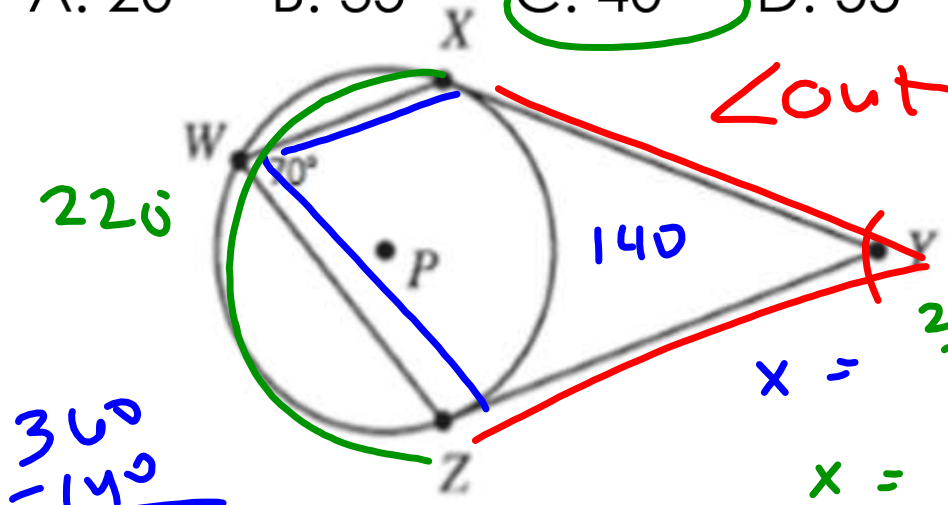
Circle with center P has tangents $\overline{XY}$ and $\overline{ZY}$ and chords $\overline{WZ}$, as shown in the figure. The $m\angle ZWX = 70^o$. What is the $m\angle XYZ$?

A. 20° B. 35° C. 40° D. 55°



$\angle out = \frac{Big - sm}{2}$

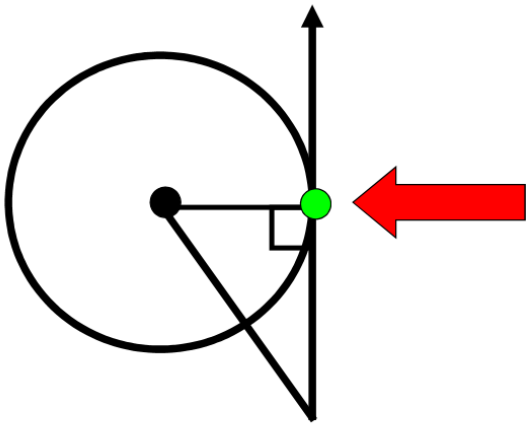
220

140

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

$x = 40$

360
−140
220

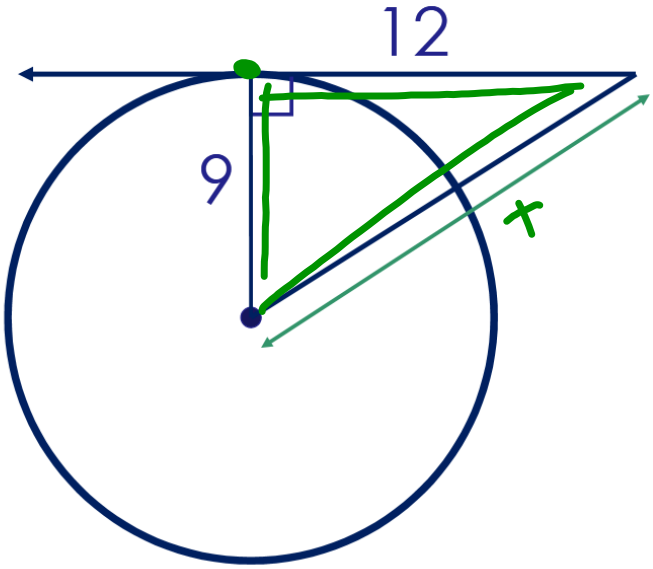


Point of Tangency

If a line (segment or ray) is tangent to a circle, then it is perpendicular to the radius the point of tangency.

What formula can be used with a right triangle?

1. Find the value of x.



$a^2 + b^2 = c^2$

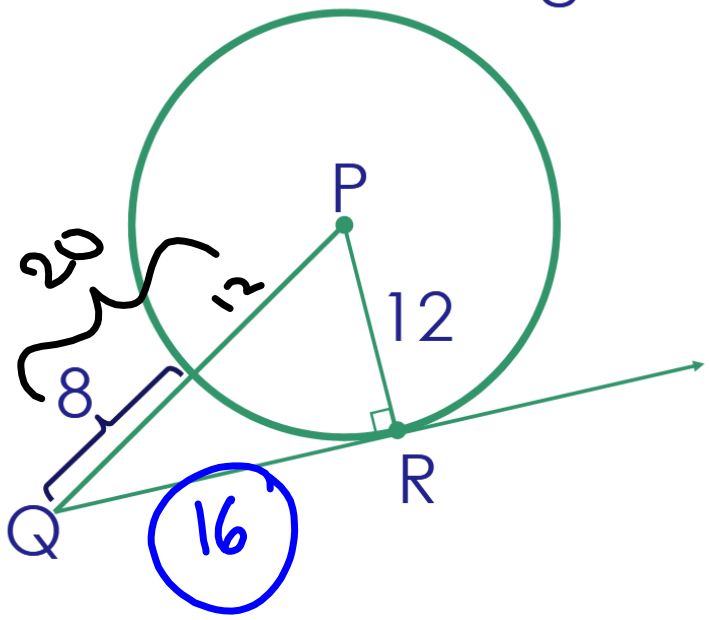
$9^2 + 12^2$

$81 + 144$

$\sqrt{225} = \sqrt{c^2}$

$x = 15$

What is the length of $\overline{RQ}$?



$a^2 + b^2 = c^2$

$a^2 + 12^2 = 20^2$

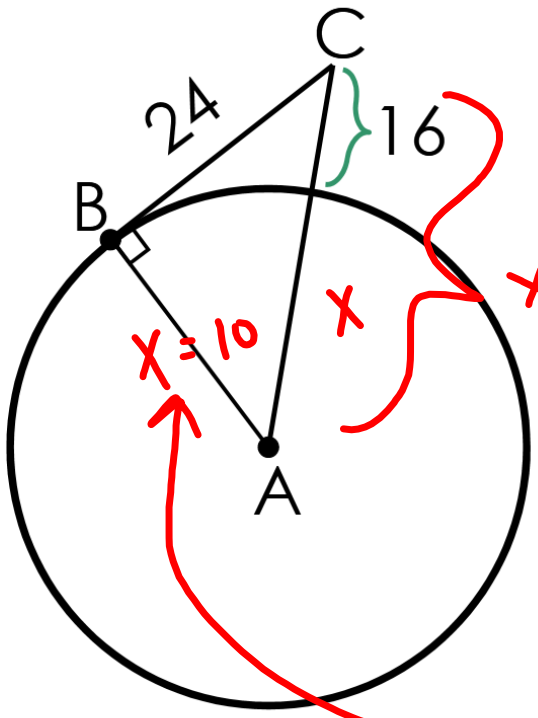
$a^2 + 144 = 400$

$-144 \quad -144$

$a^2 = 256$

$a = 16$

What is the radius of $\odot A$?



$a^2 + b^2 = c^2$

$24^2 + x^2 = (x+16)^2$

$576 + x^2 = x^2 + 32x + 256$

$576 = 32x + 256$

$-256 \quad -256$

$320 = 32x$

$\frac{320}{32} = \frac{32x}{32}$

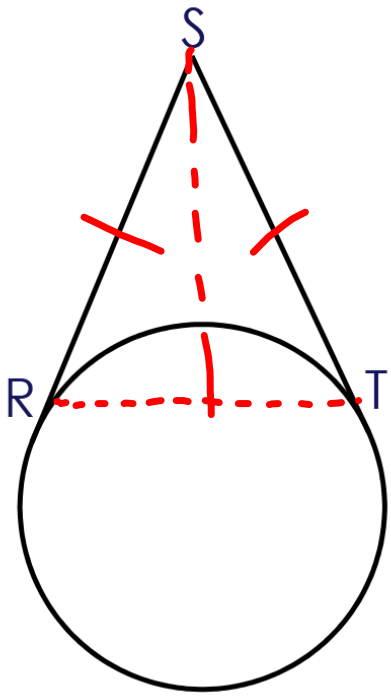
$10 = x$

$(x+16)^2 = (x+16)(x+16)$

$x^2+32x+256$

	x	$+16$
x	x^2	$16x$
$+16$	$16x$	256

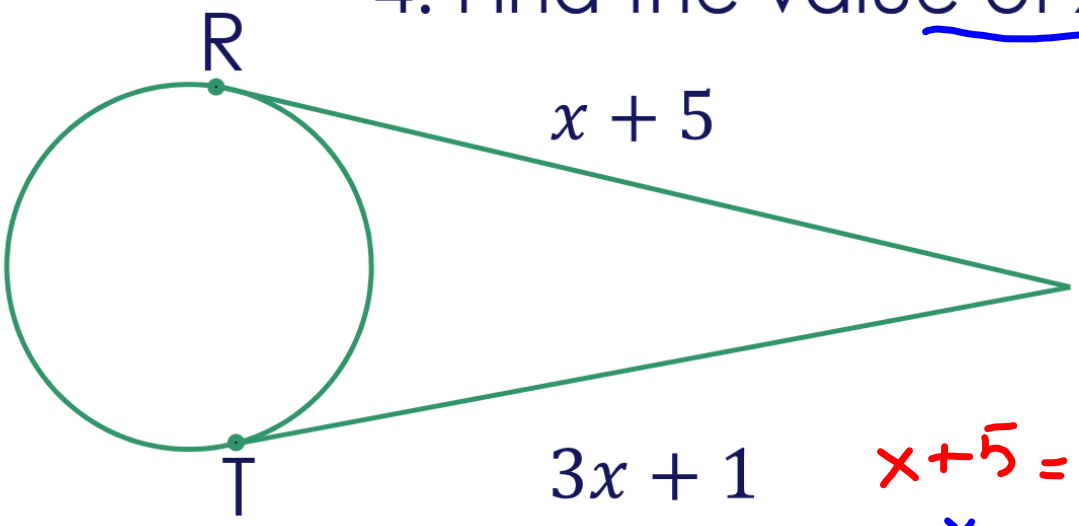
$x^2+32x+256$



$$\overline{RS} \cong \overline{TS}$$

If two segments from the same exterior point are tangent to a circle, then they are congruent.

4. Find the value of x.



$x+5 = 3x+1$

$-x \quad -x$

$5 = 2x+1$

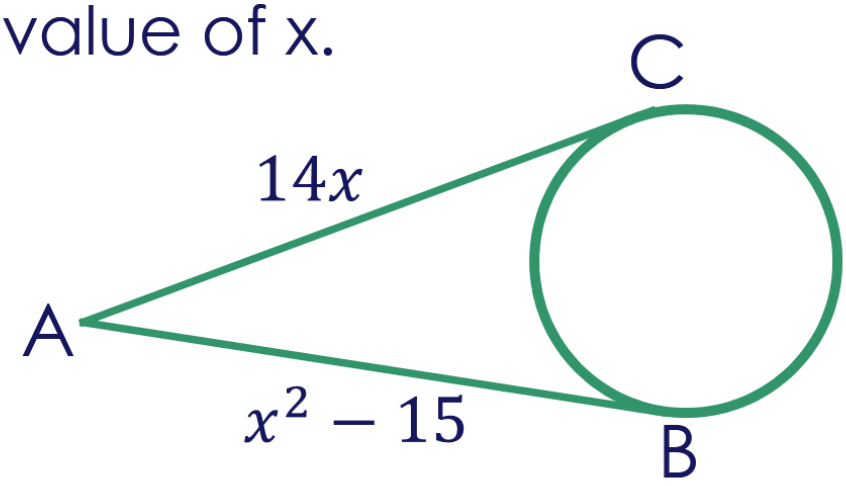
$-1 \quad -1$

$4 = 2x$

$\frac{4}{2} = \frac{2x}{2}$

$X = 2$

Find the value of x.



$x^2 - 15 = 14x$

$-14x \quad -14x$

$x^2 - 14x - 15 = 0$

$(x+1)(x-15) = 0$

Factoring by Grouping

-15

1	15
3	5

$+1 \quad -15$

$x + 1 = 0$

$-1 \quad -1$

$x = -1$

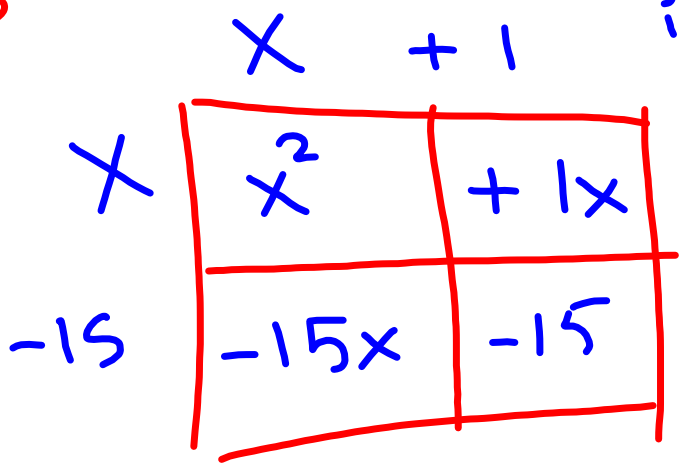
$x - 15 = 0$

$+15 \quad +15$

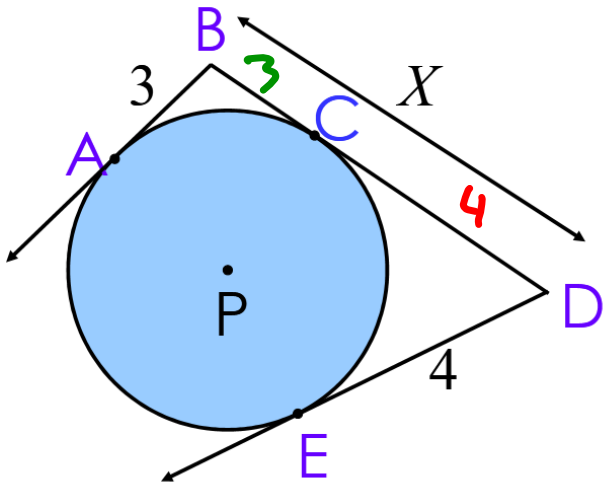
$x = 15$

$x^2 - 14x - 15$

-15: $3 \cdot 5$, $1 \cdot 15$

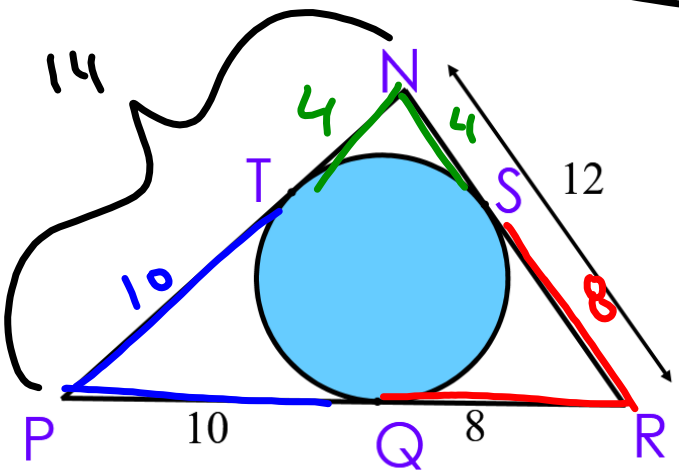


Find the value of x.



$3 + 4 = 7 = x$

What is the length of $\overline{NP}$?



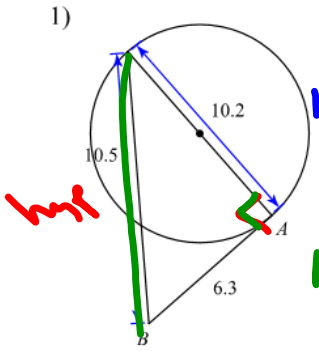
NP = 14

Geometry Name_____

Date_____ Period____

Determine if line AB is tangent to the circle.

1)



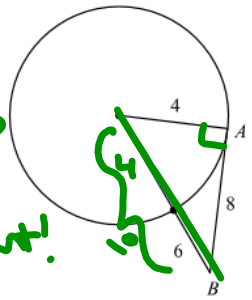
$q^2+13^2=c^2$

$10^2+6.3^2=10.5^2$

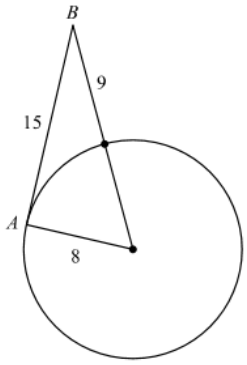
$143.73 \neq 110.25$

$\overline{AB}$ is not tangent!

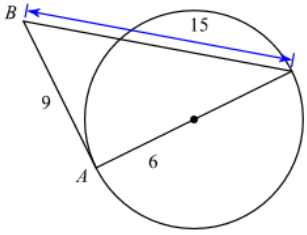
2)



3)

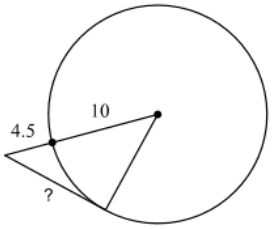


4)

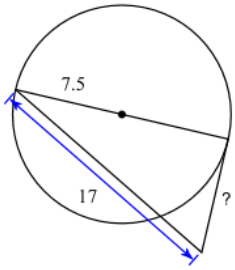


Find the segment length indicated. Assume that lines which appear to be tangent are tangent.

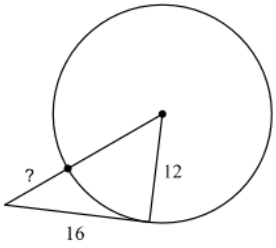
5)



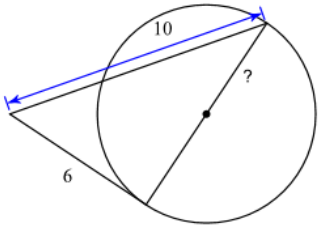
6)



7)

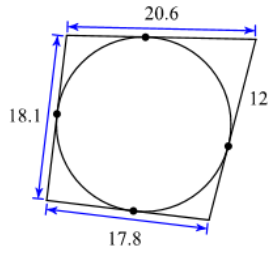


8)

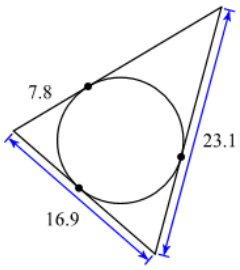


Find the perimeter of each polygon. Assume that lines which appear to be tangent are tangent.

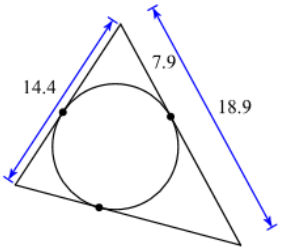
9)



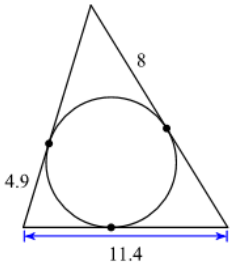
10)



11)

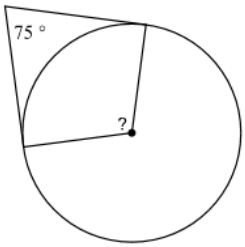


12)

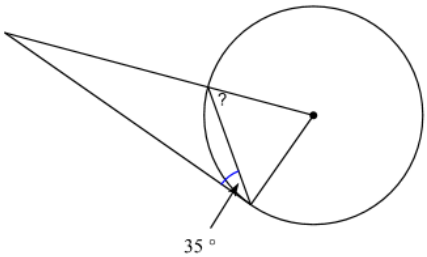


Challenge Problems: Find the angle measure indicated. Assume that lines which appear to be tangent are tangent.

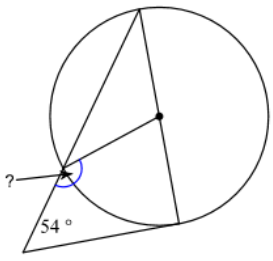
13)



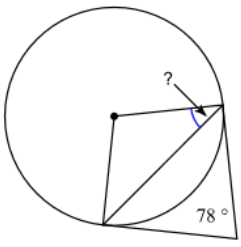
14)



15)



16)

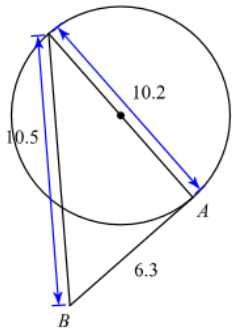


Geometry Name_____

Date_____ Period____

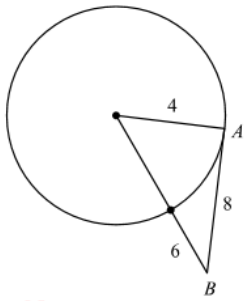
Determine if line AB is tangent to the circle.

1)



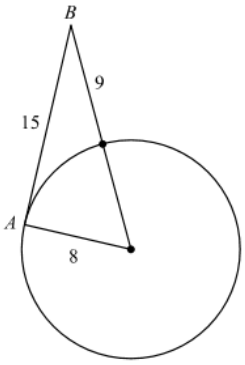
Not tangent

2)



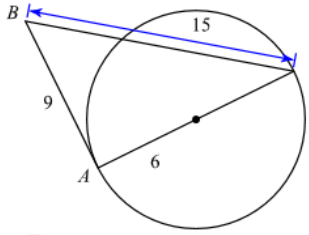
Not tangent

3)



Tangent

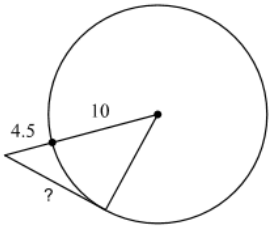
4)



Tangent

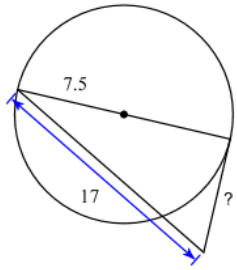
Find the segment length indicated. Assume that lines which appear to be tangent are tangent.

5)



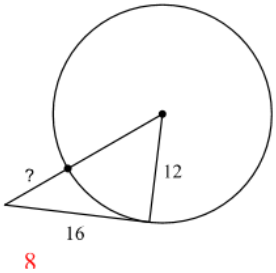
10.5

6)



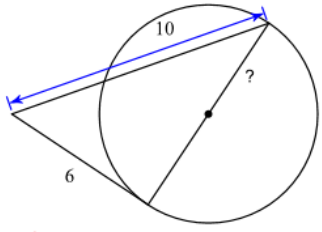
8

7)



8

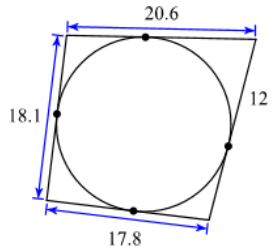
8)



4

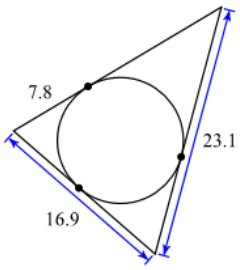
Find the perimeter of each polygon. Assume that lines which appear to be tangent are tangent.

9)



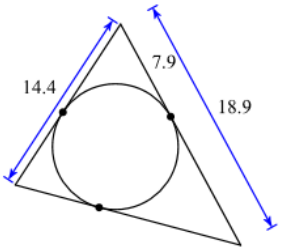
76.8

10)



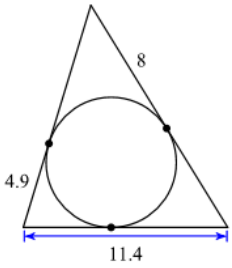
61.8

11)



50.8

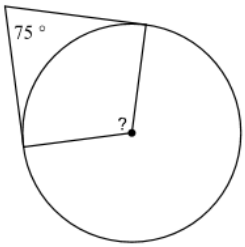
12)



38.8

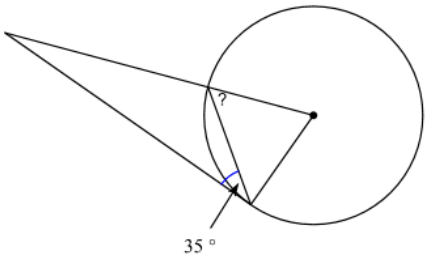
Challenge Problems: Find the angle measure indicated. Assume that lines which appear to be tangent are tangent.

13)



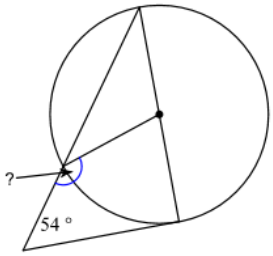
105°

14)



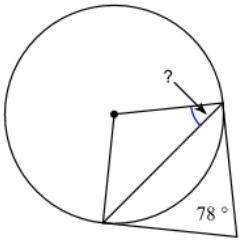
55°

15)



144°

16)



39°

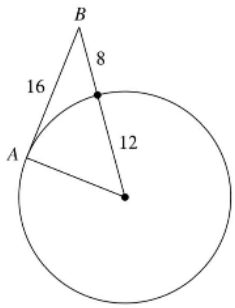
GSE Geometry Name_____

Tangents to Circles

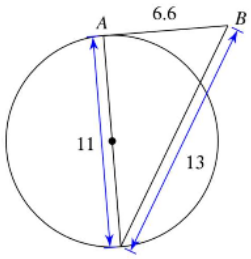
Date_____ Period____

Determine if line AB is tangent to the circle.

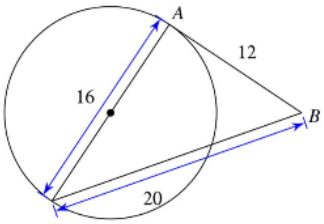
1)



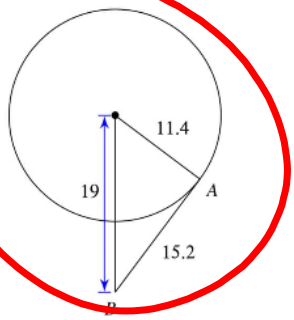
2)



3)

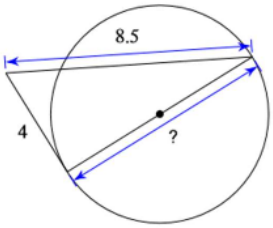


4)

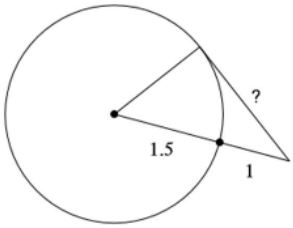


Find the segment length indicated. Assume that lines which appear to be tangent are tangent.

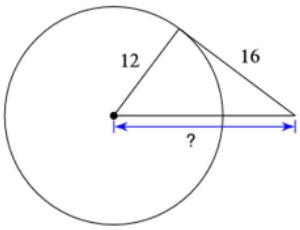
5)



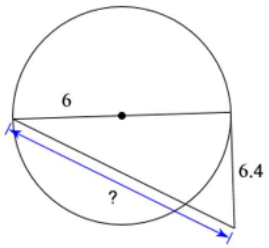
6)



7)

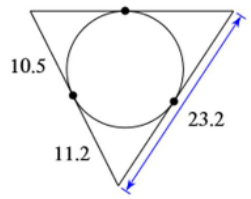


8)

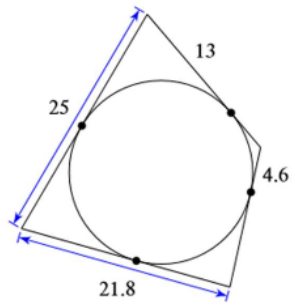


Find the perimeter of each polygon. Assume that lines which appear to be tangent are tangent.

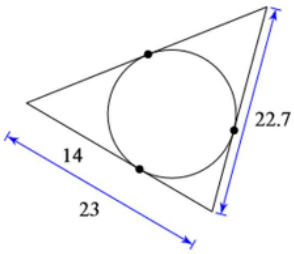
9)



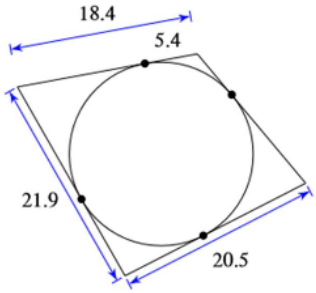
10)



11)



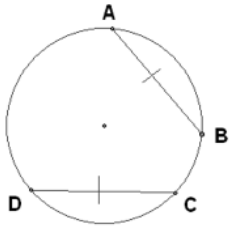
12)



Properties of Chords Recap: Find the value indicated for each.

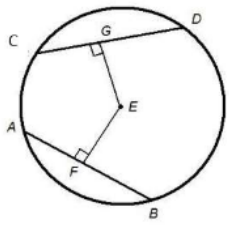
13) If $m\widehat{AB} = 84^o$ and $m\widehat{BC} = 45^o$,

what is the $m\widehat{AD}$?



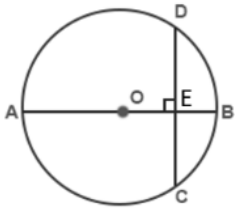
14) If $\overline{EG} \cong \overline{EF}$ and $m\overline{AB} = 24\ m$,

what is the $m\overline{CG}$?



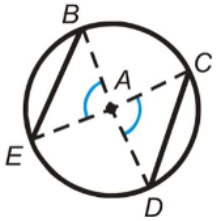
15) If $m\overline{OB} = 15\ ft$ and $m\overline{DC} = 24\ ft$,

what is the $m\overline{OE}$?



16) How could it be determined that $\overline{EB} \cong \overline{DC}$ in

in the following image?



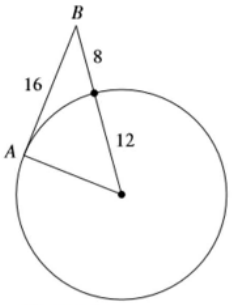
Kuta Software - Infinite Geometry Name_____

Tangents to Circles

Date_____ Period____

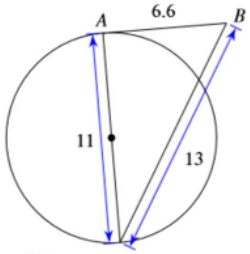
Determine if line AB is tangent to the circle.

1)



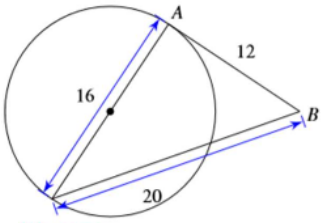
Tangent

2)



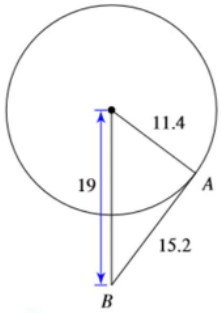
Not tangent

3)



Tangent

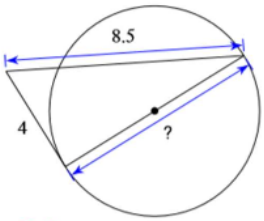
4)



Tangent

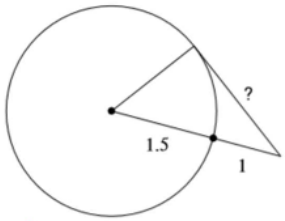
Find the segment length indicated. Assume that lines which appear to be tangent are tangent.

5)



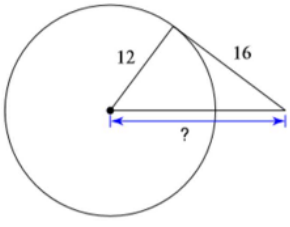
7.5

6)



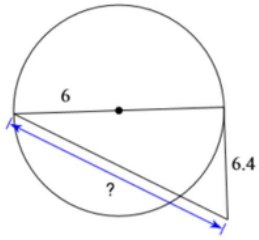
2

7)



20

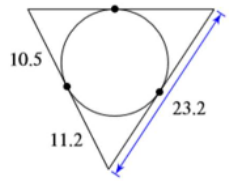
8)



13.6

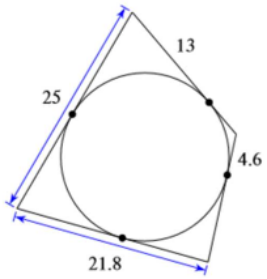
Find the perimeter of each polygon. Assume that lines which appear to be tangent are tangent.

9)



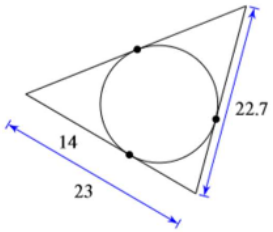
67.4

10)



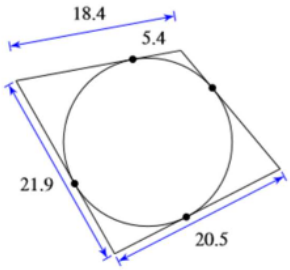
78.8

11)



73.4

12)



77.8