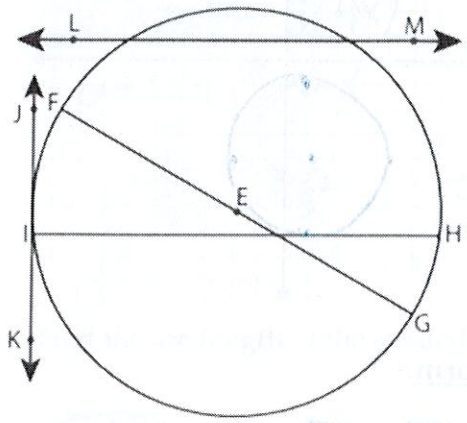
Math 3 Unit 5 Circles Test Review Name: Key Date _____

1. Use the picture below to answer the following.



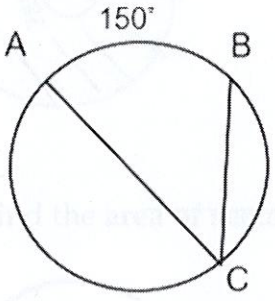
A. Circle: $\odot E$ B. Radius: $\overline{EF}, \overline{EG}$ C. Diameter: $\overline{FG}$

D. Chord: $\overline{HI}, \overline{FG}$ E. Secant: $\overleftrightarrow{LM}$ H. Minor Arc: $\overset{\frown}{HG}$ multiple answers

F. Point of Tangency: I G. Tangent: $\overleftrightarrow{JK}$

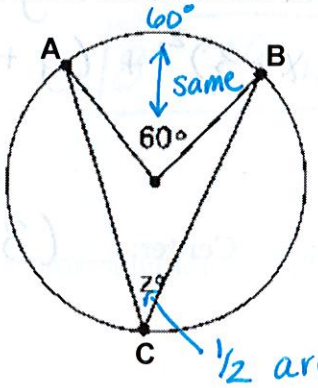
I. Major Arc: $\overset{\frown}{HGF}$ multiple answers J. If FE = 6, what is the length of GF? 12

2. What is the measure of $< C$?



$\angle C = 75°$

3. What is the measure of $< z$ and arc AB?

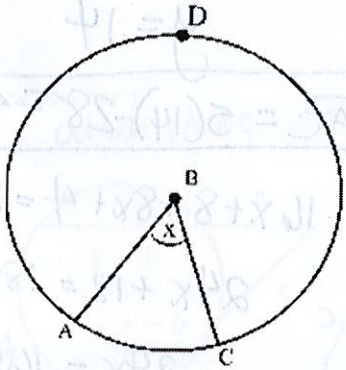


½ arc

$\angle Z = 30°$

$\overset{\frown}{AB} = 60°$

4. The measure of arc ADC = 290°. Find the measure of x.



360
−290
70

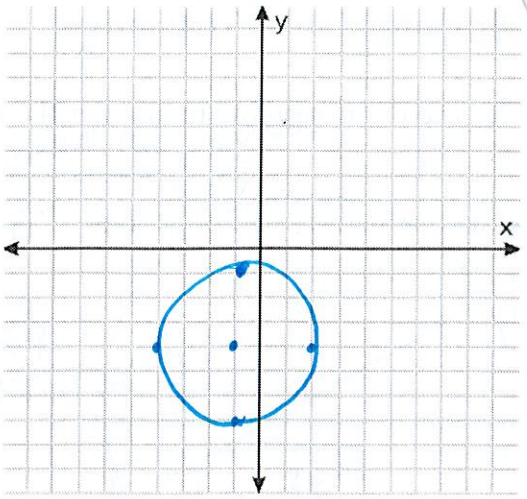
$x = 70°$

5. Given the equation of the circle: $(x + 2)^2 + (y - 5)^2 = 100$, identify the center and the radius.

Center: (−2, 5)

radius = 10 ($\sqrt{100}$)

6. **Graph** the following equation: $(x+1)^2 + (y+4)^2 = 9$ and **find the center and radius.**



Center: $(-1,-4)$

Radius: 3

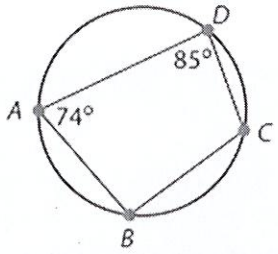
7. a) Write the circle equation $x^2 + y^2 - 6x + 4y - 3 = 0$ in **standard form**.

$(x^2 - 6x + \boxed{9}) + (y^2 + 4y + \boxed{4}) = 3 + \boxed{9} + \boxed{4}$

$(x-3)^2 + (y+2)^2 = 16$

b) Identify the following: Center: $(3,-2)$ Radius: 4

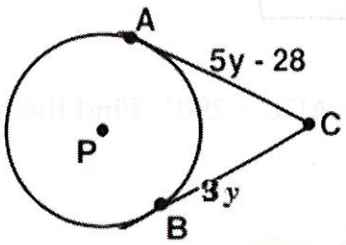
8. Find the missing angles.



$\angle B = 95°$

$\angle C = 106°$

9. Find the length of AC.



$5y - 28 = 3y$

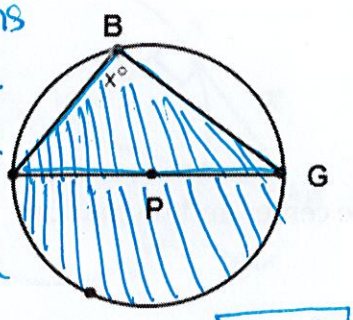
$\frac{2y}{2} = \frac{28}{2}$

$y = 14$

$\overline{AC} = 5(14) - 28 = 42$

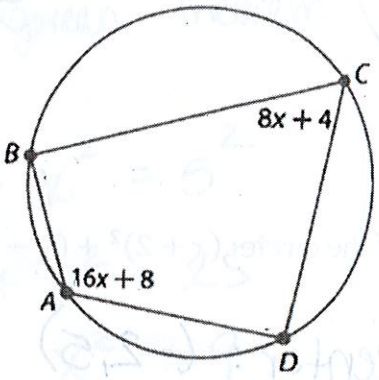
10. Find x.

$\angle B$ opens up to a semi-circle & is inscribed



$x = 180 \div 2 = \boxed{90°}$

11. Solve for x.



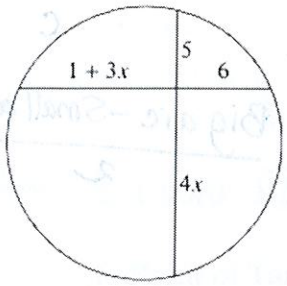
$16x + 8 + 8x + 4 = 180$

$24x + 12 = 180$

$\frac{24x}{24} = \frac{168}{24}$

$\boxed{x = 7}$

Solve for x.



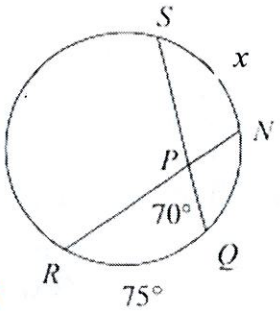
$6(1+3x) = 5(4x)$

$6 + 18x = 20x$

$\frac{6}{2} = \frac{2x}{2}$

$\boxed{x = 3}$

13. Solve for x.

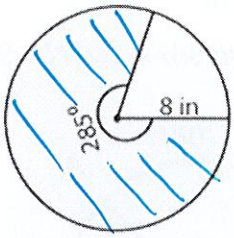


$\frac{75 + x}{2} = 70$

$75 + x = 140$

$\boxed{x = 65}$

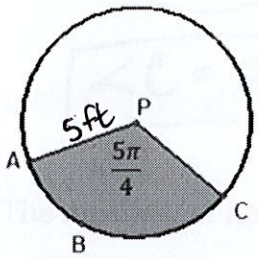
14. Find the **arc length** of the shaded region. Round to the nearest hundredths place.



$S = \frac{\theta}{360} \cdot 2\pi r$

$= \frac{285}{360} \cdot 2\pi(8) = \boxed{39.79 \text{ in}}$

15. Find the **area of sector** of the shaded region. Round to the nearest hundredths place.

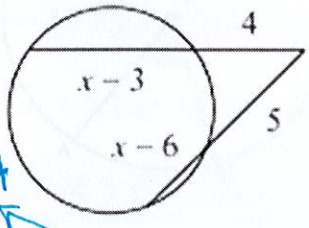


$S = \frac{\theta}{2} \cdot r^2$

$= \frac{\frac{5\pi}{4}}{2} \cdot (5)^2 = \boxed{49.09 \text{ ft}^2}$

16. Solve for x.

outside · whole = outside · whole



$4(x+1) = 5(x-1)$

$4x + 4 = 5x - 5$

$-4x \quad -4x$

$4 = x - 5$

$+5 \quad +5$

$\boxed{x = 9}$

17. Solve for x.

$(\text{outside})^2 = \text{outside} \cdot \text{whole}$

alone

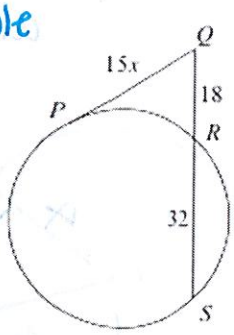
$(15x)^2 = 18(50)$ ← 18+32

$\frac{225x^2}{225} = \frac{900}{225}$

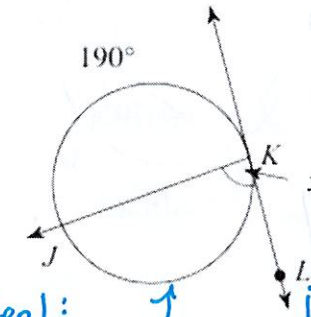
$x^2 = 4$

$\sqrt{x^2} = \sqrt{4}$

$\boxed{x = 2}$



18. Find the measure of x.

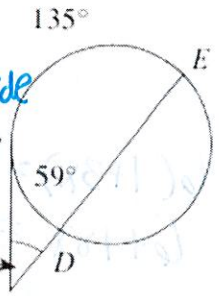


Step 1: arc JK = 360 − 190 = 170°

Step 2: $x = \frac{1}{2}$ arc $= \frac{1}{2}(170)$

$x = 85°$

19. Solve for <C.

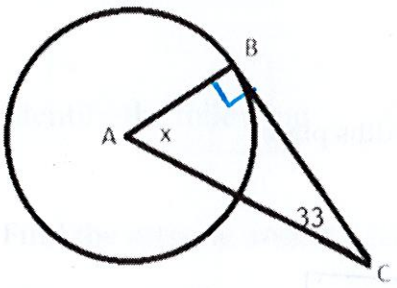


$\frac{\text{Big arc} - \text{Small arc}}{2} = \text{outside } \angle$

$\frac{135 - 59}{2} = \angle C$

$\angle C = 38°$

20. $\overline{BC}$ is a tangent to circle A. Find the measure of x given m<C = 33°.

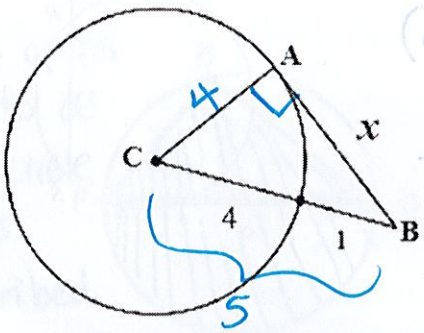


180
− 90
− 33
57

$x = 57°$

21. AB is tangent to Circle C. **Find x.**

all radii are the same!



Pythagorean Theorem

$4^2 + x^2 = 5^2$

$16 + x^2 = 25$

$x^2 = 9$

$\sqrt{x^2} = \sqrt{9}$

$x = 3$