

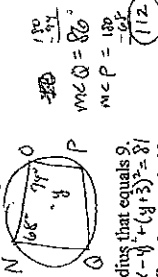
Find the value of each variable. Lines that appear to be tangent are tangent.

10. 106° , 8° , b°
 11. 112° , 8° , b°
 13. 132° , 54° , b°

Points A, B, and D lie on $\odot C$. $m\angle ACB = 40^\circ$, $m\widehat{AB} < m\widehat{AD}$. Find each measure.

13. $m\widehat{AB}$ 40°
 14. $m\angle ADB$ 20°
 15. $m\angle BAC$ 70°
16. A student inscribes a triangle inside a circle. The triangle divides the circle into arcs with the following measures: 46° , 102° , and 212° . What are the measures of the angles of the triangle?
 46° , 102° , 212°

17. A student inscribes $\triangle NOPQ$ inside $\odot Y$. The measure of $m\angle N = 68$ and $m\angle O = 94$. Find the measures of the other angles of the quadrilateral.



12.5

- 1) Write the equation of a circle with center at $(4, -3)$ and a radius that equals 9.
 $(x-4)^2 + (y+3)^2 = 81$
- 2) Write the equation of a circle with center at $(-2, 0)$ and a radius that equals 12.
 $(x+2)^2 + (y-0)^2 = 144$
- 3) Write the equation of a circle with center at the origin and a radius that equals $\sqrt{7}$.
 $x^2 + y^2 = 7$

4) If the equation of a circle is $(x+2)^2 + (y-3)^2 = 9$, find the radius and the center. $r = 3$ center $(-2, 3)$

5) If the equation of a circle is $x^2 + (y-3)^2 = 36$, find the radius and the center. $r = 6$ center $(0, 3)$

Write the standard equation of the circle with the given center that passes through the given point. Check the point using your equation.

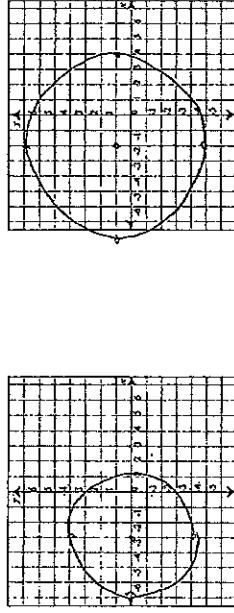
6. center $(2, -4)$; point $(6, -4)$
 $(x-2)^2 + (y+4)^2 = r^2$
 $(6-2)^2 + (-4+4)^2 = r^2$
 $(x-2)^2 + (y+4)^2 = 16$
7. center $(-1, 3)$; point $(7, -3)$
 $(x+1)^2 + (y-3)^2 = r^2$
 $(7+1)^2 + (-3-3)^2 = r^2$
 $(x+1)^2 + (y-3)^2 = 100$
8. center $(-4, 1)$; point $(0, -2)$
 $(x+4)^2 + (y-1)^2 = r^2$
 $(0+4)^2 + (-2-1)^2 = r^2$
 $(x+4)^2 + (y-1)^2 = 25$

Write the standard equation of each circle. Check two points using your equation.

9. $x^2 + (y-4)^2 = 16$
10. $(x-2)^2 + (y+4)^2 = 16$

Find the radius and center of the circles. Then graph the circles.

11. $(x-3)^2 + y^2 = 16$
 $r = 4$, center $(3, 0)$
12. $(x+2)^2 + (y-1)^2 = 36$
 center $(-2, 1)$, $r = 6$



12.1

In each circle, what is the value of x ?

- 28°

3 3

$x = 62$
- 59°

9 15

$x = 31$
- 33°

10 10

$x = 57$

In each circle, what is the value of r ?

- 3 3

$r = 4$
- 9 15

$r = 8$
- 50°

$r = 10.47$
- 24°

$r = 48$
- 88°

$r = 44$
- 96°

$r = 174$

The circles are inscribed in the triangles below. Find perimeter of the triangles.

- 3 cm 6 cm 8 cm

Perimeter = 34
- 7.5 ft 4 ft 6 ft

Perimeter = 35
- 60°

$r = 10.47$
- 30°

$r = 10.47$

12.2

Find the value of x .

- 12°

12 9

$x = 24$
- 32°

3.2 3.2

$x = 3.2$
- 6.3°

6.3 10

$x = 5$

Find the value of x to the nearest tenth.

- 14°

20 10

$x = 9.8$
- 92°

12 9

$x = 15.87$
- 96°

20.25 3.61

$x = 4.88$
- 87°

9 9

$x = 15.87$
- 88°

9 8

$x = 12$
- 90°

8 8

$x = 6.3$
- 96°

20.25 3.61

$x = 4.88$
- 100°

40 40

$x = 40$
- 100°

10 10

$x = 10$

In Exercises 1-9, find the value of each variable.

- 24°

a b

$a = 48$
- 88°

a b

$a = 44$
- 96°

a b

$a = 174$
- 55°

a b c

$a = 28, b = 47, c = 105$
- 76°

a b c

$a = 90, b = 74, c = 105$
- 100°

a b c

$a = 120, b = 120, c = 105$
- 140°

a b c

$a = 60, b = 105, c = 105$
- 100°

a b c

$a = 90, b = 74, c = 105$
- 100°

a b c

$a = 120, b = 120, c = 105$