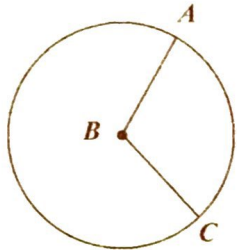


# ARC & ANGLE MEASURES IN CIRCLES

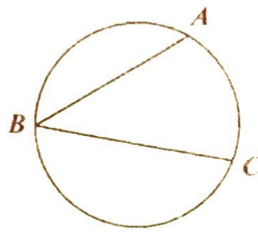
**\* Vertex is center**  
**Central Angles**



$$m\angle ABC = m\widehat{AC}$$

(Angle = Arc)

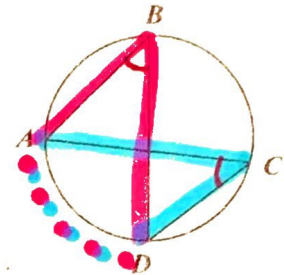
**\* Vertex on**  
**Inscribed Angles**



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

(Angle = Arc/2)

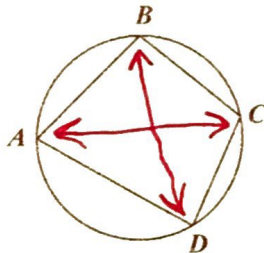
Overlapping Arcs



$$m\angle ABD = m\angle ACD$$

(Angles  $\cong$ )

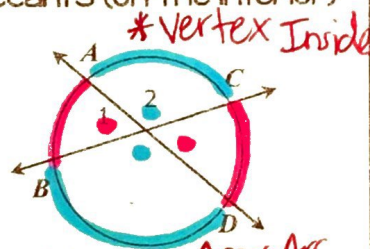
**Inscribed**  
**Quadrilaterals**



$$m\angle A + m\angle C = 180^\circ$$

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

Intersecting Chords or  
Secants (on the Interior)



**\* Vertex Inside**

$$\text{Angle} = \frac{\text{Arc} + \text{Arc}}{2}$$

$$m\angle 1 = \frac{1}{2} (m\widehat{AB} + m\widehat{CD})$$

$$m\angle 2 = \frac{1}{2} (m\widehat{AC} + m\widehat{BD})$$

Intersecting Tangents  
& Chords/Secants  
(on the circle)



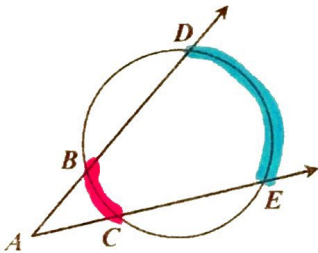
**\* Vertex ON**

$$\text{Angle} = \frac{\text{Arc}}{2}$$

$$m\angle 1 = \frac{1}{2} (m\widehat{ABC})$$

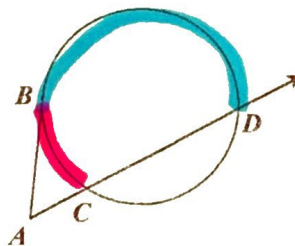
$$m\angle 2 = \frac{1}{2} (m\widehat{AC})$$

Intersecting Secants  
(on the Exterior)



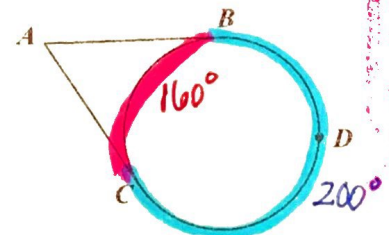
$$m\angle A = \frac{1}{2} (m\widehat{DE} - m\widehat{BC})$$

Intersecting Secants &  
Tangents (on the Exterior)



$$m\angle A = \frac{1}{2} (m\widehat{BD} - m\widehat{BC})$$

Intersecting Tangents  
(on the Exterior)

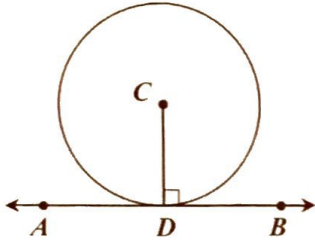


$$m\angle A = \frac{1}{2} (m\widehat{BDC} - m\widehat{BC})$$

$$\text{Angle} = \frac{\text{Big Arc} - \text{Small Arc}}{2}$$

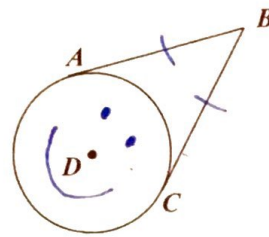
# SEGMENT LENGTHS IN CIRCLES

Tangents \* radius  $\perp$  to point of tangency



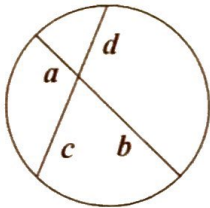
If  $\overline{AB}$  is tangent to circle C, then  
 $\overline{AB} \perp \overline{CD}$

Two Tangents From the same External Point



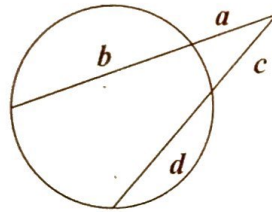
\* Partly that  
 If  $\overline{AB}$  and  $\overline{BC}$  are tangent to circle D, then  $AB = BC$ .

Intersecting Chords or Secants (on the Interior)



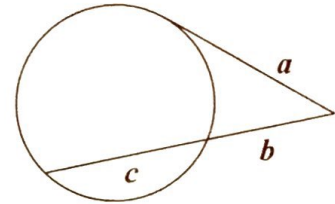
$$a \cdot b = c \cdot d$$

Intersecting Secants (on the Exterior)



$$a(a + b) = c(c + d)$$

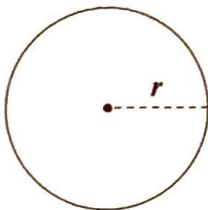
Intersecting Tangent & Secant (on the Exterior)



$$a^2 = b(b + c)$$

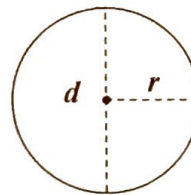
# AREA, CIRCUMFERENCE, ARC LENGTH, & CIRCLE EQUATION

Area



$$A = \pi r^2$$

Circumference



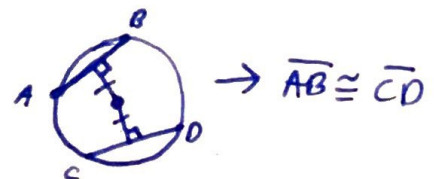
$$C = 2\pi r$$

$$C = \pi d$$

\* If the radius (or diameter) is  $\perp$  to a chord, then it bisects the chord and Arc.



\* Two chords are  $\cong$  if and only if they are equidistant from the center



After Quiz  
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