WELCOME

Chapter 9: Section 5 Segment Lengths in Circles

WARM-UP

1. What are the solutions of $x^2 + 11x + 30 = 0$?

A $x = 2$ or $x = 15$ **B** $x = -5$ or $x = -6$
C $x = -15$ or $x = -2$ **D** $x = 6$ or $x = 5$

2. What are the solutions of $x^2 - 30 = 6$?

A $x = 0$ or $x = -6$ **B** $x = 6$ or $x = -6$
C $x = 0$ or $x = 6$ **D** $x = -6$ only

3. What are the solutions of $x^2 + x = 20$?

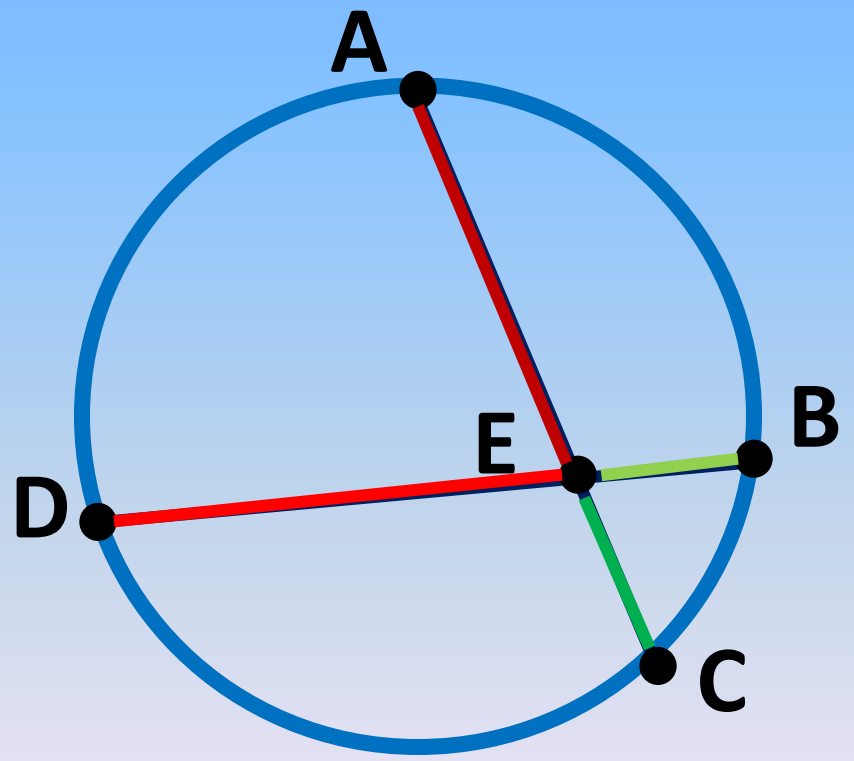
A $x = 5$ or $x = -4$ **B** $x = -5$ or $x = -4$
C $x = 5$ or $x = 4$ **D** $x = -5$ or $x = 4$

Chapter 9: Sect 5 Learning Target:

Calculate ***Segments* Lengths** in circles when **Secant and Tangent lines** are present.

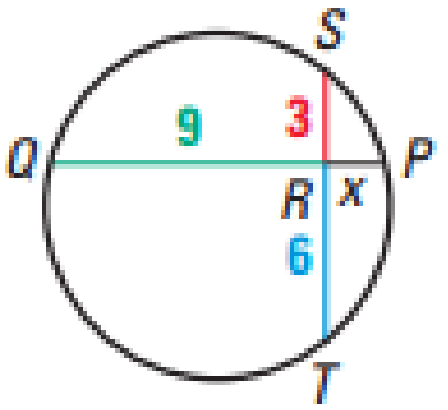
Segment Chord Theorem

If two chords in a circle intersect then the products of the lengths of their segment parts are equal.



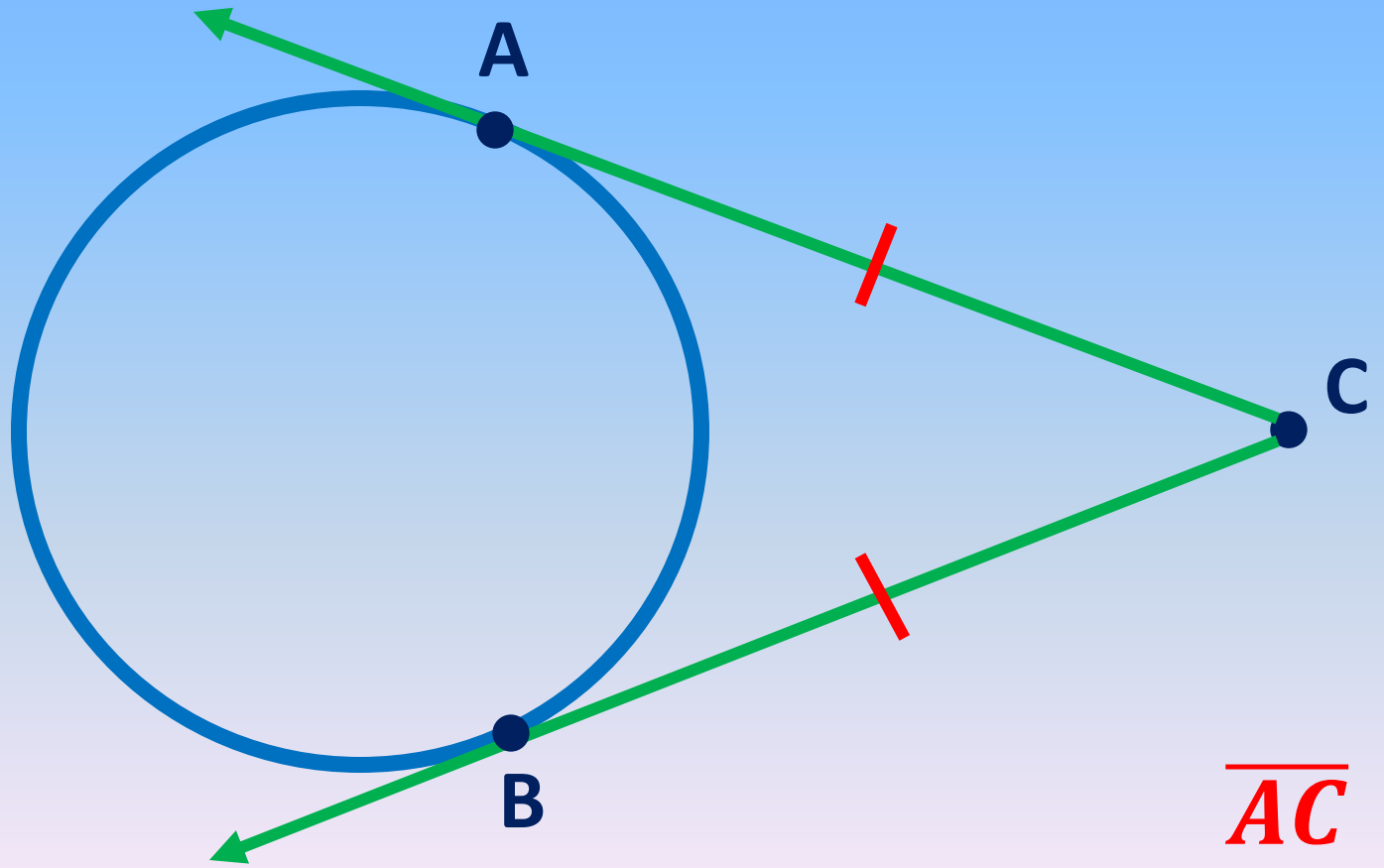
$$\overline{DE} \cdot \overline{EB} = \overline{AE} \cdot \overline{EC}$$

Chords $\overline{ST}$ and $\overline{PQ}$ intersect inside the circle.
Find the value of x.



Congruent Tangency 10.3

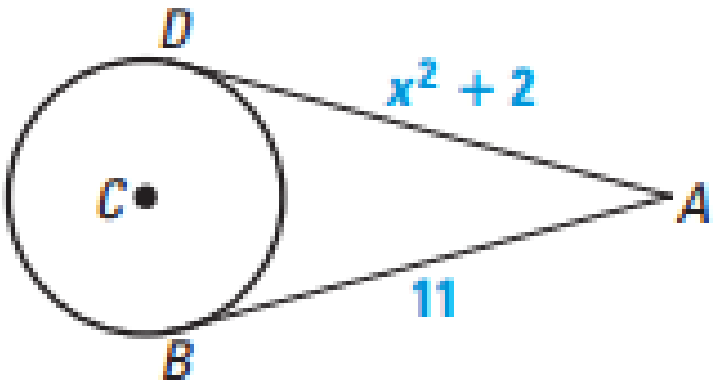
If two segments from the same exterior point are tangent to a circle, then they are congruent.



$\overline{AC} \cong \overline{BC}$

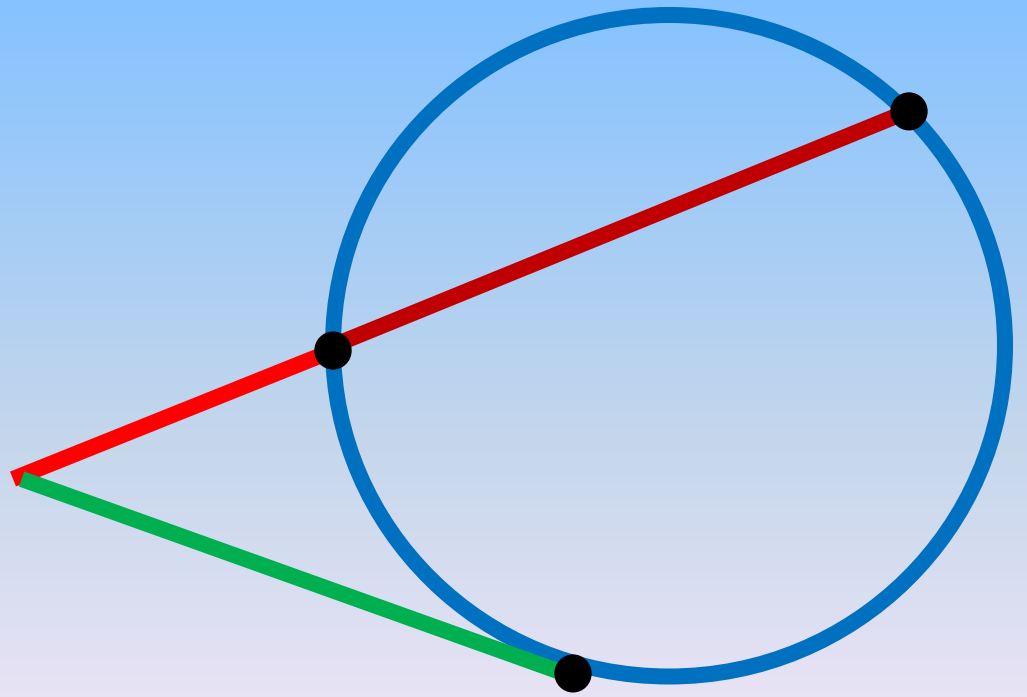
$\overleftrightarrow{AB}$ is tangent to $\odot C$ at B.
$\overleftrightarrow{AD}$ is tangent to $\odot C$ at D.

Find the value of x.



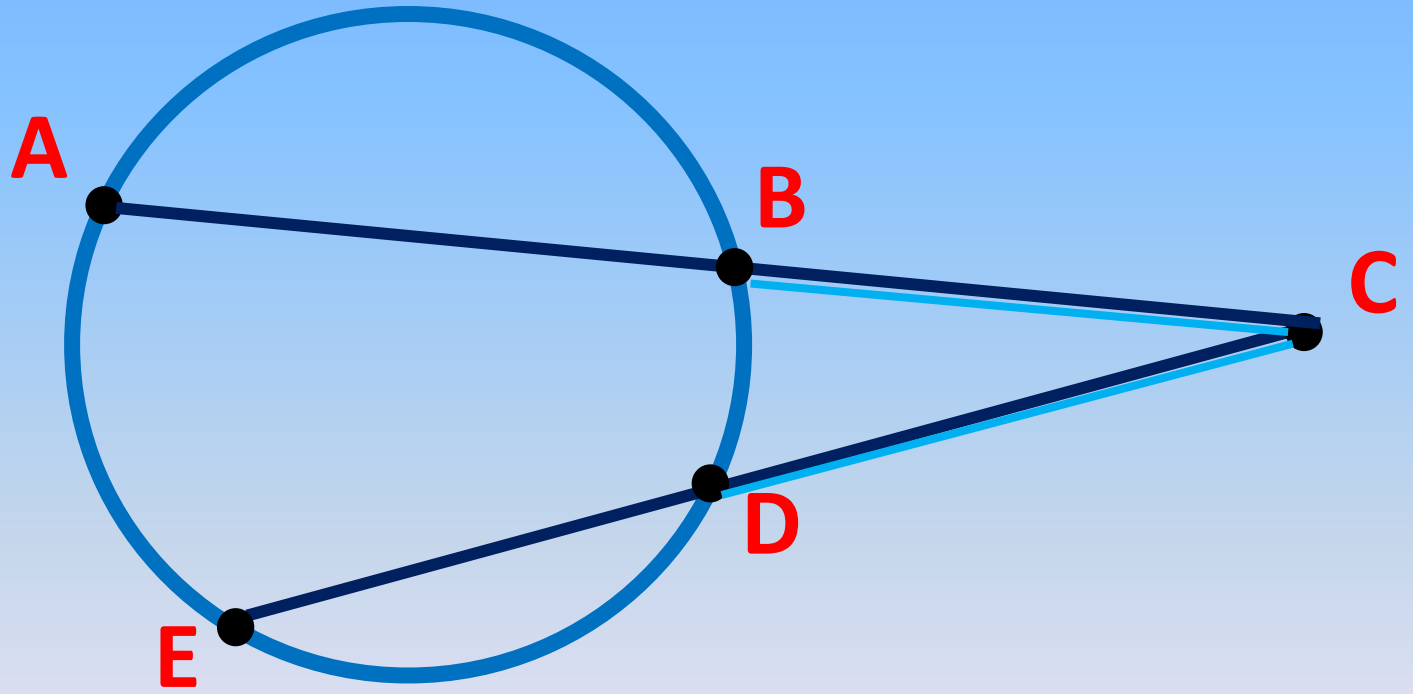
Secant and Tangent Segments

When a secant/tangent has endpoints on both ends it is called a segment of a secant/tangent.



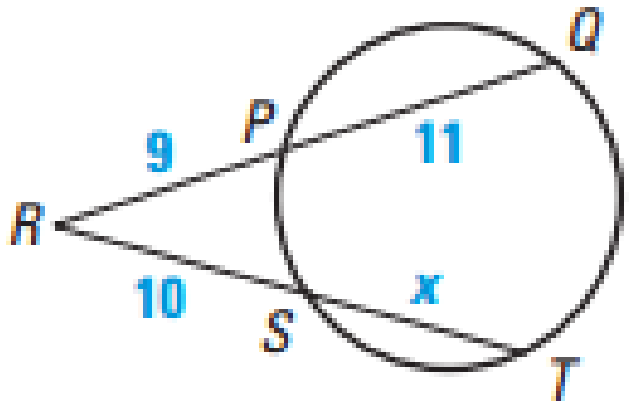
Secant Segment Theorem

If two secants share an external point then the product of the secants length with the external portion are equal.



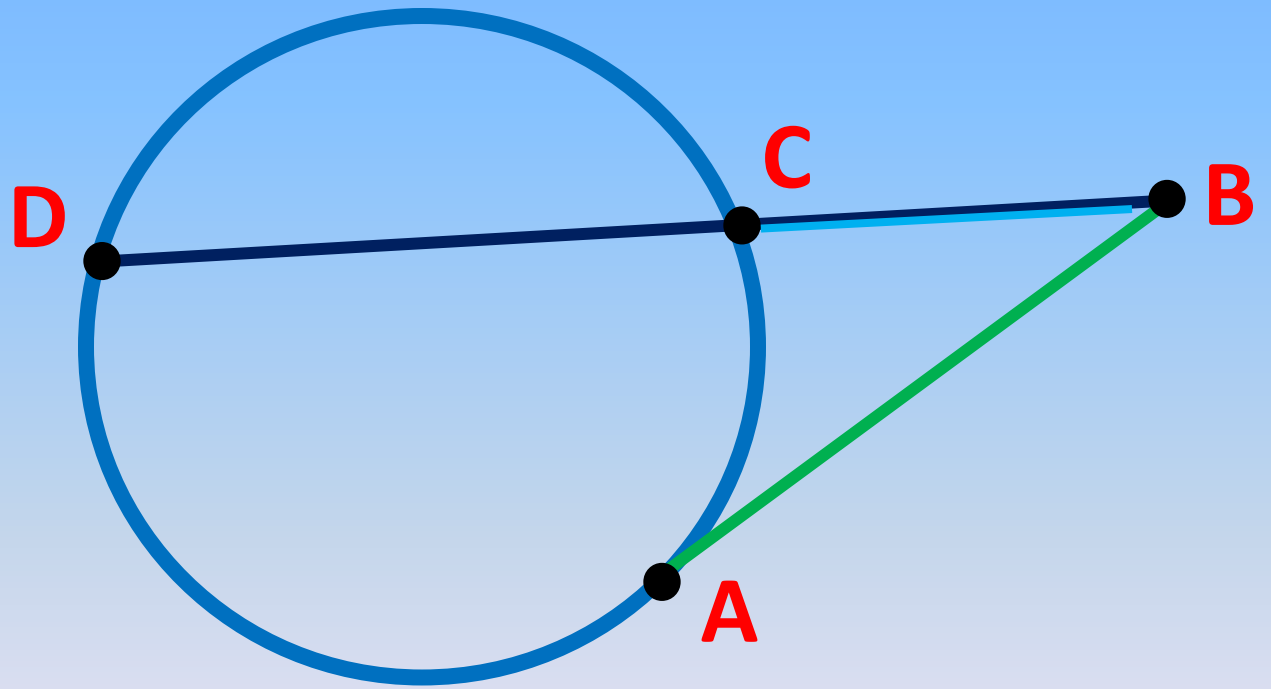
$$\overline{CB} \cdot \overline{CA} = \overline{CD} \cdot \overline{CE}$$

Find the value of x.



Secant Tangent Theorem

If a secant and tangent share a point then the product of the secant and external part is equal to tangent squared.



$$\overline{BC} \cdot \overline{BD} = (\overline{BA})^2$$

Use the figure at the right to find the value of x.