

# AREA AND CIRCUMFERENCE OF A CIRCLE

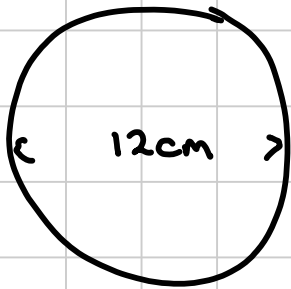
Note Title

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$$\text{Area} = \pi r^2 \quad [\text{NB do } r^2 \text{ first, then } \times \pi]$$
$$\text{Circ} = \pi d$$

## Examples

- ① Find the circumference and area of this circle



$$C = \pi \times 12$$
$$= \underline{37.7 \text{ cm}} \quad (1 \text{ dp})$$

$$A = \pi \times 6^2$$
$$= \underline{113.1 \text{ cm}^2} \quad (1 \text{ dp})$$

- ② The circumference of a circle is 100 cm. What is its diameter?

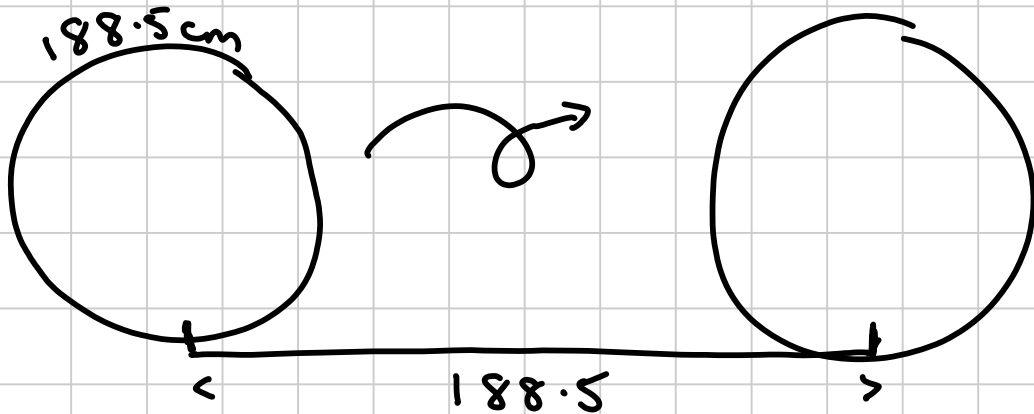
$$\pi d = 100$$

$$d = \frac{100}{\pi}$$

$$= \underline{31.8 \text{ cm}} \quad (1 \text{ dp})$$

③ A cycle wheel has a diameter of 60 cm. How many times does it turn in a journey of 1 km?

$$\begin{aligned}C &= \pi \times 60 \\ &= 188.5 \text{ cm.}\end{aligned}$$

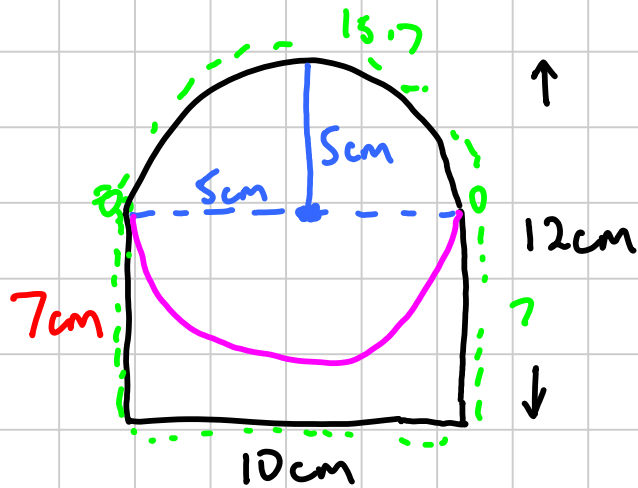


So the wheel moves forward 188.5 cm for each turn that it makes.

To travel 1 km, which is 1000 m  
or 100000 cm

So in 1 km the wheel turns  $\frac{100000}{188.5} = \underline{\underline{530.5}}$  times

④



Find the area and perimeter of this shape

$$\text{Area of rectangle} = 7 \times 10 = 70 \text{ cm}^2$$

$$\begin{aligned} \text{Area of semicircle} &= \frac{1}{2} \times \pi 5^2 \\ &= 39.3 \text{ cm}^2 \end{aligned}$$

$$\text{Total area} = \underline{\underline{109.3 \text{ cm}^2}} \quad (70 + 39.3)$$

$$\begin{aligned} \text{Perimeter of semicircle} &= \frac{1}{2} \times \pi 10 \\ &= 15.7 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Total perimeter} &= 15.7 + 7 + 10 + 7 \\ &= \underline{\underline{39.7 \text{ cm}}} \end{aligned}$$

⑤

A circle has an area of  $100 \text{ cm}^2$ . Find its radius.

$$\pi r^2 = 100$$

$$r^2 = \frac{100}{\pi}$$

$$r = \sqrt{\frac{100}{\pi}}$$

$$= \underline{\underline{5.64 \text{ cm}}}$$