Name: _____

9.8 – Radian Measure

Past due on: _____ Period: _____

Convert each degree measure into radians. Express your answer as a multiple of π in simplest form.

1. -495°

2. 100°

3. -30°

4. -300°

Convert each radian measure into degrees.

5. $-\dfrac{53\pi}{36}$

6. $\dfrac{14\pi}{9}$

7. $\dfrac{35\pi}{18}$

8. $-\dfrac{29\pi}{6}$

Find the <u>exact value</u> of the missing quantity: s denotes the length of the arc of a circle of radius r subtended by the central angle θ.

9. $s = 1.5$ feet & $\theta = \pi/4$ radians; find r

10. $s = 4$ meters & $r = 7$ meters; find θ

11. $r = 5$ feet & $\theta = 18°$; find s

12. $s = 40$ cm & $\theta = 20°$; find r

13. In a circle with a diameter of 24 centimeters, a central angle of $\dfrac{4\pi}{3}$ radians intercepts an arc. What is the length of the arc?

14. In the diagram, Circle 1 has radius 4 while Circle 2 had radius 6.5. Angle A intercepts an arc of length π, and angle B intercepts an arc of length $\dfrac{13\pi}{8}$. Dominic thinks that angles A and B have the same radian measure. Is Dominic correct? Explain your reasoning.

Circle 1   Circle 2

4
A
π

6.5
B

$\dfrac{13\pi}{8}$
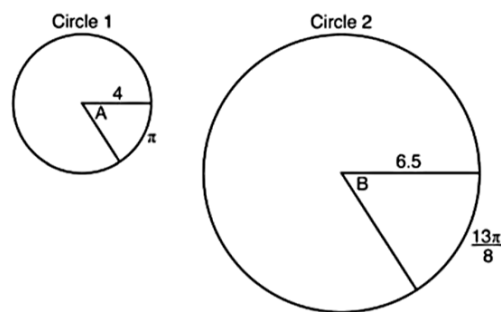
15. As shown in the diagram, a dial in the shape of a semicircle has a radius of 4 centimeters. Find the measure of θ, in radians, when the pointer rotates to form an arc whose length is 1.38 centimeters.

1.38 cm   4 cm

θ
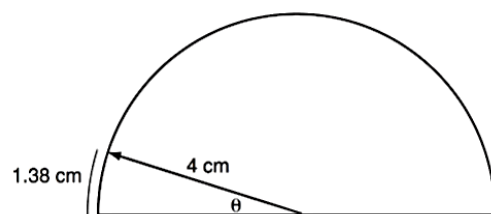
16. The pendulum of a clock swings through an angle of 2.5 radians as its tip travels through an arc of 50 centimeters. Find the length of the pendulum, in centimeters.

17. 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 5.5 inches. What is the diameter of the pizza to the nearest inch?

18. Suppose a windshield wiper arm has a length of 22 inches and rotates through an angle of $\dfrac{11\pi}{18}$ radians. What distance does the tip of the wiper travel as it moves once across the windshield? Explain.

Chapter 9: Circles