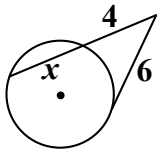
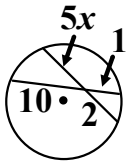
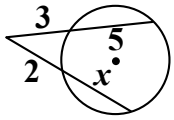
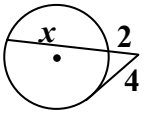
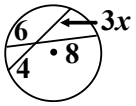
Name: _____

Segment Relationships on Circles

Now that you know what the parts that interact with a circle are called, it's time to learn how to evaluate them (determine their value). All of the parts on a circle have a specific relationship. For example, a diameter is always twice as big as a radius. If you know the rules of those relationships, then you can use those rules to solve problems. Today, we're going to focus on the segments. Here are two rules that govern tangents, secants, and chords…

Secant-Tangent or Secant-Secant *If you <u>multiply</u> <u>the outside</u> part of one segment <u>with the whole</u> thing, it will equal the outside of the other multiplied by the whole thing.*	**Chord-Chord** *If you multiply the two parts of one chord, it will equal the product of the two parts of the chord that crosses it.*
$(\boldsymbol{out_1})(\boldsymbol{out_1 + in_1}) = (\boldsymbol{out_2})(\boldsymbol{out_2 + in_2})$ EX:  Secant: out = 4, in = x Tangent: out = 6, in = 0 $(out_1)(out_1 + in_1) = (out_2)(out_2 + in_2)$ $(4)(4 + x) = 6(6 + 0)$ $16 + 4x = 36$ $4x = 20$ $x = \boxed{5}$	$(\boldsymbol{part_1})(\boldsymbol{part_2}) = (\boldsymbol{part_1})(\boldsymbol{part_2})$ Ex:  Chord 1: part$_1$ = 5x, part$_2$ = 2 Chord 2: part$_1$ = 10, part$_2$ = 1 $(part_1)(part_2) = (part_1)(part_2)$ $(5x)(2) = (10)(1)$ $10x = 10$ $x = \boxed{1}$

Determine the value of x.

EX	1.	2.
 There are two secants, so: *Secant-secant* Secant1: out = 3, in = 5 Secant2: out = 2, in = x $(out_1)(out_1 + in_1) = (out_2)(out_2 + in_2)$ $(3)(3 + 5) = 2(2 + x)$ $3(8) = 4 + 2x$ $24 = 4 + 2x$ $20 = 2x$ $4 = x$ $x = \boxed{4}$	 	
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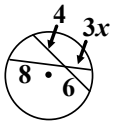
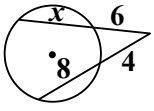
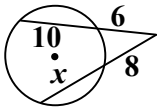
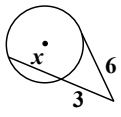
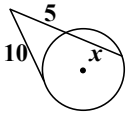
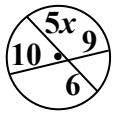
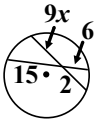
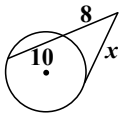
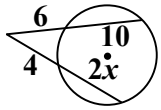
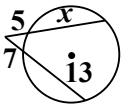
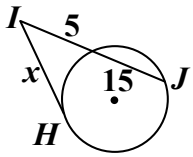
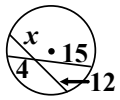
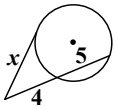
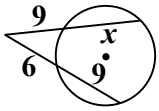
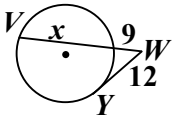
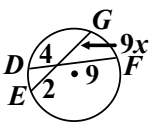
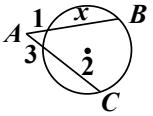
 	 	

6. 	7. 	8. 
9. 	10. 	11. 
12. 	13. 	14. 
15. 	16. 	17. 
18. 	19. 	20.