

Geometry - Lesson 2

Area of Circles

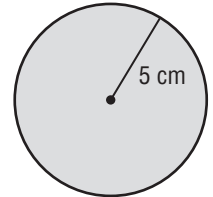
The area A of a circle equals the product of pi (π) and the square of its radius r .

$$A = \pi r^2$$

Example 1

Find the area of the circle. Use 3.14 for π .

$$\begin{aligned} A &= \pi r^2 && \text{Area of circle} \\ A &\approx 3.14 \cdot 5^2 && \text{Replace } \pi \text{ with } 3.14 \text{ and } r \text{ with } 5. \\ A &\approx 3.14 \cdot 25 && 5^2 = 5 \cdot 5 = 25 \\ A &\approx 78.5 \end{aligned}$$



The area of the circle is approximately 78.5 square centimeters.

The formula for the area of a semicircle, or half a circle, is $A = \frac{1}{2}\pi r^2$.

Example 2

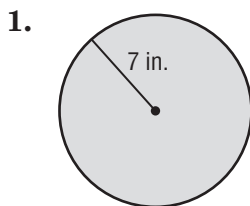
Find the area of a semicircle that has a diameter of 9.4 millimeters. Use 3.14 for π . Round to the nearest tenth.

$$\begin{aligned} A &= \frac{1}{2}\pi r^2 && \text{Area of semicircle} \\ A &\approx \frac{1}{2} \cdot 3.14 \cdot 4.7^2 && \text{Replace } \pi \text{ with } 3.14 \text{ and } r \text{ with } 9.4 \div 2 \text{ or } 4.7. \\ A &\approx 34.7 && \text{Multiply.} \end{aligned}$$

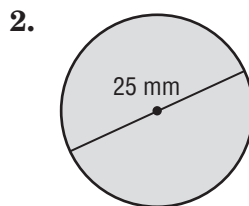
The area of the semicircle is approximately 34.7 square millimeters.

Exercises

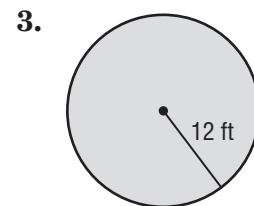
Find the area of each circle. Round to the nearest tenth. Use 3.14 or $\frac{22}{7}$ for π .



$$\frac{22}{7} \times 7 \times 7 = 154 \text{ in}^2$$



$$3.14 \times 12.5 \times 12.5 = 490.6 \text{ mm}^2$$

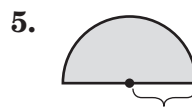


$$3.14 \times 12 \times 12 = 452.2 \text{ ft}^2$$

Find the area of each semicircle. Round to the nearest tenth. Use 3.14 or $\frac{22}{7}$ for π .



$$\frac{1}{2} \times \frac{22}{7} \times 14 \times 14 = 308 \text{ m}^2$$



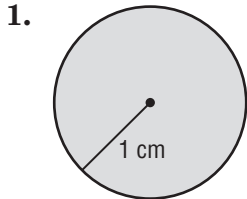
$$\frac{1}{2} \times 3.14 \times 3 \times 3 = 14.1 \text{ ft}^2$$

Lesson 2 Skills Practice

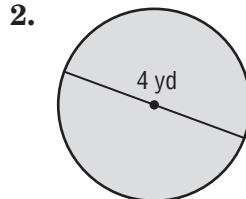
Area of Circles

Find the area of each circle. Round to the nearest tenth.

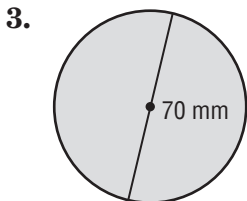
Use 3.14 or $\frac{22}{7}$ for π .



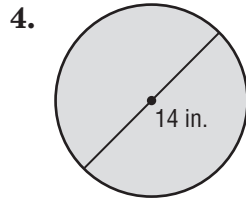
$$3.14 \times 1 \times 1 = 3.1 \text{ cm}^2$$



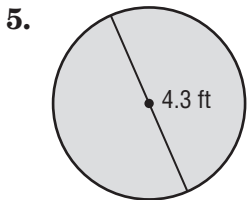
$$3.14 \times 2 \times 2 = 12.6 \text{ yd}^2$$



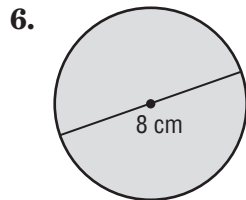
$$\frac{22}{7} \times 35 \times 35 = 3,850 \text{ mm}^2$$



$$\frac{22}{7} \times 7 \times 7 = 154 \text{ in}^2$$



$$3.14 \times 2.15 \times 2.15 = 14.5 \text{ ft}^2$$



$$3.14 \times 4 \times 4 = 50.2 \text{ cm}^2$$

7. radius = 5.7 mm

$$3.14 \times 5.7 \times 5.7 = 102.0 \text{ mm}^2$$

8. radius = 8.2 ft

$$3.14 \times 8.2 \times 8.2 = 211.1 \text{ ft}^2$$

9. diameter = 3 in.

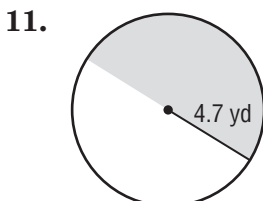
$$3.14 \times 1.5 \times 1.5 = 7.1 \text{ in}^2$$

10. diameter = 15.6 cm

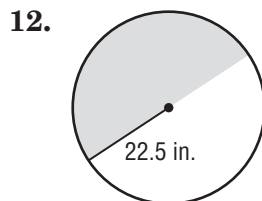
$$3.14 \times 7.8 \times 7.8 = 191.0 \text{ cm}^2$$

Find the area of each semicircle. Round to the nearest tenth.

Use 3.14 for π .



$$\approx 34.7 \text{ yd}^2$$



$$\approx 794.8 \text{ in}^2$$