Area of a Shaded Region

AIM: Finding the area of the shaded region
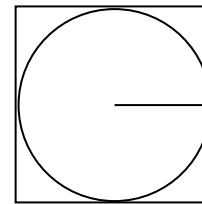
RECALL:

a. The square shown has a side of 8 in.
    We know the formula for the area of a square:
    A = s², where s is the side of the square. So,
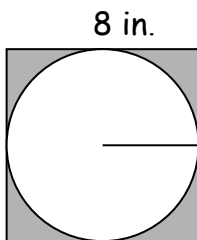   the area of the square shown is ……

8 in.

b. The circle shown has a radius of 4 in.
    We know the formula for the area of a circle:
    A = π r², substitute 3.14 for π. So, the area of
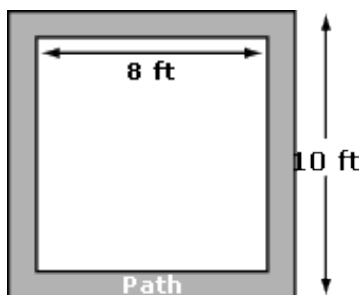   the circle shown is ……

8 in.

THINK: If the circle above is *inscribed* in the square above, can you think of how we could
             calculate just the shaded region of the figure below?

8 in.

Shaded→**S**ubtract

Example #1: A square garden measuring 8 feet on a side is surrounded by a 1-foot-wide path.
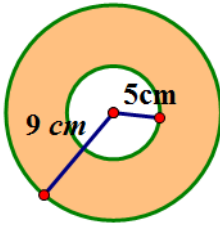   What is the area of the path? Round to the nearest whole number.

8 ft

10 ft

Path

a. Area of the large square: b. Area of the small square:

c. Area of the shaded region:

Example #2: Two *concentric circles* have radii of 5 and 9 inches respectively. Find the area of the shaded region between the circles as shown in the diagram.
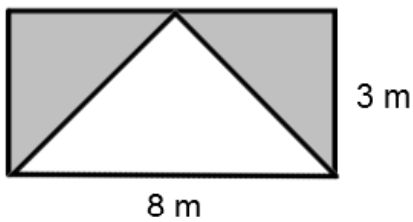**Leave in terms of pi.**

5cm

9 cm

a. Area of the large circle: b. Area of the small circle:

c. Area of the shaded region:

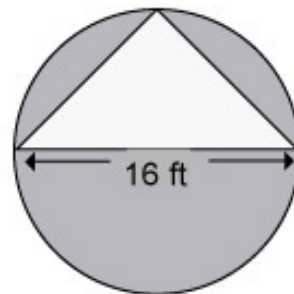Example #3: Find the area of the **shaded region**.

3 m

8 m

a) Area of the rectangle: b. Area of the triangle:

c. Area of the shaded region:

You try:
1. Find the area of the shaded region. **Round to nearest whole number. → remember that this means you will have to use the pi button.**
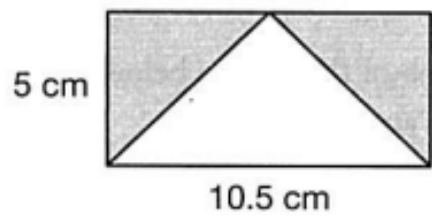
a. Area of the circle: $A = \pi r^2$
   Hint: diameter is 16 ft.

16 ft

b. Area of the triangle: $A = \frac{1}{2}(bh)$
   Hint: height is equal to the radius.

c.   Area of the shaded region:

2. Find the area of the shaded region in the diagram below.

5 cm

10.5 cm

3. Find the area of the shaded region in the diagram below. Substitute 3.14 for pi when finding the area of the circle.

6 ft

6 ft

14 ft