Secondary 2H
Unit 10

Name Key **Desk** _____

HW: REVIEW of Circles

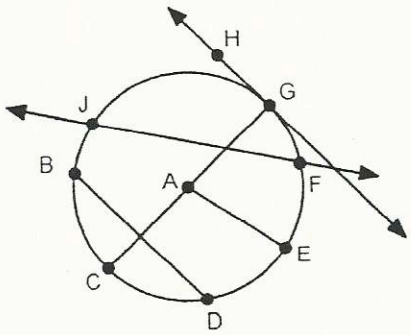
Score _____

TEST will be on: Thursday, April 4th

Things you should be able to do:

- Explain why all circles are similar.
- Understand and apply the relationships between inscribed angles, central angles, arcs, chords, tangent lines and secant lines.
- Use and apply the properties of a quadrilateral inscribed in a circle.
- Identify a tangent line to a circle.
- Find arc lengths and areas of sectors of circles.
- Find the equation of a circle given the center and the radius.
- Complete the square to find the center of a given circle.
- Determine the focus and directrix of a parabola given the equation.
- Write the equation of a parabola with a given focus/directrix and vertex.
- Write the equation of a parabola using the distance formula.

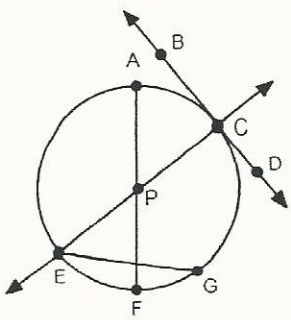
1. Identify the parts of Circle A.



a. chord: $\overline{BD}$, $\overline{JF}$, $\overline{CG}$
b. tangent line: $\overleftrightarrow{HG}$
c. diameter: $\overline{CG}$
d. radius: $\overline{AE}$, $\overline{CA}$, $\overline{AG}$
e. point of tangency: G
f. center: A
g. secant line: $\overleftrightarrow{JF}$

2. Identify the term that best describes the given line, segment, or point.

a. $\overline{AF}$ diameter
b. $\overline{PF}$ radius
c. C point of tangency
d. $\overleftrightarrow{BD}$ tangent line
e. $\overline{EG}$ chord
f. $\overleftrightarrow{CE}$ secant line
g. P center

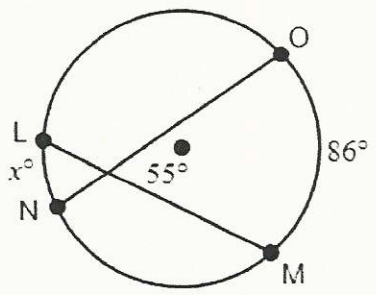


3. A child's train has a circular turning radius of 12 inches. The distance between the two front tires is 3 inches. To the nearest tenth of an inch, how much farther does the tire on the outer edge of the turn travel than a tire on the inner edge?

6π in $\approx$ 18.8 in

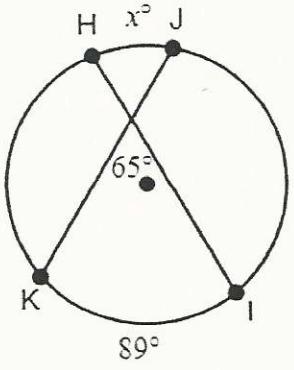
For #4-6, find the value of x.

4.



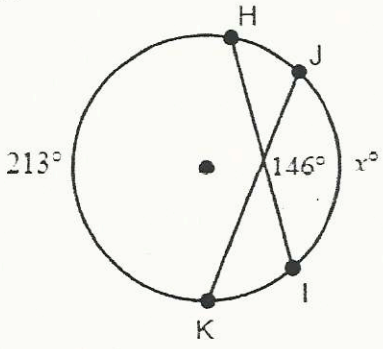
x = 24°

5.



x = 41°

6.



x = 79°

7. In circle Q, $m\angle CBD = 23$ and $m\widehat{AD} = 98$. Find the following measures:

a. $m\widehat{CD}$ = 46°

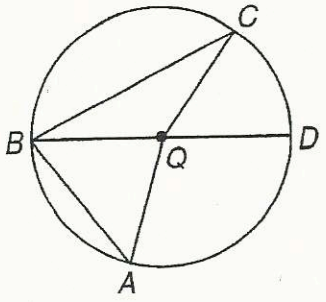
b. $m\angle DBA$ = 49°

c. $m\widehat{AC}$ = 144°

d. $m\angle CBA$ = 72°

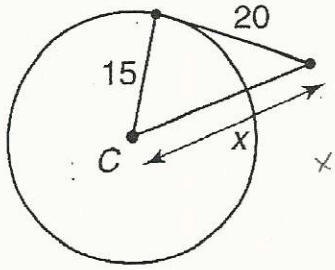
e. $m\widehat{CBA}$ = 216°

f. $m\angle DQA$ = 98°



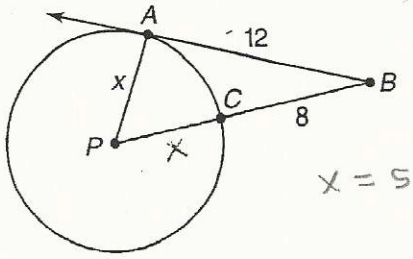
For #8 and #9, assume that segments are tangent if they appear to be tangent. Find the value of x.

8.



x = 25

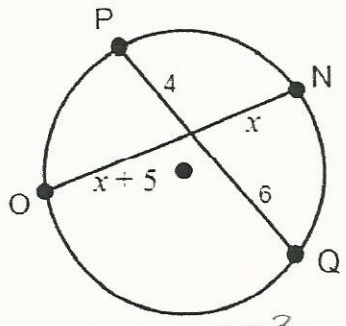
9.



x = 5

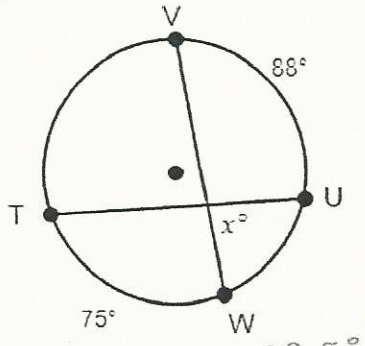
For #10-18, find the value of x. Assume that segments are tangent if they appear to be tangent.

10.



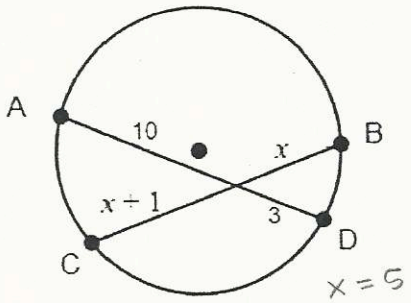
x = 3

11.



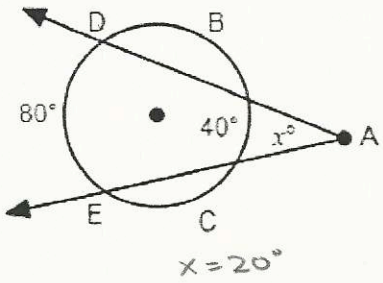
x = 98.5°

12.



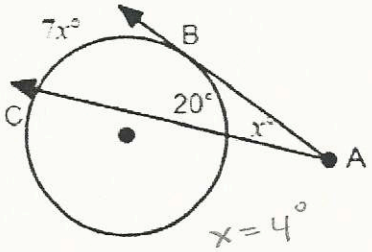
x = 5

13.



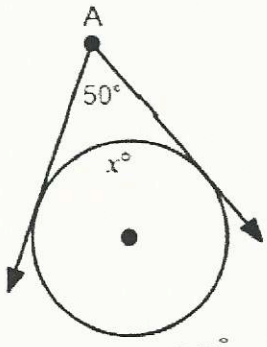
x = 20°

14.



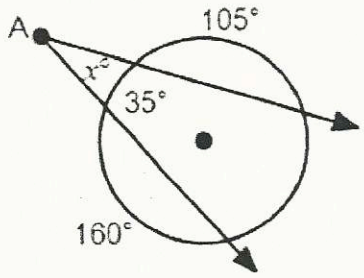
x = 4°

15.



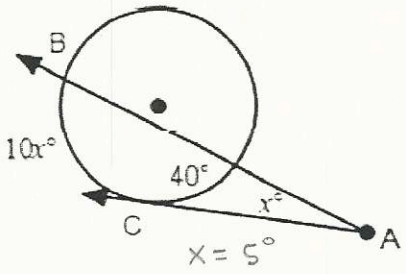
x = 130°

16.



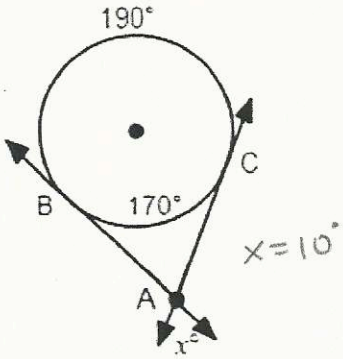
x = 30°

17.



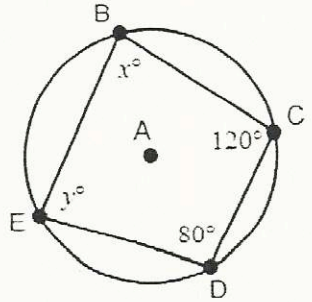
x = 5°

18.



x = 10°

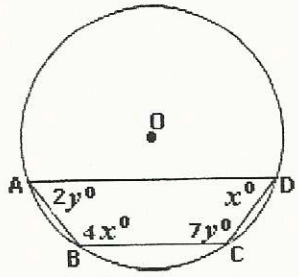
19. Find the value of x and y.



x = 80°

y = 120°

20. Find the value of x and y.



y = 20°

x = 36°

21. Find the degree measure of each angle expressed in radians and find the radian measure of each angle expressed in degrees. (Express radian measures in terms of π).

a. 225° $\frac{5\pi}{4}$

b. $\frac{7\pi}{6}$ 210°

c. 58° $\frac{29\pi}{90}$

d. $\frac{\pi}{2}$ 90°

e. 270° $\frac{3\pi}{2}$

f. $\frac{2\pi}{3}$ 120°

22. Find the arc length if the radius of a circle is 10 yards and the central angle is 2.9 radians. Write the answer in terms of π and give a decimal approximation to the nearest thousandth.

29 yards

23. Find the arc length if the diameter of a circle is 12 miles the central angle is 125°. Write the answer in terms of π and give a decimal approximation to the nearest thousandth.

$\frac{25\pi}{6}$ miles $\approx$ 13.09 miles

24. A central angle of $\frac{5\pi}{2}$ radians intercepts an arc length of 46 feet. What is the radius of the circle, rounded to the nearest hundredth?

$r \approx 5.856$

25. Find the area of a sector with a central angle of 9.6 radians and a radius of 21.4 meters.

2198.208 m^2

26. Find the area of a sector with a central angle of 44° and a radius of 56 inches.

$\frac{17248\pi}{45}$ $in^2 \approx 1204.138$ in^2

27. A personal pizza with a 6-inch diameter is cut into slices with a central angle of $\frac{\pi}{2}$ radians. What is the area of each slice? What is the perimeter of each slice?

Area: $\frac{9\pi}{4}$ in^2 ≈ 7.069 in^2 perimeter: $\frac{3\pi}{2} + 6$ in ≈ 10.712 in

28. Write the equation of a circle with a center at $(-1, 7)$ and a radius of 5.

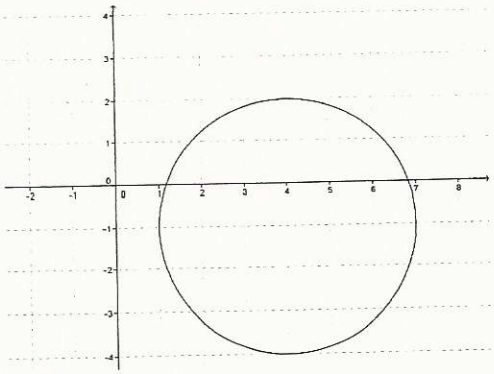
$(x+1)^2 + (y-7)^2 = 25$

29. Identify the center and the radius of the circle: $(x + 5)^2 + (y - 3)^2 = 4$

center $= (-5, 3)$

radius $= 2$

30. Write the equation of the circle pictured.



$(x-4)^2 + (y+1)^2 = 9$

31. Find the center and radius of the circle described by the equation: $x^2 + y^2 - 8x + 2y + 2 = 0$

center $= (-1, 4)$

radius $= \sqrt{17}$

32. What are the center and radius of the circle whose equation is $2x^2 + 2y^2 + 3x - 16y + \frac{9}{8} = 0$?

center $= (-\frac{3}{4}, 4)$

radius $= 4$