# (keA AlgebraCoach.com Area of Circles 

Unit 10 Lesson 3

## AREA: CIRCLES

## Students will be able to: Solve problem involving area of a circle. Key Vocabulary:

- Circle
- Diameter
- Radius


## AREA: CIRCLES

## Circle

A circle is a boundary of a round region in a plane.

## Area of a Circle

The area of a circle is the product of the two constant $\pi$ and the square of the length of the radius of the circle.

$$
A=\pi r^{2}
$$

The area of a circle, with the diameter of $d$, is

$$
A=\frac{\pi d^{2}}{4}
$$

## AREA: CIRCLES

Sample Problem 1: Find the area of the following circle.

Solution:

$$
\begin{aligned}
& A=\pi r^{2} \\
& A=\pi 4^{2} \\
& A=16 \pi
\end{aligned}
$$

## AREA: CIRCLES

Sample Problem 1: Find the area of the following circle.


$$
\begin{aligned}
& \text { Solution: } \\
& \begin{array}{l}
A=\frac{\pi d^{2}}{4} \\
A=\frac{\pi 8^{2}}{4} \\
A=\frac{64 \pi}{4}
\end{array}
\end{aligned}
$$

$$
A=16 \pi
$$

## AREA: CIRCLES

Sample Problem 2: Solve Problems involving the area of a circle.
The area of the circle G is $81 \pi$. Find its diameter.

Solution:

$$
\begin{aligned}
81 \pi & =\frac{\pi d^{2}}{4} \\
81(4) \pi & =\pi d^{2} \\
d^{2} & =324 \\
d & =18
\end{aligned}
$$

## AREA: CIRCLES

Sample Problem 2: Solve Problems involving the area of a circle.
Find the radius of a circle F if its area is $169 \pi \mathrm{~cm}^{2}$.

Solution:

$$
\begin{array}{r}
169 \pi=\pi r^{2} \\
r^{2}=169 \\
r=13
\end{array}
$$

## AREA: CIRCLES

Sample Problem 2: Solve Problems involving the area of a circle.

Find the area of a circle with a diameter of 21 m .

Solution:

$$
\begin{aligned}
& A=\frac{\pi d^{2}}{4} \\
& A=\frac{\pi 21^{2}}{4} \\
& A=\frac{441 \pi}{4} \quad A=346.36 \mathrm{~m}^{2}
\end{aligned}
$$

