## NOTES 10.2 – ARCS, SEMICIRCLES, & CENTRAL ANGLES

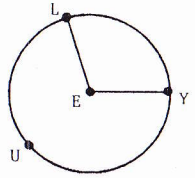
CENTRAL ANGLE:

An angle whose vertex is the center of the circle.

THEOREM: SUM OF CENTRAL ANGLES

The sum of the measures of the central angles of a circle with no interior points in common is 360°.

**EXAMPLE 1: Name the following.**




The central angle: ∠LEY

The two arcs: $\overset{\frown}{LY}$ & $\overset{\frown}{LUY}$

MINOR ARC:

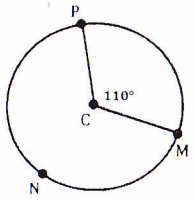
- An arc that measures less than 180°
- Named by its endpoints

MAJOR ARC:

- An arc that measures more than 180°
- Named by its endpoints and another point on the arc

Arcs are measured by their corresponding central angles.

**EXAMPLE 2:**

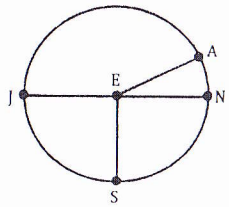



- $m\angle PCM =$ _____
- $m\overset{\frown}{PM} =$ _____
- $m\overset{\frown}{PNM} =$ _____
- What kind of arc is $\overset{\frown}{PM}$? How do you know? _____

SEMICIRCLES:

An arc that measures 180°.

**EXAMPLE 3: In *circle* E, $m\angle AEN = 18°$, $\overline{JN}$ is a diameter, and $m\angle JES = 90°$. Find each measure.**

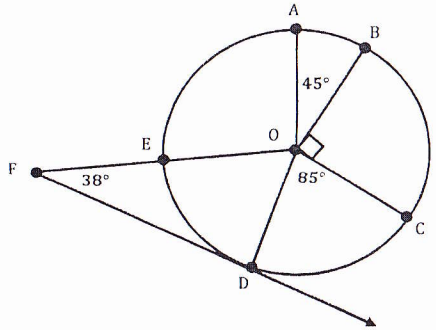



a) $m\overset{\frown}{AN} =$ _____

b) $m\overset{\frown}{JA} =$ _____

c) $m\overset{\frown}{JAS} =$ _____

**EXAMPLE 4: $\overleftrightarrow{FD}$ is a tangent to *circle* O. Based on the angle measures given, find the measure of each of the following.**




a) $m\overset{\frown}{AB} =$ _____

b) $m\overset{\frown}{AD} =$ _____

c) $m\overset{\frown}{AC} =$ _____

d) $m\overset{\frown}{BC} =$ _____

e) $m\overset{\frown}{ADC} =$ _____

f) $m\overset{\frown}{ACD} =$ _____

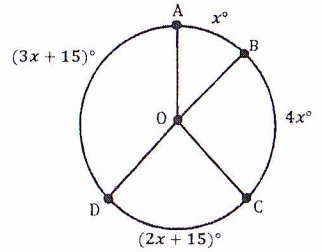
g) $m\overset{\frown}{ED} =$ _____

h) $m\overset{\frown}{AE} =$ _____

i) $m\angle DOF =$ _____

j) $m\angle EOA =$ _____

**EXAMPLE 5: Find the measure of each of the following.**



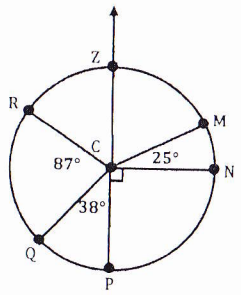

a) $m\angle AOB =$ _____

b) $m\angle BOC =$ _____

c) $m\angle COD =$ _____

d) $m\angle AOD =$ _____

**EXAMPLE 6:** Find the measure of each arc in *circle* C and classify it. In the figure $\overline{PZ}$ is a diameter.




a) $m\overset{\frown}{PN}$ = _____; _____

b) $m\overset{\frown}{ZQP}$ = _____; _____

c) $m\overset{\frown}{RZ}$ = _____; _____

d) $m\overset{\frown}{ZMP}$ = _____; _____

e) $m\overset{\frown}{RM}$ = _____; _____

f) $m\overset{\frown}{NQP}$ = _____; _____

g) $m\overset{\frown}{QN}$ = _____; _____

h) $m\overset{\frown}{RP}$ = _____; _____

**EXAMPLE 7:** Find the indicated measures.

$x$ = _____

$m\angle AEB$ = _____

$m\angle BEC$ = _____

$m\angle CED$ = _____

$m\angle DEA$ = _____