Geometry Notes
10.2 Find Arc Measures

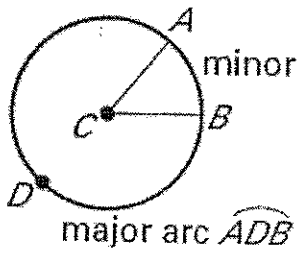
Name Key

Vocabulary:

Central Angle: an angle whose vertex is the center of the circle.

Minor Arc: part of the circle measuring less than 180°.
notation: named by endpoints. AB

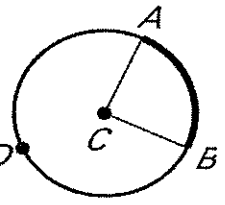
Major Arc: part of the circle measuring between 180° – 360°.
notation: named by endpoints AND another point on the arc. ADB



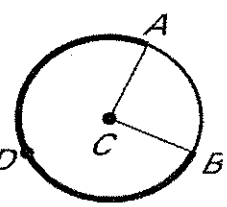
Semicircle: an arc with endpoints formed by a diameter.
notation: named by endpoints AND another point on the arc.

Name the arc shown in bold.

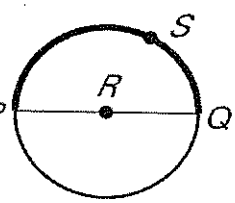
1. $\overset{\frown}{AB}$ minor arc



2. $\overset{\frown}{ADB}$ major arc



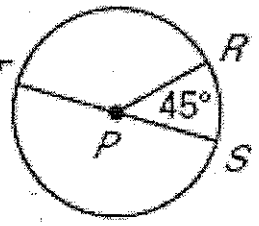
3. $\overset{\frown}{PSQ}$ Semi ⊙



Measuring Arcs

*Note: The **measure** of an arc is not the same as the **length** of an arc.*

Measure of an entire circle = 360° Measure of a semicircle = 180°



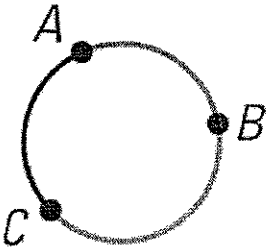
The Measure of a Minor Arc is the measure of its central angle. $\overset{\frown}{RS}$ = 45°

The Measure of a Major Arc is the difference between 360° and the measure of the related minor arc. $\overset{\frown}{RTS}$ = 315°

360 – 45 = 315°

Arc Addition: The measure of an arc formed by two adjacent arcs is the sum of the measures of the two arcs. (Adjacent arcs share a common endpoint.)

Measure of $\overset{\frown}{ABC}$ = $m\overset{\frown}{AB}$ + $m\overset{\frown}{BC}$

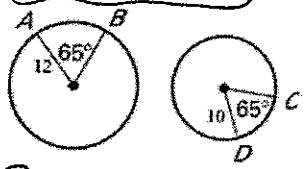


Congruent Circles: two circles with the same radius

Congruent Arcs: two arcs with the same measure and they are arcs of the same circle or of congruent circles

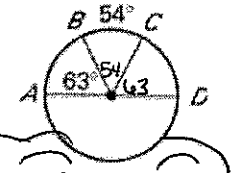
Decide if $\overset{\frown}{AB} \cong \overset{\frown}{CD}$. Explain.

4. No $\overset{\frown}{AB} \ncong \overset{\frown}{CD}$



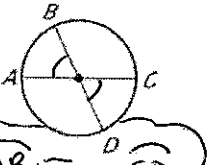
⊙s have different radii

5.



Yes $\overset{\frown}{AB} \cong \overset{\frown}{CD}$
Central ∠s ≅ ≅

6.



Yes $\overset{\frown}{AB} \cong \overset{\frown}{CD}$
Vert ∠s → Central ∠s ≅ ≅

6. In ⊙ O, $\overline{MQ}$ and $\overline{NR}$ are diameters. Find the indicated measure.

$m\widehat{NP}$ = 80°

$m\widehat{QN}$ = 120°

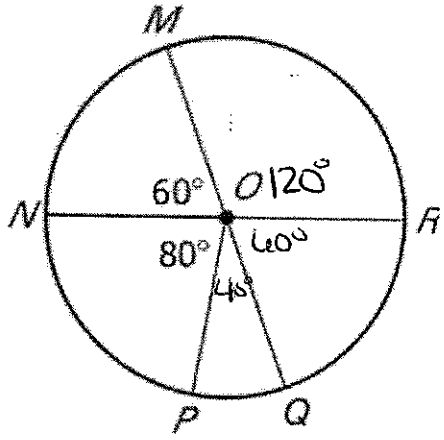
$m\widehat{MPQ}$ = 180°

$m\widehat{MQN}$ = 300°

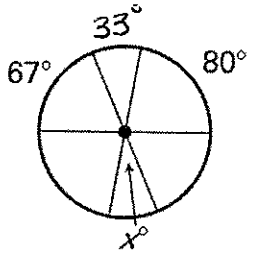
$m\widehat{QR}$ = 60°

$m\widehat{PR}$ = 100°

$m\widehat{PMQ}$ = 320°

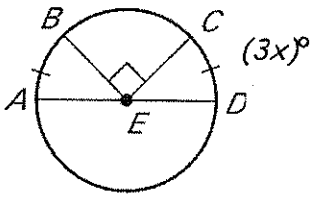


7. Find the value of x.



X = 33

8. Find the value of x.



$3x + 3x + 90 = 180$

$6x = 90$

$x = 15$