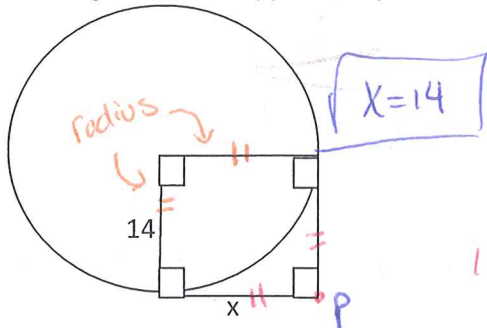


10-5 Tangents

If a line is tangent to a circle, then it is perpendicular to the circle's radius.

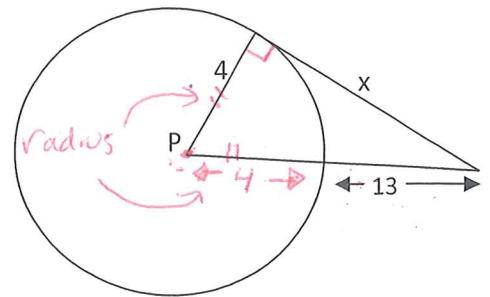
Find x. Assume segments that appear tangent are tangent.

1.



\* Rectangle opposite sides are  $\cong$

2.



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

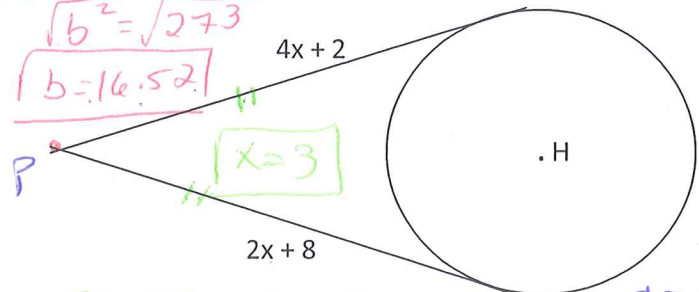
$$4^2 + b^2 = 13^2$$

$$16 + b^2 = 169$$

$$b^2 = 153$$

$$b = \sqrt{153}$$

3.



$$4x + 2 = 2x + 8$$

$$2x = 6$$

$$x = 3$$

10-6 Secants, Tangents, and Angle Measures

Rules:

- Intersection is inside the circle

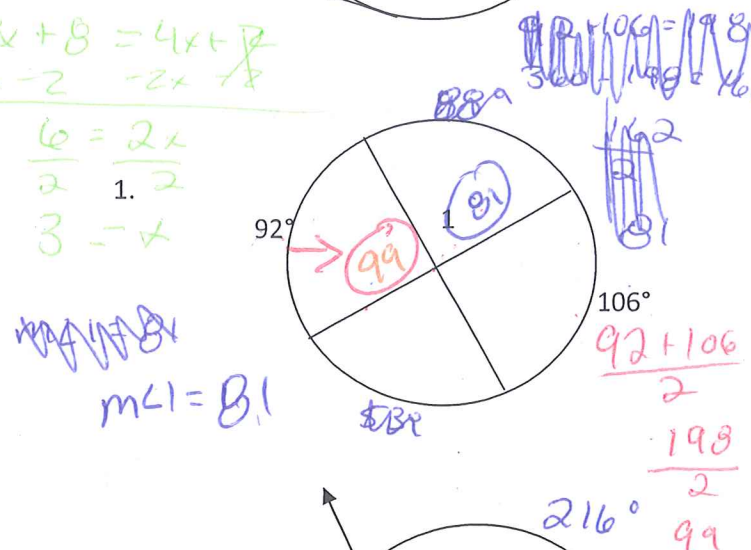
Sum the intercepted arcs and divide by 2

- Intersection is on the circle

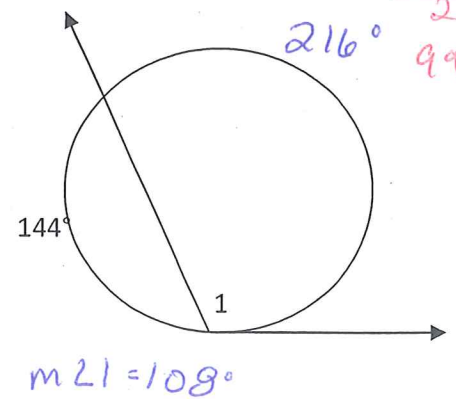
Find the intercepted arcs and divide by 2

- Intersect outside the circle

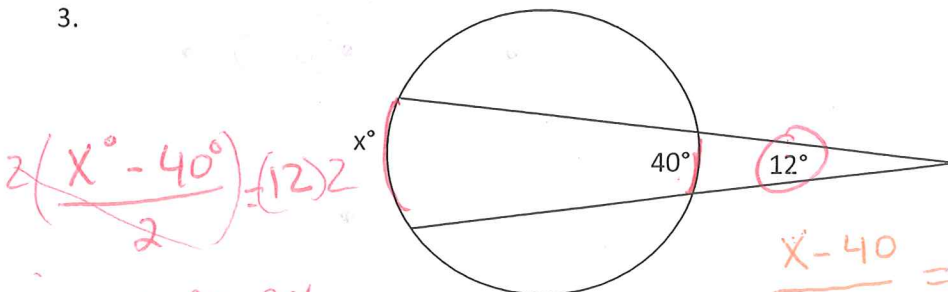
Subtract the intercepted arcs and divide by 2



2.



3.



$$2(x - 40) = 24$$

$$x - 40 = 12$$

$$x = 52$$

$$x - 40 = 12$$

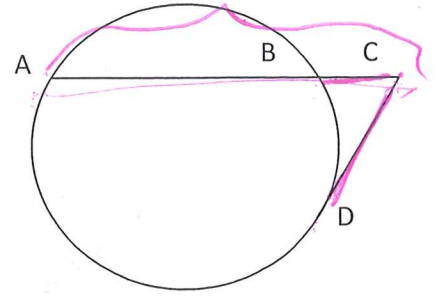
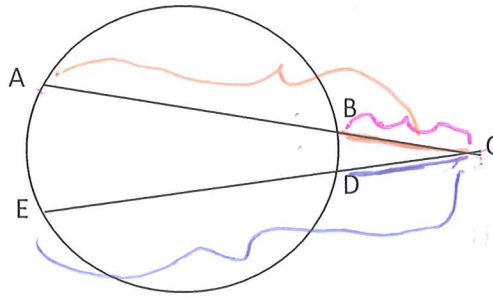
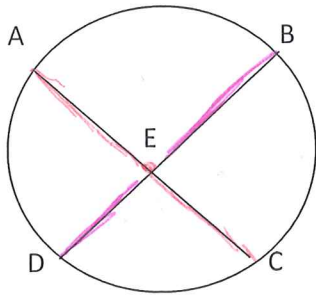
$$x = 52$$

$$\frac{x - 40}{2} = 12$$

$$x - 40 = 24$$

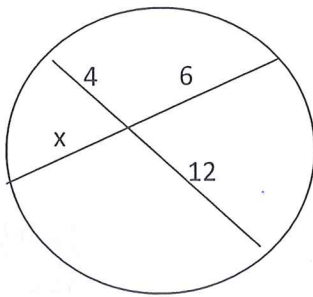
$$x = 64$$

10-7 Special Segments in a circle Write an equation representing the segment length relationships.



Relationship:  $AE \cdot EC = BE \cdot ED$  Relationship:  $CB \cdot CA = CD \cdot CE$  Relationship:  $CB \cdot CA = CD^2$

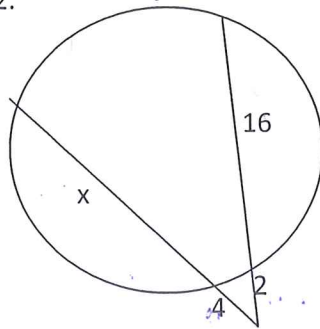
1.



$4 \cdot 12 = 6 \cdot x$   
 $48 = 6x$   
 $8 = x$

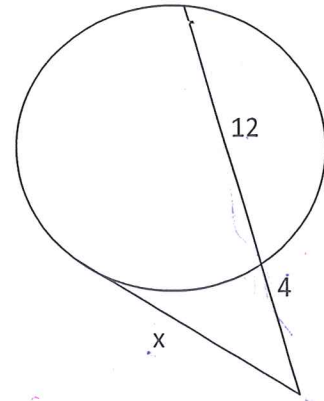
For #1-3 above, find x.

2.



$2 \cdot 18 = 4 \cdot (4 + x)$   
 $36 = 16 + 4x$   
 $20 = 4x$   
 $x = 5$

3.



$x^2 = 4 \cdot 16$   
 $x^2 = 64$

10-8 Equations of circles

The standard equation for a circle is  $(x-h)^2 + (y-k)^2 = r^2$

1. Find the equation for a circle with diameter 8 and center (-3, 5)  $(x+3)^2 + (y-5)^2 = 16$

2. Find the radius and center for a circle with equation  $(x+1)^2 + (y-2)^2 = 49$  radius = 7

3. Graph the circle whose equation is  $x^2 + (y-1)^2 = 64$

$(0, 1)$   $r = 8$

