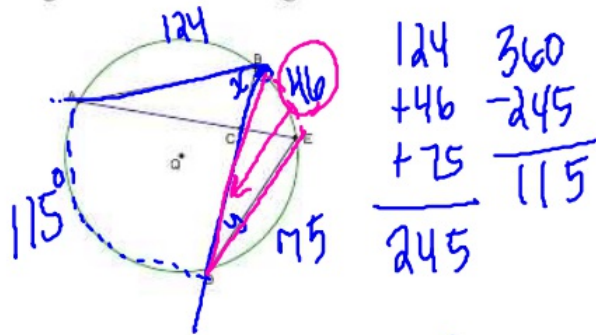


Questions 1 and 2 refer to the figure below. Use the given information about circle Q to answer questions 1 and 2.

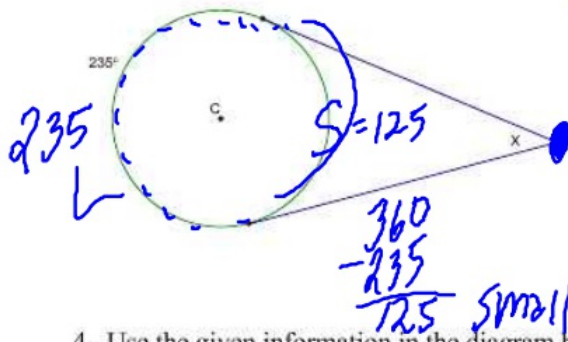
Given  $m\widehat{AB} = 124$   
 $m\widehat{BE} = 46$   
 $m\widehat{ED} = 75$



1. Find  $m\angle ABD =$   
 \* Vertex ON circle \*  
 $\text{Angle} = \frac{\text{Arc}}{2}$  Arc = 2 Angle

2. Find  $m\angle BDE =$  [G.C.2]  
 $\frac{115}{2} = 57.5$        $\frac{\text{Arc}}{2} = \frac{46}{2} = 23$

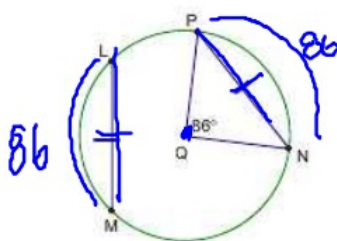
3. Use the given information below to determine the value of x.



Vertex Outside  
 $\frac{\text{Large Arc} - \text{Small Arc}}{2} = x$

[G.C.2]  
 $\frac{235 - 125}{2} = x$   
 $\frac{110}{2} = 55$

4. Use the given information in the diagram below to find  $m\widehat{LM}$



Central  $\angle = \text{Arc}$   
 $86^\circ$

[G.C.2]

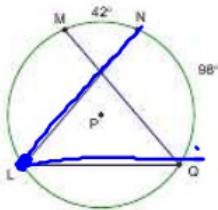
5. What is the definition of a minor arc?

An arc less than  $180^\circ$

[G.C.2]

6. In the circle below, P is the center. What is the measure of  $\angle NLQ$ ?

[G.C.2]

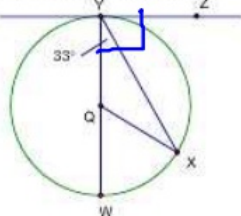


ON the circle  
 $\text{Angle} = \frac{\text{Arc}}{2}$

$$\frac{98}{2} = \boxed{49^\circ}$$

7. In the circle below,  $\overline{YZ}$  is tangent to the circle at point Y, and  $\overline{WY}$  is a diameter. What is the measure of  $\angle XYZ$ ?

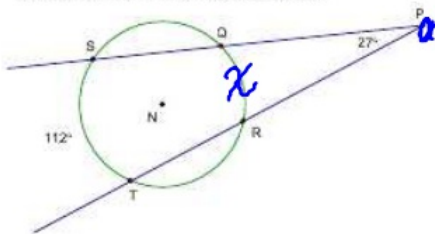
[G.C.2]



$$\begin{array}{r} 90 \\ - 33 \\ \hline 57^\circ \end{array}$$

8. In the circle below, N is the center. The measure of  $\angle P$  is  $27^\circ$  and the measure of

What is the measure of  $\widehat{QR}$ ?

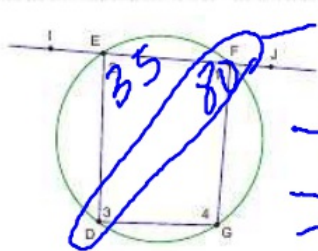


outside

$$\frac{\angle \text{Arc} - \angle \text{Arc}}{2} = \frac{112 - x}{2} = 27$$

$$\begin{array}{r} 112 - x = 54 \\ - 112 \quad - 112 \\ \hline \end{array}$$

9. Given:  $m\angle 2 = 35^\circ$  and  $m\angle 1 = 80^\circ$ , find the measure of each unknown angle. [G.C.3]



add to  $180^\circ$

$\begin{array}{r} \text{Angle 3} \\ 180 \\ - 80 \\ \hline 100^\circ \end{array}$	$\begin{array}{r} \text{Angle 4} \\ 180 \\ - 35 \\ \hline 145^\circ \end{array}$
--	--

$$\begin{array}{r} -x = -58 \\ -1 \quad -1 \\ \hline \boxed{x = 58} \end{array}$$

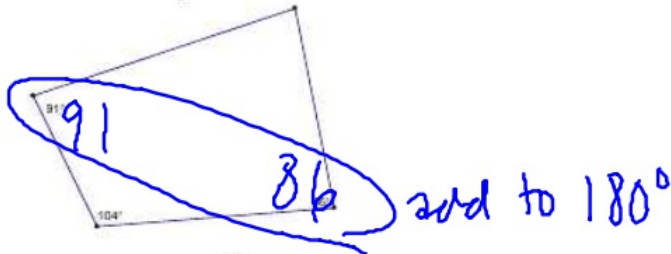
10. Are circles always similar? Explain your reasoning.

Similar: same shape, different size!



11. Can this quadrilateral be inscribed in a circle?

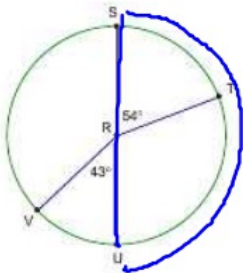
[G.C.3]



$$\begin{array}{r} 91 \\ 86 \\ \hline 177 \neq 180 \text{ NO!} \end{array}$$

12. In the figure,  $\overline{US}$  is a diameter of circle R. What type of arc is  $\overline{STU}$ ?

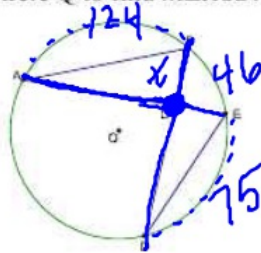
[G.C.2]



Semicircle  $180^\circ$

13. Use the information below about circle Q to find  $m\angle ACB$ .

$$\begin{aligned} m\widehat{AB} &= 124 \\ m\widehat{BE} &= 46 \\ m\widehat{ED} &= 75 \end{aligned}$$

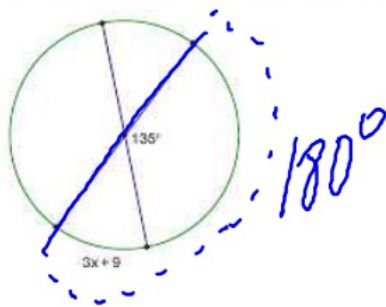


Inside

$$\frac{\text{Arc} + \text{Arc}}{2} = x$$

$$\frac{124 + 75}{2} = \frac{199}{2} = 99.5$$

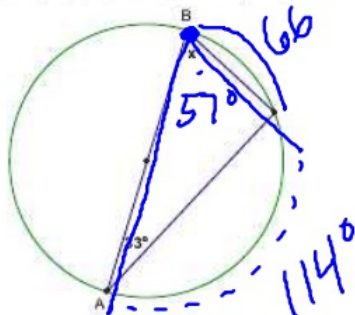
14. Solve for x. The lines drawn are diameters to the circle.



$$\begin{aligned} 3x + 9 + 135 &= 180 \\ 3x + 144 &= 180 \\ -144 \quad -144 & \\ \hline 3x &= 36 \\ \frac{3x}{3} &= \frac{36}{3} \quad \boxed{x=12} \end{aligned}$$



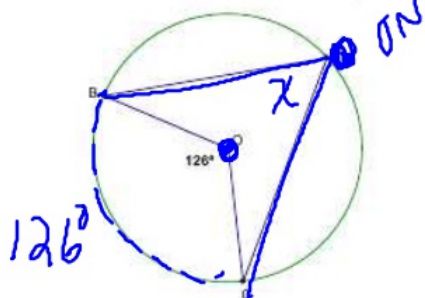
15. Given diameter  $\overline{AB}$ , find  $x$ .



ON the circle  
 Arc = 2 · Angle.  
 $33 \cdot 2 = 66$   
 Semicircle 180  
 $\frac{180 - 66}{2} = 114^\circ$

Angle =  $\frac{\text{Arc}}{2}$   
 $x = \frac{114}{2}$   
 $x = 57^\circ$

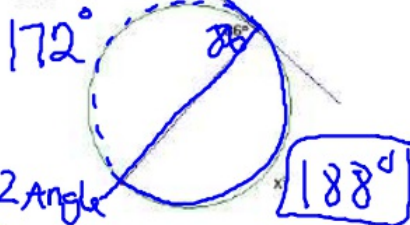
16. Given circle O below, determine  $m\angle BAC$ .



Angle =  $\frac{\text{Arc}}{2}$   
 $\frac{126}{2} = 63^\circ$

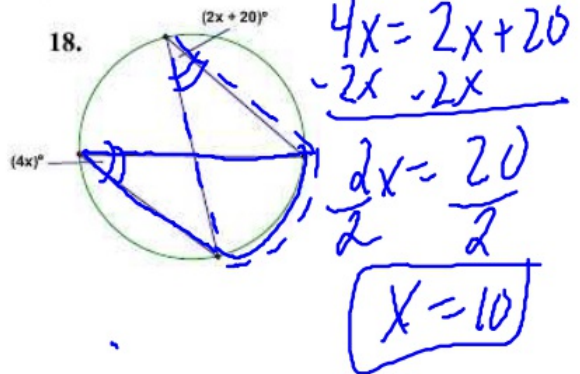
For questions 17 and 18 below, determine the value of  $x$ .

17.



Arc = 2 Angle  
 $2 \cdot 86 = 172$   
 $\frac{360 - 172}{2} = 188^\circ$

18.



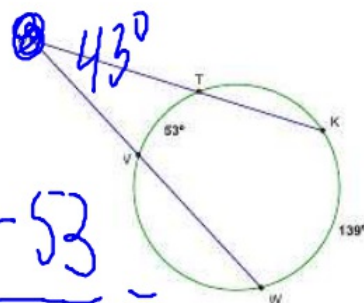
$4x = 2x + 20$   
 $\frac{4x - 2x}{2} = \frac{20}{2}$   
 $x = 10$

19. Find the measure of  $\angle WUK$ .

Outside

$\frac{L \text{ Arc} - S \text{ Arc}}{2} = x$

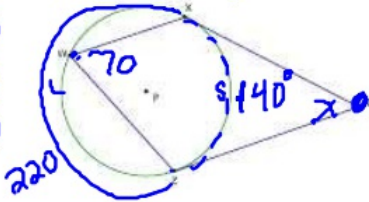
$\frac{139 - 53}{2} =$



$\frac{86}{2} = 43^\circ$

20. Circle P has tangents  $\overline{XY}$  and  $\overline{ZY}$  and chords  $\overline{WX}$  and  $\overline{WZ}$ , as shown in this figure. The measure of  $\angle ZWX = 70^\circ$ . What is the measure, in degrees, of  $\angle XYZ$ ?

$$\begin{array}{r} 360 \\ -140 \\ \hline 220 \end{array}$$



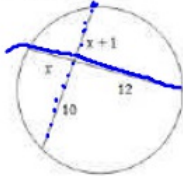
$$\frac{220 - 140}{2} = x$$

$$\frac{80}{2} = \boxed{40^\circ}$$

outside

$$\frac{\text{Larc} - \text{Sarc}}{2} = x$$

21. Solve for x.



$$12 \cdot x = 10(x+1)$$

$$12x = 10x + 10$$

$$-10x = -10x$$

$$\frac{2x = 10}{2} \quad \boxed{x = 5}$$

22. For a-c, fill in the word that best fits the given definition.

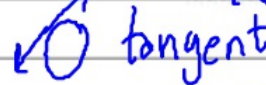
a) A segment whose endpoints are on the circle is called a



b) A segments that touches a circle at 2 points is called a



c) A segment that touches a circle at one point is called a



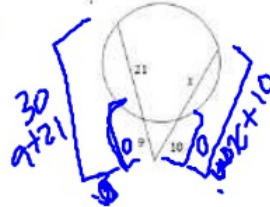
23. For each of the following, solve for x.



$$x \cdot x = 4(9)$$

$$x^2 = 36$$

$$\boxed{x = 6}$$



$$10(x+10) = 9(30)$$

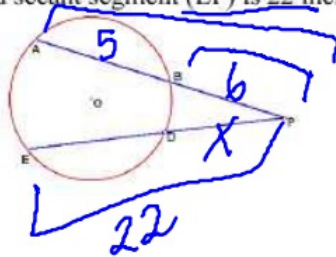
$$10x + 100 = 270$$

$$-100 \quad -100$$

$$\frac{10x}{10} = \frac{170}{10}$$

$$\boxed{x = 17}$$

24. Two secants are drawn from the point P outside the circle. The external segment of the first secant segment (PB) is 6 inches and its internal segment (AB) is 5 inches. If the entire length of the second secant segment (EP) is 22 inches, what is the length of its external segment (PD)?



$$6(11) = x \cdot 22$$

$$\frac{66}{22} = \frac{22x}{22}$$

$$\boxed{3 = x}$$