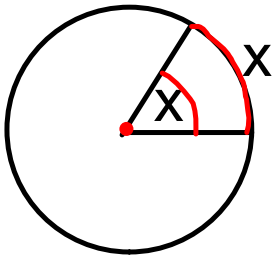
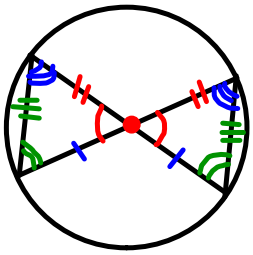
CIRCLE THEOREMS

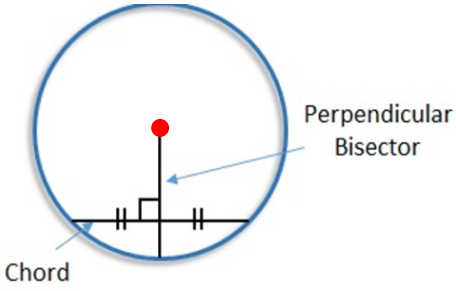
CENTRAL ANGLES = Vertex in the center.



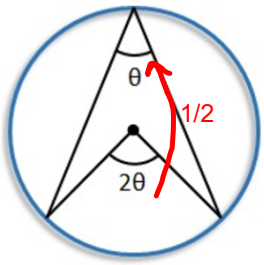
The central angle and it's arc are congruent.



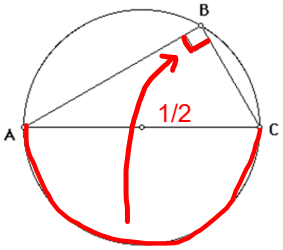
Triangles are congruent if both triangles contain the same central angle.



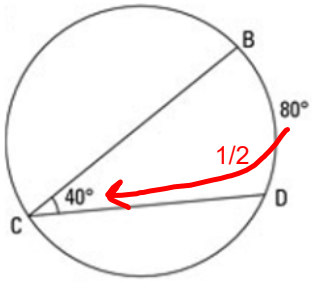
VERTEX ON A CIRCLE [Inscribed]

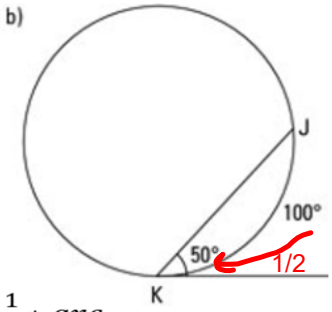


Central angle is 2*~~θ~~



Semicircles always from a 90° angle





- $angle = \frac{1}{2} * arc$

VERTEX INSIDE A CIRCLE

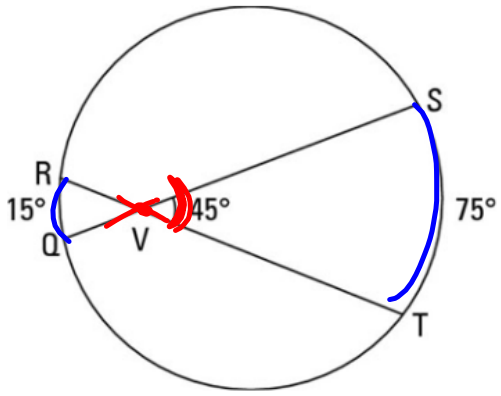
- Angle measure is half the sum of the measure of the intercepted arcs.

- $angle = \frac{1}{2}(arc + arc)$

$15 + 75$

$\frac{1}{2}(90)$

$= 45°$



VERTEX OUTSIDE A CIRCLE

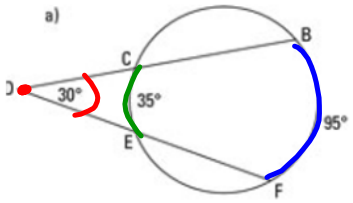
a) Angles:

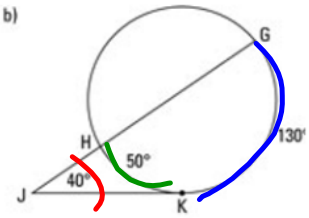
Angle measure is half the difference of the measure of the intercepted arcs.

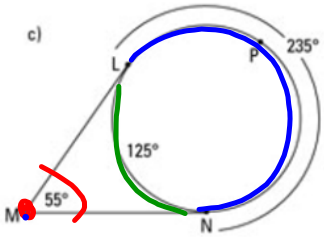
$$angle = \frac{1}{2}(arc - arc)$$

far - near

*far away - take away.

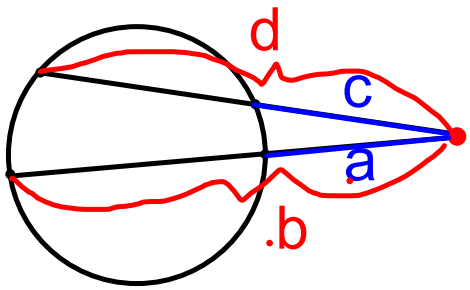






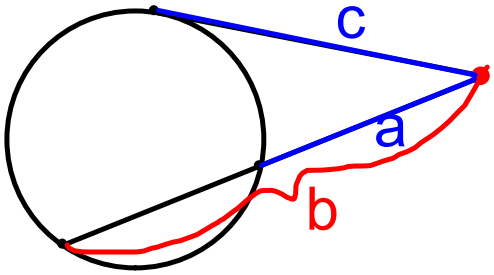
VERTEX OUTSIDE A CIRCLE

b) Side Lengths:



(outside)(entire)=(outside)(entire)

$a*b=c*d$



(outside)(entire)=(outside)(entire)

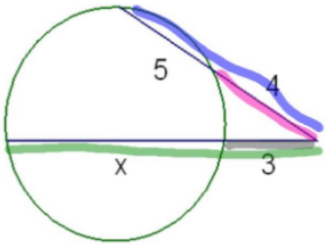
Same

$a*b=c^2$

Example:

(Outside)(Entire) = (Outside)(Entire)

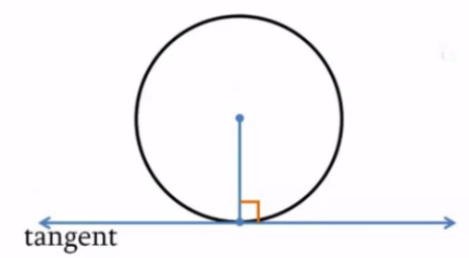
6. What is the value of x?



$4(4+5) = 3(3+x)$

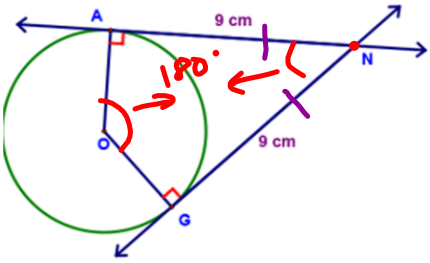
Show your setup like this

TANGENT LINES



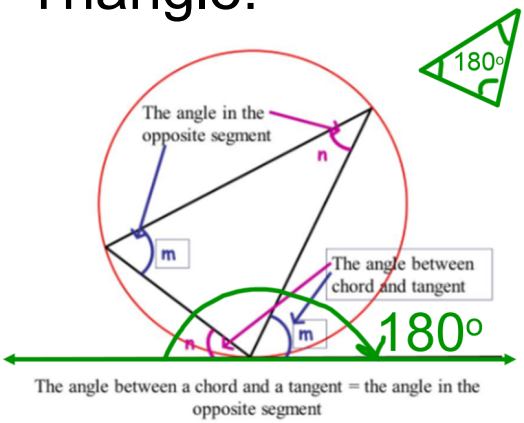
TWO TANGENTS

- Two tangents drawn from a point to a circle are equal.



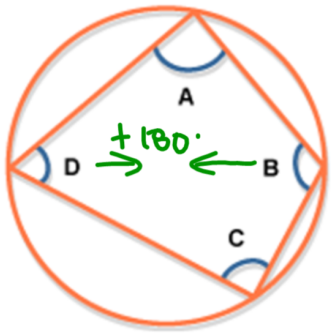
Inscribed Shapes:

Triangle:



The angle between a chord and a tangent = the angle in the opposite segment

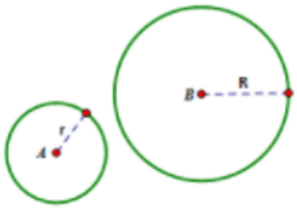
CYCLIC QUADRILATERAL



CIRCLE SIMILARITY

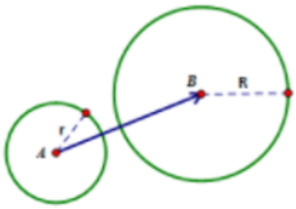
- All circles are similar.

Step #1



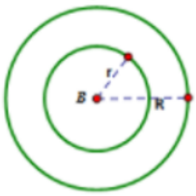
Given Circle A and Circle B with radii, r and R, respectively.

Step #2



Translate Circle A by vector $\overrightarrow{AB}$.
This will create concentric circles.

Step #3

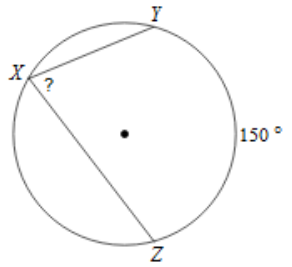


Dilate circle A by a factor of $\frac{R}{r}$.

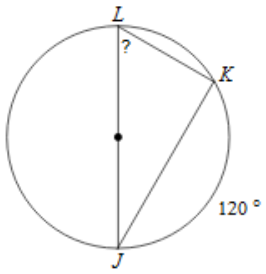
Circle Theorems

Find the measure of the arc or angle indicated.

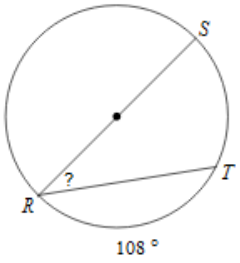
1)



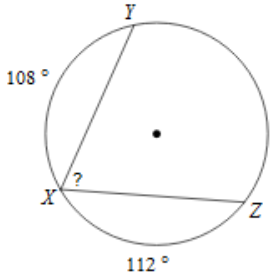
2)



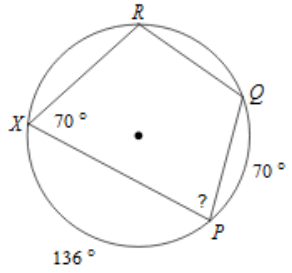
3)



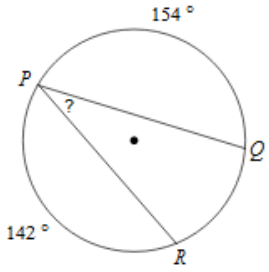
4)



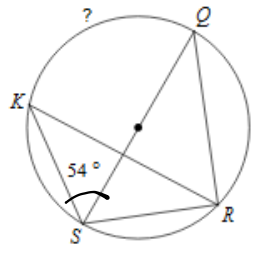
5)



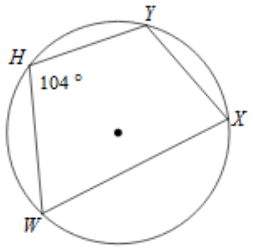
6)



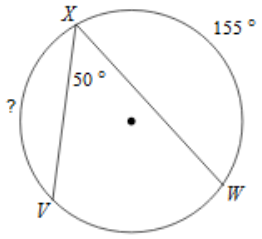
7)



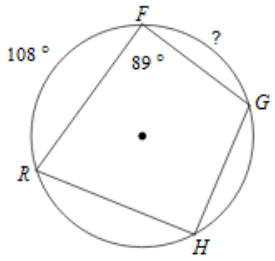
8) Find $m\widehat{YXW}$



9)

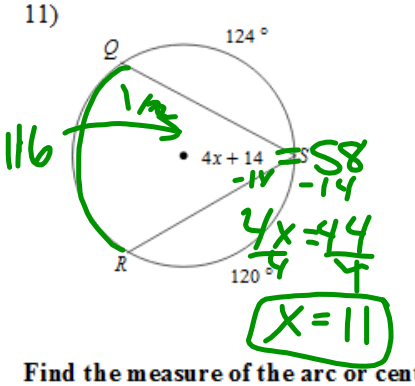


10)

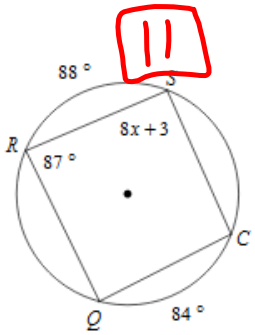


Solve for x.

11)

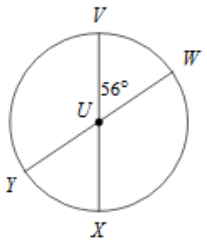


12)

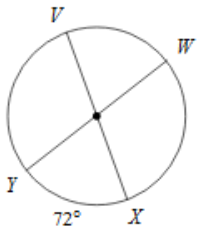


Find the measure of the arc or central angle indicated. Assume that lines which appear to be diameters are actual diameters.

13) $m\angle XUY$

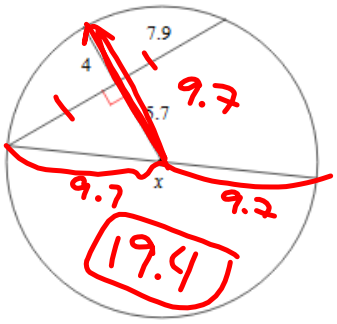


14) $m\overset{\frown}{YV}$

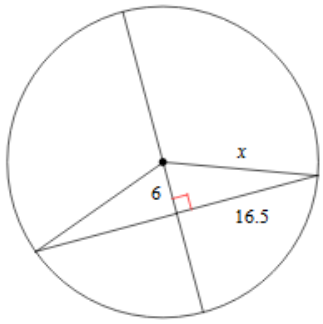


Find the length of the segment indicated. Round your answer to the nearest tenth if necessary.

15)

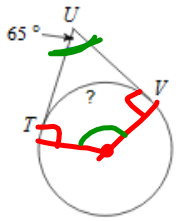


16)

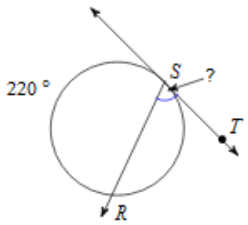


Find the measure of the arc or angle indicated. Assume that lines which appear tangent are tangent.

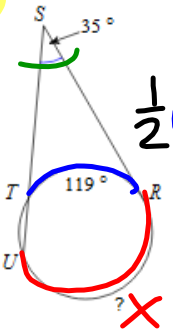
17)



18)



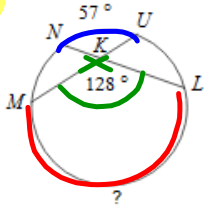
19)



$\frac{1}{2}(x-119)=35$

$=189°$

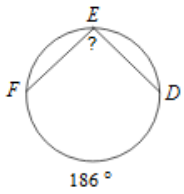
20)



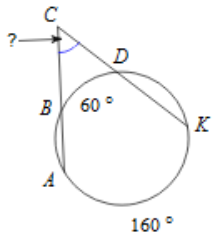
$\frac{1}{2}(x+57)=128$

$=199$

21)

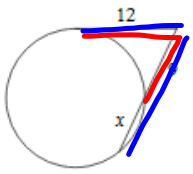


22)



Solve for x. Assume that lines which appear tangent are tangent.

23)



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

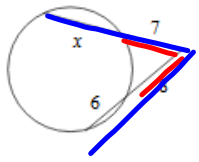
$144 = 81 + 9x$

$-81 \quad -81$

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

$x = 7$

24)



(outside)(entire)

$8(14) = 7(7+x)$

Solve for x. Assume that lines which appear to be tangent are tangent.

25)