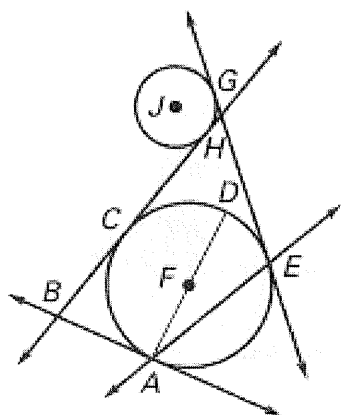


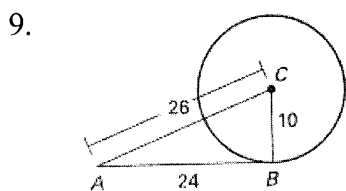
Use the diagram to match the notation with the term that best describes it.



- A. Center
- B. Chord
- C. Common Tangent
- D. Diameter
- E. Point of Tangent
- F. Radius
- G. Secant
- H. Tangent

- 1. \overline{EA} secant
- 2. \overline{AF} radius
- 3. \overline{EG} common tangent
- 4. F center
- 5. \overline{DA} diameter
- 6. C point of tangent
- 7. \overline{AE} chord
- 8. \overline{AB} tangent

Determine whether \overline{AB} is tangent to circle C. Explain your reasoning.

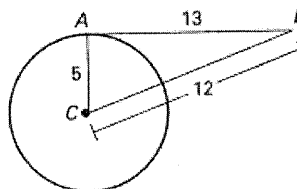


$$10^2 + 24^2 = 26^2$$

$$100 + 576 = 676$$

$$676 = 676 \checkmark$$

yes

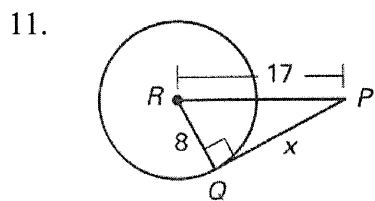


$$5^2 + 13^2 = 12^2$$

$$25 + 169 \neq 144$$

No does not make a right triangle

\overline{QR} is a radius of circle R and \overline{PQ} is tangent to circle R. Find the value of x.

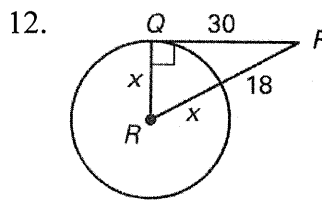


$$8^2 + x^2 = 17^2$$

$$64 + x^2 = 289$$

$$\begin{array}{r} -64 \\ \hline \sqrt{x^2} = \sqrt{225} \end{array}$$

x = 15

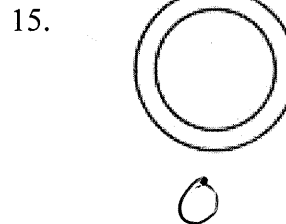
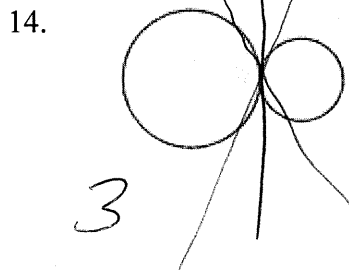
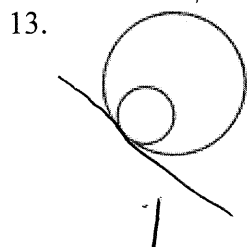


$$x^2 + 30^2 = (x+18)^2$$

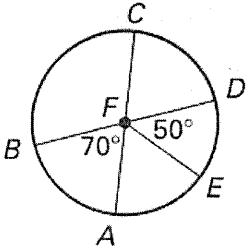
$$x^2 + 900 = (x+18)(x+18)$$

$$\begin{array}{r} x^2 + 900 = x^2 + 18x + 18x + 324 \\ -x^2 \qquad \qquad -x^2 \\ \hline 900 = 36x + 324 \\ -324 \qquad \qquad -324 \\ \hline 576 = 36x \\ \frac{576}{36} = \frac{36x}{36} \\ \hline \text{x = 16} \end{array}$$

Tell how many common tangents the given circles have.



\overline{AC} and \overline{BD} are diameters of circle F. Identify the given arc as a major arc, minor arc or semicircle. Then find the measure of the arc.



16. $m\widehat{AB} = 70^\circ$
minor

17. $m\widehat{BC} = 180 - 70 = 110^\circ$
minor

18. $m\widehat{ABC} = 180^\circ$
semicircle

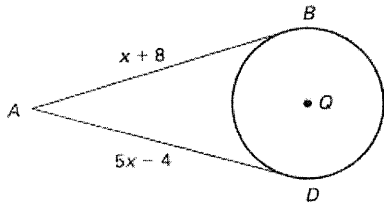
19. $m\widehat{AE} = 180 - 120 = 60^\circ$
minor

20. $m\widehat{CDE} = 70 + 50 = 120^\circ$
minor

21. $m\widehat{BDC} = 180 + 70 = 250^\circ$
major

Find the value of x in circle Q.

22.



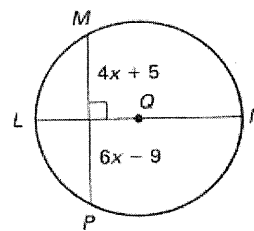
$$5x - 4 = x + 8$$

$$-x + 4 \quad -x + 4$$

$$\frac{4x}{4} = \frac{12}{4}$$

$$x = 3$$

23.



$$6x - 9 = 4x + 5$$

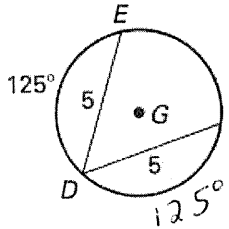
$$-4x + 9 \quad -4x + 9$$

$$\frac{2x}{2} = \frac{14}{2}$$

$$x = 7$$

Find the measure of the given arc or angle measure.

24.



$$360 = x + 125 + 125$$

$$360 = x + 250$$

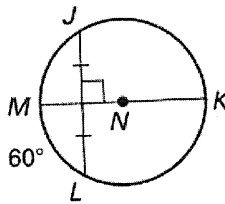
$$\frac{-250}{110} = \frac{-250}{110}$$

$$110 = x$$

$$m\widehat{DF} = 125^\circ$$

$$m\widehat{EF} = 110^\circ$$

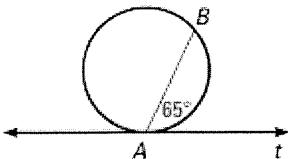
25.



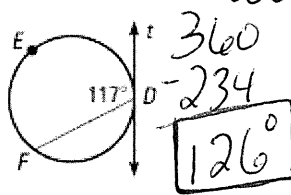
$$m\widehat{JM} = 60^\circ$$

$$m\widehat{JKL} = 360 - 120 = 240^\circ$$

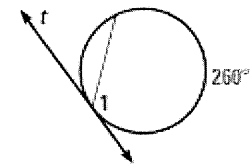
26. $m\widehat{AB} = 2(65) = 130^\circ$



27. $m\widehat{DF} = 2(117) = 234^\circ$

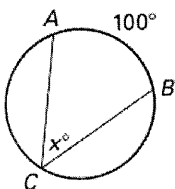


28. $m\angle 1 = \frac{1}{2}(260) = 130^\circ$



Find the values of the variables.

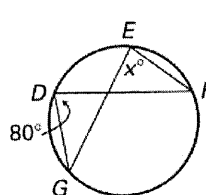
29.



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

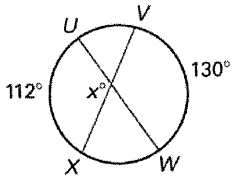
$$x = 50^\circ$$

30.



$$x = 80^\circ$$

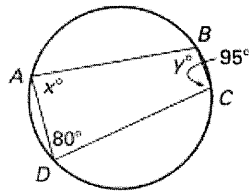
31.



$$x = \frac{1}{2}(130 + 112)$$

$$x = \frac{1}{2}(242) = \boxed{121^\circ}$$

32. $m\widehat{ABC} = z^\circ$



$$m\widehat{ABC} = 2(80)$$

$$z^\circ = \boxed{160^\circ}$$

$$x + 95 = 180$$

$$-95 \quad -95$$

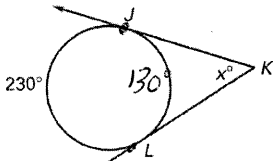
$$x = \boxed{85^\circ}$$

$$y + 80 = 180$$

$$-80 \quad -80$$

$$y = \boxed{100^\circ}$$

33.



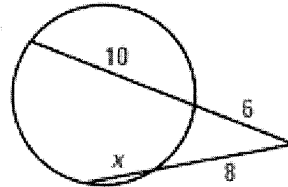
$$360 - 230 = 130$$

$$x = \frac{1}{2}(230 - 130)$$

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

$$x = \boxed{50^\circ}$$

34.



$$6(16) = 8(x + 8)$$

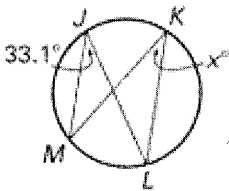
$$96 = 8x + 64$$

$$-64 \quad -64$$

$$\frac{32}{8} = \frac{8x}{8}$$

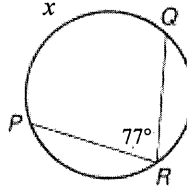
$$x = \boxed{4}$$

35.



$$x = \boxed{33.1^\circ}$$

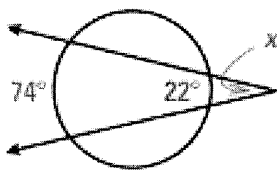
36.



$$x = 77(2)$$

$$x = \boxed{154^\circ}$$

37.

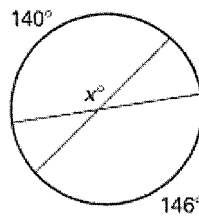


$$x = \frac{1}{2}(74 - 22)$$

$$= \frac{1}{2}(52)$$

$$x = \boxed{26^\circ}$$

38.

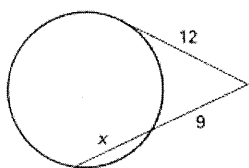


$$x = \frac{1}{2}(140 + 146)$$

$$= \frac{1}{2}(286)$$

$$x = \boxed{143^\circ}$$

39.



$$12^2 = 9(9 + x)$$

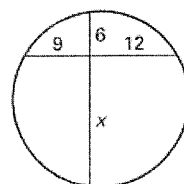
$$144 = 81 + 9x$$

$$-81 \quad -81$$

$$\frac{63}{9} = \frac{9x}{9}$$

$$\boxed{7 = x}$$

40.



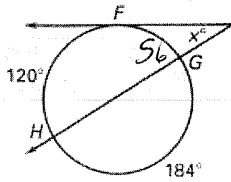
$$9(12) = 6x$$

$$\frac{108}{6} = \frac{6x}{6}$$

$$\boxed{18 = x}$$

Find the values of the variables.

41.

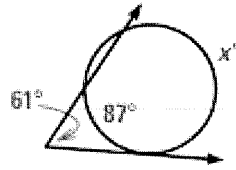


$$\begin{aligned} 360 &= 120 + 184 + FG \\ 360 &= 304 + FG \\ -304 &-304 \\ 56 &= FG \end{aligned}$$

$$\begin{aligned} x &= \frac{1}{2}(120 - 56) \\ &= \frac{1}{2}(64) \end{aligned}$$

$$\boxed{x = 32^\circ}$$

42.



$$2(61) = \left(\frac{1}{2}(x - 87)\right) \cdot 2$$

$$\begin{aligned} 122 &= x - 87 \\ +87 &+87 \end{aligned}$$

$$\boxed{209^\circ = x}$$

43. Find the center and radius of a circle that has the standard equation: $(x - 3)^2 + (y + 1)^2 = 25$

$$\text{Center } (3, -1) \quad r = 5$$

Write the standard equation of the circle with the given center and radius

44. Center $(-4, 7)$, Radius 6

$$(x + 4)^2 + (y - 7)^2 = 36$$

45. Center $(3, -9)$, Radius 8.4

$$\boxed{(x - 3)^2 + (y + 9)^2 = 70.56}$$

46. The point $(1, 2)$ is on a circle whose center is $(5, -1)$. Write the standard equation of the circle.

$$(x - h)^2 + (y - k)^2 = r^2 \quad \begin{matrix} x & y \\ h & k \end{matrix}$$

$$(1 - 5)^2 + (2 - (-1))^2 = r^2$$

$$(-4)^2 + (2 + 1)^2$$

$$16 + 3^2 = r^2$$

$$16 + 9 = r^2$$

$$\rightarrow 25 = r^2$$

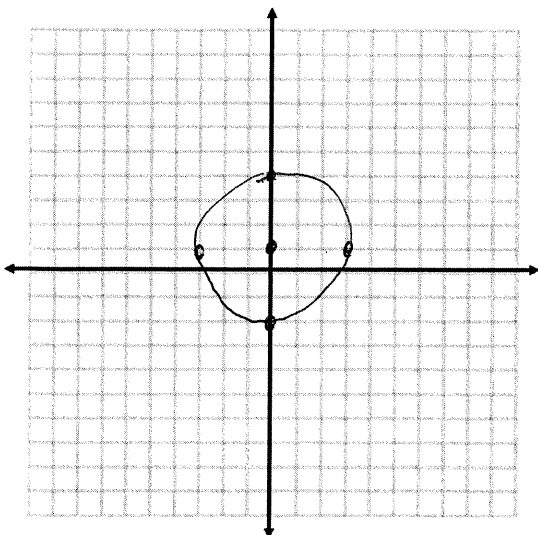
$$\boxed{(x - 5)^2 + (y + 1)^2 = 25}$$

Graph the equation.

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

$$r = 3$$

Center $(0, 1)$



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

Center $(2, -3)$
 $r = 4$

