of the triangle at *P*, *Q* and *R*.
The shape formed by the arcs is shaded in pink.

a Calculate the perimeter of the shaded shape.
Give your answer correct to 1 decimal place.

.... cm

(3)

b Calculate the area of the pink shaded shape.
Give your answer correct to 1 decimal place.

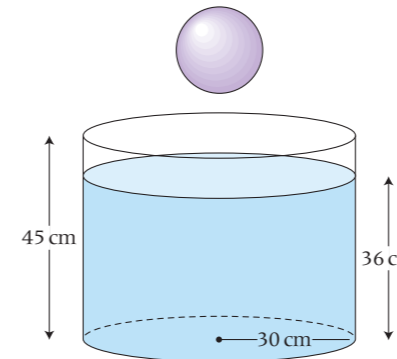.................. cm²

(4)

(Total 7 marks)

4

Diagram **NOT** accurately drawn

A cylindrical tank has a radius of 30 cm and a height of 45 cm.
The tank contains water to a depth of 36 cm.

A metal sphere is dropped into the water and is completely covered.
The water level rises by 5 cm.

Calculate the radius of the sphere.

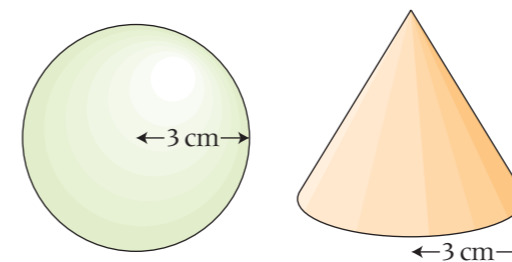.................. cm

(Total 5 marks)

5

Diagram **NOT** accurately drawn

The radius of a sphere is 3 cm.
The radius of the base of a cone is also 3 cm.
The volume of the sphere is 3 times the volume of the cone.

Work out the curved surface area of the cone.
Give your answer as a multiple of π.

.... cm²

(Total 7 marks)

6 The diagram shows a sector of a circle with a radius of *x* cm and centre *O*.
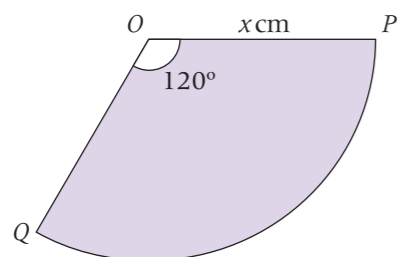*PQ* is an arc of the circle.
Angle *POQ* = 120°.

Diagram **NOT**
accurately drawn

O *x* cm *P*

120°

Q

a Write down an expression in terms of π and *x* for

i the area of this sector,

....

ii the arc length of this sector.

.... (2)

The sector is the net of the curved surface of this cone.
Arc *PQ* forms the circumference of the circle that makes the base
of the cone.

h cm   *x* cm
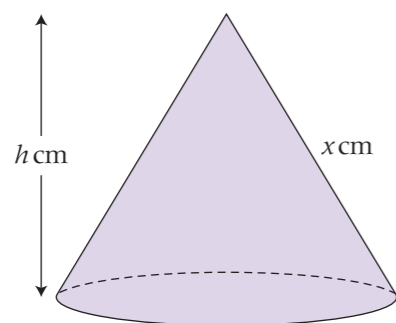
The curved surface area of the cone is *A* cm².
The volume of the cone is *V* cm³.
The height of the cone is *h* cm.

Given that *V* = 3*A*,

b find the value of *h*.

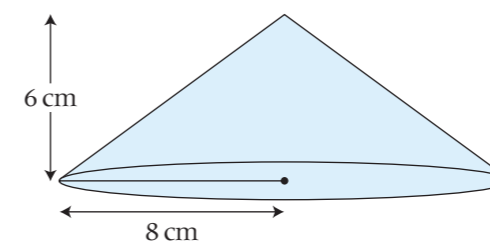............................... (3)

(Total 5 marks)

7

Diagram **NOT**
accurately drawn

6 cm

8 cm

The diagram shows a solid wooden cone.
The height of the cone is 6 cm.
The base radius of the cone is 8 cm.

a Find the volume of the cone.
Give your answer as a multiple of π.

.... cm³

(2)

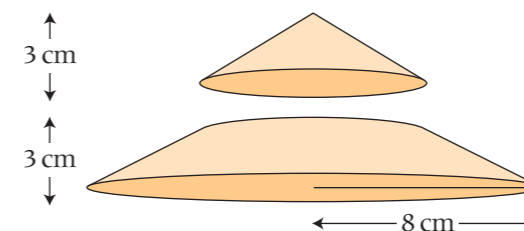The cone is cut once to form a smaller cone and a frustum.

3 cm

3 cm

Diagram **NOT**
accurately drawn

8 cm

The height of the smaller cone and the height of the frustum are both 3 cm.
The base radius of the smaller cone is 4 cm.

b Show that the volume of the frustum is 112π cm³.
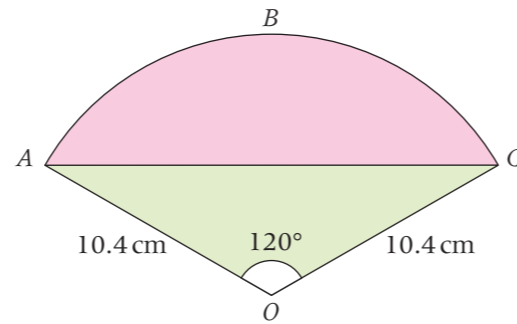
(2)

(Total 4 marks)

8

Diagram **NOT** accurately drawn

The diagram shows a sector *OABC* of a circle with centre *O*.
OA = *OC* = 10.4 cm.
Angle *AOC* = 120°.

a Calculate the length of the arc *ABC* of the sector.
   Give your answer correct to 3 significant figures.

.... cm

(3)

b Calculate the area of the shaded segment *ABC*.
   Give your answer correct to 3 significant figures.

.... cm²

(4)

(Total 7 marks)