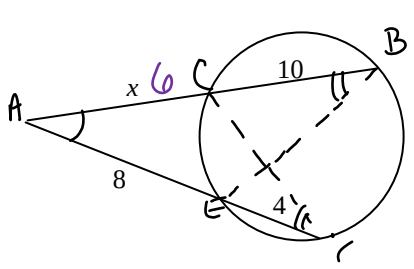
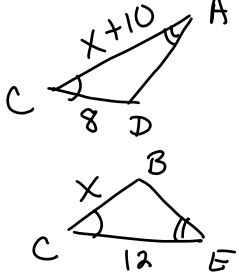
Accelerated Geometry ***Name*_____**
Chapter 10 Section 8 ***Date*_____**

Objective: To understand the relationship between the segments of a circle.

Case #1: When 2 secants intersect outside the circle:





$\triangle CAD \sim \triangle CEB$ by AA~

$\frac{CA}{CE} = \frac{AD}{EB} = \frac{CD}{CB}$

$\frac{x+10}{12} = \frac{8}{x}$

$x(x+10) = (8)(12)$

$(6)(16) = (8)(12)$

$x^2 + 10x = 96$

$x^2 + 10x - 96 = 0$

$(x-6)(x+16) = 0$

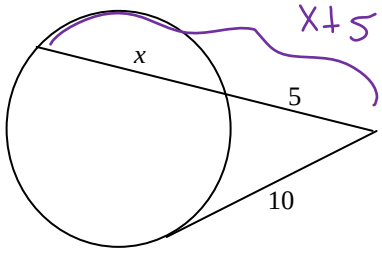
$x = 6 \quad x \neq -16$

What is the relationship between all of the segments?

(external seg.)(whole seg) = (external seg)(whole seg.)

The following cases can be proven with similar logic!

Case #2: When a tangent and a secant intersect outside the circle:



$(10)(10) = 5(5+x)$

$100 = 25 + 5x$

$75 = 5x$

$15 = x$

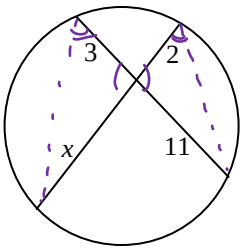
In this case the length of the tangent squared will be equal to the product of the whole secant and its external part.

(whole)(external)

whole = external

tangent² = whole · external

Case #3: When two chords intersect inside the circle:



$\frac{3}{2} = \frac{x}{11}$

$(3)(11) = (2)(x)$

$x = 16.5$

In this case, the product of the two pieces of one of the chords is equal to the product of the two pieces of the other chord.

piece · piece = piece · piece

Reeses Pieces

Accelerated Geometry ***Name*_____**
Chapter 10 Section 8 ***Date*_____**

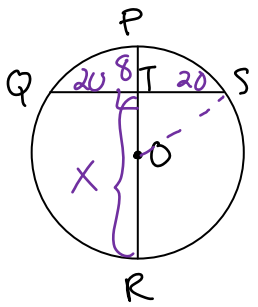
Practice:

1. T is the midpoint of $\overline{QS}$, PT = 8 and QS = 40.

a) Find TR. = 50

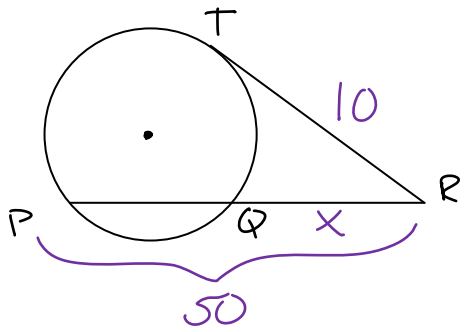
b) Find the diameter of $\odot O$ = 58

$8x = (20)(20)$
$8x = 400$
$x = 50$



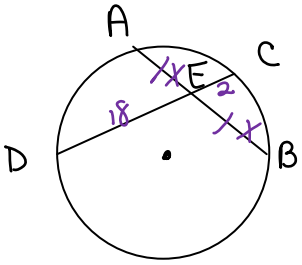
2. If TR = 10 and PR = 50, find PQ.

$\text{tangent}^2 = (\text{ext})(\text{whole})$
$10^2 = x \cdot 50$
$x = 2$
PQ = 48



3. If CE = 2, ED = 18, and $\overline{AE} \cong \overline{EB}$, find AB.

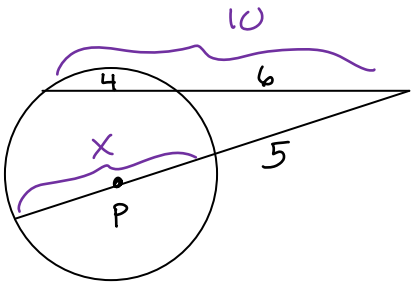
$(18)(2) = x \cdot x$
$36 = x^2$
$6 = x$
AB = 12



4. Find the radius of $\odot P$

$(6)(10) = (5)(5+x)$
$60 = 25 + 5x$
$35 = 5x$
$7 = x$

radius = 3.5



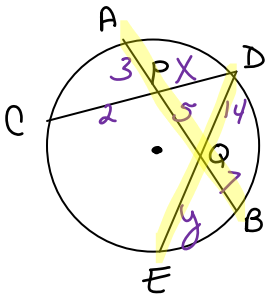
Accelerated Geometry **Name**_____
Chapter 10 Section 8 **Date**_____

5. Given: AP = 3, PQ = 5, QB = 7, CP = 2, QD = 14.

Find: PD and EQ

$2x = (3)(12)$
$2x = 36$
$x = 18$

$14y = (7)(8)$
$14y = 56$
$y = 4$

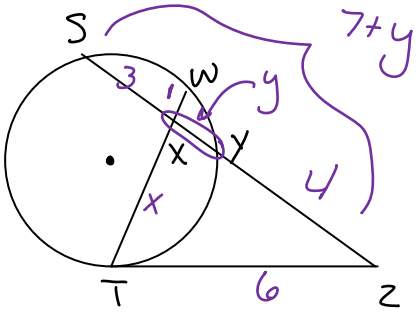


6. Given TZ = 6, YZ = 4, SX = 3, WX = 1.

Find: XT

$6^2 = 4(7+y)$
$36 = 28+4y$
$8 = 4y$
$2 = y$

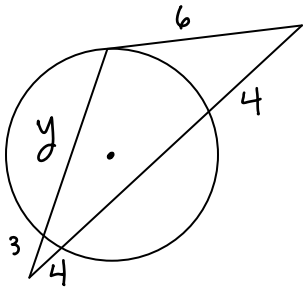
$(3)(2) = (1)(x)$
$6 = TX$



Finish for HW

7. a) Find y.

b) Is the triangle acute, right or obtuse? Justify your answer with the appropriate work.



8. Given: AB = 7, CD = 5, ED = 2.

Find: AE