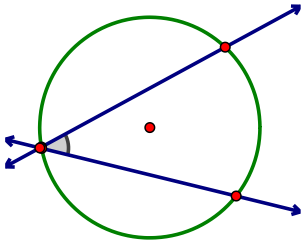
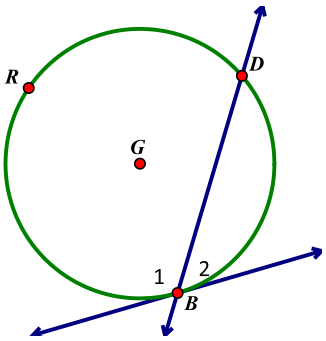
Circles – Internal, External and Tangent Angles

G.C.A.2 Notes Section 13.4 Name_____

Inscribed Angle (ON)



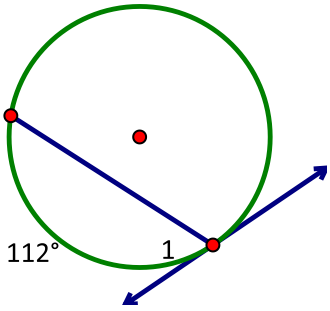
Theorem: If a tangent and a secant (or chord) intersect at a point on a circle, then the measure of each angle formed is one half the measure of its intercepted arc.



$m\angle 1 = \frac{1}{2} m\overset{\frown}{BRD}$

$m\angle 2 = \frac{1}{2}\overset{\frown}{BD}$

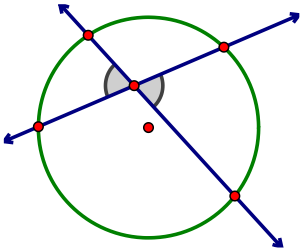
#1) Find m∠1.



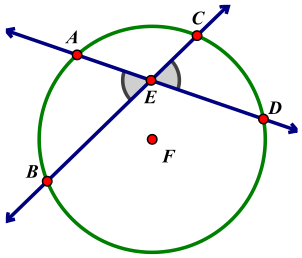
$m\angle 1 = \frac{1}{2}(112°)$

$m\angle 1 = 56°$

Interior Angle (IN)

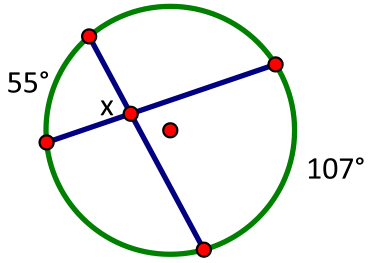


Theorem: If two secants (or chords) intersect in the interior of a circle, then the measure of each angle formed is one half the sum of the measure of arcs intercepted by the angle and its vertical angle.



$m\angle AEB = \frac{1}{2}(m\overset{\frown}{AB} + m\overset{\frown}{CD})$

#2) Find x.

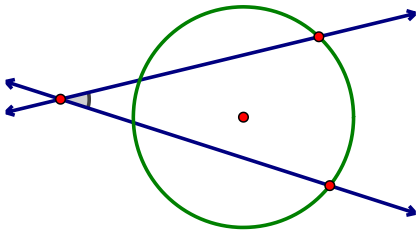


$x = \frac{1}{2}(55° + 107°)$

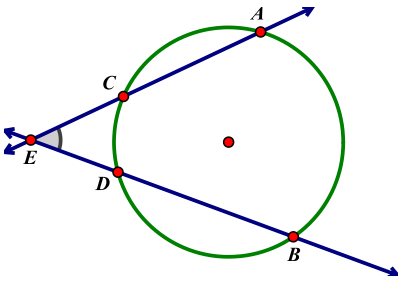
$x = \frac{1}{2}(162°)$

$x = 81°$

Exterior Angle (OUT)

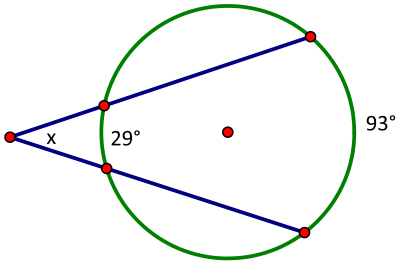


Theorem: If any combination of secants and tangents intersect in the exterior of a circle, then the measure of each the angle formed is one half the difference of the measure of arcs intercepted arcs.



$m\angle CED = \frac{1}{2}(m\overset{\frown}{AB} - m\overset{\frown}{CD})$

#3) Find x.



$x = \frac{1}{2}(93° - 29°)$

$x = \frac{1}{2}(64)$

$x = 32°$

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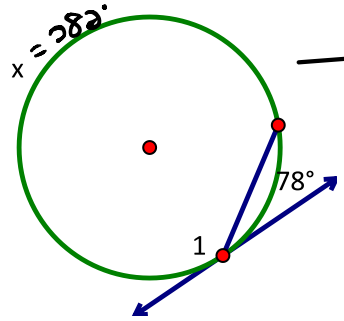
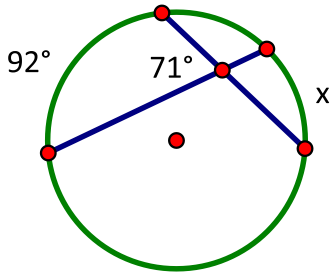
#4) Find x and m∠1.



$x + 78 = 360$
$x = 282$

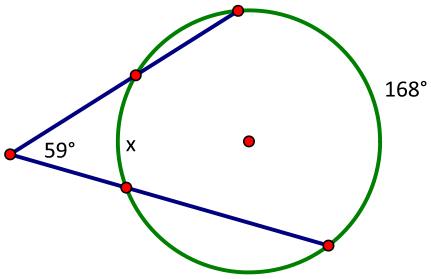
$m\angle 1 = \frac{1}{2}(282)$
$m\angle 1 = 141$

#5) Find x.



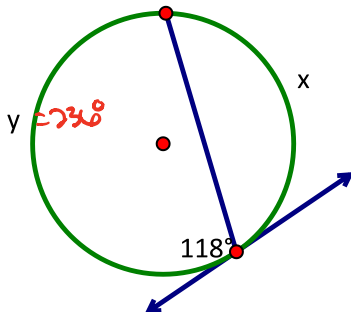
$71 = \frac{1}{2}(x+92)$
$142 = x+92$
$50 = x$

#6) Find x.



$59 = \frac{1}{2}(168 - x)$
$118 = 168 - x$
$-50 = -x$
$50 = x$

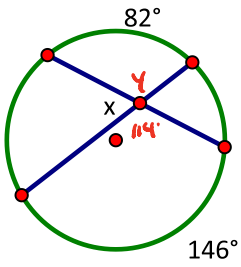
#7) Find x and y.



$118 = \frac{1}{2}y$
$236° = y$

$x + 236° = 360°$
$x = 124°$

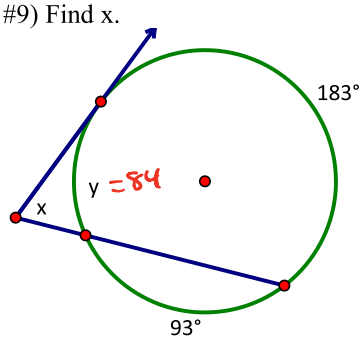
#8) Find x.



$y = \frac{1}{2}(82 + 146)$
$y = \frac{1}{2}(228)$
$y = 114$

$x + 114 = 180$
$x = 66$

#9) Find x.



$y + 183 + 93 = 360$
$y + 276 = 360$
$y = 84$

$x = \frac{1}{2}(183° - 84°)$
$x = \frac{1}{2}(99)$
$x = 49.5°$