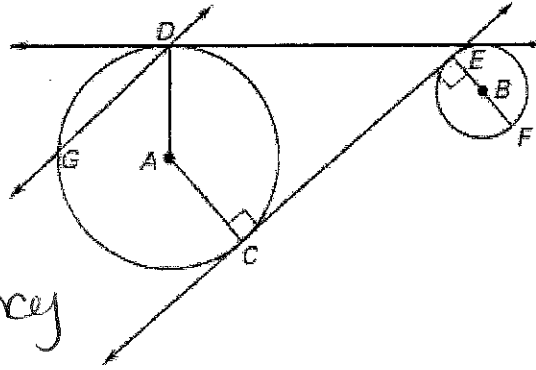


MIXED PRACTICE – Circle Properties

Key

Using the diagram to the right, identify what each of the following are.

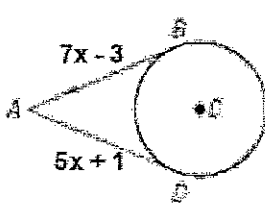
1. \overleftrightarrow{DE} Tangent
2. \overline{EF} Diameter
3. \overline{AD} Radius
4. \overleftrightarrow{DG} Secant
5. Point B center
6. \overline{DG} chord
7. \overleftrightarrow{CE} Tangent
8. Point C point of tangency



Word Box	
Point of Tangency	
Center	
Diameter	
Chord	
Secant	
Tangent	
Radius	

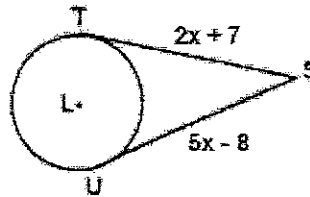
Given the following are tangents, Find the value of x:

9. Solve for x.



$$\begin{array}{r}
 7x-3 = 5x+1 \\
 -5x \quad -5x \\
 \hline
 2x-3 = 1 \\
 +3 \quad +3 \\
 \hline
 2x = 4 \\
 \frac{2x}{2} = \frac{4}{2} \\
 x = 2
 \end{array}$$

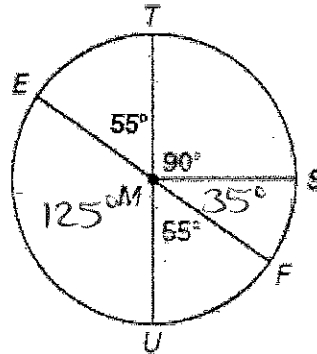
10. Solve for x.



$$\begin{array}{r}
 5x-8 = 2x+7 \\
 -2x \quad -2x \\
 \hline
 3x-8 = 7 \\
 +8 \quad +8 \\
 \hline
 3x = 15 \\
 \frac{3x}{3} = \frac{15}{3} \\
 x = 5
 \end{array}$$

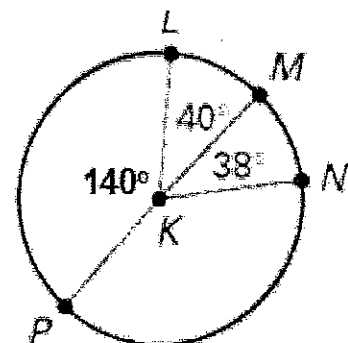
In the following questions, EF and TU are diameters of Circle M. Find the indicated measure.

13. $m\widehat{SF}$ 35°
14. $m\widehat{ET}$ 55°
15. $m\angle EMU$ 125°
16. $m\widehat{TSF}$ 125°
17. $m\angle EMS$ 145°
18. $m\angle SMU$ 90°



Use Circle K to answer the following questions:

19. \widehat{PLM} is a _____ (minor arc, major arc, semicircle)
20. \widehat{NL} is a _____ (minor arc, major arc, semicircle)
21. \widehat{MN} is a _____ (minor arc, major arc, semicircle)
22. \widehat{NP} is a _____ (minor arc, major arc, semicircle)
23. \widehat{MNP} is a _____ (minor arc, major arc, semicircle)
24. \widehat{PNL} is a _____ (minor arc, major arc, semicircle)



Use the given information to solve for x.

25. 55° x°

$$\begin{array}{r} 180 \\ -55 \\ \hline 125 \end{array}$$

26. 155° 120°

27. 82° 82°

28. 84° x°

$$\begin{array}{r} 84 \\ \times 2 \\ \hline 168 \end{array}$$

29. $(x + 16)^\circ$ $3x^\circ$

$$\begin{array}{r} 3x + x + 16 = 180 \\ 4x + 16 = 180 \\ -16 \quad -16 \\ \hline 4x = 164 \\ \frac{4x}{4} = \frac{164}{4} \\ x = 41 \end{array}$$

30. 123° x°

31. $(6x + 22)^\circ$ $4x^\circ$

wouldn't actually make sense in this problem

$$\begin{array}{r} 6x + 22 = 4x \\ -6x \quad -6x \\ \hline 22 = -2x \\ \frac{22}{-2} = \frac{-2x}{-2} \\ -11 = x \end{array}$$

32. 170° x°

33. x° 110°

$$\frac{110}{2} = 55^\circ$$

34. 105° 130° 50° x°

$$\begin{array}{r} x + 105 = 180 \\ -105 \quad -105 \\ \hline x = 75 \end{array}$$

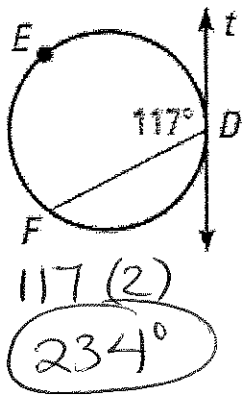
35. x° $(2x - 7)^\circ$

$$\begin{array}{r} x = 2x - 7 \\ -2x \quad -2x \\ \hline -x = -7 \\ \frac{-x}{-1} = \frac{-7}{-1} \quad x = 7 \end{array}$$

36. $(3x - 8)^\circ$ $(5x + 2)^\circ$

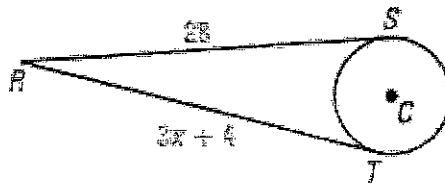
$$\begin{array}{r} 3x - 8 + 5x + 2 = 180 \\ 8x - 6 = 180 \\ +6 \quad +6 \\ \hline 8x = 186 \\ \frac{8x}{8} = \frac{186}{8} \quad x = 23.25 \end{array}$$

37. $m\widehat{DEF}$



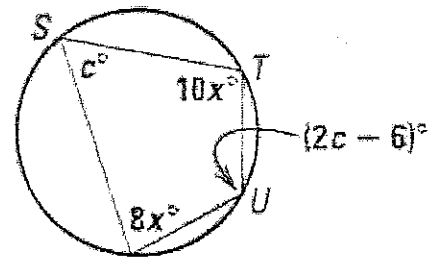
$$117(2) = 234^\circ$$

38.



$$\begin{aligned} 3x + 4 &= 28 \\ -4 &\quad -4 \\ \hline 3x &= 24 \\ \frac{3x}{3} &= \frac{24}{3} \\ x &= 8 \end{aligned}$$

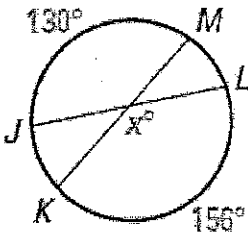
39.



$$\begin{aligned} 8x + 10x &= 180 \\ 18x &= 180 \\ \frac{18x}{18} &= \frac{180}{18} \\ x &= 10 \end{aligned}$$

$$\begin{aligned} c + 2c - 6 &= 180 \\ 3c - 6 &= 180 \\ +6 &\quad +6 \\ \hline 3c &= 186 \\ \frac{3c}{3} &= \frac{186}{3} \\ c &= 62 \end{aligned}$$

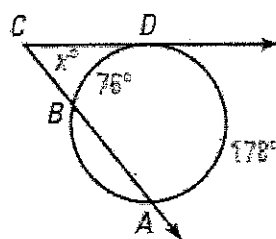
40.



$$\frac{130 + 156}{2} = x$$

$$143^\circ = x$$

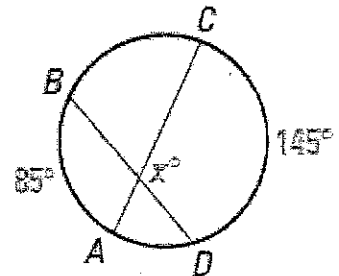
41.



$$\frac{178 - 76}{2} = x$$

$$51^\circ = x$$

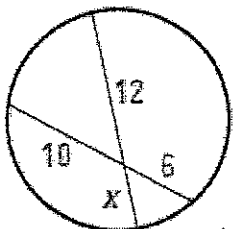
42.



$$\frac{85 + 145}{2} = x$$

$$115^\circ = x$$

43.

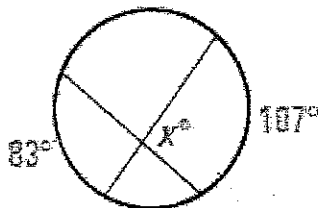


$$10(6) = 12(x)$$

$$\frac{60}{12} = \frac{12x}{12}$$

$$5 = x$$

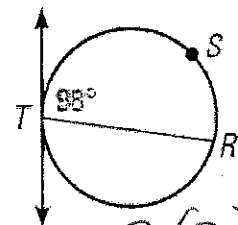
44.



$$\frac{83 + 107}{2} = x$$

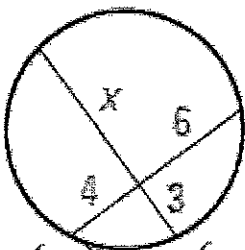
$$95^\circ = x$$

45. $m\widehat{RST}$



$$98(2) = 196^\circ$$

46.

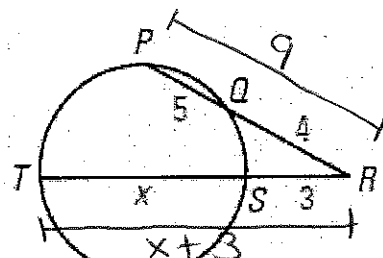


$$6(4) = 3(x)$$

$$\frac{24}{3} = \frac{3x}{3}$$

$$8 = x$$

47.



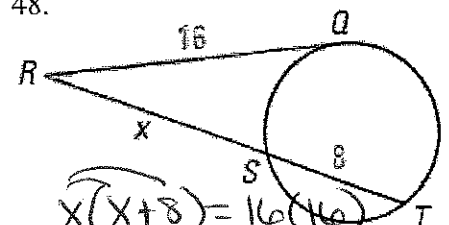
$$4(9) = 3(x + 3)$$

$$36 = 3x + 9$$

$$\frac{27}{3} = \frac{3x}{3}$$

$$x = 9$$

48.



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

$$x^2 + 8x = 256$$

$$x^2 + 8x - 256 = 0$$

$$x = \frac{-8 \pm \sqrt{(8)^2 - 4(1)(-256)}}{2(1)}$$

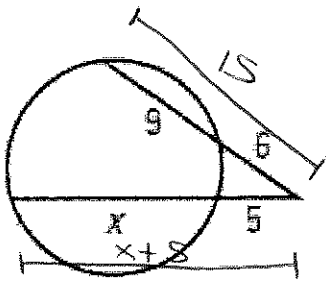
$$x = \frac{-8 \pm \sqrt{64 + 1024}}{2}$$

$$x = \frac{-8 \pm \sqrt{1088}}{2}$$

$$x = \frac{-8 \pm 32.98}{2}$$

$$x = 12.492$$

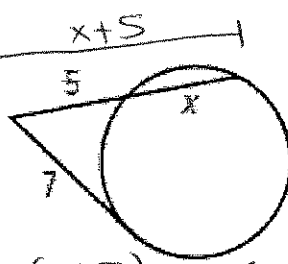
49.



$$6(15) = 5(x+8)$$

$$\begin{array}{r} 90 = 5x + 25 \\ -25 \quad -25 \\ \hline 65 = 5x \\ \frac{65}{5} = \frac{5x}{5} \quad x = 13 \end{array}$$

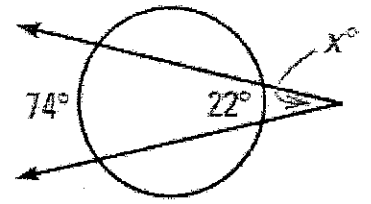
50.



$$5(x+5) = 7(7)$$

$$\begin{array}{r} 5x + 25 = 49 \\ -25 \quad -25 \\ \hline 5x = 24 \\ \frac{5x}{5} = \frac{24}{5} \\ x = 4.8 \end{array}$$

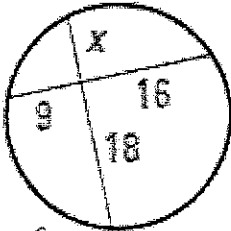
51.



$$\frac{74 - 22}{2} = x$$

$$26 = x$$

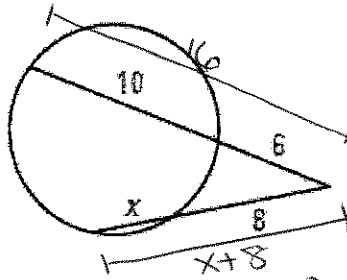
52.



$$9(16) = 18(x)$$

$$\begin{array}{r} 144 = 18x \\ \frac{144}{18} = \frac{18x}{18} \\ 8 = x \end{array}$$

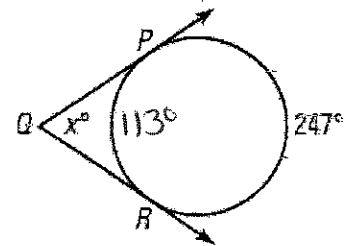
53.



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

$$\begin{array}{r} 96 = 8x + 64 \\ -64 \quad -64 \\ \hline 32 = 8x \\ \frac{32}{8} = \frac{8x}{8} \quad x = 4 \end{array}$$

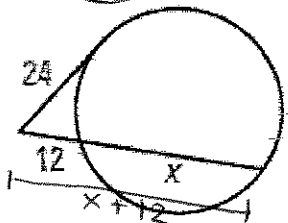
54.



$$\frac{247 - 113}{2} = x$$

$$67 = x$$

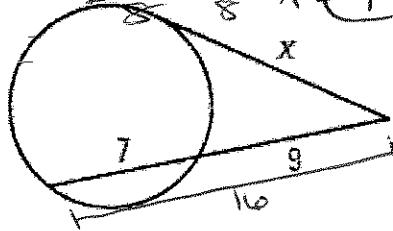
55.



$$12(x+12) = 24(24)$$

$$\begin{array}{r} 12x + 144 = 576 \\ -144 \quad -144 \\ \hline 12x = 432 \\ \frac{12x}{12} = \frac{432}{12} \quad x = 36 \end{array}$$

56.



$$9(16) = x(x)$$

$$144 = x^2$$

$$\sqrt{144} = \sqrt{x^2}$$

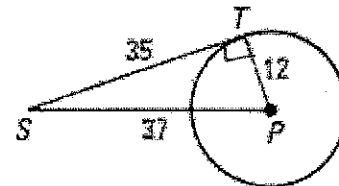
$$12 = x$$

57. In the diagram, \overline{PT} is a radius of $\odot P$.Is \overline{ST} tangent to $\odot P$?

$$12^2 + 35^2 = c^2$$

$$\sqrt{369} \neq c^2$$

$$= 37 = c \quad \checkmark$$



Yes, \overline{ST} is a tangent because the pythagorean theorem proves $\angle PTS$ is a right \angle and a tangent & radius are \perp .

58. Find the indicated measure in $\odot P$.a. $m\angle T$

$$\frac{48}{2}$$

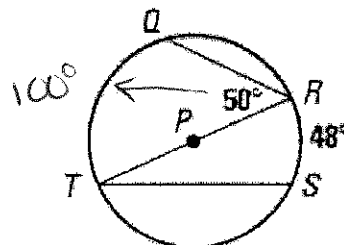
$$24^\circ$$

b. $m\widehat{QR}$

$$\frac{180}{2}$$

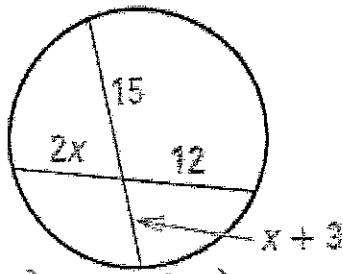
$$-100$$

$$80^\circ$$



CHALLENGE QUESTIONS: Do you have what it takes???

59.



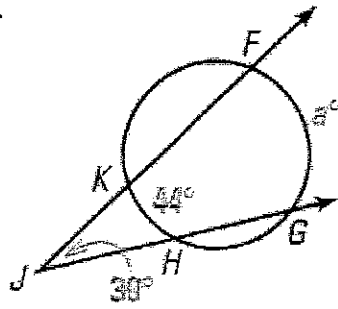
$$15(x+3) = 2x(12)$$

$$\begin{array}{r} 15x + 45 = 24x \\ -15x \quad -15x \\ \hline \end{array}$$

$$\frac{45}{9} = \frac{9x}{9}$$

$$5 = x$$

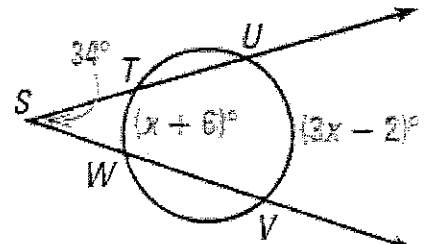
60.



$$(2) \frac{a-44}{2} = 30(2)$$

$$\begin{array}{r} a - 44 = 60 \\ +44 \quad +44 \\ \hline a = 104 \end{array}$$

61.



$$(3x-2) - (x+6) = 34$$

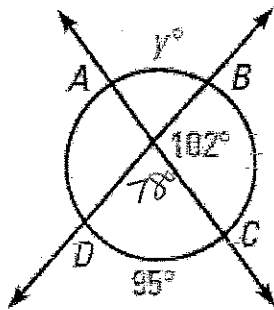
$$3x - 2 - x - 6 = 34$$

$$\begin{array}{r} 2x - 8 = 34 \\ +8 \quad +8 \\ \hline \end{array}$$

$$\frac{2x}{2} = \frac{42}{2}$$

$$x = 21$$

62.

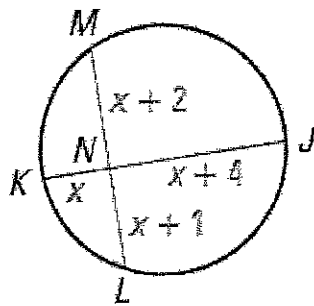


$$(2) \frac{95+y}{2} = 78(2)$$

$$\begin{array}{r} 95 + y = 156 \\ -95 \quad -95 \\ \hline \end{array}$$

$$y = 61^\circ$$

63.



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

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

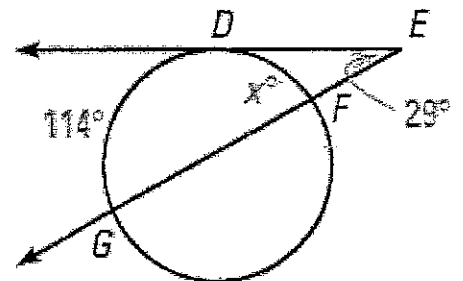
$$\begin{array}{r} x^2 + 4x = x^2 + 3x + 2 \\ -x^2 \quad -x^2 \\ \hline \end{array}$$

$$4x = 3x + 2$$

$$\begin{array}{r} -3x \quad -3x \\ \hline \end{array}$$

$$x = 2$$

64.



$$(2) \frac{114-x}{2} = 29(2)$$

$$\begin{array}{r} 114 - x = 58 \\ -114 \quad -114 \\ \hline \end{array}$$

$$\begin{array}{r} -x = -56 \\ -1 \quad -1 \\ \hline \end{array}$$

$$x = 56$$

