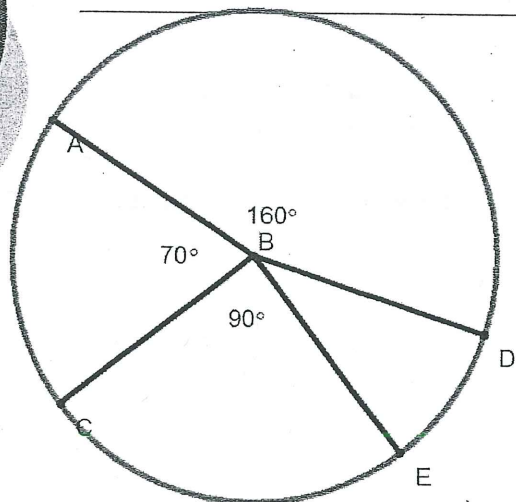


Warm Up



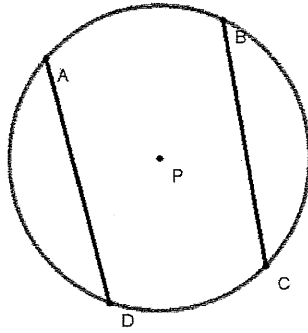
Find:

 $m\widehat{AC}$: $m\widehat{CE}$: $m\widehat{ED}$: $m\widehat{AD}$: $m\widehat{ACE}$:

Use congruent chords to find arc measures

- To determine if two minor arcs are congruent, we need to see if the chords that create them are equal.
- Theorem 6.5 – In the same circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

Examples

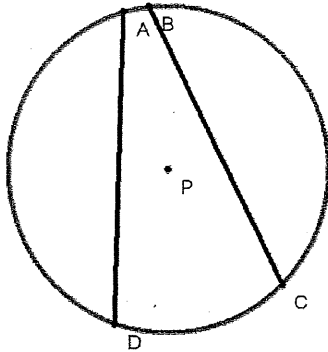


In $\odot P$, \overline{AD} and \overline{BC} are congruent.

1) If $m\widehat{AD} = 95^\circ$, find $m\widehat{BC}$.

2) If $m\widehat{AB} = 45^\circ$ and $m\widehat{CD} = 35^\circ$, find $m\widehat{BC}$

Now You Try!



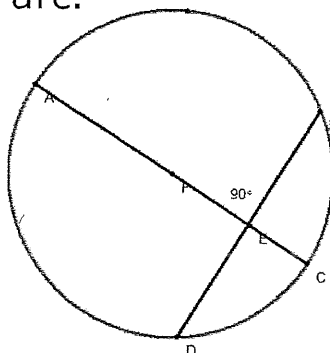
In $\odot P$, \overline{AD} and \overline{BC} are congruent.

1) If $m\widehat{AD} = 105^\circ$, find $m\widehat{BC}$.

2) If $m\widehat{AB} = 15^\circ$ and $m\widehat{BC} = 135^\circ$, find $m\widehat{CD}$

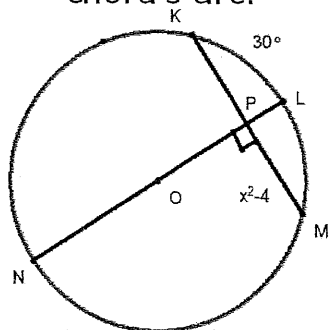
Properties of perpendicular bisectors of chords

- Theorem 6.7: If a diameter is perpendicular to another chord, then the diameter bisects the chord and its arc.



Theorem 6.7

- Theorem 6.7 states that if a diameter is a perpendicular bisector of another chord, then it bisects both the chord and that chord's arc.



In $\odot O$, \overline{NL} is a diameter.
 \overline{KM} is a chord in the circle.
 $m\widehat{KL}$ is 30°

Find:

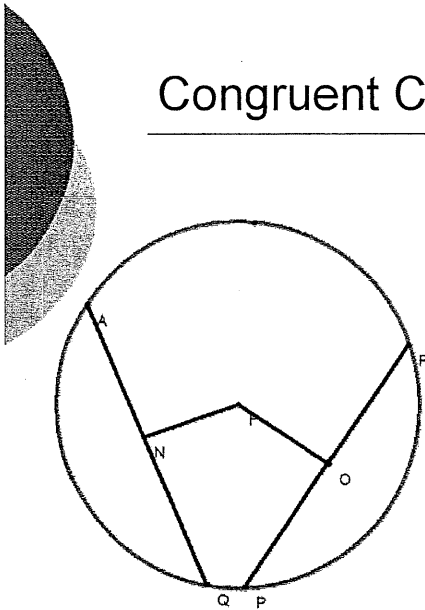
1) $m\widehat{LM} =$

2) If $\overline{KP} = 12$, then solve
 for x if $\overline{PM} = x^2 - 4$

Congruent Chords

- So far, we have seen how congruent chords can be used to find congruent arc measures but we need to be able to figure out if they are congruent as well.
- Theorem 6.8 – Two chords are congruent if and only if they are equidistant from the center.

Congruent Chords



If $\overline{TN} \cong \overline{TO}$, $m\angle N = 90^\circ$, $m\angle O = 90^\circ$ and $\overline{RP} = 14$, find \overline{AQ}

If $\overline{TN} \cong \overline{TO}$, $m\angle N = 90^\circ$ and $m\angle O = 90^\circ$ solve for x if $\overline{RP} = 9x + 21$ and $\overline{AQ} = 14x - 9$