



TOPIC/OBJECTIVE:

Class: Arcs, angles and

CONCEPTS:

Lines in circles

Geometry

NAME:

CLASS/PERIOD:

6

DATE:

3/10/16

ESSENTIAL QUESTION:

What are some special relationships between parts in a circle?

QUESTIONS:

NOTES:

Major Arc - arc bigger than 180° (more than half of a circle)

*use 3 letters to label major arcs. Eg: \widehat{MLN} is a major arc

Minor Arc - arc smaller than 180° (less than half of a circle)

*use 2 letters to label minor arcs. Eg: \widehat{MN} is a minor arc

Semicircle - arc of exactly 180° (exactly half of a circle)

*a diameter cuts a circle into 2 halves. Arc is a semicircle

Central Angle - an angle with vertex in the center of a circle.

Every central angle has a corresponding arc.

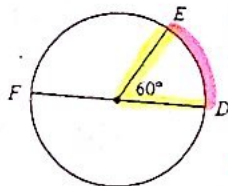
For example, in $\odot P$ at right, $\angle APB$ is a central angle and corresponds to \widehat{AB} .

Arc measure (different than arc length) - the distance around a circle in degrees.

The central angle is always equal to its corresponding arc

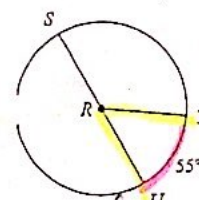
*use lower case m for measure

Examples: Find $m\widehat{ED}$ "Find the measure of arc ED"



Since central \angle is 60° then $m\widehat{ED} = 60^\circ$

Find $m\angle TRU$ "Find the measure of angle TRU"



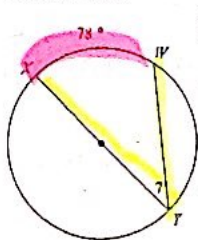
Since $\widehat{TU} = 55^\circ$ then $m\angle TRU = 55^\circ$

Inscribed Angle - an angle with vertex on the circumference of a circle

An inscribed angle is always half its corresponding arc measure.

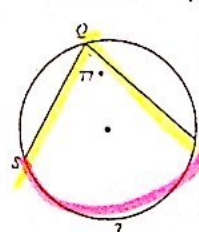
Examples:

Find $m\angle XYW$



Since $\widehat{XW} = 78^\circ$ and $\frac{78}{2} = 39$ Then $\angle XYW = 39^\circ$

Find $m\widehat{SR}$



This means the arc will be twice (or $2x$) the inscribed angle. Since $\angle SQR = 77^\circ$ and $77(2) = 154$ Then $\widehat{SR} = 154^\circ$

SUMMARY:

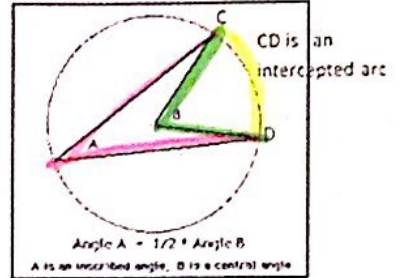
QUESTIONS:

NOTES:

Corresponding/Intercepted Arc - an arc that shares its endpoints with one or more angle.

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

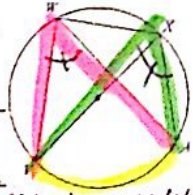
It corresponds to central angle $\angle DBC$ because they both intercept the same arc, CD.



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

Inscribed Angles Sharing Same Arc - 2 or more angles all with vertices on the circle's circumference and all intercepting the same arc.

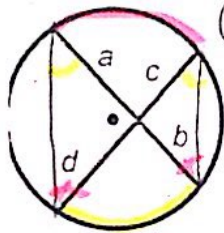
When inscribed angles share the same arc they are always congruent.



Chord - a line segment that goes from one side of a circle to the other side. A diameter is a special chord that goes through the center.

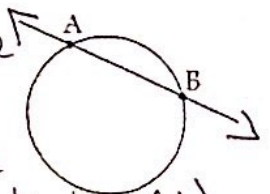


Intersecting Chords = Since similar triangles are created with 2 intersecting chords then $\frac{a}{c} = \frac{d}{b} \Rightarrow a \cdot b = c \cdot d$



a and b are lengths of 2 parts of the same chord and c and d are also lengths of 2 parts of another chord

Secant - a line or line segment that crosses circle (or curve) twice
Eg: AB is a secant line



Tangent - A line or line segment that intersects with a circle (or curve) exactly one. A tangent line is always perpendicular (\perp) to the radius it intersects with.



If \overline{ST} is tangent to $\odot D$, then $\overline{ST} \perp \overline{TD}$ and $\angle DTS = 90^\circ$

SUMMARY: