



G.6b: Arcs and Chords

Geometry

3/10/16

ESSENTIAL QUESTION:

What are special relationships between the arcs, chords, and angles in a circle?

QUESTIONS:

NOTES:

MN is minor; MLN is major
bigger than 180° (more than $\frac{1}{2}$ of circle)

Major Arc -

less than 180° (less than $\frac{1}{2}$ of circle)

Minor Arc -

exactly 180° (exactly $\frac{1}{2}$ of circle)

Semicircle -

Central Angle - angle whose vertex is at the center of circle

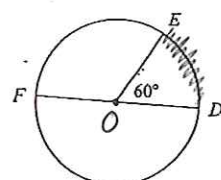
Every central angle has a corresponding/intercepted arc

For example, in $\odot P$ at right, $\angle APB$ is a central angle and corresponds to \overline{AB} .

Arc measure (different than arc length) is equal to the corresponding central angle

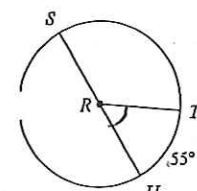
Examples:

Find $m\widehat{ED}$



Since $m\angle EOD$ is 60° , then $m\widehat{ED}$ is also 60°

Find $m\angle TRU$

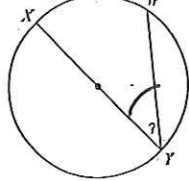


Since $m\widehat{TU} = 55^\circ$ then $m\angle TRU$ is 55°

Inscribed Angle - angle whose vertex is on the circumference of a circle. The measure of an inscribed angle is half of the arc measure OR the arc measure is twice the measure of the inscribed angle.

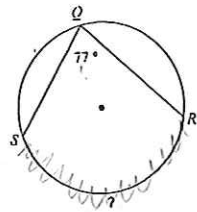
Examples:

Find $m\angle XYW$



39°

Find $m\widehat{SR}$



154°

SUMMARY:

QUESTIONS:

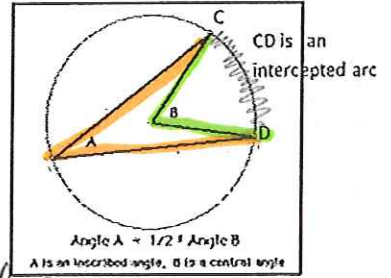
NOTES:

Corresponding/Intercepted Arc - arc that is formed when line segments intersect portions of the circumference of a circle and create arcs.

$\angle CAD$ is an example of an Inscribed angle, because its vertex, point A, lies on the circle's circumference.

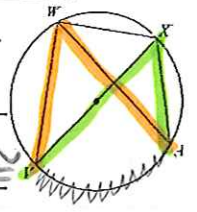
It corresponds to central angle $\angle DBC$ because they both intercept the same arc, \widehat{CD} .

An Intercepted arc is an arc with endpoints on each side of the angle.

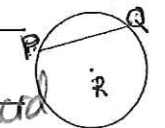


Inscribed Angles Sharing Same Arc - if two inscribed angles intercept the same arc, then the angles are \cong

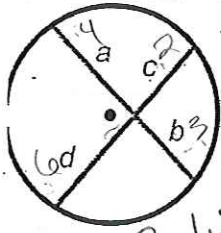
i.e. $\angle AUV$ and $\angle AXV$ both intercept \widehat{VA} , so they are \cong



Chord - a line segment whose endpoints both lie on the circumference of the circle, ex \overline{PA} is a chord
it does not need to go through diameter

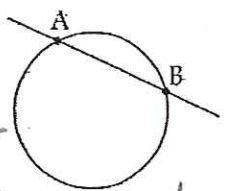


Intersecting Chords = when 2 chords intersect each other inside a circle, the product of their segments are equal.

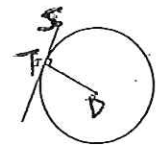


i.e. $ab = cd$

Secant - a line that intersects a circle at 2 points, ex \overline{AB} is a secant



Tangent - a line that intersects with a curve or circle at exactly one point. In a circle, a tangent is always \perp to the radius.



\overline{ST} is tangent to $\odot D$,
so $\overline{ST} \perp \overline{DT}$
 $\therefore \angle DTS = 90^\circ$

SUMMARY: