

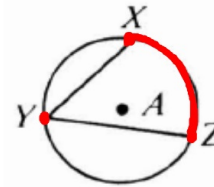
9-5 Inscribed Angles

Feb 22

std. 7.0

$\angle XYZ$ is an **inscribed angle**. Its vertex is on the circle and its sides intersect the circle.

$\angle XYZ$ intercepts \widehat{XZ}



$$m\angle Y = \frac{1}{2} m\widehat{XZ}$$

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

Inscribed angles that intercept the same arc are congruent.

$$m\angle 1 = \frac{1}{2} m\widehat{CD}$$

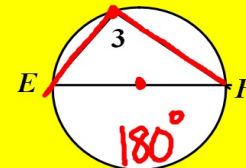
$$m\angle 2 = \frac{1}{2} m\widehat{CD}$$

So $m\angle 1 = m\angle 2$.



An angle inscribed in a semicircle is a right angle.

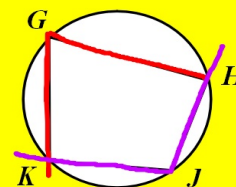
$$m\angle 3 = \frac{1}{2} \cdot 180^\circ = 90^\circ$$



★ Opposite angles of an inscribed quadrilateral are supplementary.

$$m\angle G + m\angle J = 180$$

$$m\angle K + m\angle H = 180$$



Why?

$$m\angle G = \frac{1}{2} m\widehat{HK}$$

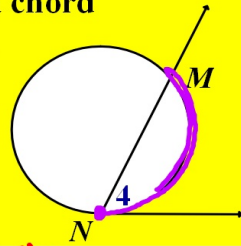
$$+ m\angle J = \frac{1}{2} m\widehat{KGH}$$

$$m\angle G + m\angle J = \frac{1}{2} (m\widehat{HK} + m\widehat{KGH})$$

$$= \frac{1}{2} (360) = 180$$

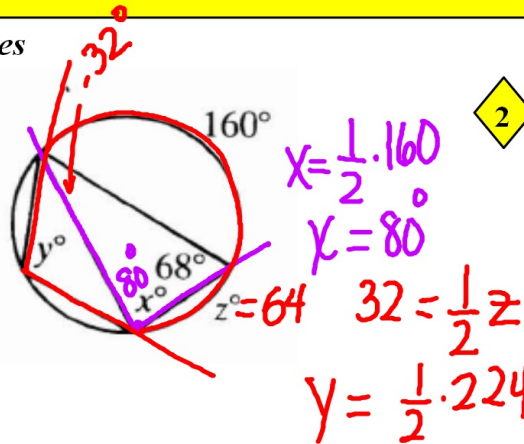
The measure of an angle formed by a tangent and a chord (or secant) = $\frac{1}{2}$ the measure of its intercepted arc.

$$m\angle 4 = \frac{1}{2} m\widehat{NM}$$

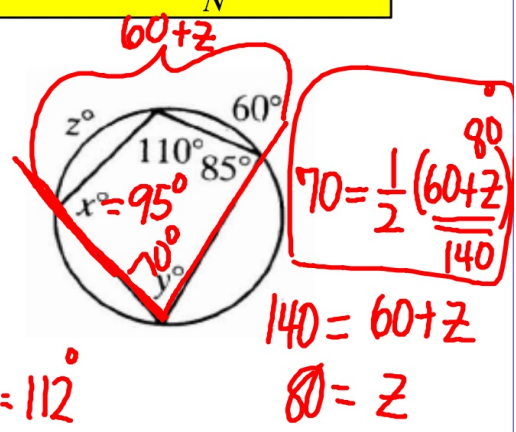


Examples

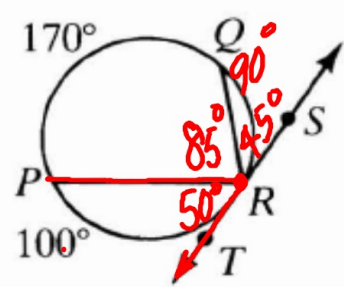
1



2



3



$\frac{1}{2} \cdot 100 = 50^\circ$
 $\frac{1}{2} \cdot 170 = 85^\circ$

4

Quadrilateral ABCD is inscribed in a circle, $m\angle B = 8x$, $m\angle D = x^2$, and $m\angle A = 6x + 3$.

Find $m\angle B$. = 80°

$x = 10$ $x^2 + 8x = 180$
 $x^2 + 8x - 180 = 0$
 $(x + 18)(x - 10) = 0$

