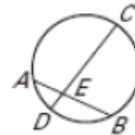


10.6 Segments in Circles

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.

(Theorem 10.14 Segments of Chords Theorem)

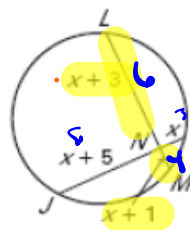


$$EA \cdot EB = EC \cdot ED$$

Find ML and JK .

$$ML = 10$$

$$JK = 11$$



$$(x+3)(x+1) = x(x+5)$$

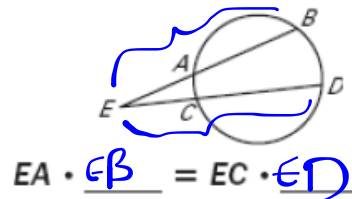
$$x^2 + 3x + x + 3 = x^2 + 5x$$

$$4x + 3 = 5x$$

$$3 = x$$

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.

(Theorem 10.15: Segments of Secants Theorem)

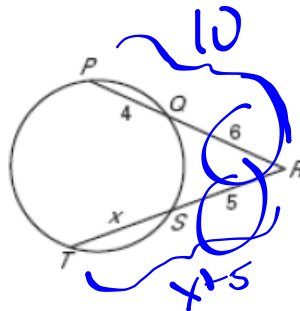


$$6(10) = 5(x+5)$$

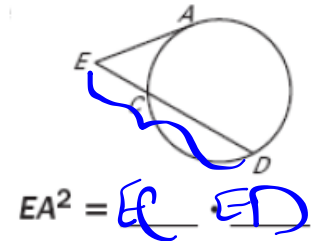
$$60 = 5x + 25$$

$$35 = 5x$$

$$\boxed{7 = x}$$

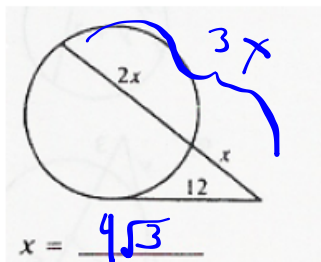
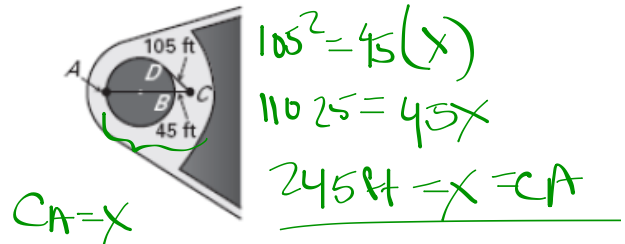


If a secant segment and a tangent segment share an endpoint outside a circle, then the product of the lengths of the secant segment and its external segment equals the square of the length of the tangent segment.
 (Theorem 10.16: Segments of Secants and Tangents Theorem)



<p>1.</p>	<p>$x(17) = 5(12)$ $17x = 60$ $x = 19$</p>
<p>2.</p>	<p>$6(14) = 7(x+7)$ $84 = 7x + 49$ $35 = 7x$ $5 = x$</p>

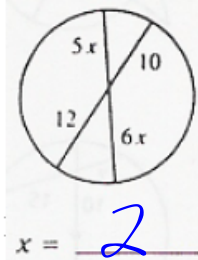
Fountain You are standing at point C, 45 feet from the Point State Park fountain in Pittsburgh, PA. The distance from you to a point of tangency on the fountain is 105 feet. Find the distance CA between you and your friend at point A.



$$12^2 = x(3x)$$

$$\sqrt{144} = \sqrt{3x^2}$$

$$12 = \sqrt{3}x$$

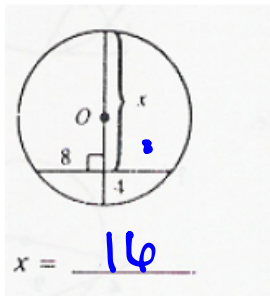


$$5x(10x) = 10(12)$$

$$30x^2 = 120$$

$$\sqrt{x^2} = \sqrt{4}$$

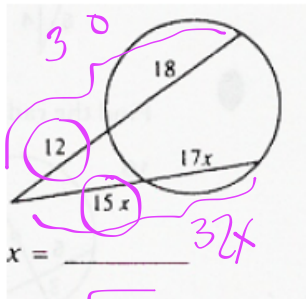
$$x = \pm 2$$



$$8(8) = 4x$$

$$64 = 4x$$

$$16 = x$$



$$12(30) = 15x(32x)$$

$$\frac{360 = 480x^2}{480} \quad \frac{480}{480}$$

$$\sqrt{\frac{3}{4}} = \sqrt{x^2}$$

$$\frac{\sqrt{3}}{2} = x$$