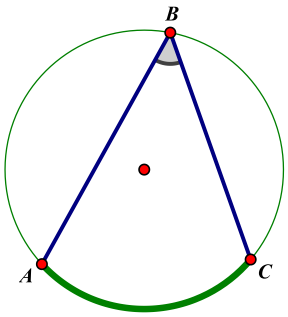
Circles – Inscribed Angles

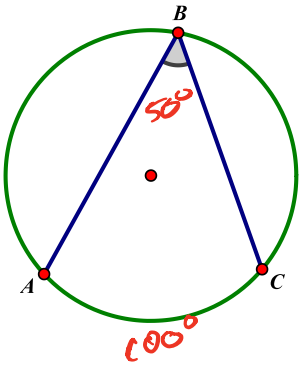
G.C.A.2 Notes Section 13.3 Name_____

Inscribed Angle: an angle with vertex on the circle and whose sides are chords.



Intercepted Arc

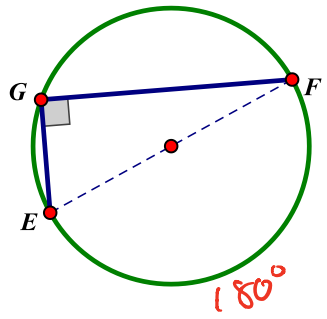
Theorem: An inscribed angle is half its intercepted arc.



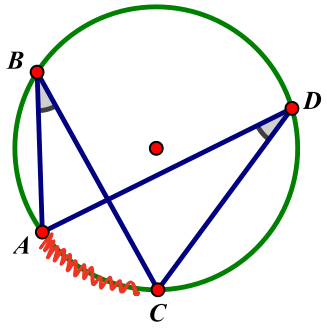
$m\angle ABC = \frac{1}{2} m\overset{\frown}{AC}$

$2m\angle ABC = m\overset{\frown}{AC}$

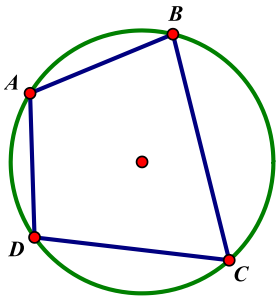
Theorem: An inscribed angle whose intercepted arc is a semicircle is 90°.



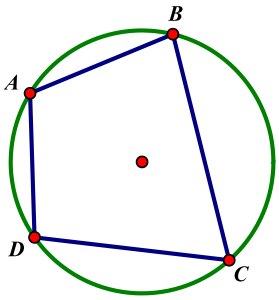
Theorem: Inscribed angles on the same intercepted arc are congruent.



Cyclic Quadrilateral: A quadrilateral that is inscribed in a circle.



Cyclic Quadrilateral Theorem: Opposite angles in a cyclic quadrilateral are supplementary.



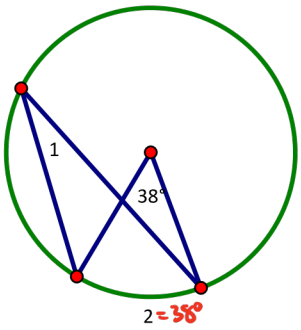
$m\angle A + m\angle C = 180°$

$m\angle B + m\angle D = 180°$

Circles – Inscribed Angles

G.C.A.2 Notes Section 13.3 Name_____

#1) Find $m\angle 1$ and $m\hat{2}$

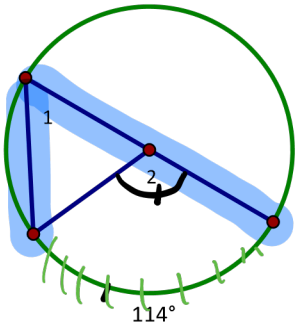


$m\overset{\frown}{2} = 38°$

$m\angle 1 = \frac{1}{2}(38°)$

$m\angle 1 = 19°$

#2) Find $m\angle 1$ and $m\angle 2$

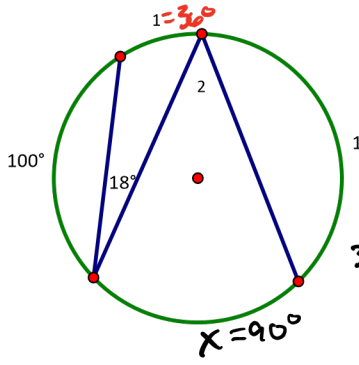


$m\angle 2 = 114°$

$m\angle 1 = \frac{1}{2}(114°)$

$m\angle 1 = 57°$

#3) Find $m\angle 2$ and $m\hat{1}$



$m\angle 1 = 2(18°)$

$m\angle 1 = 36°$

$36° + 134° + 100° + x = 360°$

$270 + x = 360°$

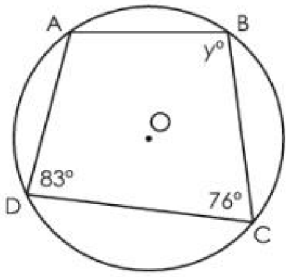
$x = 90°$

$m\angle 2 = \frac{1}{2}(90°)$

$m\angle 2 = 45°$

#4)

Quadrilateral ABCD is inscribed in circle O, as shown.

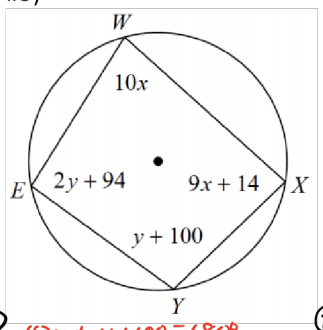


What is the value of y?

$y + 83° = 180°$

$y = 97°$

#5)



① $10x + y + 100 = 180°$

$y + 10x = 80$

$y = 80 - 10x$

④ $y = 80 - 10(8)$

$y = 80 - 80$

$y = 0$

② $2y + 94 + 9x + 14 = 180°$

$9x + 2y + 108 = 180$

$9x + 2y = 72$

③ $9x + 2(80 - 10x) = 72$

$9x + 160 - 20x = 72$

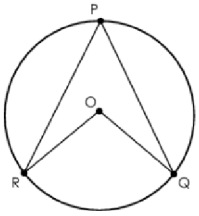
$-11x + 160 = 72°$

$-11x = -88$

$x = 8$

#5)

A teacher draws circle O, $\angle RPQ$ and $\angle ROQ$, as shown.



The teacher asks students to select the correct claim about the relationship between $m\angle RPQ$ and $m\angle ROQ$.

- Claim 1: The measure of $\angle RPQ$ is equal to the measure of $\angle ROQ$. False
- Claim 2: The measure of $\angle ROQ$ is twice the measure of $\angle RPQ$.

Which claim is correct? Justify your answer.

Claim 2 is correct because an inscribed angle, $\angle RPQ$, is half its intercepted arc and a central angle, $\angle ROQ$, is equal to its intercepted arc.