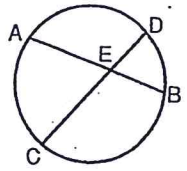
TOOLKIT

Name KEY Date _____ Class _____

LESSON 11-6

Review for Mastery

Segment Relationships in Circles

Chord-Chord Product Theorem	
If two chords intersect in the interior of a circle, then the products of the lengths of the segments of the chords are equal.	 $AE \cdot EB = CE \cdot ED$

Find the value of x and the length of each chord.

$HL \cdot LJ = KL \cdot LM$ Chord-Chord Product Thm.

$4 \cdot 9 = 6 \cdot x$ $HL = 4, LJ = 9, KL = 6, LM = x$

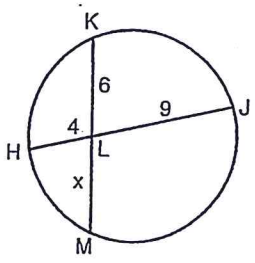
$36 = 6x$ Simplify.

$6 = x$ Divide each side by 6.

$HJ = 4 + 9 = 13$

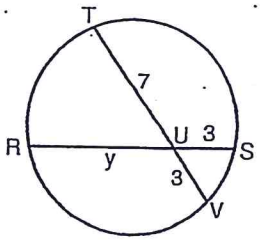
$KM = 6 + x$

$= 6 + 6 = 12$



Find the value of the variable and the length of each chord.

1.

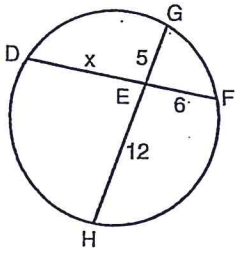


$7 \cdot 3 = y \cdot 3$

$7 = y$

$RS = 7 + 3 = 10$ $TV = 7 + 3 = 10$

2.



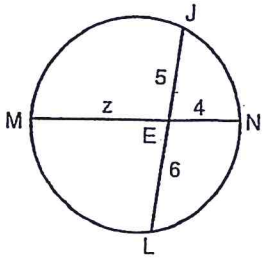
$6x = 5 \cdot 12$

$\frac{6x}{6} = \frac{60}{6}$

$x = 10$

$DF = 10 + 6 = 16$ $GH = 12 + 5 = 17$

3.

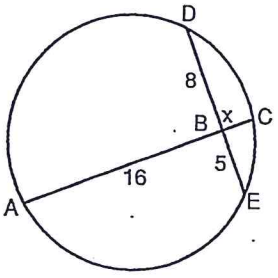


$4z = 5 \cdot 6$

$z = 7.5$

$MN = 7.5 + 4 = 11.5$ $JL = 11$

4.



$16x = 8 \cdot 5$

$16x = 40$

$x = 2.5$

$AC = 16 + 2.5 = 18.5$ $DE = 13$

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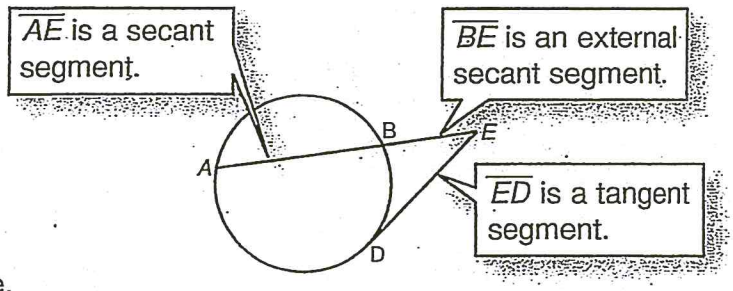
LESSON 11-6

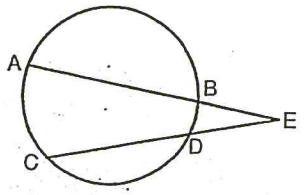
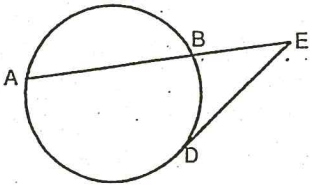
Review for Mastery

Segment Relationships in Circles continued

- A **secant segment** is a segment of a secant with at least one endpoint on the circle.
- An **external secant segment** is the part of the secant segment that lies in the exterior of the circle.
- A **tangent segment** is a segment of a tangent with one endpoint on the circle.

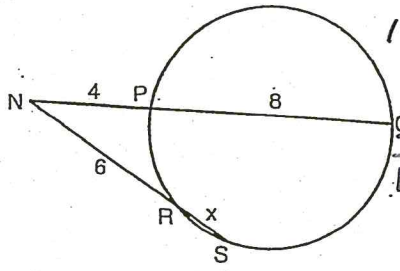


If two segments intersect outside a circle, the following theorems are true.

Secant-Secant Product Theorem The product of the lengths of one secant segment and its external segment equals the product of the lengths of the other secant segment and its external segment. whole • outside = whole • outside $AE \cdot BE = CE \cdot DE$	
Secant-Tangent Product Theorem The product of the lengths of the secant segment and its external segment equals the length of the tangent segment squared. whole • outside = tangent^2 $AE \cdot BE = DE^2$	

Find the value of the variable and the length of each secant segment.

5.



$12 \cdot 4 = 6(x+6)$

$48 = 6x + 36$

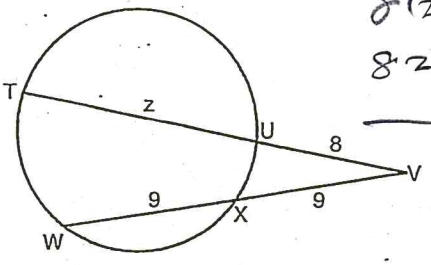
$-36 \quad -36$

$12 = 6x$

$2 = x$

$NQ = 12 \quad NS = 8$

6.



$8(z+8) = 18 \cdot 9$

$8z + 64 = 162$

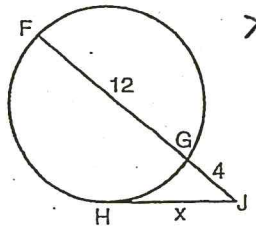
$-64 \quad -64$

$8z = 98$

$z = 12.25$

Find the value of the variable.

7.



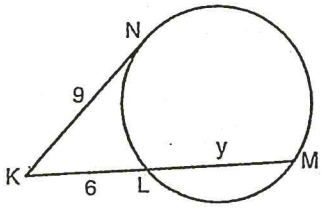
$x^2 = 16 \cdot 4$

$x^2 = 64$

$x = 8$

$FJ = 16, \; HJ = 8$

8.



$6(y+6) = 9^2$

$6y + 36 = 81$

$-36 \quad -36$

$\frac{6y}{6} = \frac{45}{6}$

$y = 7.5$

$KN = 9 \quad KM = 13.5$