**AIM:** How do you find the area of a circle given the radius or diameter?

**_Remember_:** What is area?
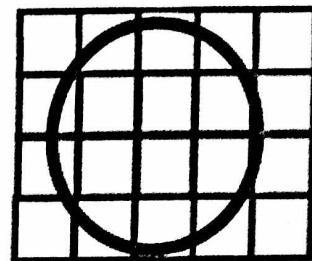
**Area** is the number of square units that is needed to cover a figure.

The **units** for area are **always squared** (ex: inches$^2$, square feet).

The **area** of a circle is equal to $\pi$ times the radius squared.

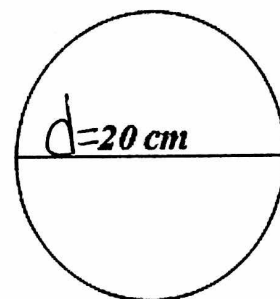The **formula** for the area of a circle is:

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

area $\longrightarrow$       $\longleftarrow$ radius

**_Example #1:_** "Using the Pi Button"

Find the area of the circle to the right. Round your answer to the nearest _tenth_.

| What do you know? | What do you need to find? |
|---|---|
| d=20 → r=10 | A |

d=20 cm

**Step 1:** Write out the formula     **F**    $A = \pi r^2$

**Step 2:** Substitute     **S**    $A = \pi (10)^2$

**Step 3:** Do the math.     **M**    $A = 314.1592654$

**Step 4:** Round and label your answer     **U**    $A = 314.2\ cm^2$

**Try It!**

Find the area of a circle whose radius is 8 meters. Round your answer to the nearest _hundredth_.

| What do you know? | What do you need to find? |
|---|---|
| r=8 | A |

**Step 1:** Write out the formula     **F**

**Step 2:** Substitute     **S**

**Step 3:** Do the math.     **M**

**Step 4:** Round and label your answer     **U**

**Example #2:** "Leaving in Terms of Pi"

**Try It!**

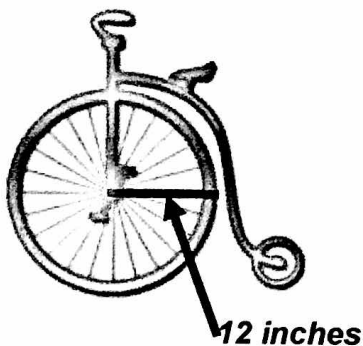Find the area of a circle whose diameter is 6 inches. Leave your answer in terms of $\pi$.

Find the area of a circle whose radius is 4 cm. Leave your answer in terms of $\pi$. **Show your work.**

**F** $A = \pi r^2$

$d = 6$

$r = 3$

**S** $A = \pi (3)^2$

**M** $A = \pi (9)$

**U** $\boxed{A = 9\pi \text{ in}^2}$

**On Your Own!**

1.)   Find the **circumference** and **area** of the wheel with a radius of 12 inches. Use 3.14 for $\pi$. **Show your work.**



*12 inches*

2.)   A revolving water sprinkler sprays water in all directions to a distance of 25 feet from the sprinkler. What area does it cover? Round to the nearest square foot. **Show your work.**