

A2.A.61: Arc Length 3: Determine the length of an arc of a circle, given its radius and the measure of its central angle

- 1 A central angle of a circular garden measures 2.5 radians and intercepts an arc of 20 feet. What is the radius of the garden?
 - 1) 8 ft
 - 2) 50 ft
 - 3) 100 ft
 - 4) 125 ft
- 2 In a circle, a central angle containing 1.5 radians intercepts an arc whose measure is 18 centimeters. The length of the radius is
 - 1) 6 cm
 - 2) 12 cm
 - 3) 24 cm
 - 4) 27 cm
- 3 In a circle, a central angle whose measure is $\frac{\pi}{2}$ radians intercepts an arc whose length is $\frac{3\pi}{2}$ centimeters. How many centimeters are in the radius of the circle?
 - 1) 1
 - 2) 2
 - 3) 3
 - 4) 4
- 4 In a circle, an arc of length 5 is subtended by a central angle of $\frac{5}{3}$ radians. What is the radius of the circle?
 - 1) $\frac{25}{3}$
 - 2) $\frac{3}{25}$
 - 3) 3
 - 4) 5
- 5 Ileana buys a large circular pizza that is divided into eight equal slices. She measures along the outer edge of the crust from one piece and finds it to be $5\frac{1}{2}$ inches. What is the diameter of the pizza to the *nearest inch*?
 - 1) 14
 - 2) 8
 - 3) 7
 - 4) 4
- 6 In a circle, a central angle of 3 radians intercepts an arc of 18 centimeters. What is the radius, in centimeters, of the circle?
- 7 In a circle, a central angle of 2 radians intercepts an arc of length 12 centimeters. Find the length of the radius in centimeters.

- 8 In a circle, a central angle of 3 radians intercepts an arc of length 12. What is the length of the radius of the circle?
- 9 In circle O , a central angle of 2 radians intercepts an arc of 28 meters. Find the length, in meters, of the radius of the circle?
- 10 In a circle, a central angle of 3 radians intercepts an arc of length 21. Find the length of the radius of the circle.
- 11 In a circle, a central angle of 2 radians intercepts an arc of 6 centimeters. Find the length of the radius in centimeters.
- 12 In a circle, a central angle of 3.5 radians intercepts an arc of 24.5 centimeters. Find the number of centimeters in the radius of the circle.
- 13 In circle O , a central angle of 3 radians intercepts an arc of 27 meters. Find the number of meters in the length of the radius.
- 14 An arc of a circle that is 6 centimeters in length intercepts a central angle of 1.5 radians. Find the number of centimeters in the radius of the circle.
- 15 In a circle, an arc of length 10 is intercepted by a central angle of $\frac{2}{3}$ radian. Find the radius of the circle.
- 16 In a circle, an arc length of 6.6 is intercepted by a central angle of $\frac{2}{3}$ radians. Determine the length of the radius.
- 17 In a circle, a central angle of $2\frac{1}{2}$ radians intercepts an arc of length 10. What is the length of the radius of the circle?
- 18 An angle of $2\frac{1}{4}$ radians at the center of a circle intercepts an arc of 18 inches. Find the length of the radius in inches.
- 19 The pendulum of a clock swings through an angle of 2.5 radians as its tip travels through an arc of 50 centimeters. Find the length of the pendulum, in centimeters.
- 20 The tip of a pendulum describes an arc 18 centimeters long when the pendulum swings through an angle of $\frac{3}{4}$ of a radian. Find the length, in centimeters, of the pendulum.

A2.A.61: Arc Length 3: Determine the length of an arc of a circle, given its radius and the measure of its central angle

Answer Section

1 ANS: 1

$$r = \frac{s}{\theta} = \frac{20}{2.5} = 8$$

PTS: 2

REF: 010910b

2 ANS: 2

PTS: 2

REF: 019023siii

3 ANS: 3

PTS: 2

REF: 060123siii

4 ANS: 3

PTS: 2

REF: 060234siii

5 ANS: 1

If the pizza is divided into eight slices, the central angle of a slice is $\frac{2\pi}{8} = \frac{\pi}{4}$ radians. $r = \frac{s}{\theta} = \frac{5\frac{1}{2}}{\frac{\pi}{4}} \approx 7$. The

diameter is about 14.

PTS: 2

REF: 010307b

6 ANS:

6

PTS: 2

REF: 068003siii

7 ANS:

6

PTS: 2

REF: 068106siii

8 ANS:

4

PTS: 2

REF: 018409siii

9 ANS:

14

PTS: 2

REF: 088412siii

10 ANS:

7

PTS: 2

REF: 088505siii

11 ANS:

3

PTS: 2

REF: 088912siii

12 ANS:

7

PTS: 2

REF: 069508siii

13 ANS:
9

PTS: 2 REF: 069907siii

14 ANS:

$$4. \ r = \frac{s}{\theta} = \frac{6}{1.5} = 4$$

PTS: 2 REF: 010526b

15 ANS:
15

PTS: 2 REF: 068618siii

16 ANS:

$$r = \frac{6.6}{\frac{2}{3}} = 9.9$$

PTS: 2 REF: 081532a2

17 ANS:
4

PTS: 2 REF: 018715siii

18 ANS:
8

PTS: 2 REF: 060312siii

19 ANS:

$$20. \ r = \frac{s}{\theta} = \frac{50}{2.5} = 20$$

PTS: 2 REF: 060626b

20 ANS:

$$24. \ \theta = \frac{s}{r}$$

$$\frac{3}{4} = \frac{18}{r}$$

$$3r = 72$$

$$r = 24$$

PTS: 2 REF: 061026b