

Lesson 12.4 – Angle Measures and Segment Lengths

A. Interior and Exterior Angles

A **secant** is a _____ that intersects a circle in exactly _____.

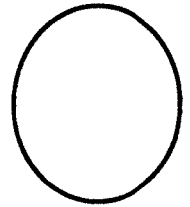
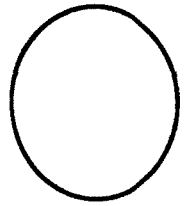
When two chords or secants intersect _____ a circle, a new kind of angle is formed – an _____ angle, whose vertex is _____

the circle but not _____.

If secants or tangents intersect _____ the circle, an _____ angle is formed,

whose vertex is _____ the circle. Both kinds of angles

have _____ intercepted arcs, which are used to find the angle measure.



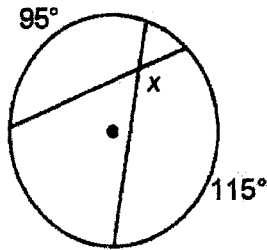
Interior Angles:

Exterior Angles:

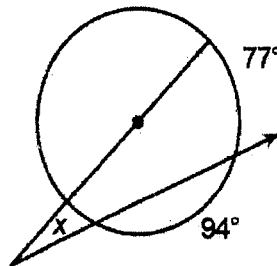
Examples:

Find the value of each variable below.

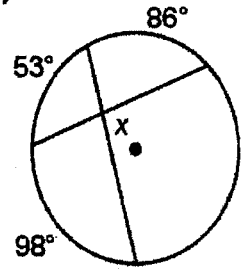
1)



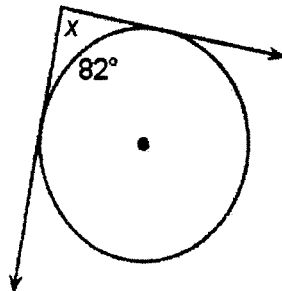
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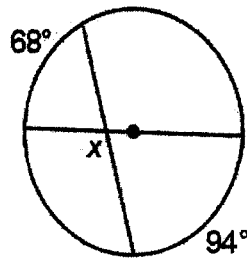
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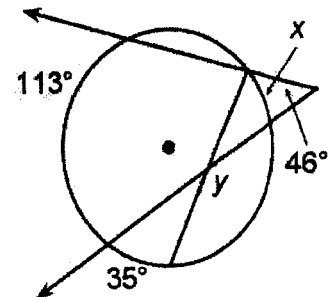
4)



5)



6)



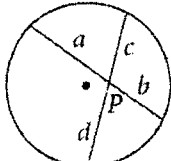
B. Finding Segment Lengths

You can also find the lengths of various segments inside a circle.

Theorem 12-12

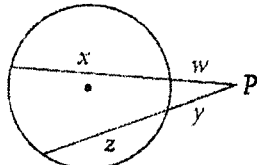
For a given point and circle, the product of the lengths of the two segments from the point to the circle is constant along any line through the point and circle.

I.



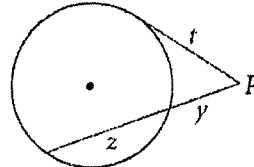
$$a \cdot b = c \cdot d$$

II.



$$(w + x)w = (y + z)y$$

III.

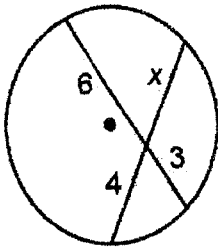


$$(y + z)y = t^2$$

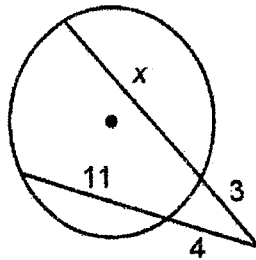
Examples:

Find each variable below.

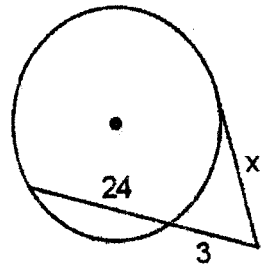
7)



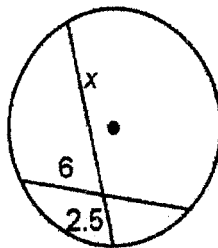
8)



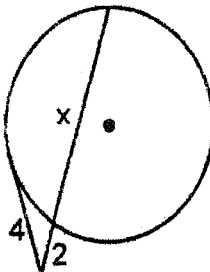
9)



10)



11)



12)

