

Core Concept Inscribed Angles

An inscribed angle

is an angle whose vertex is on a circle and whose sides contain chords of the circle.

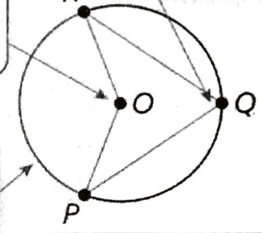
The measure of an inscribed angle is $\frac{1}{2}$ the measure of the intercepted arc.

A polygon is inscribed in a circle if all its vertices lie on the circle.

$\angle O$ is a central \angle

\widehat{RP} is the intercepted arc

$\angle Q$ is an inscribed \angle .



If the $m\widehat{RP} = 140^\circ$
then $m\angle Q = 70^\circ$

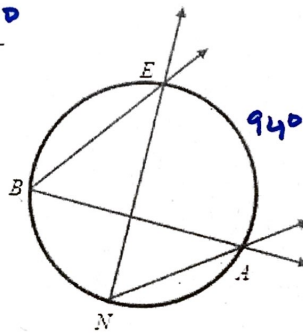


$\frac{1}{2}(140^\circ) = 70^\circ$

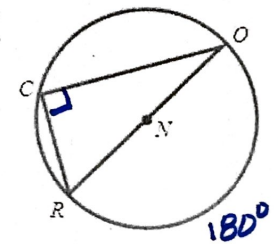
- 1) If $m\widehat{EA} = 94^\circ$ then $m\angle B = 47^\circ$
and $m\angle N = 47^\circ$

Theorem:

If two inscribed angles intercept the same arc then the angles are congruent.

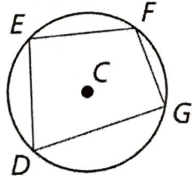


- 2) If \overline{RO} is a diameter then $m\widehat{RO} = 180^\circ$
so $m\angle C = 90^\circ$
and $\triangle COR$ is a right \triangle .



Theorem: A right \triangle is inscribed in a circle iff the hypotenuse is a diameter of the circle.

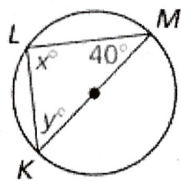
- 3) If a quadrilateral is inscribed in a circle then its opposite angles are supplementary.



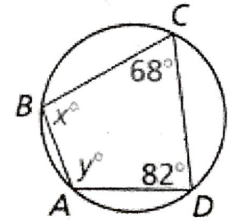
$m\angle F + m\angle D = 180^\circ$

$m\angle E + m\angle G = 180^\circ$

- 4) Find the value of each variable and the indicate arc measure.



$x = 90^\circ$
 $y = 50^\circ$
 $m\widehat{LM} = 100^\circ$
 $m\widehat{KM} = 180^\circ$



$x = 98$
 $y = 112$
 $m\widehat{BCD} = 224^\circ$
 $m\widehat{BD} = 136^\circ$