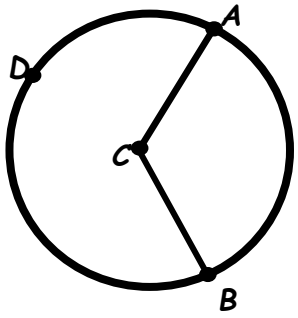
Acc. Geom/Algebra II Name_____

Arcs of a Circle & Central Angles Period_____Date_____

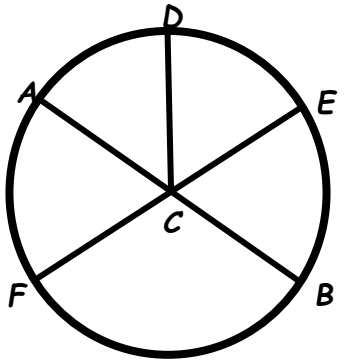


Definitions: A **central angle** of a circle is an angle whose vertex is the center of the circle. An **arc** consists of two points on a circle and all points on the circle needed to connect those points by a single path. If $m\angle ACB$ is less than 180°, then the points on the circle that lie in the interior of $\angle ACB$ form a **minor arc**, AB (also denoted as ACB), with endpoints **A** and **B**. The points on circle **C** that do not lie on minor arc AB form a **major arc**, ADB, also with endpoints **A** and **B**. The **measure of a minor arc** is the measure of its central angle. The **measure of a major arc** is the difference between 360° and the measure of its related minor arc. Adjacent arcs can be added and has a measure of the sum of the two arc measures. **Congruent arcs** are two arcs in the same circle or congruent circles that have the same measure.

A **semicircle** is an arc whose endpoints are _____

_____, and which has a measure of _____°.

I. Determine whether the indicated arc is a ***minor arc***, a **major arc**, or a ***semicircle*** of $\odot C$. ($\overline{AB}$ and $\overline{FE}$ are diameters of $\odot C$.)



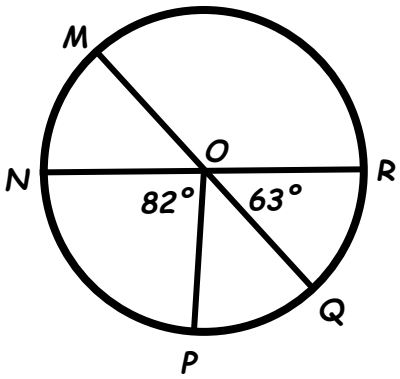
1.) AE 2.) ADB

3.) FDE 4.) DFB

5.) FA 6.) BE

7.) BDA 8.) FB

II. $\overline{MQ}$ and $\overline{NR}$ are diameters of $\odot O$. Find each of the following indicated measures:



9.) $m\overset{\frown}{MN}$ 10.) $m\overset{\frown}{NQ}$

11.) $m\overset{\frown}{NQR}$ 12.) $m\overset{\frown}{MRP}$

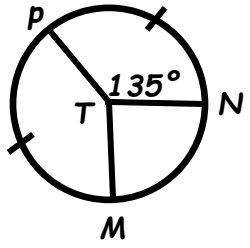
13.) $m\overset{\frown}{QR}$ 14.) $m\overset{\frown}{MR}$

15.) $m\overset{\frown}{QMR}$ 16.) $m\overset{\frown}{PQ}$

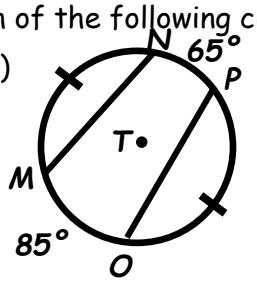
17.) $m\overset{\frown}{PRN}$ 18.) $m\overset{\frown}{MQN}$

III. Find the measure of $\overset{\frown}{MN}$ in each of the following circles.

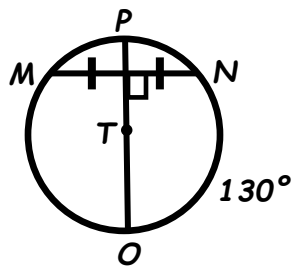
19.)



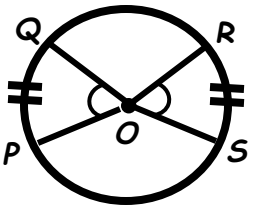
20.)



21.)

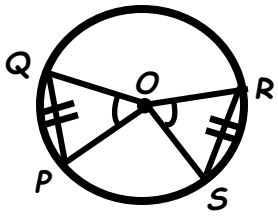


Some (common sense) theorems to consider:



Theorem 79: ***If two central angles of a circle (or of congruent circles) are congruent, then their intercepted arcs are congruent.***

Theorem 80: ***If two arcs of a circle (or of congruent circles) are congruent, then their corresponding central angles are congruent.***



Theorem 81: ***If two central angles of a circle (or of congruent circles) are congruent, then the corresponding chords are congruent.***

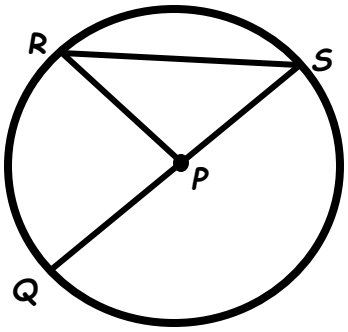
Theorem 82: ***If two chords of a circle (or of congruent circles) are congruent, then the corresponding central angles are congruent.***

Theorem 83: ***If two arcs of a circle (or of congruent circles) are congruent, then the corresponding chords are congruent.***

Theorem 84: ***If two chords of a circle (or of congruent circles) are congruent, then the corresponding arcs are congruent.***

IV. Match each item in the left column with the correct term in the right column.

_____22.) QRS	A) Radius
_____23.) $\overline{QS}$	B) Diameter
_____24.) RQS	C) Chord
_____25.) RS	D) Minor arc
_____26.) $\overline{RS}$	E) Major arc
_____27.) $\angle RPQ$	F) Semicircle
_____28.) $\overline{PS}$	G) Central angle



29.) What **fractional part** of a circle is an arc that measures

a) $8°$ b) $240°$ c) $144°$ d) $315°$

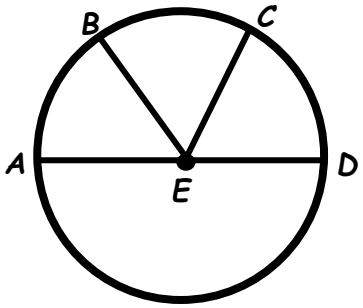
30.) Given: $\overline{AD}$ is a diameter of $\odot E$.

C is the midpoint of BD.

$m\overset{\frown}{AB} = 9x + 30$.

$m\overset{\frown}{CD} = 54 - x$.

Find: $m\angle AEC$



In summary, your take-away from today:

Congruent chords ⇔ Congruent arcs ⇔ Congruent central angles