

$PA = \sqrt{450}$
 $PB = \sqrt{800}$
 $PA \cdot PB = \sqrt{360,000}$
600

$PC = 20$
 $PD = 30$
 $PC \cdot PD = 600$

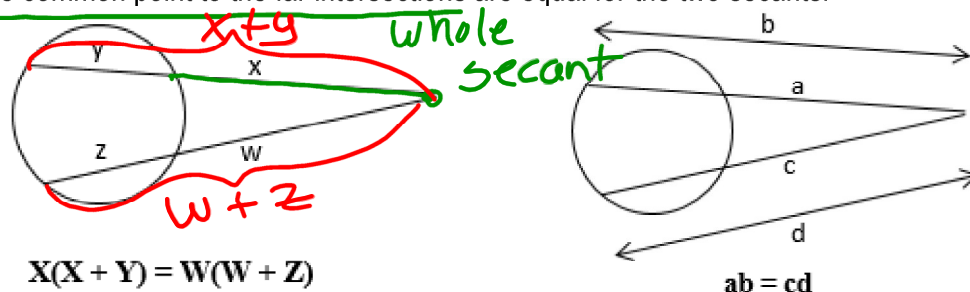
9.Blank - Intersecting Chords and Secants.notebook

March 15, 2017

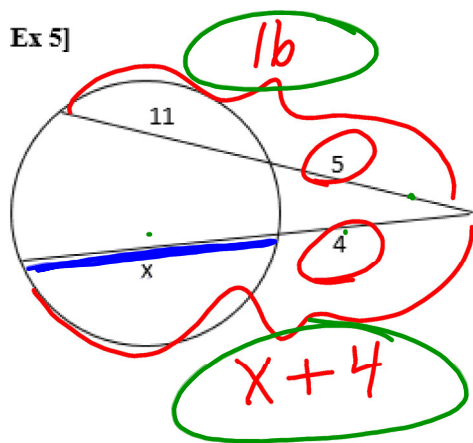
In the figure above, line PB and line PD are called *secants* because they each intersect the circle in two places.

If two secants meet at a common point (P), then there is a relationship among the lengths of the segments created by the common point and the intersections with the circle.

The distances from the common point to the near intersections times the distances from the common point to the far intersections are equal for the two secants.

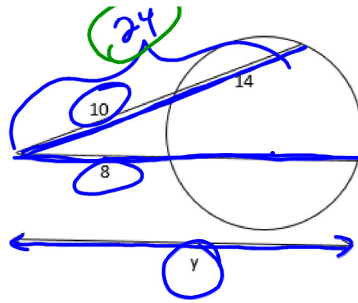


Ex 5]



$$\begin{aligned}
 5(16) &= 4(x+4) \\
 80 &= 4x + 16 \\
 -16 &\quad -16 \\
 \hline
 64 &= 4x \\
 \hline
 4 &\quad 4 \\
 \hline
 16 &= x
 \end{aligned}$$

Ex 6]

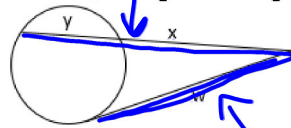


$$10(24) = 8(y)$$

$$\frac{240}{8} = \frac{8y}{8}$$

$$y = 30$$

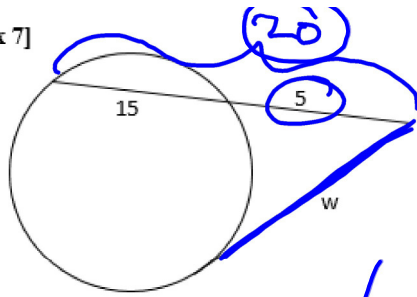
There is a special case when one of the secants is actually a tangent. In that case, the length of the tangent segment is squared for use within the formula.

$$X(X + Y) = W^2$$


secant

tangent

Ex 7]

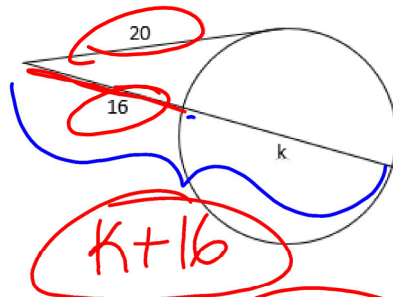


$$5(20) = w^2$$

$$\sqrt{100} = \sqrt{w^2}$$

$$10 = w$$

Ex 8]



$$20^2 = 16(16 + k)$$

$$400 = 256 + 16k$$

$$-256 \quad -256$$

$$\frac{144}{16} = \frac{16k}{16}$$

$$k = 9$$

Assignment:

Worksheet 9.Blank HW