

## Lesson 14 Practice Problems

1. Jada is finding the area of a sector with an angle  $\frac{\pi}{4}$  radians and radius 8 units. She found the area of the whole circle, then found the fraction represented by the sector by dividing  $\frac{\pi}{4}$  by 360. She multiplied this fraction by the total circle area.

a. Do you agree with Jada's strategy? Explain your reasoning.

b. Find the area of the sector.

(From Unit 7, Lesson 13.)

2. Which of these pizza slices gives the best value (the most pizza per dollar spent)?

A. a slice with a radius of 12 inches, central angle of  $30^\circ$ , and a cost of \$3 per slice

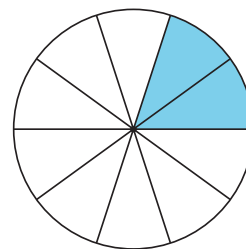
B. a slice with a radius of 8 inches, central angle of  $45^\circ$ , and a cost of \$2 per slice

C. a slice with a radius of 6 inches, central angle of  $\frac{\pi}{3}$  radians, and a cost of \$2 per slice

D. a slice with a radius of 6 inches, central angle of  $\frac{\pi}{4}$  radians, and a cost of \$1 per slice

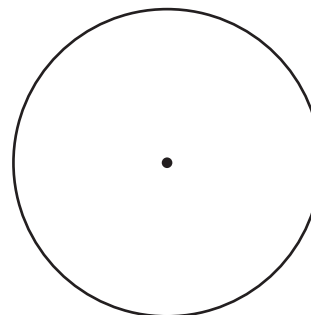
(From Unit 7, Lesson 13.)

3. The circle in the image has been divided into congruent sectors. What is the measure of the central angle of the shaded region in radians?



(From Unit 7, Lesson 12.)

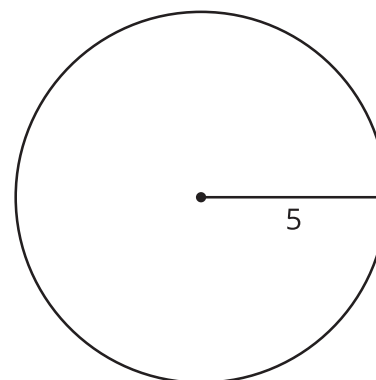
4. In the circle, sketch a central angle that measures  $\frac{5\pi}{3}$  radians.



(From Unit 7, Lesson 12.)

5. The image shows a circle with radius 5 units.

- a. Draw a 180 degree central angle (a diameter) in the circle. What is the length of the arc defined by this angle?



- b. Use the arc length and the radius to calculate the radian measure of 180 degrees.

- c. Calculate the radian measure of a 360 degree angle. Explain or show your reasoning.

(From Unit 7, Lesson 11.)

6. Complete the table. Each row represents a circle with a defined sector.

sector area	radius	central angle
$5\pi \text{ cm}^2$	5 cm	
$12\pi \text{ cm}^2$		270 degrees
	12 cm	15 degrees

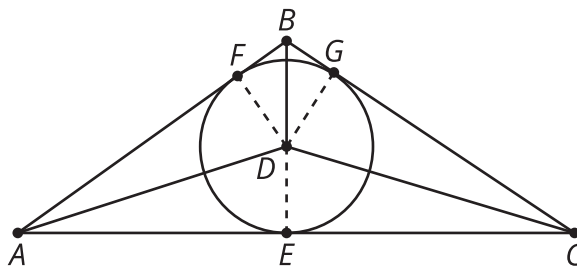
(From Unit 7, Lesson 9.)

7. Several circles with central angles are described. Select **all** the circles for which the central angle defines arcs that have length  $6\pi$  units.

- A. radius 6 units, central angle 180 degrees
- B. radius 18 units, central angle 60 degrees
- C. radius 12 units, central angle 90 degrees
- D. radius 3 units, central angle 120 degrees
- E. radius 4 units, central angle 270 degrees

(From Unit 7, Lesson 8.)

8. Triangle  $ABC$  is shown with its incenter at  $D$ . The inscribed circle's radius measures 2 units. The length of  $AB$  is 9 units. The length of  $BC$  is 10 units. The length of  $AC$  is 17 units.



a. What is the area of triangle  $ABD$ ?

b. What is the area of triangle  $BCD$ ?

(From Unit 7, Lesson 7.)

9. Noah makes 3 statements about the incenter of a triangle.

- a. To find the incenter of a triangle, you must construct all 3 angle bisectors.
- b. The incenter is always equidistant from the vertices of the triangle.
- c. The incenter is always equidistant from each side of the triangle.

For each statement, decide whether you agree with Noah. Explain your reasoning.

(From Unit 7, Lesson 6.)

10. Elena is writing notes about central angles in circles. Help her finish her notes by answering the questions.

- a. Where is the vertex of a central angle located in relation to the circle?
- b. What line segments related to circles are contained in the rays that form a central angle?
- c. How does the measure of a central angle relate to the measure of the arc it is associated with?

(From Unit 7, Lesson 1.)