Name_____ Date _____

11.2 Areas of Circles and Sectors

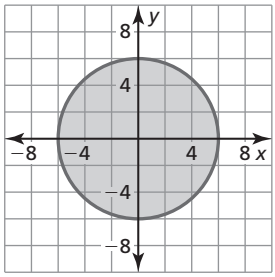
For use with Exploration 11.2

Essential Question How can you find the area of a sector of a circle?

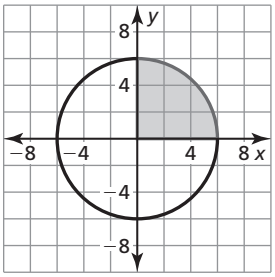
1 EXPLORATION: Finding the Area of a Sector of a Circle

Work with a partner. A **sector of a circle** is the region bounded by two radii of the circle and their intercepted arc. Find the area of each shaded circle or sector of a circle.

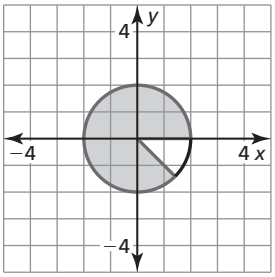
a. entire circle



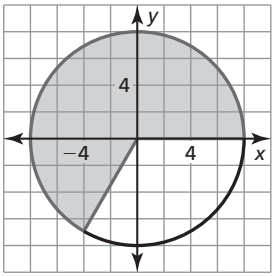
b. one-fourth of a circle



c. seven-eighths of a circle

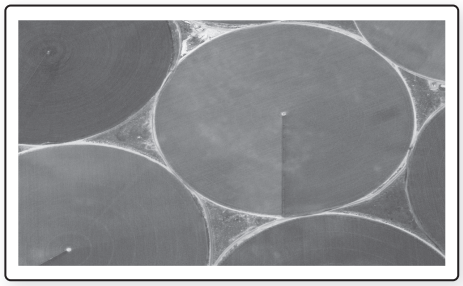


d. two-thirds of a circle



2 EXPLORATION: Finding the Area of a Circular Sector

Work with a partner. A center pivot irrigation system consists of 400 meters of sprinkler equipment that rotates around a central pivot point at a rate of once every 3 days to irrigate a circular region with a diameter of 800 meters. Find the area of the sector that is irrigated by this system in one day.



Communicate Your Answer

3. How can you find the area of a sector of a circle?

4. In Exploration 2, find the area of the sector that is irrigated in 2 hours.

Name_____ Date _____

11.2 Notetaking with Vocabulary

For use after Lesson 11.2

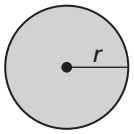
In your own words, write the meaning of each vocabulary term.

population density

sector of a circle

Core Concepts

Area of a Circle



The area of a circle is

$$A = \pi r^2$$

where r is the radius of the circle.

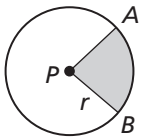
Notes:

Name _____ Date _____

11.2 Notetaking with Vocabulary (continued)

Area of a Sector

The ratio of the area of a sector of a circle to the area of the whole circle $\left(\pi r^2\right)$ is equal to the ratio of the measure of the intercepted arc to 360°.



$$\frac{\text{Area of sector } APB}{\pi r^2} = \frac{m\overset{\frown}{AB}}{360°}, \text{ or}$$

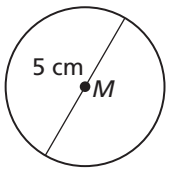
$$\text{Area of sector } APB = \frac{m\overset{\frown}{AB}}{360°} \cdot \pi r^2$$

Notes:

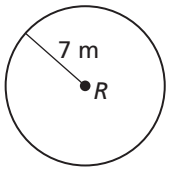
Extra Practice

In Exercises 1–2, find the indicated measure.

1. area of $\odot M$



2. area of $\odot R$



Name_____ Date _____

11.2 Notetaking with Vocabulary (continued)

In Exercises 3–8, find the indicated measure.

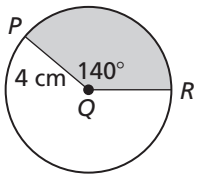
3. area of a circle with a diameter of 1.8 inches

4. diameter of a circle with an area of 10 square feet

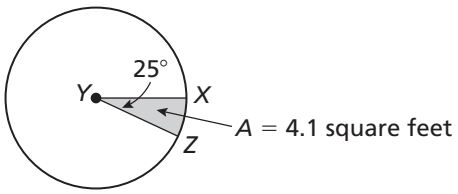
5. radius of a circle with an area of 65 square centimeters

6. area of a circle with a radius of 6.1 yards

7. areas of the sectors formed by $\angle PQR$



8. area of $\odot Y$



9. About 70,000 people live in a region with a 30-mile radius. Find the population density in people per square mile.