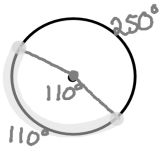
Finding the Measures of Arcs:

Central Angle - An angle whose vertex is the center of a circle.

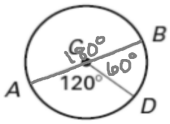
The measure of a minor arc is equal to the measure of its central angle.



The measure of a major arc is defined by the difference between 360° and the measure of its associated minor arc.

Ex. Find the measure of each arc of ⊙C.

1. $\overset{\frown}{AD}$ 120°
2. $\overset{\frown}{ADB}$ 180°
3. $\overset{\frown}{DBA}$ 240°
4. $\overset{\frown}{BD}$ 60°



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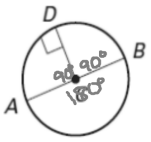
Arc Addition Rule - The measure of an arc formed by 2 adjacent arcs is the sum of the measures of the two arcs.

Ex. Find the measure of each arc of ⊙C.



1. $\overset{\frown}{ADB}$ 180°
2. $\overset{\frown}{AD}$ 90°
3. $\overset{\frown}{DB}$ 90°
4. $\overset{\frown}{DBA}$ 270°

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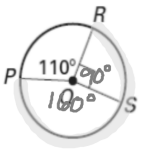
Arc Addition Rule - The measure of an arc formed by 2 adjacent arcs is the sum of the measures of the two arcs.

Ex. Find the measure of each arc of ⊙Q.



1. $\overset{\frown}{PR}$ 110°
2. $\overset{\frown}{PRS}$ 200°
3. $\overset{\frown}{PS}$ 160°
4. $\overset{\frown}{RSP}$ 250°

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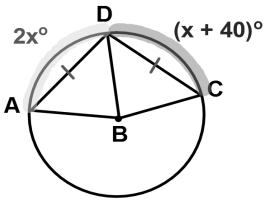
Congruent Chord and Arc - In the same circle, or in congruent circles, 2 minor arcs are congruent if and only if their corresponding chords are congruent.

Find $m\overset{\frown}{AD}$.



arc = arc

$2x = x + 40$

$-x \quad -x$

$x = 40$

$m\overset{\frown}{AD} = 2x$

$2(40) = 80°$

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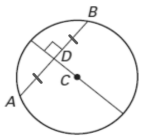
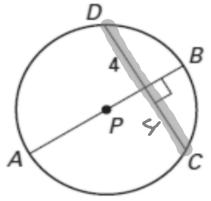
Diameter Perpendicular to Chord - If a diameter of a circle is perpendicular to a chord, then the diameter bisects the chord and its arc.

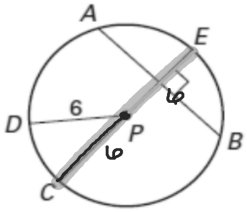
Perpendicular Bisector of Chord - If one chord is a perpendicular bisector of another chord, then the first chord is a diameter.



EX. 1: DC = 8



EX. 2: EC = 12



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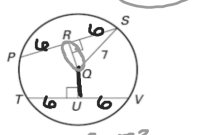
Congruent Chords - In the same circle, or in congruent circles, 2 chords are congruent if and only if they are equidistant from the center.

EX. 1: PS = 12, TV = 12, SQ = 7, Find QU. 3.61



$x^2 + 6^2 = 7^2$

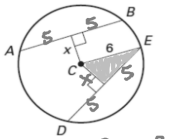
$x^2 + 36 = 49$

$-36 \quad -36$

$x^2 = 13$

$x = \sqrt{13} = 3.61$

EX. 2: AB = DE = 10, radius = 6, Find x. 3.32



$x^2 + 5^2 = 6^2$

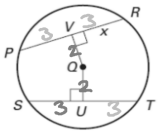
$x^2 + 25 = 36$

$-25 \quad -25$

$x^2 = 11$

$x = \sqrt{11} = 3.32$

EX. 3: QV = 2, QU = 2, SU = 3, Find x. 3



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