

12.7

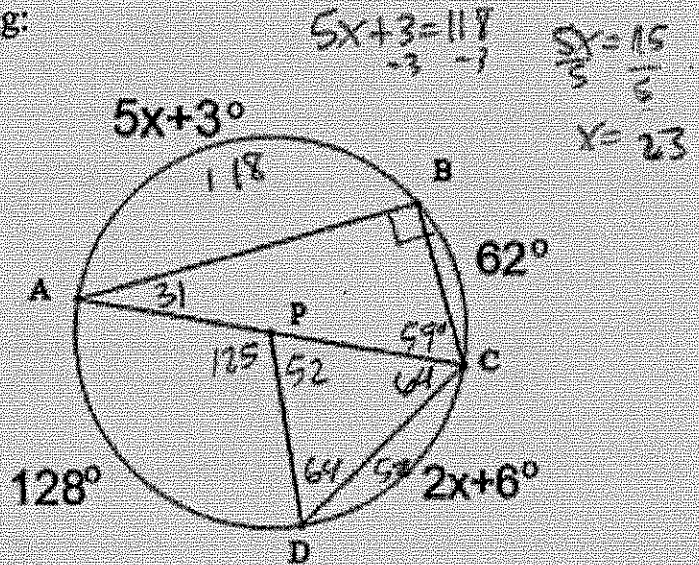
Name: _____

Hour: Key

Unit #12 – Quiz 1 Review: Inscribed Angles and Arcs and Sector Area and Arc Length

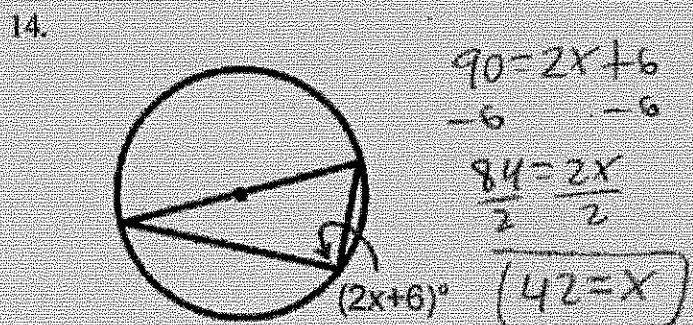
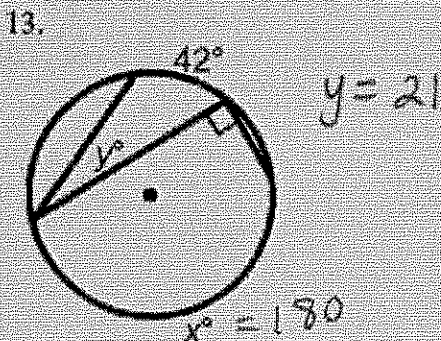
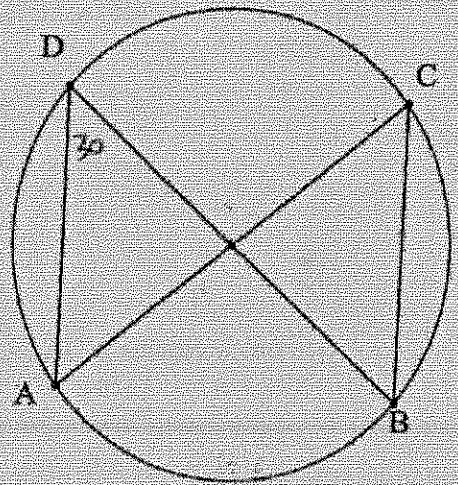
Show your work by filling out the diagrams.
In circle P, AC is a diameter. Find the following:

- | | |
|-------------------------------|-----------------------------|
| 1. $x = 23$ | 2. $m\angle B = 90^\circ$ |
| 3. $m\angle BCA = 59^\circ$ | 4. $m\widehat{AB} = 118$ |
| 5. $m\angle PCD = 64^\circ$ | 6. $m\angle PDC = 64^\circ$ |
| 7. $m\widehat{DC} = 52^\circ$ | 8. $m\angle A = 31^\circ$ |



Refer to the circle to answer the following questions.

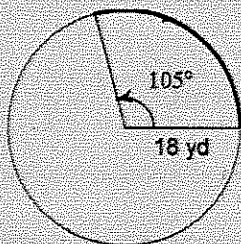
- | | | |
|--------------------------------|----------------------------|------------------------|
| 9. $m\widehat{AB} = 68^\circ$ | $m\angle C = 34^\circ$ | $m\angle D = 34^\circ$ |
| 10. $m\angle D = 30^\circ$ | $m\widehat{AB} = 60$ | $m\angle C = 30$ |
| 11. $m\widehat{CD} = 87^\circ$ | $m\angle B = 43.5$ | $m\angle A = 43.5$ |
| 12. $m\angle B = 30^\circ$ | $m\widehat{CD} = 60^\circ$ | $m\angle A = 30^\circ$ |



Find the arc length and the area of the indicated sector.

15.

$$\frac{105}{360} (2\pi \cdot 18) =$$



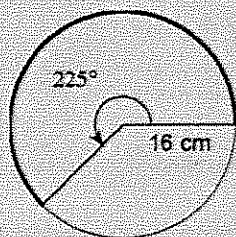
Arc length

$$33 \text{ yd or } 21\frac{1}{2}\pi$$

Sector Area

$$\frac{105}{360} (\pi \cdot 18^2) = 296.88 \text{ yd}^2 \text{ or } 94.5\pi$$

$$\frac{225}{360} (2\pi \cdot 16) =$$



Arc length

$$62.8 \text{ cm or } 20\pi$$

Sector Area

$$\frac{225}{360} (16^2\pi) = 502.65 \text{ or } 160\pi$$

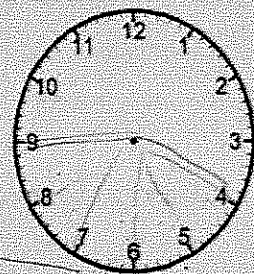
Consider a standard 12 hour clock like the one below with a radius of 5 inches.

Use this to answer questions 17-18. Use the shortest path between the two numbers.

$$\text{each } \frac{360}{12} = 30$$

17. It is 12:30. What is the length of the arc between the minute and hour hands?

$$15.71 \text{ in}$$



change to 9:20

18. It is 9:20. What is the length of the arc between the minute and hour hands?

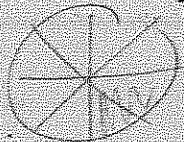
$$\frac{150}{360} \cdot 2\pi(5)$$

$$\frac{25\pi}{6} \text{ or } 13.09 \text{ inches}$$

A pie has a radius of 4in. Use this information to answer questions 19 & 20.

$$\frac{360}{8} = 45$$

19. You eat two pieces of a pie divided into eight slices. What is the area of the pie you ate?



$$\frac{90}{360} (\pi \cdot 4^2)$$

$$4\pi \text{ or } 12.57 \text{ in}^2$$

20. What is the area of half of the pie?

$$\frac{180}{360} (\pi \cdot 4^2)$$

$$8\pi \text{ or } 25.13 \text{ in}^2$$

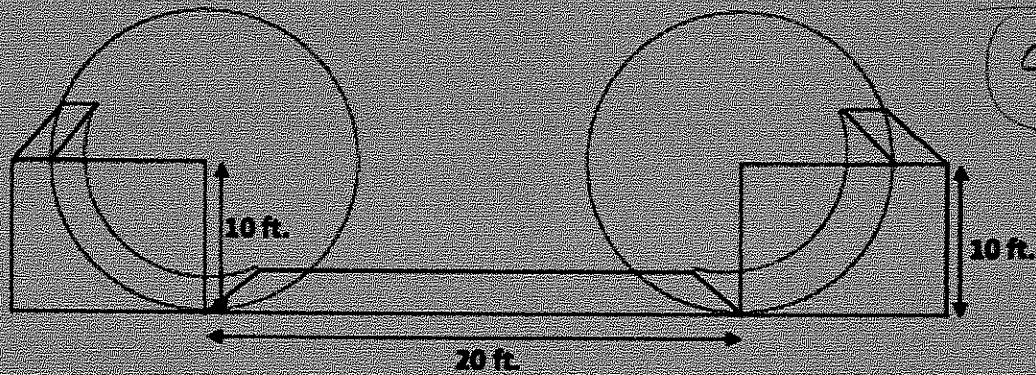
21. An inchworm crawls on the outside of a big round peach. If the peach has a radius of 4 centimeters and a central angle of 270° , how far did the inchworm travel?

$$\frac{270}{360} (8\pi) = 6\pi \text{ or } 18.85 \text{ cm}$$

22. A garden is in the shape of a semicircle with a diameter of 40 m. What is the area of the garden?

$$\frac{180}{360} (\pi 20^2) = 200\pi \text{ or } 628.32 \text{ m}^2$$

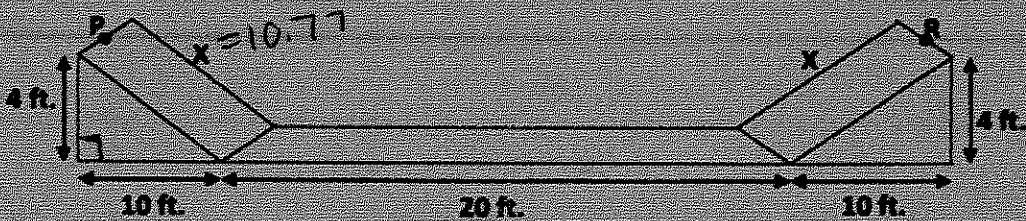
23. Skateboarding has become a popular sport. The parks department is thinking of constructing ramps in some of the local playgrounds. A "half-pipe" ramp is formed by two quarter-circle ramps, each of which is 10 feet high, plus a flat space 20 feet long between the centers. Find the distance a skater travels from the top of one ramp to the top of the other.



51.42 ft

$$\frac{90}{360} (2\pi 10) = 5\pi \quad 2(5\pi) + 20 = 51.42$$

24. A second ramp has two straight ramps, each of which is 4 feet high and 10 feet long, with a flat space of 20 feet in between. Find the distance a skater travels from the top on one ramp to the top of the other—from point P to point R. (Hint: Use the Pythagorean Theorem.)



$$4^2 + 10^2 = x^2$$

$$16 + 100 = x^2$$

$$\sqrt{116} = \sqrt{x^2}$$

$$10.77 = x$$

$$10.77 + 20 + 10.77 = 41.54 \text{ ft}$$

25. A lawn sprinkler located at the corner of a yard is set to rotate through 90° and project water out 30 feet. To the nearest square foot, what area of lawn is watered by the sprinkler?

$$\frac{90}{360} (\pi 30^2) = (225\pi \text{ or } 706.86 \text{ ft}^2)$$

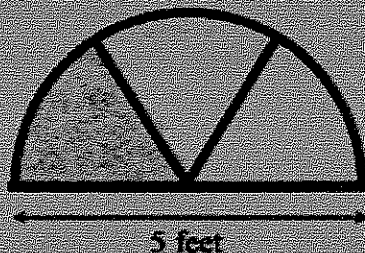
26. The pendulum in the Franklin Institute is 40 feet long. It swings through an angle of 12° . Find the length of the arc it swings through in inches.

$$\frac{12}{360} (2\pi 40) = \frac{2}{3}\pi \text{ or } 8.38 \text{ in}$$

27. The minute hand of a clock is 1.2 centimeters long. To the nearest tenth of a centimeter, how far does the tip of the minute hand move in 20 minutes?

$$\frac{20}{60} = \frac{1}{3} \quad \frac{1}{3} (2\pi 1.2) = \frac{4}{5}\pi \text{ or } 2.5 \text{ cm}$$

28. A cathedral window is built in the shape of a semicircle. If the window is to contain three stained glass sections of equal size, what is the area of each stained glass section? Round to the nearest foot.



$$\frac{60}{180} (\pi 2.5^2)$$

$$\frac{25}{12} \pi \text{ or } 6.5$$

7 ft²

29. You stop for lunch at a local pizza shop where each pizza is cut into 8 slices. Would your hunger be better satisfied with one slice from a 16 inch pizza or two slices from a 12 inch pizza?

$$\frac{1}{8} (\pi 8^2) = 25.1 \text{ in}^2$$

$$\frac{2}{8} (\pi 6^2) = 28.27$$

2 slices from 12 inch pizza

30. George is riding a Ferris Wheel. The diameter of the wheel is 250 feet and George travels 50° along the arc of the circle before it stopped to let other riders on. How far did George travel before the Ferris Wheel stopped?

$$\frac{50}{360} (2\pi 125)$$

$$\frac{625}{18} \pi \text{ or } 109.08$$