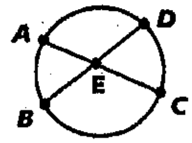
Name ______________________________

Length of Chords

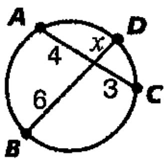
Remember

If two chords intersect, the product of the segment lengths along one chord is equal to the product of the segment lengths along the other chord.

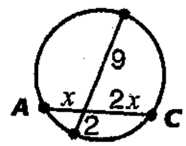


$AE \cdot EC = BE \cdot ED$

Examples: Find the value of x and the length of $\overline{AC}$.



$4 \cdot 3 = 6 \cdot x$
$12 = 6x$
$2 = x$
$AC = 4 + 3 = 7$

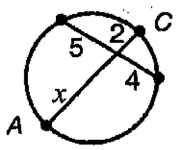


$x \cdot 2x = 2 \cdot 9$
$2x^2 = 18$
$x^2 = 9$
$x = 3$

Check: $3 \cdot 2(3) \stackrel{?}{=} 2 \cdot 9$
$3 \cdot 6 \stackrel{?}{=} 2 \cdot 9$
$18 = 18$
$AC = x + 2x = 3 + 6 = 9$

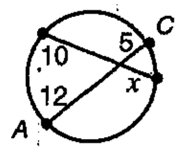
Find the value of x and the length of $\overline{AC}$. Follow your answers in order through the maze.

1.



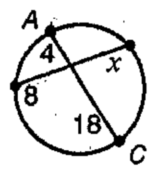
$x =$ ____ $AC =$ ____

2.



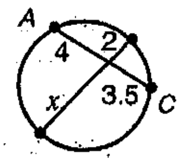
$x =$ ____ $AC =$ ____

3.



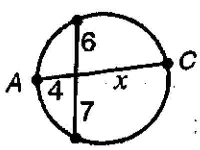
$x =$ ____ $AC =$ ____

4.



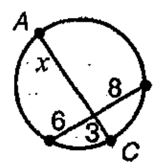
$x =$ ____ $AC =$ ____

5.



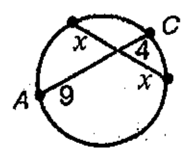
$x =$ ____ $AC =$ ____

6.



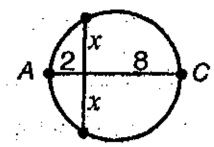
$x =$ ____ $AC =$ ____

7.



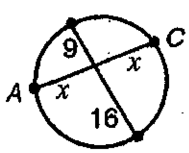
$x =$ ____ $AC =$ ____

8.



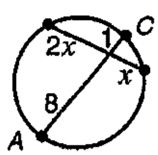
$x =$ ____ $AC =$ ____

9.



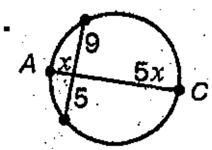
$x =$ ____ $AC =$ ____

10.



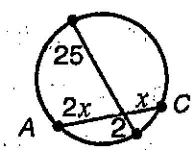
$x =$ ____ $AC =$ ____

11.



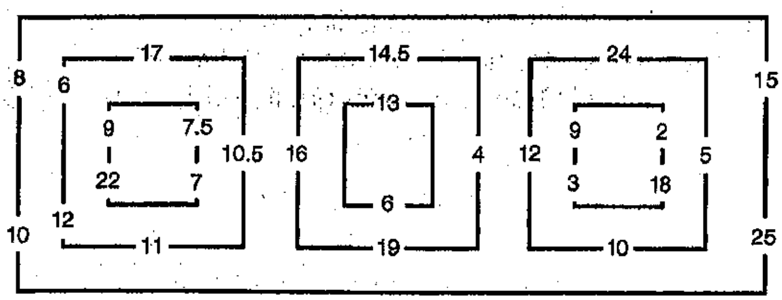
$x =$ ____ $AC =$ ____

12.



$x =$ ____ $AC =$ ____

START



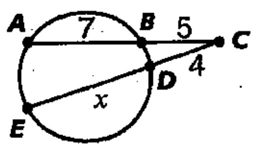
FINISH

Name ______________________________

Length of Secant and Tangent Segments

Remember

1. If two secant segments share the same point outside a circle, the product of the length of one secant and its external segment length is equal to the product of the length of the other secant and its external segment length.



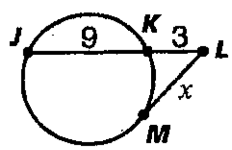
$AC \cdot BC = EC \cdot DC$

Example:
Given: $AB = 7$, $BC = 5$, $DC = 4$. Find the length of $\overline{ED}$ and $\overline{EC}$.

$$AC \cdot BC = EC \cdot DC$$
$$(7 + 5) \cdot 5 = (x + 4) \cdot 4$$
$$60 = 4x + 16$$
$$44 = 4x$$
$$11 = x$$

$ED = 11$; $EC = 15$

2. If a secant segment and a tangent segment share the same external point, the segment lengths follow a similar product rule.



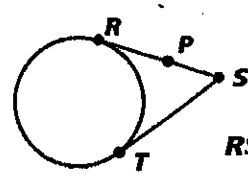
$JL \cdot KL = ML \cdot ML$

Example:
Given: $JK = 9$, $KL = 3$. Find the length of $\overline{ML}$.

$$JL \cdot KL = ML \cdot ML$$
$$(9 + 3) \cdot 3 = x \cdot x$$
$$36 = x^2$$
$$6 = x$$

$ML = 6$

3. If two tangent segments share the same external point, they are congruent.



$RS = TS$

Use the diagrams above and the measures given to find the missing lengths.

1. $AC = 15$, $BC = 5$, $DC = 3$, $ED =$ ____, $EC =$ ____, $AB =$ ____
2. $ED = 20$, $DC = 4$, $BC = 8$, $EC =$ ____, $AB =$ ____, $AC =$ ____
3. $JK = 30$, $KL = 10$, $JL =$ ____, $ML =$ ____
4. $ML = 12$, $KL = 10$, $JK =$ ____, $JL =$ ____
5. $JL = 25$, $ML = 20$, $KL =$ ____, $JK =$ ____
6. $RP = 10$, $TS = 17$, $RS =$ ____, $PS =$ ____

4	A
4.4	C
7	E
9	F
10	G
12	H
14.4	I
16	M
17	N
20	O
22	R
24	S
25	T
40	W

Use the decoder to find the name of an Italian mathematician and the math curve named for her. The Italian word for curve was mistranslated which is how the curve got its odd name.

M (5-KL) ___ (2-AB) ___ (1-ED) ___ (4-JL) ___ (2-AB) ___ (2-AB) ___ (1-AB) ___ (6-RS) ___ (6-PS) ___ (2-EC) ___ (4-JL);

___ (3-JL) ___ (4-JL) ___ (1-EC) ___ (4-JK) ___ (2-AC) ___ (3-ML) ___ (5-JK) ___ (2-AB) ___ (1-AB) ___ (6-RS) ___ (6-PS) ___ (2-EC) ___ (4-JL)