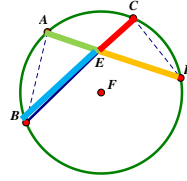


Segments Intersecting Inside a Circle:

The product of the segments of one chord equals the product of segments of the 2nd chord.

* All lengths should be from the vertex of the interior angle to the circle.

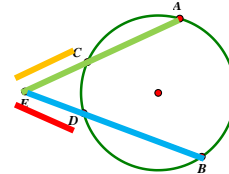


$$(AE)(DE) = (CE)(BE)$$

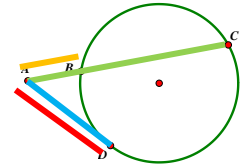
Segments Intersecting Outside a Circle:

The product of one whole segment and its exterior portion equals the product of the 2nd whole segment and its exterior portion.

* All lengths should be from the vertex of the exterior angle to the circle.



$$(AE)(EC) = (EB)(ED)$$

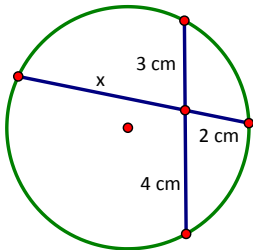


$$(AC)(AB) = (AD)(AD)$$

$$(AB)(AC) = (AD)^2$$

1. Determine the value of x in each circle below.

a)

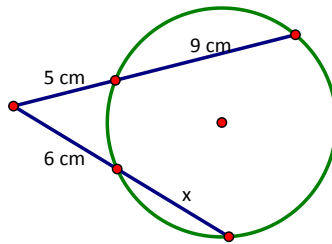


$$(3)(4) = 2x$$

$$12 = 2x$$

$$x = \underline{6 \text{ cm}}$$

b)



$$(5)(5+9) = 6(6+x)$$

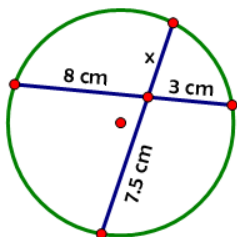
$$70 = 36 + 6x$$

$$34 = 6x$$

$$x = \underline{\frac{17}{3} \text{ or } 5\frac{2}{3} \text{ cm}}$$

2. Determine the value of x.

a)

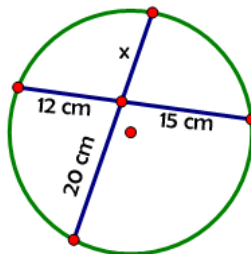


$$(8)(3) = 7.5x$$

$$24 = 7.5x$$

$$x = \underline{3.2 \text{ cm}}$$

b)

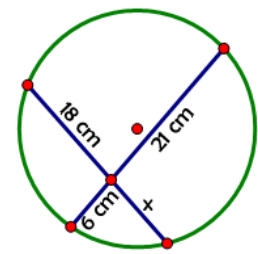


$$(12)(15) = 20x$$

$$180 = 20x$$

$$x = \underline{9 \text{ cm}}$$

c)



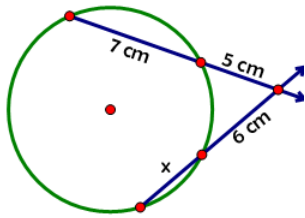
$$(6)(21) = 18x$$

$$126 = 18x$$

$$x = \underline{7 \text{ cm}}$$

3. Determine the value of x . (Lines that appear to be tangent are tangent.)

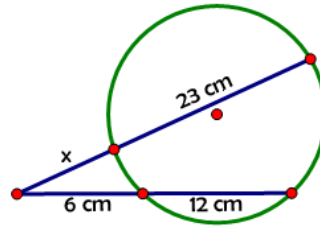
a)



$$\begin{aligned}(5)(7+5) &= 6(6+x) \\ 60 &= 6x + 36 \\ 6x &= 24\end{aligned}$$

$$x = \underline{4 \text{ cm}}$$

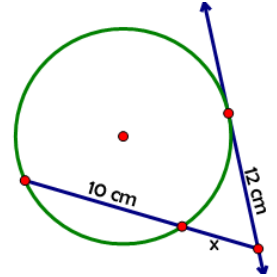
b)



$$\begin{aligned}(x)(x + 23) &= 6(6+12) \\ x^2 + 23x &= 108 \\ x^2 + 23x - 108 &= 0 \\ (x + 27)(x - 4) &= 0 \\ x &= -\cancel{27} \text{ and } x = 4\end{aligned}$$

$$x = \underline{4 \text{ cm}}$$

c)



$$\begin{aligned}(x)(x + 10) &= (12)(12) \\ x^2 + 10x &= 144 \\ x^2 + 10x - 144 &= 0 \\ (x + 18)(x - 8) &= 0 \\ x &= -\cancel{18} \text{ and } x = 8\end{aligned}$$

$$x = \underline{8 \text{ cm}}$$

4. Solve for x and y .

$$\begin{aligned}(x)(x + 30) &= (20)(20) \\ x^2 + 30x &= 400 \\ x^2 + 30x - 400 &= 0 \\ (x + 40)(x - 10) &= 0 \\ x &= -\cancel{40} \text{ and } x = 10\end{aligned}$$

$$x = 10 \text{ cm}$$

$$\begin{aligned}(8)(y + 8) &= (20)(20) \\ 8y + 64 &= 400 \\ 8y &= 336\end{aligned}$$

$$y = 42 \text{ cm}$$

