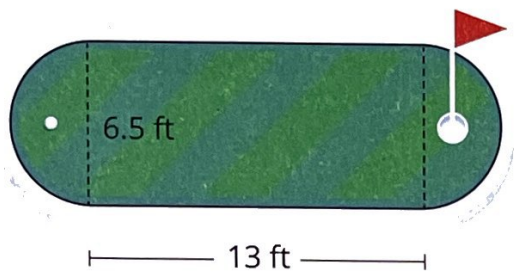




Composite Figure Problems

Now that you know how to determine the area of a circle, you can calculate the area of more interesting composite figures.

- 1 A miniature golf course designs a putting green composed of a rectangle and two semicircles. Determine the approximate amount of turf needed to cover the putting green.



$$\square + \bigcirc$$

or

$$\square + 2\triangle$$

HABITS OF MIND

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

TAKE NOTE . . .

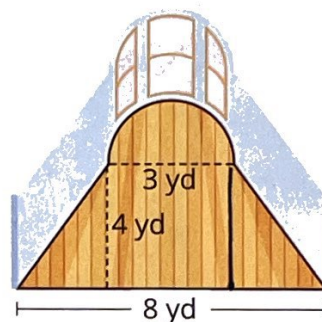
A semicircle is half of a circle.

- 2 A trapezoid and a semicircle compose the floorplan of a room with a curved bay window. Determine the approximate amount of flooring needed to cover the room.

$$\triangle + 2\triangle + \square$$

or

$$\square + \triangle$$

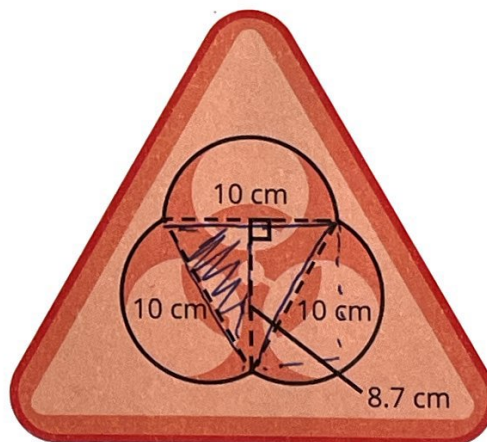


- 3 A triangle and three semicircles compose a warning label on a sticker. Determine the approximate area of the warning label.

$$3\triangle + \triangle$$

or

$$1\frac{1}{2}\bigcirc + \triangle$$

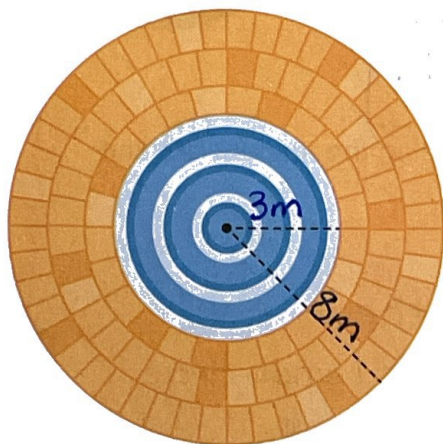




Shaded Region Problems

You have worked with composite figures by adding on areas. Now let's think about subtracting areas.

- 1 A circular fountain centered within a larger circle creates a walkway around the fountain. The radius of the fountain is 3 meters and the radius of the larger circle is 8 meters. Calculate the approximate area of the walkway around the fountain.



$$(8) - (3)$$

$$3.14 \cdot 8^2 - 3.14 \cdot 3^2$$

$$200.96 - 28.26$$

172.7 m² is the area of the walkway

HABITS OF MIND

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

DID YOU KNOW?

The image of the circular fountain shows concentric circles. Concentric circles are circles with a common center.

- 2 Anita sets a sprinkler in the center of her square garden. The area the sprinkler waters creates a circle inscribed in the square. Determine the approximate area of Anita's garden that the sprinkler does not water.



$$\square - \bigcirc$$

$$30^2 - 3.14 \cdot 15^2$$

$$900 - 706.5$$

193.5 ft² is the area that does not get water

DID YOU KNOW?

When you inscribe a circle in a square, the diameter of the circle is equal to the side length of the square.



ACTIVITY 3 Continued

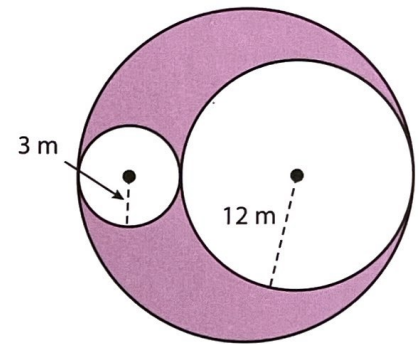
5 What is different about their strategies?

6 Which strategy do you prefer?

7 Determine the area of each shaded region.

- (a) One medium circle and one small circle touch each other, and each circle touches the large circle.

$$\begin{aligned} & \text{Handwritten: } \textcircled{30} - \textcircled{12} - \textcircled{3} \\ & 3.14 \cdot 15^2 - 3.14 \cdot 12^2 - 3.14 \cdot 3^2 \\ & \boxed{226.08 \text{ m}^2 = \text{shaded area}} \end{aligned}$$



- (b) A rectangle is inscribed in a circle. This means all the vertices of the rectangle touch the circumference of the circle.

$$\begin{aligned} & \text{Handwritten: } \textcircled{10} - \square \\ & 3.14 \cdot 5^2 - 8 \cdot 6 \\ & \boxed{30.5 \text{ cm}^2 = \text{shaded region}} \end{aligned}$$

