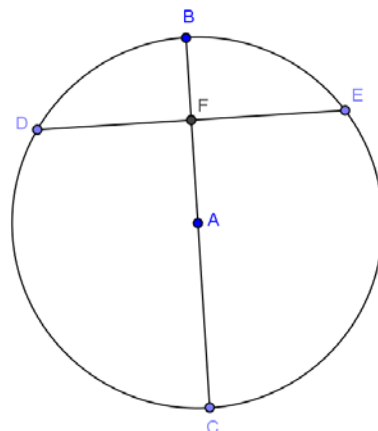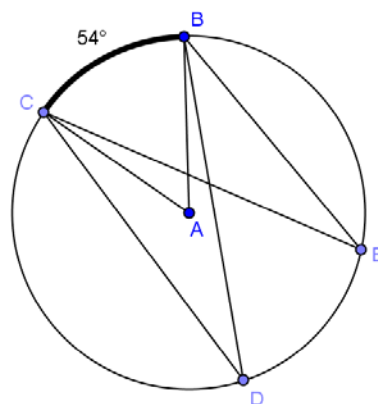# Lesson 8: Arcs and Chords

Classwork

Opening Exercise

Given circle A with $\overline{BC} \perp \overline{DE}$, $FA = 6$, and $AC = 10$. Find BF and DE. Explain your work.
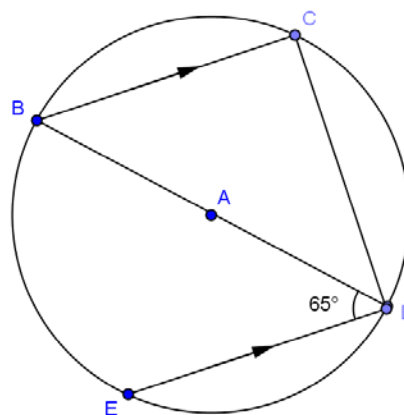

Exercises

1. Given circle A with $m\widehat{BC} = 54^0$ and $\angle CDB \cong \angle DBE$, find $m\widehat{DE}$. Explain your work.

2. If two arcs in a circle have the same measure, what can you say about the quadrilateral formed by the four endpoints? Explain.

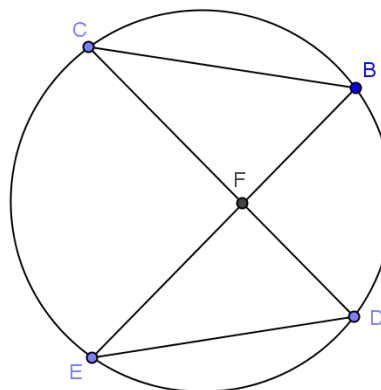3. Find the angle measure of $\widehat{CD}$ and $\widehat{ED}$.

4. $m\widehat{CB} = m\widehat{ED}$ and $m\widehat{BC} : m\widehat{BD} : m\widehat{EC} = 1 : 2 : 4$. Find
    a. $m\angle BCF$

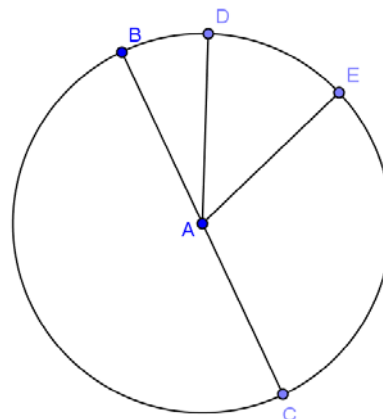   b. $m\angle EDF$

    c. $m\angle CFE$

5. $\overline{BC}$ is a diameter of circle A. $m\widehat{BD}:m\widehat{DE}:m\widehat{EC} = 1:3:5$. Find

   a. $m\widehat{BD}$

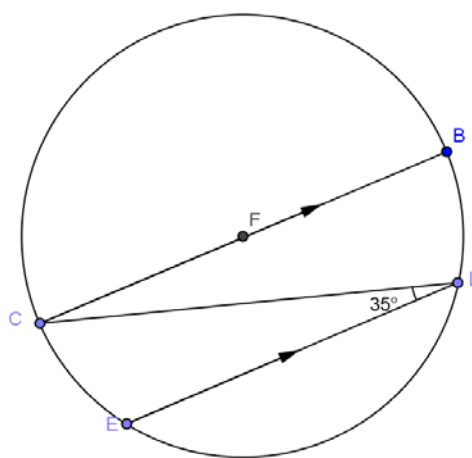   b. $m\widehat{DEC}$

   c. $m\widehat{ECB}$

Lesson Summary

THEOREMS:

- Congruent chords have congruent arcs.
- Congruent arcs have congruent chords.
- Arcs between parallel chords are congruent.

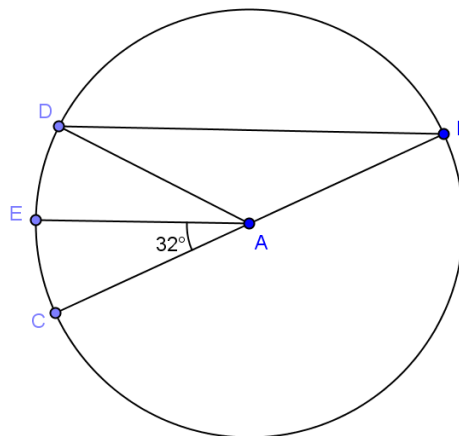
Problem Set

1. Find

   a. $m\widehat{CE}$

   b. $m\widehat{BD}$
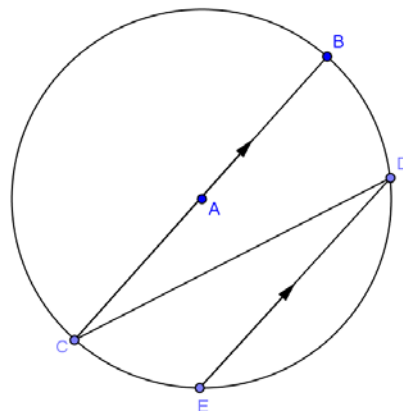
   c. $m\widehat{ED}$

2. In circle A, $\overline{BC}$ is a diameter, $m\widehat{CE} = m\widehat{ED}$, and $m\angle CAE = 32^0$.
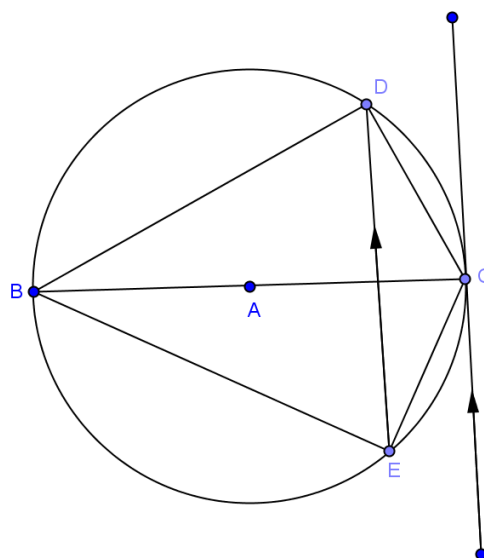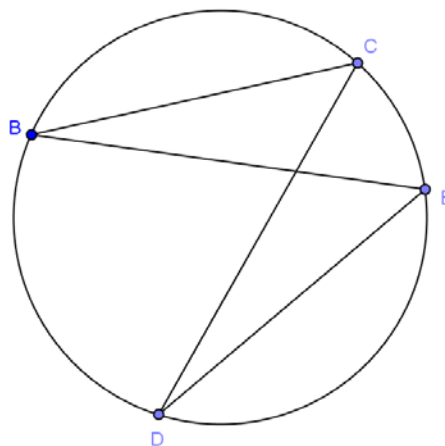
   a. Find $m\angle CAD$.

   b. Find $m\angle ADC$.

3. In circle A, $\overline{BC}$ is a diameter, $2m\widehat{CE} = m\widehat{ED}$, and $\overline{BC}\|\overline{DE}$. Find $m\angle CDE$.
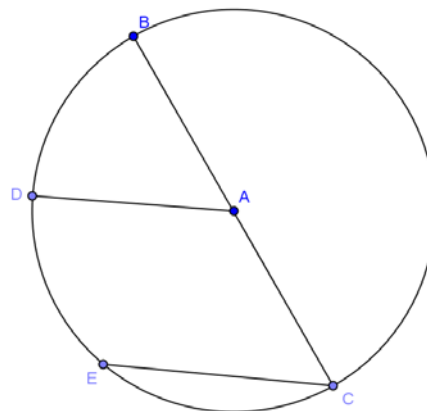
4. In circle A, $\overline{BC}$ is a diameter and $\widehat{CE} = 68^0$.
    a. Find $m\widehat{CD}$.
    b. Find $m\angle DBE$.
    c. Find $m\angle DCE$

5. In the circle given, $\widehat{BC} \cong \widehat{ED}$. Prove $\overline{BE} \cong \overline{DC}$.

6. Given circle A with $\overline{AD} \parallel \overline{CE}$, show $\overset{\frown}{BD} \cong \overset{\frown}{DE}$.

7. In circle A, $\overline{AB}$ is a radius and $\overset{\frown}{BC} \cong \overset{\frown}{BD}$ and $m\angle CAD = 54^0$. Find $m\angle ABC$. Complete the proof.

$BC = BD$ _____

$m\angle\_\_\_\_ = m\angle\_\_\_\_$ _____

$m\angle BAC + m\angle CAD + m\angle BAD =$ _____

$2m\angle\_\_\_\_ + 54^0 = 360^0$ _____

$m\angle BAC =$ _____

$AB = AC$ _____

$m\angle\_\_\_\_ = m\angle\_\_\_\_$ _____

$2m\angle ABC + m\angle BAC =$ _____

$m\angle ABC =$ ____