

Arcs and Angles Formed by Secants and Tangents from a Point Outside A Circle

URL on the angles and arcs formed by tangents & secants from a point outside the circle
www.mathwarehouse.com/geometry/circle/tangents-secants-arcs-angles.php

<http://www.mathwarehouse.com/geometry/circle/>

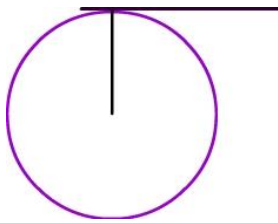
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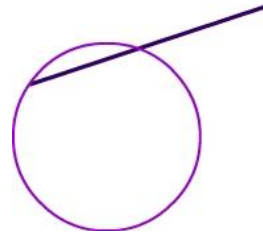
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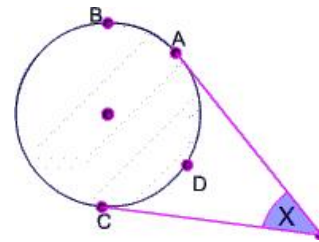
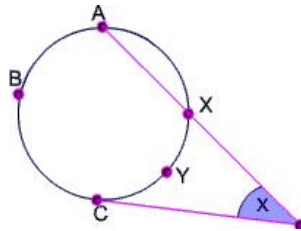
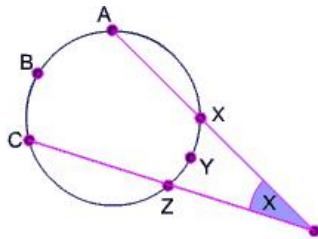
Tangent



Secant



The Types of Circles and Lines We will be Looking At:

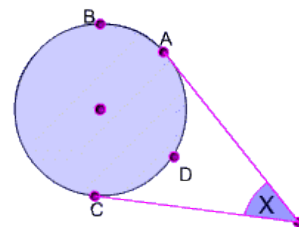
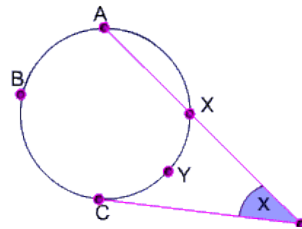
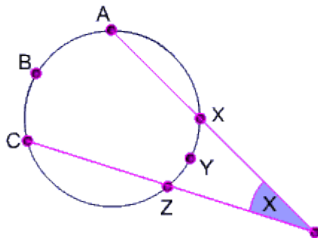


The Actual Formulas

I $m\angle X = \frac{1}{2}(\widehat{ABC} - \widehat{XYZ})$

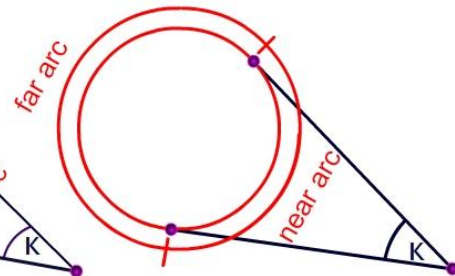
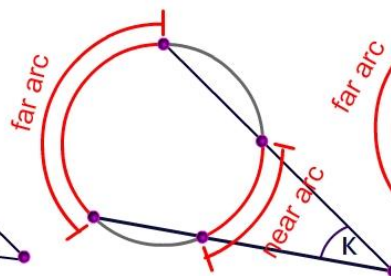
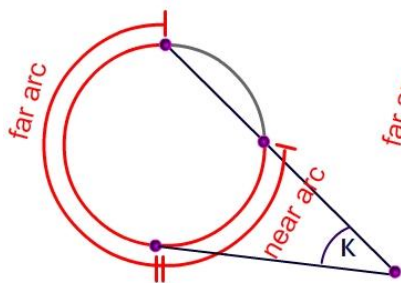
II $m\angle X = \frac{1}{2}(\widehat{ABC} - \widehat{XYC})$

III $m\angle X = \frac{1}{2}(\widehat{ABC} - \widehat{CDA})$

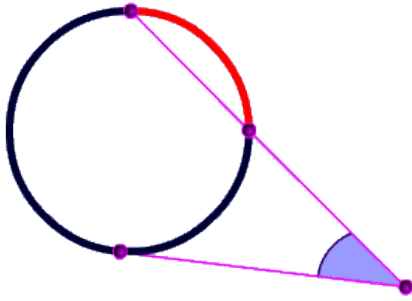


The Easy Way To Remember It

$$m\angle K = \frac{(\widehat{\text{far arc}} - \widehat{\text{near arc}})}{2}$$

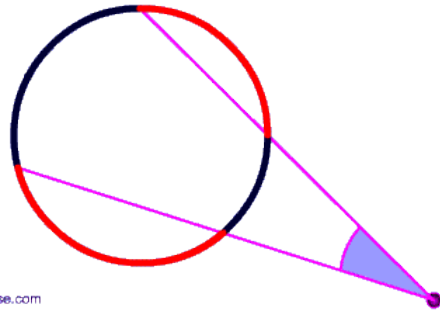


Do not count red region



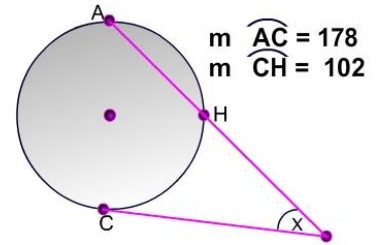
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Do not count red regions

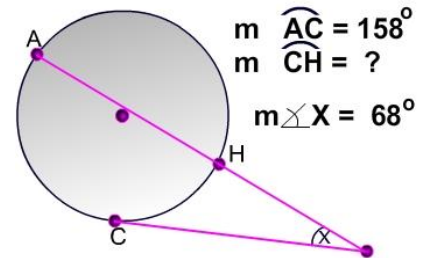


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1) What is the value of x in the problem on the right?



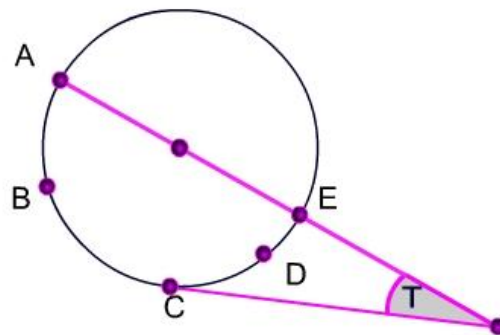
2) What is the measure of $m \widehat{AC}$?



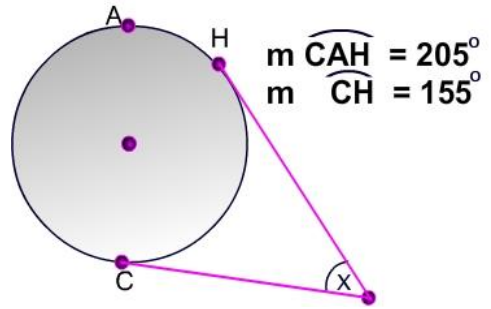
3) \overline{AE} is a diameter

$m \widehat{ABC} : m \widehat{CDE} = 3:1$

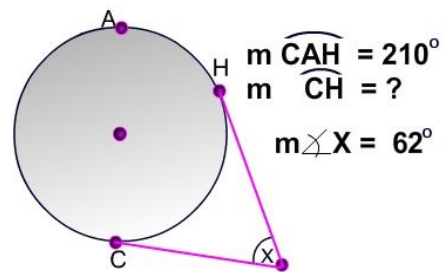
What is $m \angle T$?



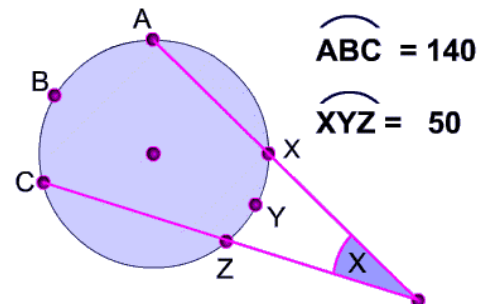
4) What is the value of x ?



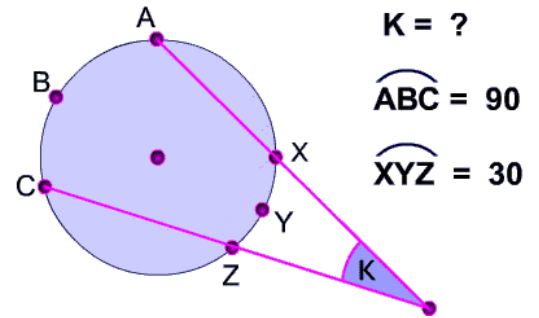
5) What is $m \widehat{CH}$



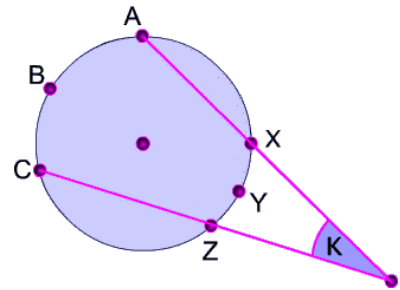
6) What is the value of x ?



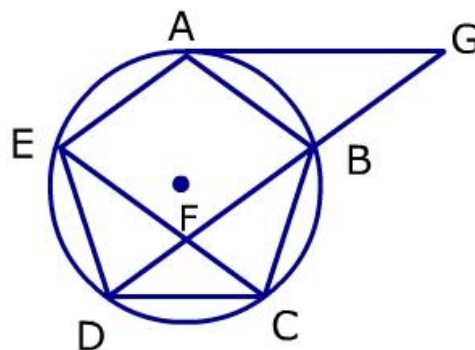
7) What is the value of k?



8) The diagram on the right is not to scale.
 $ABC : XYZ = 3:2$, arc $AX = 80$ and
 arc $CZ = 170$. What is k?

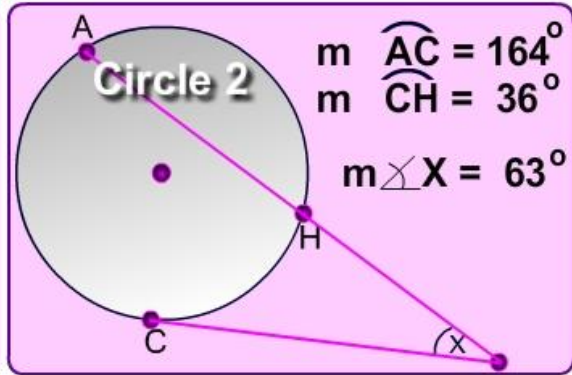
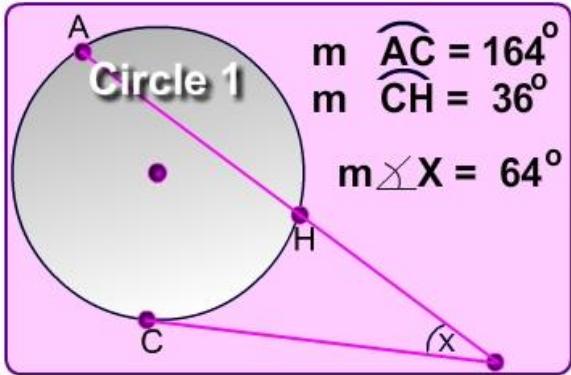


9) **Challenge problem** In the diagram, regular pentagon $ABCDE$ is inscribed in circle O . Chords \overline{EC} and \overline{DB} intersect at F , chord \overline{DB} is extended to G and tangent \overline{GA} is drawn. What is $m\angle AGD$?



Think-Pair-Share

Only one of the two circles BELOW includes the intersection of a tangent and a secant.
Which one is it? Explain your answer.



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