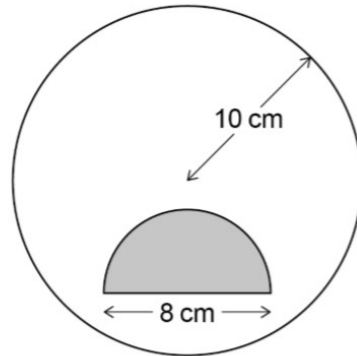


A shaded semicircle is inside a circle as shown.

Not drawn accurately



The **radius** of the circle is 10 cm

The **diameter** of the semicircle is 8 cm

How many times bigger is the unshaded area than the shaded area?

Area of a circle is πr^2 , where r is the radius of the circle.

$$\begin{aligned} \text{Area of the large circle} &= \pi 10^2 \\ &= 100\pi \end{aligned}$$

To find the area of the shaded semicircle, first find the area of the complete circle. Diameter of the shaded circle is 8cm so the radius is 4cm.

$$\begin{aligned} \text{Area of complete shaded circle} &= \\ \text{Area} &= \pi 4^2 \\ &= 16\pi \end{aligned}$$

Area of the semicircle

$$\begin{aligned} \text{Area} &= \frac{16\pi}{2} \\ &= 8\pi \end{aligned}$$

To find how many times bigger the unshaded area is:

$$\begin{aligned} &= \frac{100\pi}{8\pi} \\ &= 12\frac{1}{2} \end{aligned}$$

Your turn:

1. What if the radius of the large circle is 12cm and the diameter of the semicircle is 4cm?
2. What if the radius of the large circle is 12cm and the diameter of the semicircle is 8cm?

Answers:
1. 72
2. 18