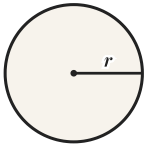


Circles and equations

1

A circle has an area of $36\pi \text{ cm}^2$. Find its radius.

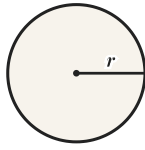


$$\begin{aligned}\pi r^2 &= 36\pi \\ r^2 &= 36 \\ r &= 6\end{aligned}$$

Answer 6 cm

2

A circle has a circumference of $14\pi \text{ cm}$. Find its radius.

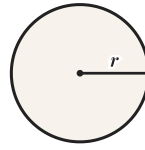


$$\begin{aligned}2\pi r &= 14\pi \\ r &= 14 \div 2 \\ r &= 7\end{aligned}$$

Answer 7 cm

3

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

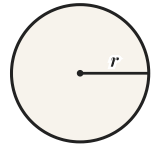


$$\begin{aligned}\pi r^2 &= 100\pi \\ r^2 &= 100 \\ r &= 10\end{aligned}$$

Answer 10 cm

4

A circle has a circumference of $22\pi \text{ cm}$. Find its radius.

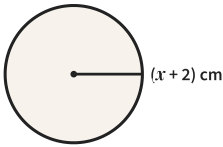


$$r = 11$$

Answer 11 cm

5

The area of this circle is $25\pi \text{ cm}^2$. Find x .

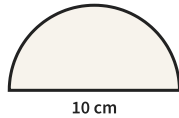


$$(x+2)^2 = 25, \text{ so } x+2 = 5$$

Answer $x = 3$

6

Find the perimeter of this semicircle in terms of π .



$$\text{half of } \pi \times 10, \text{ plus the } 10 \text{ cm straight edge}$$

Answer $(5\pi + 10) \text{ cm}$

7

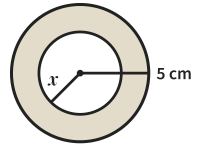
A circle has the same perimeter as a square with sides of 11 cm. Find the radius of the circle to 1 decimal place.

$$2\pi r = 44$$

Answer 7.0 cm

8

The shaded ring has an area of $16\pi \text{ cm}^2$. The outer radius is 5 cm. Find the inner radius x .



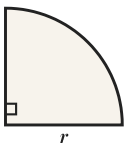
$$25\pi - \pi x^2 = 16\pi$$

Answer 3 cm

Circles and equations further practice

9

This quarter circle has an area of $9\pi \text{ cm}^2$. Find its radius.



$$\frac{1}{4}\pi r^2 = 9\pi, \text{ so } r^2 = 36$$

Answer 6 cm

10

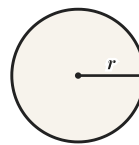
Two circles have the same area. One has radius $2x$ and the other has radius $x+3$. Find x .

$$\begin{aligned}\text{same area means same radius:} \\ 2x &= x+3\end{aligned}$$

Answer $x = 3$

11

A circle has an area of 50 cm^2 . Find its radius to 1 decimal place.

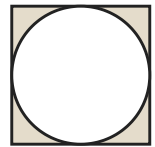


$$r^2 = 50 \div \pi = 15.92$$

Answer 4.0 cm

12

A circle fits exactly inside a square of area 64 cm^2 . Find the shaded area in terms of π .

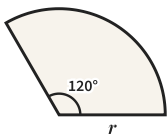


$$\text{the side is } 8 \text{ cm, so the radius is } 4 \text{ cm}$$

Answer $(64 - 16\pi) \text{ cm}^2$

13

This sector has an angle of 120° and an area of $12\pi \text{ cm}^2$. Find its radius.

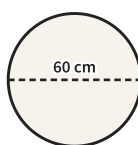


$$\text{a third of } \pi r^2 = 12\pi, \text{ so } r^2 = 36$$

Answer 6 cm

14

A wheel has a diameter of 60 cm. How many complete turns does it make in 100 m?



$$\begin{aligned}\text{one turn is } \pi \times 60 &= 188.5 \text{ cm;} \\ 10000 \div 188.5 &= 53.05\end{aligned}$$

Answer 53

15

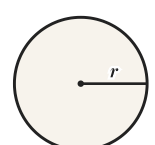
A circle has a circumference of $(4x+2)\pi \text{ cm}$ and an area of $49\pi \text{ cm}^2$. Find x .

$$r = 7, \text{ so the diameter } 4x+2 = 14$$

Answer $x = 3$

16

Ben says a circle with an area of $36\pi \text{ cm}^2$ has a radius of 18 cm, because half of 36 is 18. Explain his mistake.



$$\pi r^2 = 36\pi \text{ gives } r^2 = 36, \text{ not } 2r = 36$$

Answer 6 cm