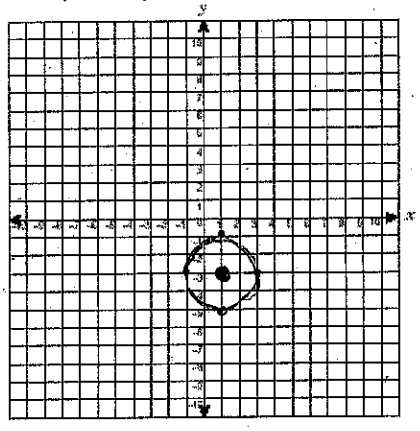
Name_____ H2-14 Date: _____

A. Write the equations for a circle with the center and radius given

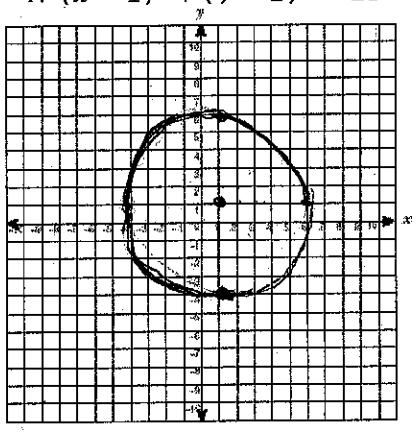
1. $(9, -9)$, $r = 3\sqrt{8}$ $(x-9)^2+(y+9)^2=72$
2. $(-2, 0)$, $r = 24$ $(x+2)^2+y^2=576$
4. $(0, -27)$, $r = \sqrt{12}$ $x^2+(y+27)^2=12$
5. $(0, 0)$, $r = 12$ $x^2+y^2=144$

B. Graph the circles

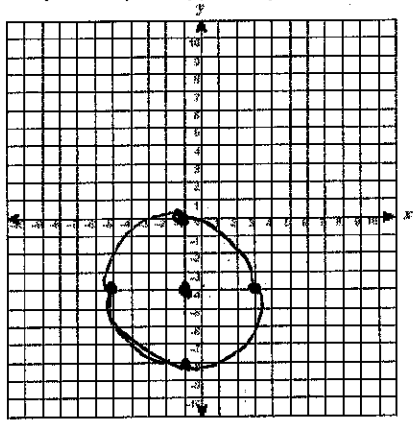
1. $(x-1)^2+(y+3)^2=4$ C(1,-3) r=2



1. $(x-1)^2+(y-1)^2=25$ C(1,1) r=5



1. $(x+1)^2+(y+4)^2=16$ C(-1,-4) r=4

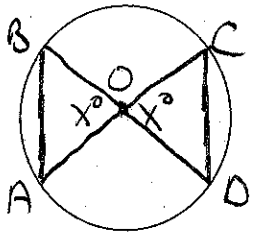


Illustrate the theorem on the circle to the right

Theorem - Congruent central angles in a circle have congruent chords
Congruent chords have congruent central angles
Congruent chords have congruent arcs
Congruent arcs have congruent chords

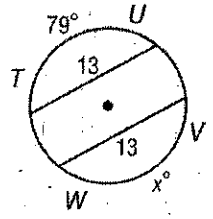
$\overline{AB} \cong \overline{CD}$

$\overset{\frown}{AB} \cong \overset{\frown}{CD}$



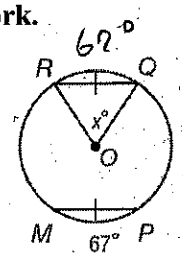
C. Find x , show your work.

1.



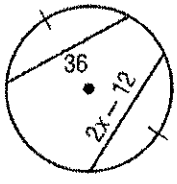
$x = 79°$

2.



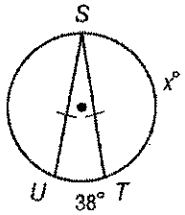
$x = 67°$

3.



$2x-12=36$

4.

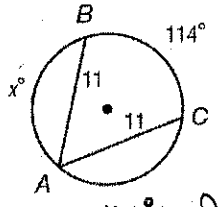


$360°-38°=322°$

$\frac{322°}{2}$

$x = 161°$

5.



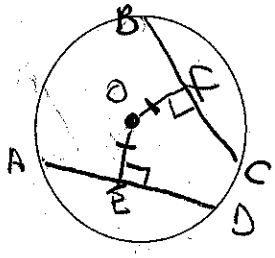
$360-114°=246°$

$\frac{246°}{2}$

$x = 123°$

Theorem Chords equidistant from the center are congruent
Congruent chords are equidistant from the center

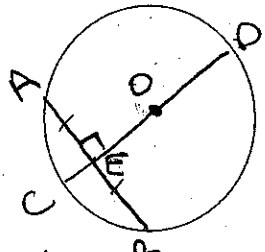
If $\overline{EO} \cong \overline{OF}$
Then $\overline{AO} \cong \overline{BC}$



If $\overline{AO} \cong \overline{BC}$
Then $\overline{EO} \cong \overline{OF}$

If a diameter is perpendicular to a chord, then it bisects the chord and its arc
If a diameter bisects a chord, then it is perpendicular to the chord
The perpendicular bisector of a chord contains the center of the circle

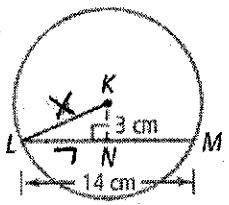
If $\overline{CO} \perp \overline{AB}$, then $\overline{AE} \cong \overline{EB}$



If $\overline{AE} \cong \overline{EB}$ and $\overline{CO} \perp \overline{AB}$, then CO is Diameter

C. Consider the relationship between chords and the radius to find x. Round the nearest tenth. Explain how you know or show all your work.

1.



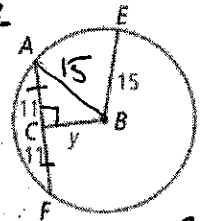
If $KN \perp LM$, then KN bisects LM

$3^2+7^2=x^2$ $\quad x=7.6$ cm

$9+49=x^2$

$58=x^2$

2.



$y^2+11^2=15^2$

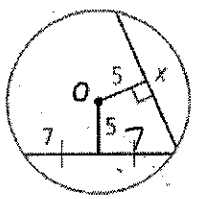
$y^2+121=225$

$-121 \quad -121$

$y^2=104$

$y=10.2$

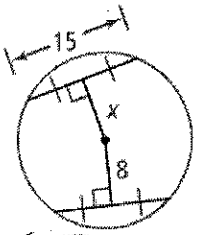
3.



chords same distance from center are $\cong$

$x=14$

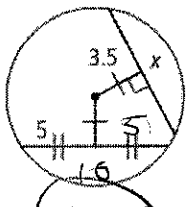
4.



$x=8$

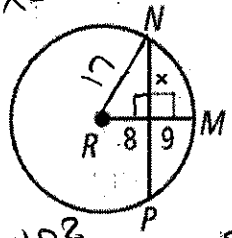
same distance from center

5.



$x=10$

6.



$8^2+x^2=17^2$

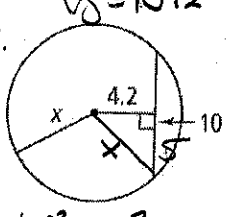
$64+x^2=289$

$-64 \quad -64$

$x^2=225$

$x=15$

7.



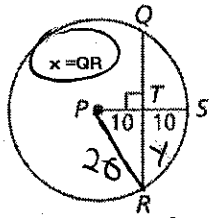
$5^2+4.2^2=x^2$

$25+17.64=x^2$

$42.64=x^2$

$6.5=x$

8.



$10^2+y^2=20^2$

$100+y^2=400$

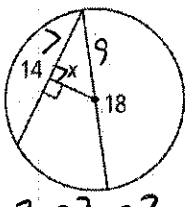
$-100 \quad -100$

$y^2=300$

$y=17.3 \times 2$

$x=34.6$

9.



$x^2+7^2=9^2$

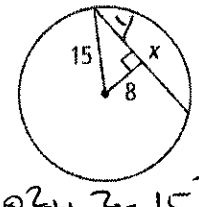
$x^2+49=81$

$-49 \quad -49$

$x^2=32$

$x=5.7$

10.



$8^2+y^2=15^2$

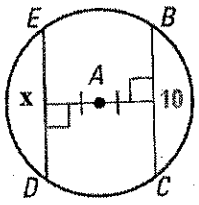
$64+y^2=225$

$-64 \quad -64$

$y^2=161$

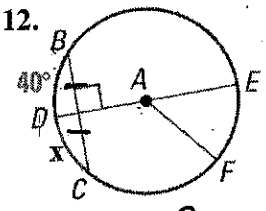
$y=12.7$

11.



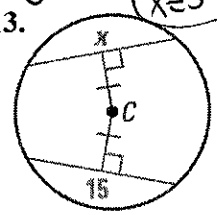
$x=10$

12.



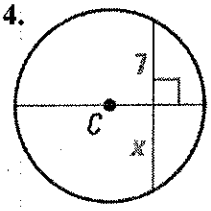
$x=40^\circ$

13.



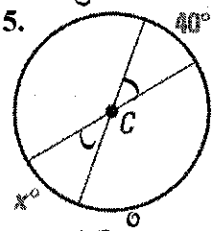
$x=15$

14.



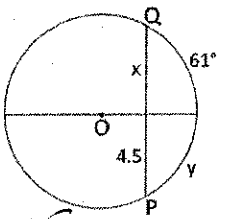
$x=7$

15.



$x=40^\circ$

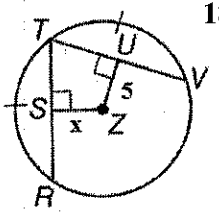
16.



$x=4.5$

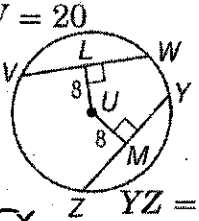
$y=61^\circ$

17.



$x=5$

18. $VW = 20$

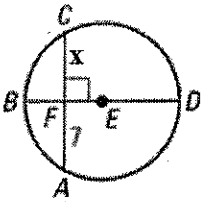


$YZ = 5x$

$20=5x$

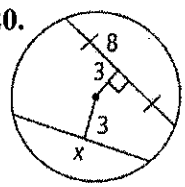
$x=4$

19.



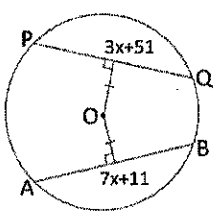
$x=7$

20.



$x=16$

21.



$3x+51=7x+11$

$-3x \quad -3x$

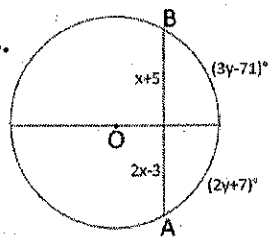
$51=4x+11$

$-11 \quad -11$

$40=4x$

$x=10$

22.



$x+5=2x-3$

$-x \quad -x \quad +3$

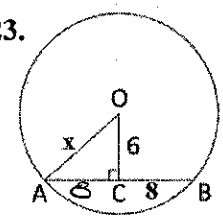
$8=x$

$3y-71=2y+7$

$-2y+71 \quad -2y+71$

$y=78$

23.



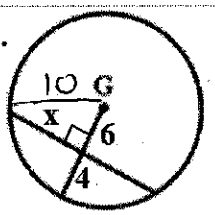
$6^2+8^2=x^2$

$36+64=x^2$

$100=x^2$

$x=10$

24.



$6^2+x^2=10^2$

$36+x^2=100$

$-36 \quad -36$

$x^2=64$

$x=8$