

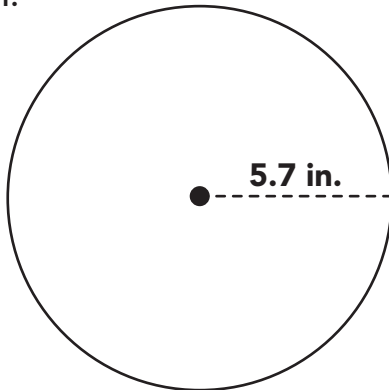
Objective Solving Area and Circumference Problems

Warm-Up

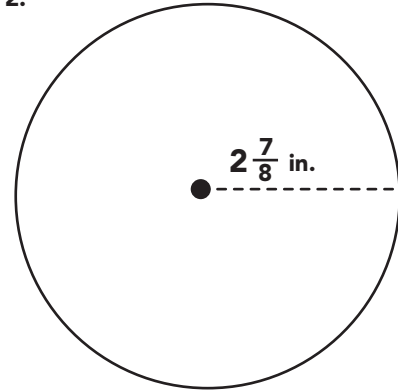


Determine the area of each circle. Use 3.14 for π .

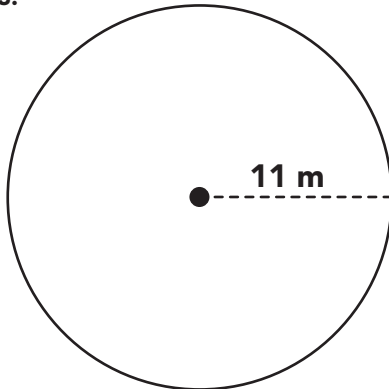
1.



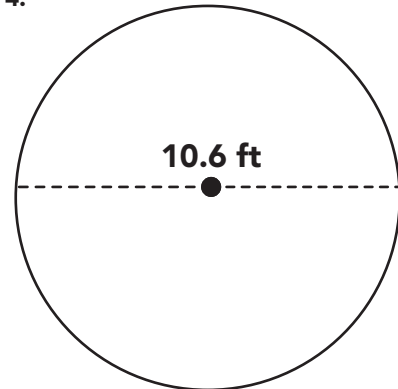
2.



3.

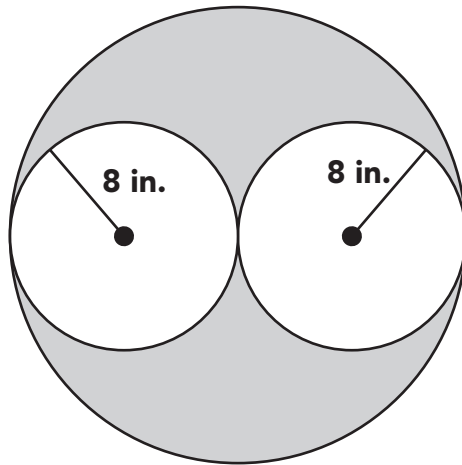


4.





3. Two small circles are drawn that touch each other, and both circles touch the large circle. Determine the area of the shaded region.



4. Jimmy and Matthew each said the area of the shaded region is about 402 square inches. Compare their strategies

Jimmy

Area of 1 small circle
 $A \approx 3.14(8)^2$
 $A \approx 3.14(64)$
 $A \approx 200.96$

Area of 2 small circles
 $A \approx 2(200.96)$
 $A \approx 401.92$

Area of large circle
 $A \approx (3.14)(16)^2$
 $A \approx (3.14)(256)$
 $A \approx 803.84$

Area of shaded region
 $803.84 - 401.92 \approx 401.92$

The area of the shaded region is about 402 sq in.

Matthew

Area of 1 small circle
 $A = \pi(8)^2$
 $A = 64\pi$

Area of 2 small circles
 $A = 2(64\pi)$
 $A = 128\pi$

Area of large circle
 $A = \pi(16)^2$
 $A = 256\pi$

Area of shaded region
 $256\pi - 128\pi = 128\pi$
 $A = 128\pi$
 $A \approx 402.12$

This means the area of the shaded region is about 402 sq in.

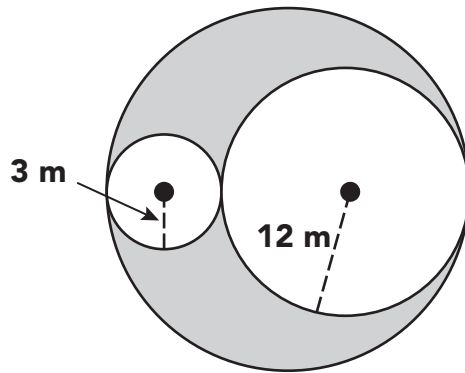
a. What did Jimmy and Matthew do the same?

b. What was different about their strategies?

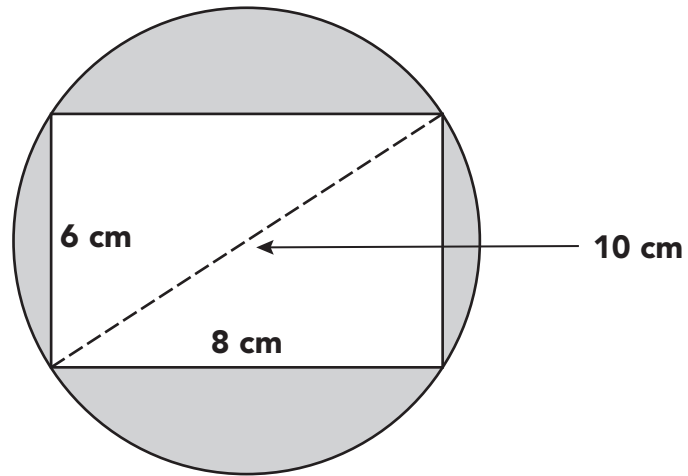
c. Which strategy do you prefer?

5. Determine the area of each shaded region.

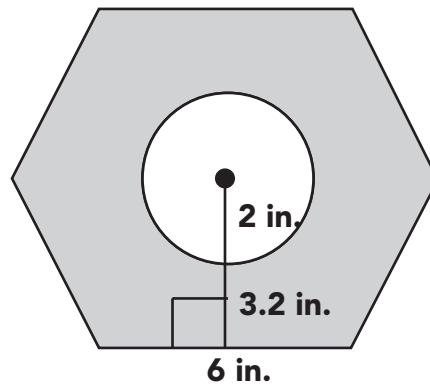
a. One medium circle and one small circle touch each other, and each circle touches the large circle.



b. A rectangle is inscribed in a circle



c. A circle is inside a regular hexagon.



**Show You
KNOW**

Rupert's Leash

Jamal loves his dog, Rupert. On sunny days, Jamal keeps Rupert on a 12-foot leash in the backyard. The leash is secured to a stake in the ground.

1. Determine the diameter, circumference, and area of Rupert's play area. Use 3.14 for π .

2. Suppose Jamal wants to give Rupert a little more room to play. He uses a 15-foot leash instead of the 12-foot leash. What is the area of Rupert's play area now? Use 3.14 for π .

**LESSON 1.3b**
Circular Reasoning**Objective** Solving Area and Circumference Problems**Review**

Solve each problem.

1. Jose is adding mulch to an existing round flower bed. The length of the rubber edging around the flower bed is 25.12 feet. What is the area that Jose needs to cover with mulch?

2. Nami is adding a mosaic pattern to the top of a small round table. The distance around the edge of the table top is 4.7 feet. What is the area that Nami needs to cover with the mosaic pattern?

Determine each area.

3. Area of a triangle with a base length of 4 in. and a height of 9 in.

4. Area of a parallelogram with a base length of 2.9 ft and a height of 5.5 ft.

5. Area of a trapezoid with a top base length of 6 cm, a bottom base length of 12 cm, and a height of 5 cm.

Write a unit rate for each ratio.

6. $\frac{28}{4 \text{ square feet}}$

7. $\frac{5.15 \text{ yd}}{5 \text{ square feet}}$

