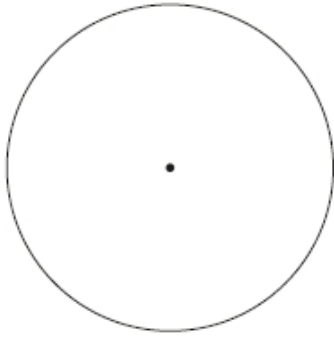


Y10 Foundation

- Area and volume of shapes involving circles

Q1.

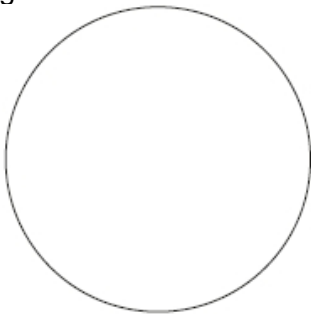


(a) On the diagram above, draw a diameter of the circle.

(1)

(b) On the diagram below, draw a segment of the circle.

Shade the segment.



(1)

(Total for Question is 2 marks)

Q2.

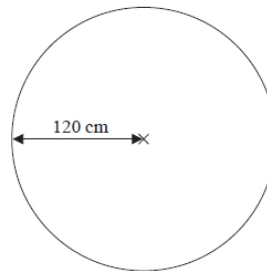
A circle has a diameter of 140 cm.
Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

..... cm
(Total for Question is 2 marks)

Q3.

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

Diagram NOT accurately drawn



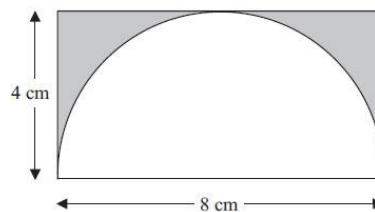
The circle has a radius of 120 cm.
Mark wants to put 20 fish into the pond.
There needs to be a surface area of 1800 cm² for each fish.
Show that the surface of the pond is large enough for Mark to put 20 fish into the pond.

(Total for Question is 4 marks)

Q4.

The diagram shows a semicircle drawn inside a rectangle.

Diagram NOT accurately drawn



The semicircle has a diameter of 8 cm.
The rectangle is 8 cm by 4 cm.
Work out the area of the shaded region.
Give your answer correct to 3 significant figures.

..... cm²
(Total for Question is 4 marks)

Q5.

Saphia is organising a conference.
People at the conference will sit at circular tables.



Diagram NOT accurately drawn

Each table has a diameter of 140 cm.
Each person needs 60 cm around the circumference of the table.
There are 12 of these tables in the conference room.
A total of 90 people will be at the conference.
Are there enough tables in the conference room?

(Total for Question is 4 marks)

Q6.

Mr Weaver's garden is in the shape of a rectangle. In the garden there is a patio in the shape of a rectangle and two ponds in the shape of circles with diameter 3.8 m. The rest of the garden is grass.

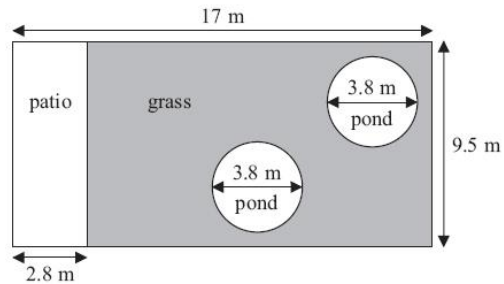


Diagram NOT accurately drawn

Mr Weaver is going to spread fertiliser over all the grass.
One box of fertiliser will cover 25 m² of grass.
How many boxes of fertiliser does Mr Weaver need?
You must show your working.

(Total for Question is 5 marks)

Q7.

The diagram shows a plan of Brian's lawn.

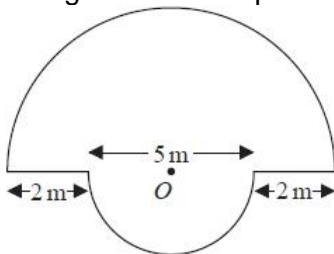


Diagram NOT accurately drawn

The edge of the lawn consists of two semicircles and two straight lines.
Each semicircle has centre O.
The diameters of the semicircles are 9 m and 5 m.
Brian is going to put lawn edging around the edge of the lawn.
Lawn edging is sold in 2.4 metre rolls.

Lawn edging
£3.99 per roll
or
3 rolls for £10

Brian has £35
Has Brian got enough money to buy all the rolls of lawn edging he needs?
You must show all your working.

(Total for Question is 5 marks)

Q8.

The diagram shows a large tin of pet food in the shape of a cylinder.

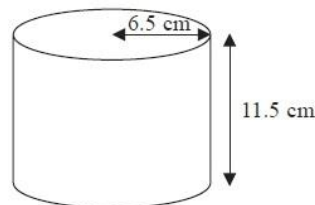


Diagram NOT accurately drawn

The large tin has a radius of 6.5 cm and a height of 11.5 cm.
A pet food company wants to make a new size of tin.
The new tin will have a radius of 5.8 cm.
It will have the same volume as the large tin.
Calculate the height of the new tin.
Give your answer correct to one decimal place.

..... cm
(Total for Question is 3 marks)

Q9.

The diagram shows a container used to store oil.

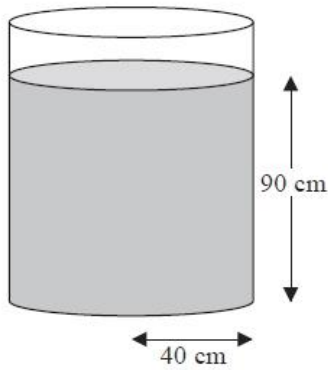


Diagram NOT accurately drawn

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 cm³.

Work out the new height of the oil in the container.

Give your answer correct to one decimal place.

..... cm

(Total for Question is 4 marks)

Q10.

Here is a vase in the shape of a cylinder.

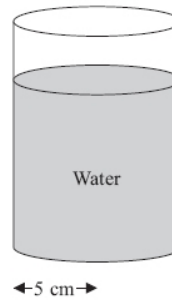


Diagram NOT accurately drawn

The vase has a radius of 5 cm.

There are 1000 cm³ of water in the vase.

Work out the depth of the water in the vase.

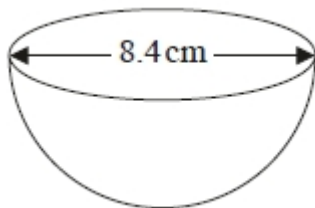
Give your answer correct to 1 decimal place.

.....

(Total for Question is 3 marks)

Q11.

The diagram shows a hemisphere with diameter 8.4 cm.



Work out the volume of the hemisphere.

Give your answer correct to 3 significant figures.

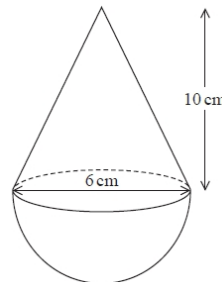
..... cm³

(Total for Question is 2 marks)

Q12.

The diagram shows a solid shape.

The shape is a cone on top of a hemisphere.



Volume of a Cone: $V = \frac{1}{3} \pi r^2 h$

Volume of a Sphere: $V = \frac{4}{3} \pi r^3$

The height of the cone is 10 cm.

The base of the cone has a diameter of 6 cm.

The hemisphere has a diameter of 6 cm.

The total volume of the shape is $k\pi$ cm³, where k is an integer.

Work out the value of k .

$k =$

(Total for Question is 4 marks)