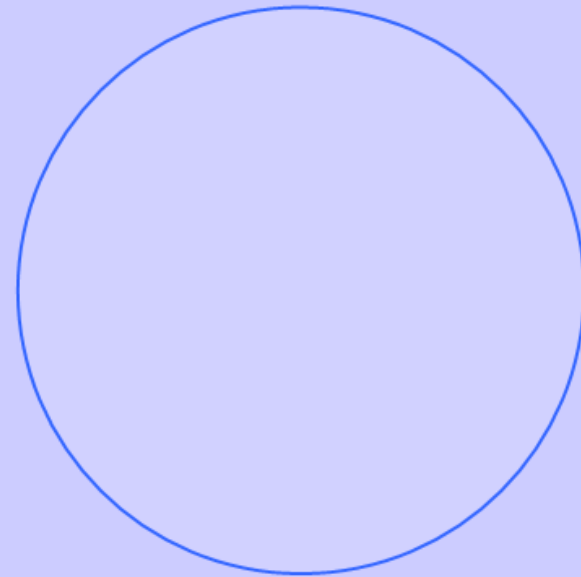


10.6 Find Segment Lengths in Circles

When two chords intersect in the interior of a circle, each chord is divided into two segments that are called **segments of the chord**.

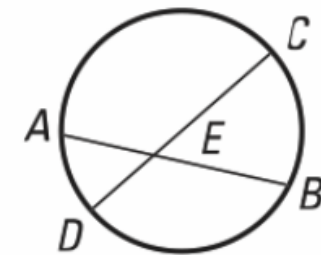
1. Draw chord AB .
2. Draw chord XY , so it intersects with chord AB at point P .
3. What are the segments of the chords?



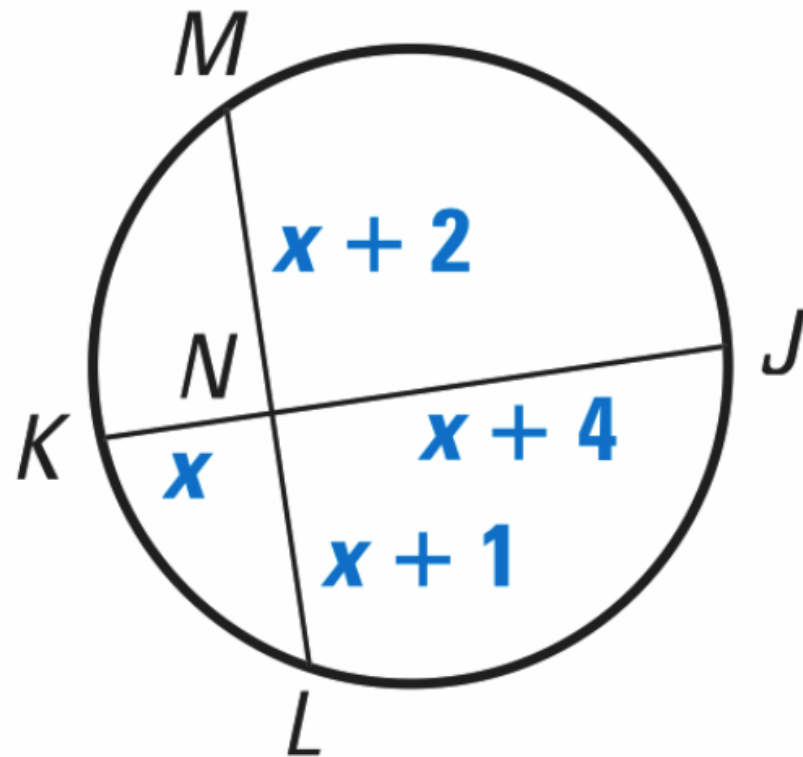
THEOREM*For Your Notebook***THEOREM 10.14 Segments of Chords Theorem**

If two chords intersect in the interior of a circle, then the product of the lengths of the segments of one chord is equal to the product of the lengths of the segments of the other chord.

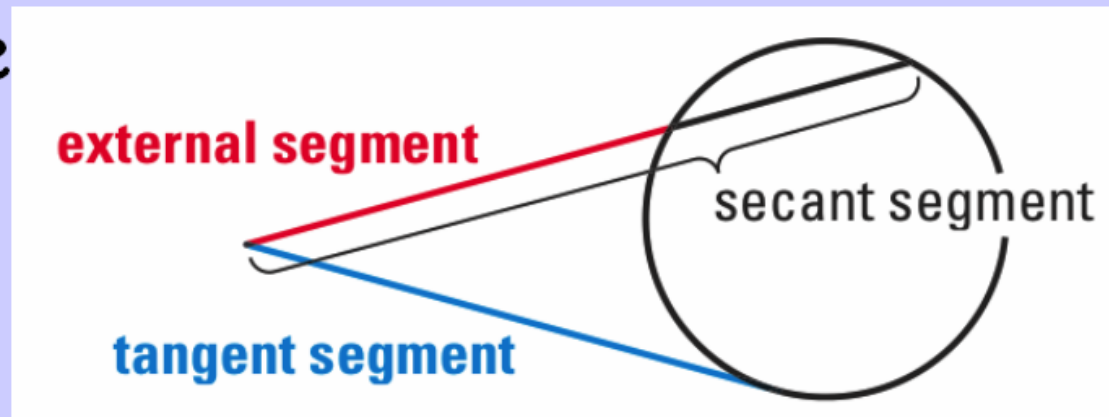
Proof: Ex. 21, p. 694



$$EA \cdot EB = EC \cdot ED$$

EXAMPLE 1 Find lengths using Theorem 10.14Find ML and JK .

secant segment-A segment that contains the chord of a circle, and has exactly one endpoint outside the circle

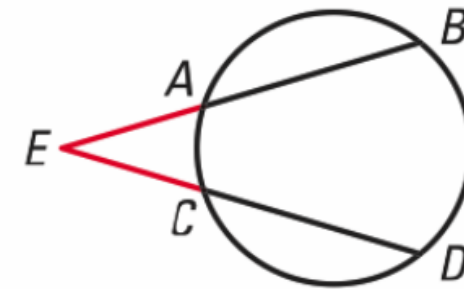


external segment-The part of a secant segment that is outside the circle

THEOREM*For Your Notebook***THEOREM 10.15 Segments of Secants Theorem**

If two secant segments share the same endpoint outside a circle, then 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.

Proof: Ex. 25, p. 694

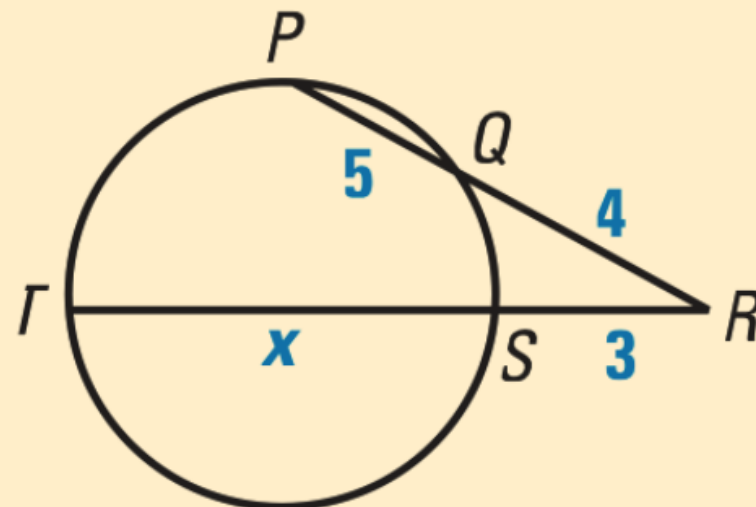


$$EA \cdot EB = EC \cdot ED$$

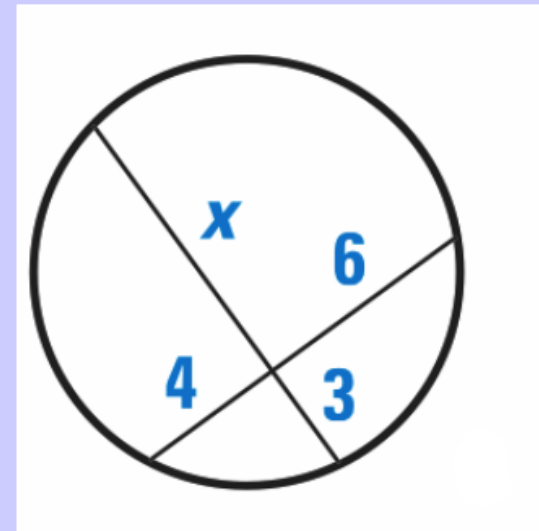
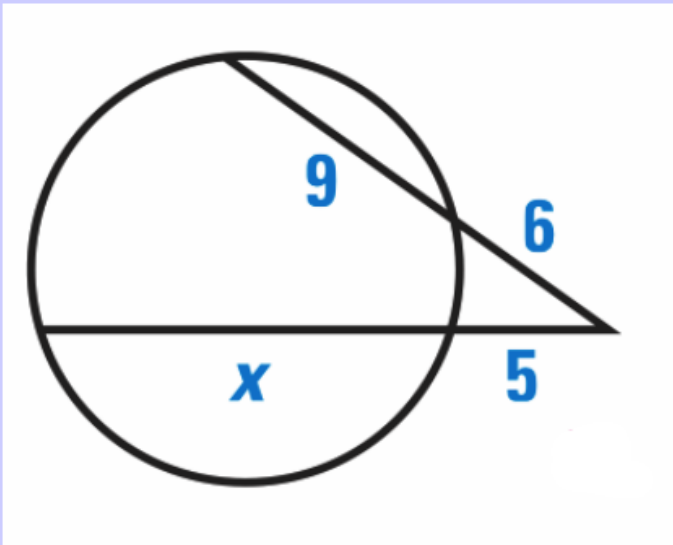
EXAMPLE 2 Standardized Test Practice

What is the value of x ?

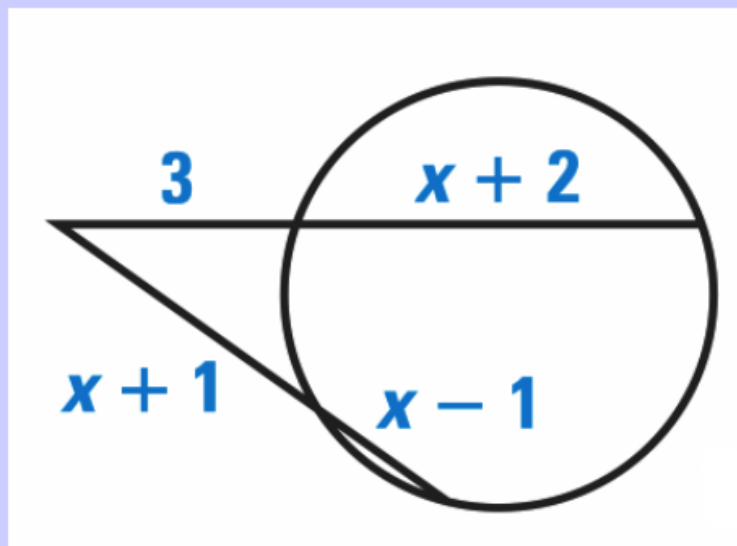
- (A) 6 (B) $6\frac{2}{3}$
(C) 8 (D) 9



Find the value(s) of x .



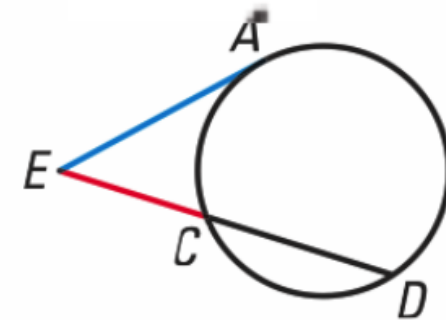
Find the value(s) of x .



THEOREM*For Your Notebook***THEOREM 10.16** Segments of Secants and Tangents Theorem

If a secant segment and a tangent segment share an endpoint outside a circle, then the product of the lengths of the secant segment and its external segment equals the square of the length of the tangent segment.

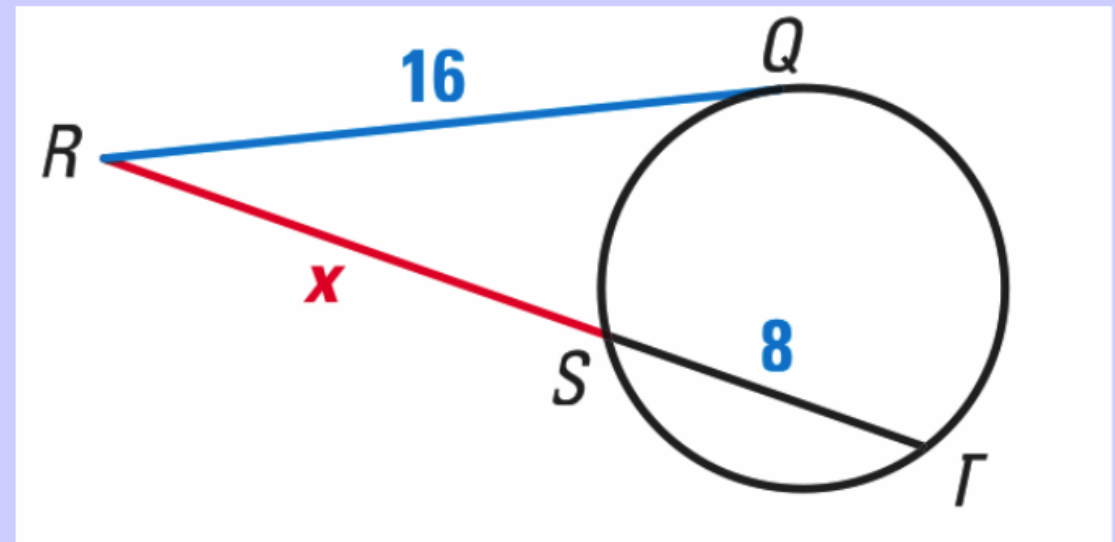
Proof: Ex. 26, p. 694



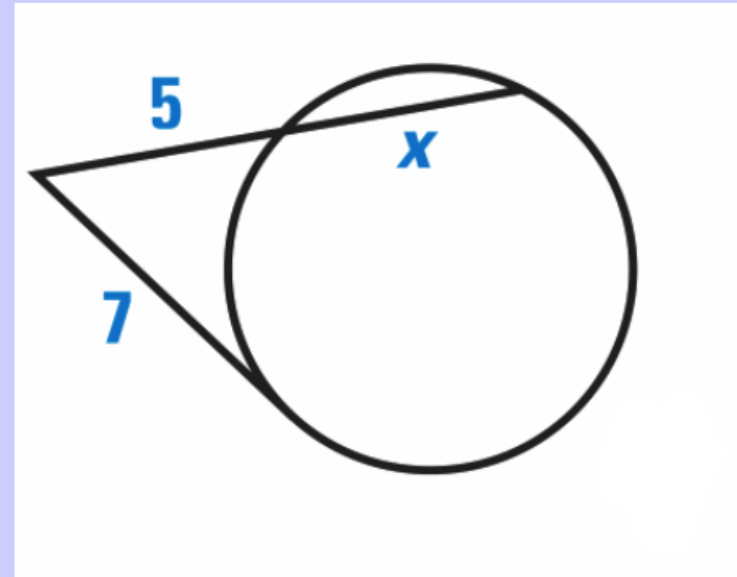
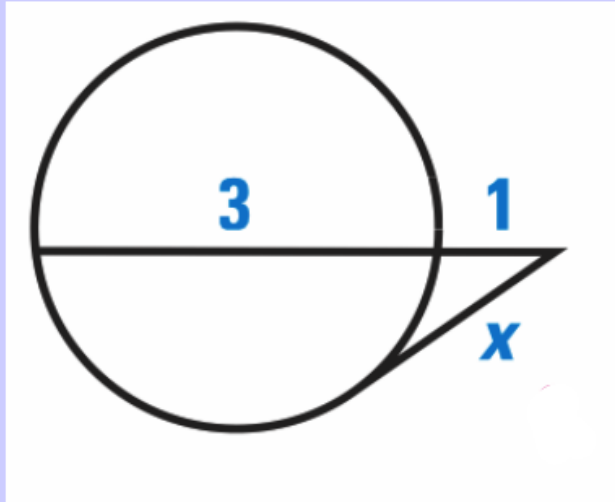
$$EA^2 = EC \cdot ED$$

EXAMPLE 3 Find lengths using Theorem 10.16

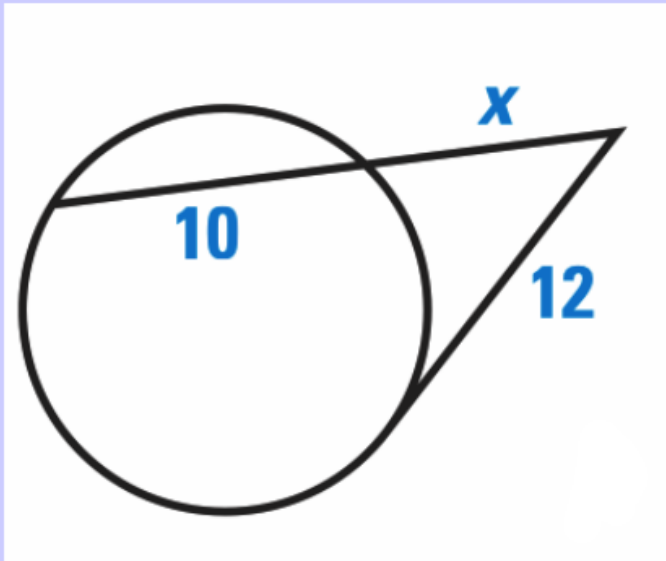
Use the figure at the right to find RS .



Find the value of x .



Find the value of x .



Assignment:

p. 692 (3-15, 20, 34-39)