

Unit 5

Angle Measures, Arc Lengths, Area of Sectors, & Circular Motion

Write the following angle measures in radians.

1. 165°

2. -300°

Write the following angle measures in degrees.

3. $-\frac{\pi}{10}$

4. $\frac{7\pi}{6}$

Give one positive and one negative coterminal angle for each given angle.

5. 135°

6. $\frac{\pi}{4}$

Write the following angle measures in degree-minute-second (DMS) form.

7. 42.25°

8. -210.615°

Write the following angle measures in decimal degree form.

9. $164^\circ 39'$

10. $8^\circ 15' 54''$

Find the length of the intercepted arc given the central angle and radius of the circle. Round your answer to the nearest tenth.

11. $\theta = \frac{4\pi}{5}$; $r = 9$ cm

12. $\theta = 345^\circ$; $r = 2.5$ ft

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

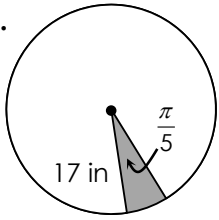
10. _____

11. _____

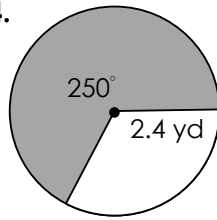
12. _____

Find the area of each sector. Round your answer to the nearest tenth.

13.



14.



13. _____

14. _____

Use your knowledge of arc lengths, area of sectors, and circular motion to solve each problem.

15. Lincoln, Nebraska lies directly north of Dallas, Texas. Lincoln is at a latitude of 40.5° N and Dallas is at a latitude of 32.5° N. Assuming the radius of the earth is 3,960 miles, how far apart are these cities?

15. _____

16. _____

17. _____

18. _____

16. A motion detector can detect movement up to 25 feet away through an angle of 105° . What area can the motion detector monitor?

17. The diameter of each tire on a vehicle is 32 inches. If the tires are moving at a rate of 800 revolutions per minute, find the linear speed of the vehicle in miles per hour.

18. The drum in a washing machine spins at 1,200 revolutions per minute. If the diameter of the drum is 76 centimeters, find the angular speed of the drum in radians per second.