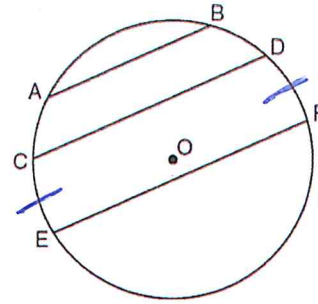


Parallel and Congruent Chords

1. In the diagram below of circle O , chord $\overline{AB} \parallel$ chord \overline{CD} , and chord $\overline{CD} \parallel$ chord \overline{EF} .

Which statement must be true?

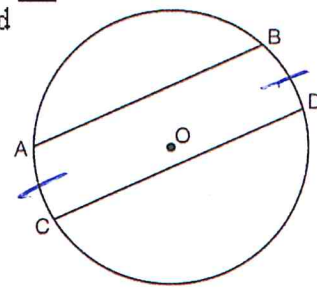
- 1) $\widehat{CE} \cong \widehat{DF}$
- 2) $\widehat{AC} \cong \widehat{DF}$
- 3) $\widehat{AC} \cong \widehat{CE}$
- 4) $\widehat{EF} \cong \widehat{CD}$



2. In the diagram below of circle O , chord \overline{AB} is parallel to chord \overline{CD} .

Which statement must be true?

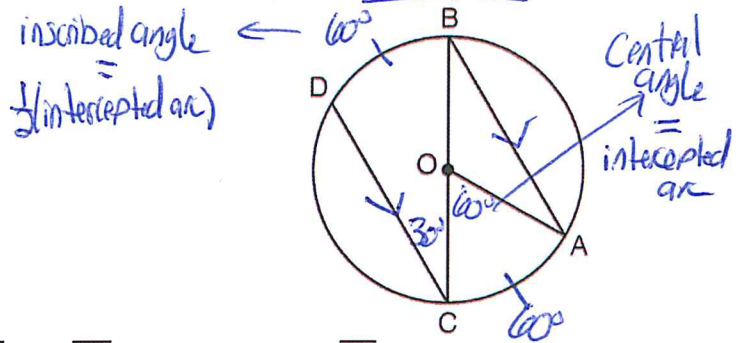
- 1) $\widehat{AC} \cong \widehat{BD}$
- 2) $\widehat{AB} \cong \widehat{CD}$
- 3) $\overline{AB} \cong \overline{CD}$
- 4) $\widehat{ABD} \cong \widehat{CDB}$



3. In the diagram below of circle O with diameter \overline{BC} and radius \overline{OA} , chord \overline{DC} is parallel to chord \overline{BA} .

If $m\angle BCD = 30^\circ$, determine and state $m\angle AOB$.

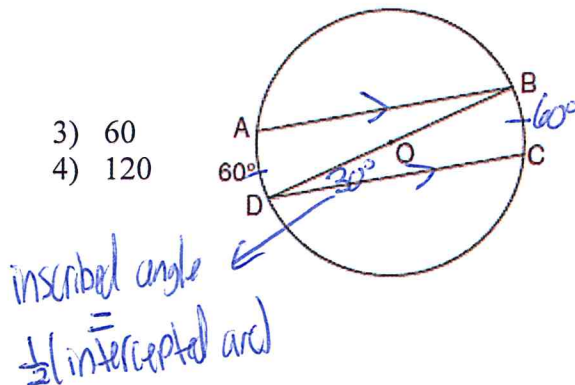
60°



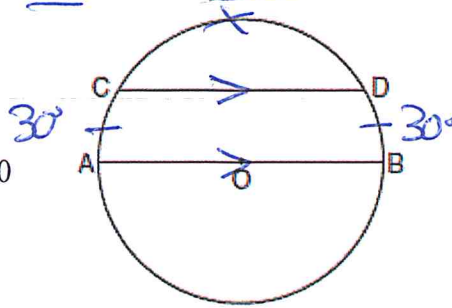
4. In the diagram of circle O below, chords \overline{AB} and \overline{CD} are parallel, and \overline{BD} is a diameter of the circle.

If $m\widehat{AD} = 60$, what is $m\angle CDB$?

- 1) 20
- 2) 30
- 3) 60
- 4) 120



5. In the diagram of circle O below, chord \overline{CD} is parallel to diameter \overline{AB} and $m\widehat{AC} = 30$



What is $m\widehat{CD}$?

- 1) 150
 2) 120
 3) 100
 4) 60

Diameter cuts a circle into 2 180° halves

$$\begin{aligned} 30 + x + 30 &= 180 \\ x + 60 &= 180 \\ x &= 120 \end{aligned}$$

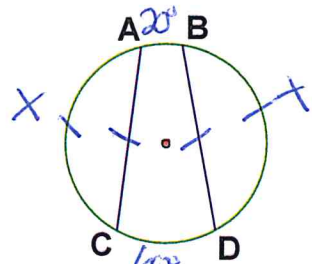
6. In the circle provided, $\overline{AC} \cong \overline{BD}$. If $m\widehat{AB} = 20^\circ$ and $m\widehat{CD} = 60^\circ$, find $m\widehat{AC}$.

The arcs of a circle add to 360° .

$$x + x + 20 + 60 = 180$$

$$\begin{aligned} 2x + 80 &= 180 \\ -80 &-80 \\ 2x &= 100 \\ x &= 50 \end{aligned}$$

$$\begin{aligned} \frac{2x}{2} &= \frac{100}{2} \\ x &= 50 \\ AC &= 50 \end{aligned}$$

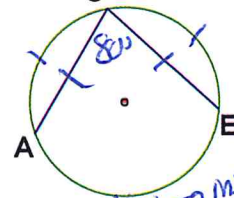


7. In the circle provided, $\overline{AC} \cong \overline{CE}$. If $m\angle ACE = 80^\circ$, find $m\widehat{CE}$.

The arcs of a circle add to 360° .

$$\begin{aligned} x + x + 160 &= 360 \\ 2x + 160 &= 360 \\ -160 &-160 \\ 2x &= 200 \\ x &= 100 \end{aligned}$$

$$CE = 100^\circ$$

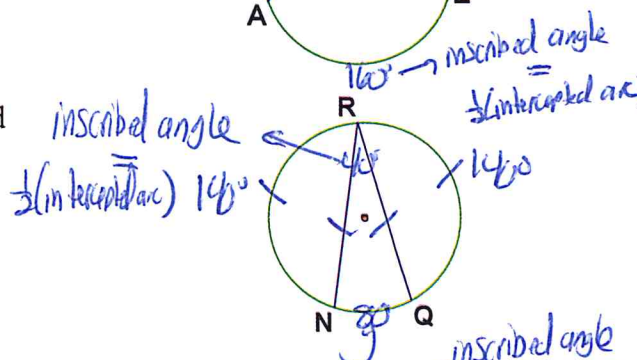


8. In the circle provided, $\overline{RN} \cong \overline{RQ}$. If $m\widehat{RN} = 140^\circ$, find $m\angle NRQ$.

The arcs of a circle add to 360° .

$$\begin{aligned} 140 + 140 + y &= 360 \\ 280 + y &= 360 \\ -280 &-280 \\ y &= 80 \end{aligned}$$

$$\angle NRQ = 40^\circ$$



9. In the circle provided, $\overline{FO} \cong \overline{OX}$. If $m\angle FOX = 60^\circ$, find $m\widehat{FO}$.

The arcs of a circle add to 360° .

$$x + x + 120 = 360$$

$$\begin{aligned} 2x + 120 &= 360 \\ -120 &-120 \\ 2x &= 240 \\ \frac{2x}{2} &= \frac{240}{2} \\ x &= 120 \end{aligned}$$

$$x = 120^\circ$$

