

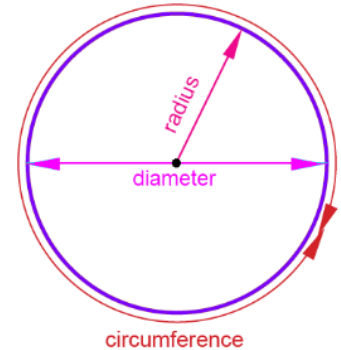
Level 4: Circles

1) Learn circle vocabulary: -

Circumference – distance round the outside of the circle.

Diameter – distance from side to side through the centre of the circle.

Radius – distance from the centre to the edge of the circle.

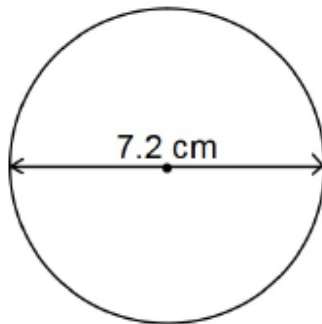


2) Learn to calculate the circumference of a circle, for example: -

a) Calculate the circumference of a circle which has diameter 9.8cm. Round your answer to one decimal place.

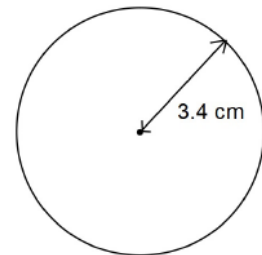
$$\begin{aligned} C &= \pi \times d \\ &= 3.14 \times 9.8 \\ &= 30.772 \\ &= 30.8 \text{ cm rounded to 1 d.p.} \end{aligned}$$

b) Calculate the circumference of the circle below. Round your answer to two decimal places.



$$\begin{aligned} C &= \pi \times d \\ &= 3.14 \times 7.2 \\ &= 22.608 \\ &= 22.61 \text{ cm rounded to 2 d.p.} \end{aligned}$$

c) Calculate the circumference of the circle below. Round your answer to one decimal place.



$$\text{Radius} = 3.4\text{cm}$$

$$\text{Diameter} = 2 \times 3.4 = 6.8\text{cm}$$

$$\begin{aligned} C &= \pi \times d \\ &= 3.14 \times 6.8 \\ &= 21.352 \\ &= 21.4 \text{ cm rounded to 1 d.p.} \end{aligned}$$

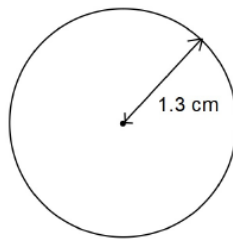
Notice that you were given the radius and had to double it to get the diameter.

3) Learn to calculate the area of a circle, for example: -

a) Calculate the area of a circle which has a radius of 7cm. Round your answer to one decimal place.

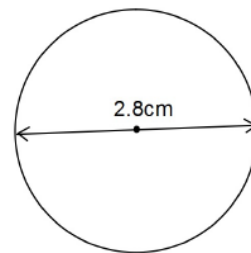
$$\begin{aligned}A &= \pi \times r^2 \\ &= 3.14 \times 7^2 \\ &= 153.86 \\ &= 153.9\text{cm}^2 \text{ to 1 d.p.}\end{aligned}$$

b) Calculate the area of the circle below. Round your answer to two decimal places.



$$\begin{aligned}A &= \pi \times r^2 \\ &= 3.14 \times 1.3^2 \\ &= 5.3066 \\ &= 5.31\text{cm}^2 \text{ to 2 d.p.}\end{aligned}$$

c) Calculate the area of the circle below. Round your answer to two decimal places.



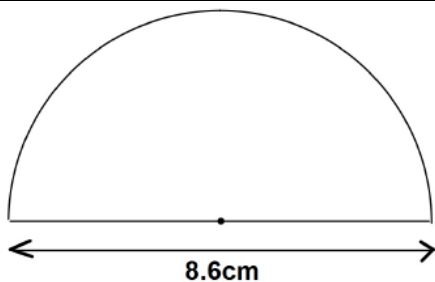
Diameter = 2.8cm

$$\text{Radius} = \frac{1}{2} \text{ of } 2.8 = 1.4\text{cm}$$

$$\begin{aligned}A &= \pi \times r^2 \\ &= 3.14 \times 1.4^2 \\ &= 6.1544 \\ &= 6.15\text{cm}^2 \text{ to 2 d.p.}\end{aligned}$$

Notice that you were given the diameter and had to half it to get the radius.

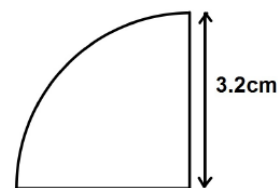
4) Learn to calculate the area of half and quarter circles, for example: -



Diameter = 8.6cm

$$\text{Radius} = \frac{1}{2} \text{ of } 8.6 = 4.3\text{cm}$$

$$\begin{aligned}A &= \frac{1}{2} \times \pi \times r^2 \\ &= 0.5 \times 3.14 \times 4.3^2 \\ &= 29.0293 \\ &= 29.0\text{cm}^2 \text{ to 1 d.p.}\end{aligned}$$

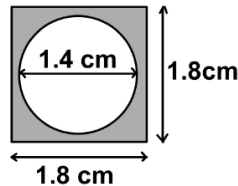


$$\begin{aligned}A &= \frac{1}{4} \times \pi \times r^2 \\ &= 0.25 \times 3.14 \times 3.2^2 \\ &= 8.0384 \\ &= 8.0\text{cm}^2 \text{ to 1 d.p.}\end{aligned}$$

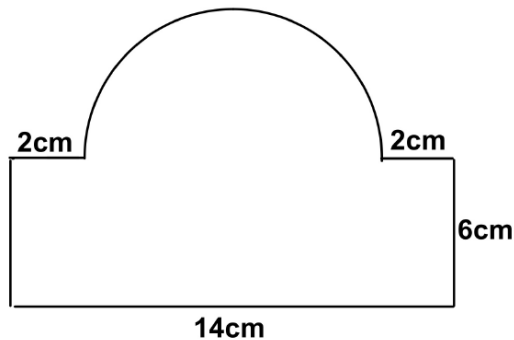
5) Solve problems by finding the area or circumference of circles.

a) A car does 20 laps of a circular test track radius 400m. How far has the car travelled?
Give your answer to the nearest kilometre

b) An earring is a square of silver side 1.8cm with a circle diameter 1.4cm cut out of it.
Calculate the area of silver in the earring. Round your answer to one decimal place.



c) Calculate the area **and** the perimeter of the shape below. Round your answers to one decimal place.



**REMEMBER TO SHOW ALL YOUR WORKING
AND EXPLAIN YOUR ANSWER FULLY!**