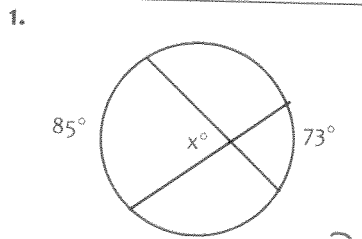


10-6 & 10-7 Review Homework

Name Master E
 Date _____ Block _____

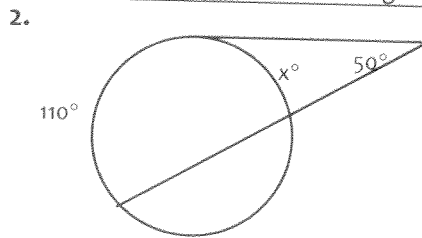
Write an equation and solve to find the value of x in each diagram.

All segments that appear to be tangent are!



$$x = \frac{1}{2}(85 + 73)$$

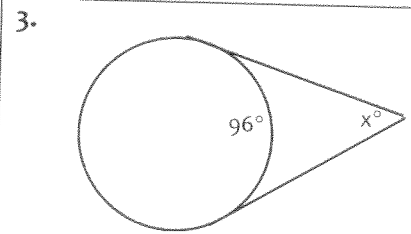
(79)



$$50 = \frac{1}{2}(100 - x)$$

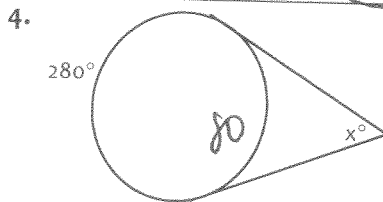
$$100 = 100 - x$$

(10)

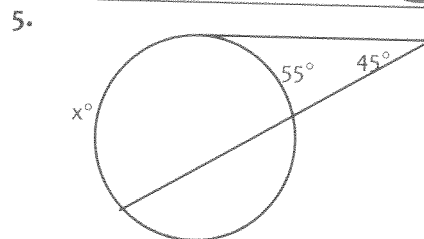


$$180 - 96 = x$$

(84)



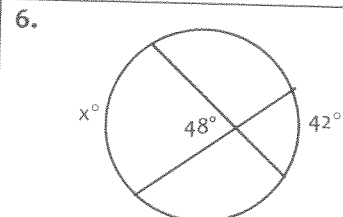
(100)



$$45 = \frac{1}{2}(x - 55)$$

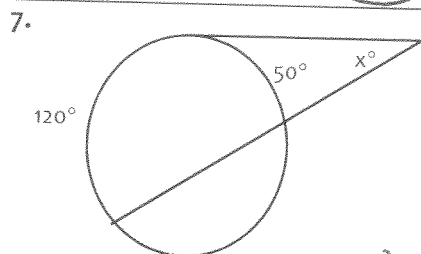
$$90 = x - 55$$

(145)



$$48 = \frac{1}{2}(x + 42)$$

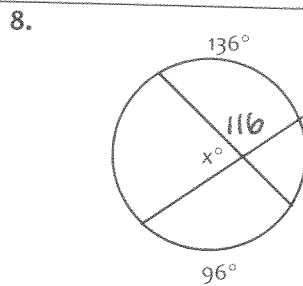
(54)



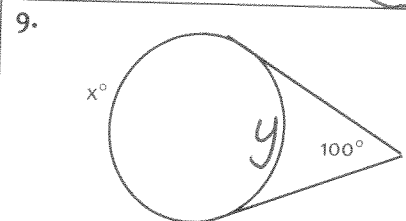
$$x = \frac{1}{2}(120 - 50)$$

$$\frac{1}{2}(70)$$

(35)



(64)



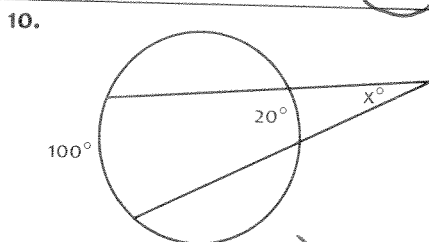
$$100 = 180 - y$$

$$y = 80$$

$$x = \frac{360}{2} - 80$$

$$x = 280$$

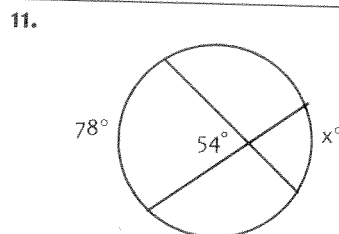
(280)



$$x = \frac{1}{2}(100 - 20)$$

$$x = \frac{1}{2}(80)$$

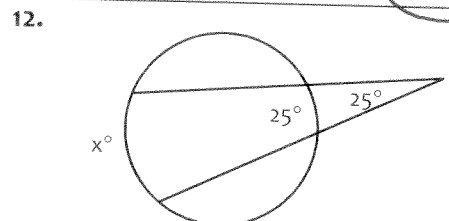
(40)



$$54 = \frac{1}{2}(78 + x)$$

$$108 = 78 + x$$

(30)



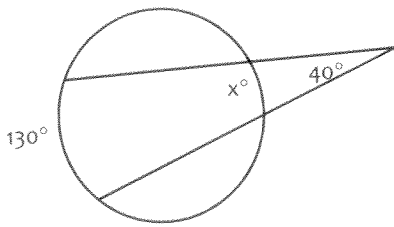
$$25 = \frac{1}{2}(x - 25)$$

$$50 = x - 25$$

(75)

Round any decimal answers to the nearest tenth.

13.

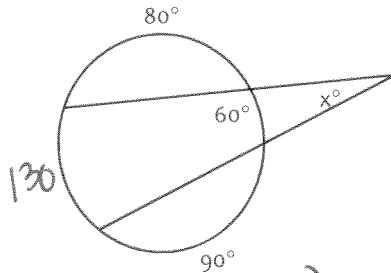


$$40 = \frac{1}{2}(130 - x)$$

$$80 = 130 - x$$

$x = 50$

14.

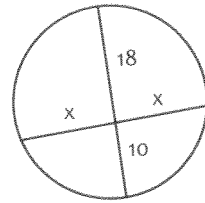


$$x = \frac{1}{2}(90 - 60)$$

$$x = \frac{1}{2}(30)$$

$x = 15$

15.

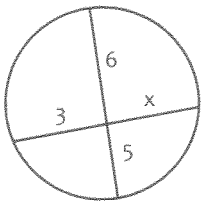


$$x \cdot x = 18 \cdot 10$$

$$x^2 = 180$$

$$x = \sqrt{180} \approx 13.4$$

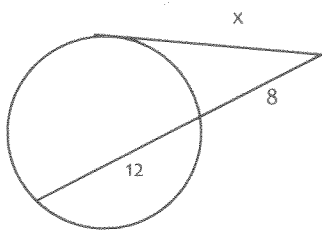
16.



$$3x = 30$$

$x = 10$

17.

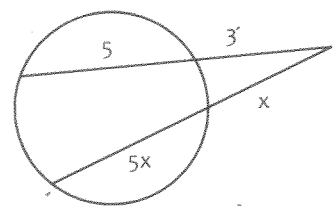


$$x^2 = 8(20)$$

$$x^2 = 160$$

$x \approx 12.6$

18.



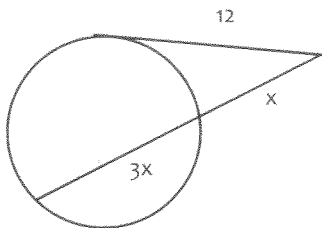
$$3(8) = x(6x)$$

$$24 = 6x^2$$

$$4 = x^2$$

$x = 2$

19.



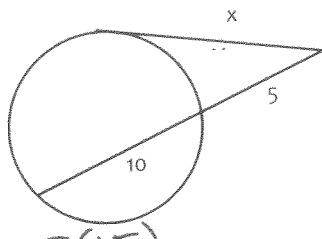
$$12^2 = x \cdot 4x$$

$$144 = 4x^2$$

$$36 = x^2$$

$x = 6$

20.

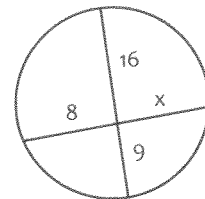


$$x^2 = 5(15)$$

$$x^2 = 75$$

$x \approx 8.7$

21.

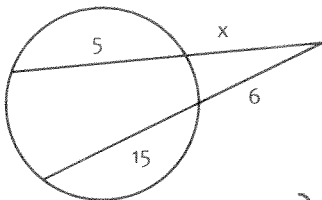


$$8x = 16 \cdot 9$$

$$8x = 144$$

$x = 18$

22.



$$x(x+5) = 6(21)$$

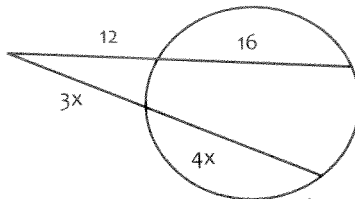
$$x^2 + 5x = 126$$

$$x^2 + 5x - 126 = 0$$

$$(x+14)(x-9) = 0$$

$x = 9$

23.



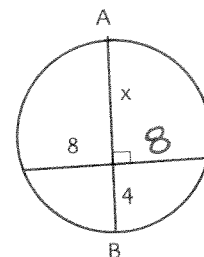
$$12(28) = 3x(7x)$$

$$336 = 21x^2$$

$$16 = x^2$$

$x = 4$

24. \overline{AB} is a diameter



$$4x = 64$$

$x = 16$

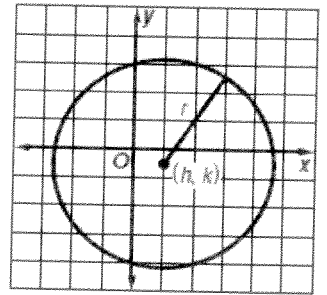
10-8: Equations of a Circle

Name Master E
Date _____ Block _____

- Objectives: - Write the equation of a circle.
- Graph a circle on the coordinate plane.

Equation of a Circle A circle is the locus of points in a plane equidistant from a given point. You can use this definition to write an equation of a circle.

Standard Equation of a Circle An equation for a circle with center at (h, k) and a radius of r units is $(x - h)^2 + (y - k)^2 = r^2$.



Example

Write an equation for a circle with center $(-1, 3)$ and radius 6.

Use the formula $(x - h)^2 + (y - k)^2 = r^2$ with $h = -1$, $k = 3$, and $r = 6$.

$$\begin{aligned} (x - h)^2 + (y - k)^2 &= r^2 && \text{Equation of a circle} \\ (x - (-1))^2 + (y - 3)^2 &= 6^2 && \text{Substitution} \\ (x + 1)^2 + (y - 3)^2 &= 36 && \text{Simplify.} \end{aligned}$$

Exercises

Write an equation for each circle.

1. center at $(0, 0)$, $r = 8$

$$x^2 + y^2 = 64$$

2. center at $(-2, 3)$, $r = 5$

$$(x + 2)^2 + (y - 3)^2 = 25$$

3. center at $(2, -4)$, $r = 1$

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

4. center at $(-1, -4)$, $r = 2$

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

5. center at $(-2, -6)$, diameter = 8

$$(x + 2)^2 + (y + 6)^2 = 64$$

6. center at $(-\frac{1}{2}, \frac{1}{4})$, $r = \sqrt{3}$

$$(x + \frac{1}{2})^2 + (y - \frac{1}{4})^2 = 3$$

7. center at the origin, diameter = 4 $r = 2$

$$x^2 + y^2 = 4$$

8. center at $(1, -\frac{5}{8})$, $r = \sqrt{5}$

$$(x - 1)^2 + (y + \frac{5}{8})^2 = 5$$

9. Find the center and radius of a circle with equation $x^2 + y^2 = 20$.

$$C(0, 0) \quad r = \sqrt{20} \approx 4.5$$

10. Find the center and radius of a circle with equation $(x + 4)^2 + (y + 3)^2 = 16$.

$$C(-4, -3) \quad r = \sqrt{16} = 4$$

10-8: Equations of a Circle

Name _____
Date _____ Block _____

Graph Circles If you are given an equation of a circle, you can find information to help you graph the circle.

Example

Graph $(x + 3)^2 + (y - 1)^2 = 9$.

Use the parts of the equation to find (h, k) and r .

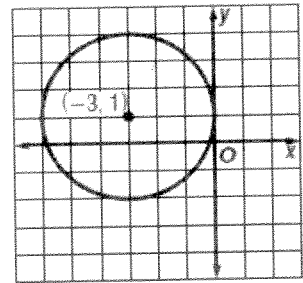
$$(x - h)^2 + (y - k)^2 = r^2$$

$$(x - h)^2 = (x + 3)^2 \quad (y - k)^2 = (y - 1)^2 \quad r^2 = 9$$

$$x - h = x + 3 \quad y - k = y - 1 \quad r = 3$$

$$-h = 3 \quad -k = -1$$

$$h = -3 \quad k = 1$$

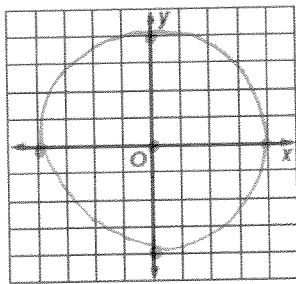


The center is at $(-3, 1)$ and the radius is 3. Graph the center. Use a compass set at a radius of 3 grid squares to draw the circle.

Exercises

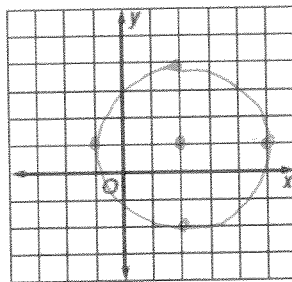
Graph each equation.

1. $x^2 + y^2 = 16$



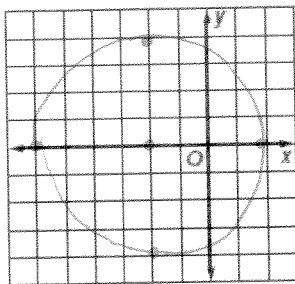
$(0, 0)$

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



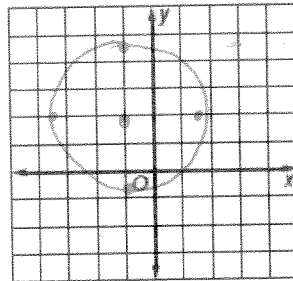
$(2, 1)$

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



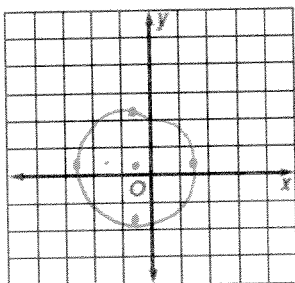
$(-2, 0)$

4. $(x + 1)^2 + (y - 2)^2 = 6.25$ $r = 2.5$



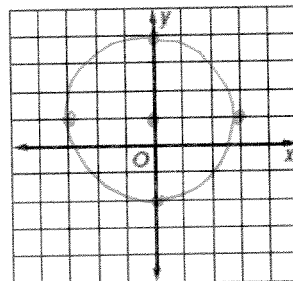
$(-1, 2)$

5. $(x + \frac{1}{2})^2 + (y - \frac{1}{4})^2 = 4$



$(-\frac{1}{2}, \frac{1}{4})$

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



$(0, 1)$