

Practice with Examples

For use with pages 691–698

GOAL

Find the area of a circle and a sector of a circle and use areas of circles and sectors to solve problems

VOCABULARY

A **sector of a circle** is the region bounded by two radii of the circle and their intercepted arc.

Theorem 11.7 Area of a Circle

The area of a circle is π times the square of the radius, or $A = \pi r^2$.

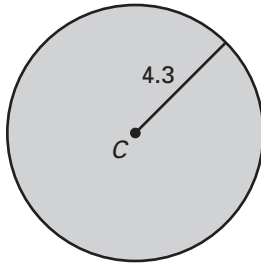
Theorem 11.8 Area of a Sector

The ratio of the area A of a sector of a circle to the area of the circle is equal to the ratio of the measure of the intercepted arc to 360° .

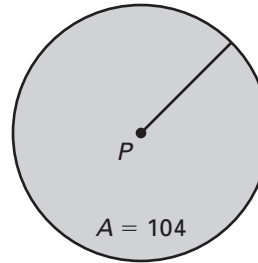
$$\frac{A}{\pi r^2} = \frac{m\widehat{AB}}{360^\circ}, \text{ or } A = \frac{m\widehat{AB}}{360^\circ} \cdot \pi r^2$$

EXAMPLE 1**Using the Area of a Circle**

- a. Find the area of
- $\odot C$
- .



- b. Find the radius of
- $\odot P$
- .

**SOLUTION**

- a. Use
- $r = 4.3$
- in the area formula.

$$A = \pi r^2$$

$$A = \pi \cdot 4.3^2$$

$$A \approx 58.09$$

So, the area is about 58.09 square units.

- b.
- $A = \pi r^2$

$$104 = \pi r^2$$

$$\frac{104}{\pi} = r^2$$

$$33.10 \approx r^2$$

$$r \approx 5.75$$

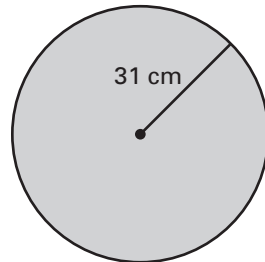
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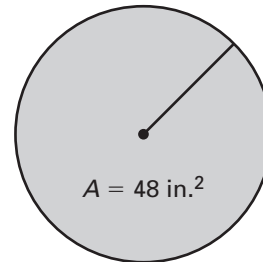
Exercises for Example 1

Find the indicated measure.

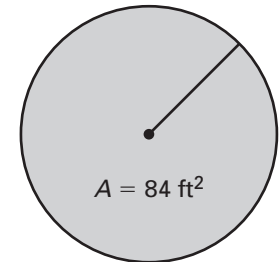
1. Area



2. Diameter



3. Radius



EXAMPLE 2 Finding the Area of a Sector

Find the area of the sector shown at the right.

SOLUTION

Sector CPD intercepts an arc whose measure is 135° .
The radius is 6 centimeters.

$$A = \frac{m\widehat{CD}}{360^\circ} \cdot \pi r^2$$

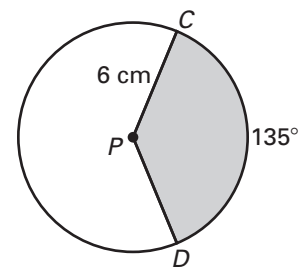
Write the formula for the area of a sector.

$$A = \frac{135^\circ}{360^\circ} \cdot \pi \cdot 6^2$$

Substitute known values.

$$A \approx 42.4$$

Use a calculator.



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Exercises for Example 2

In Exercises 4–6, find the area of the shaded region.

