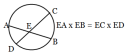
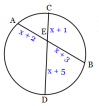
Lesson 30-6: Find Segment Lengths in Circles

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

*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.



[Ex. 1]



Find AB and CD.

Your Turn
Solve for x.

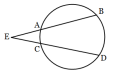
1)

2)

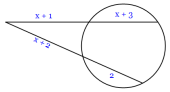
3)

A secant segment is a segment that contains a chord of a circle, and has exactly one endpoint outside the circle. The part of the secant segment that is outside the circle is called and external segment.

* Segments of a Secant 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.



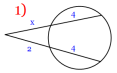
[Ex 2]



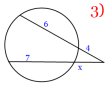
Find EB and ED.

Your Turn
Solve for x.

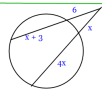
1)



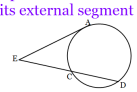
2)



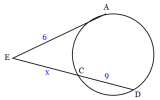
3)



* 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.



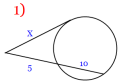
[Ex 3]



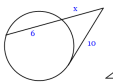
Find ED.

Your Turn
Solve for x.

1)



2)



3)