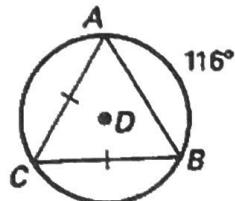
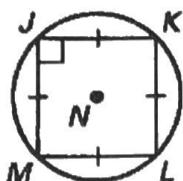


**Find the measure of the given arc or chord.**

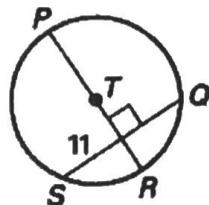
1.  $m\widehat{BC} = 122^\circ$



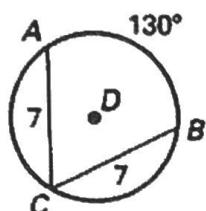
2.  $m\widehat{LM} = 90^\circ$



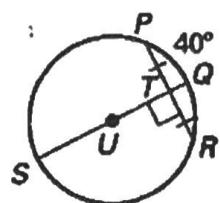
3.  $\overline{QS} = 22$



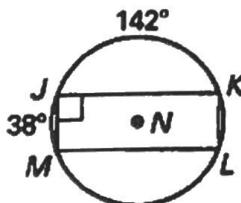
4.  $m\widehat{AC} = 115^\circ$



5.  $m\widehat{PQR} = 80^\circ$



6.  $m\widehat{KLM} = 180^\circ$



**Find the value of  $x$ .**

7.

A circle with center J. Chords EF and GH intersect at point E. Angle FEG is labeled  $3x + 16$  and angle GEF is labeled  $12x + 7$ . Angle X is labeled  $x$ .

8.

A circle with center E. Chords AD and BC intersect at point E. Angle AED is labeled  $3x - 11$  and angle CEB is labeled  $x + 9$ . Angle X is labeled  $10$ .

9.

A circle with center T. Chords PQ and RS intersect at point T. Angle PQT is labeled  $9x - 3$  and angle RST is labeled  $7x + 5$ . Angle X is labeled  $4$ .

10.

A circle with center W. Chords SV and TU intersect at point W. Angle SVW is labeled  $6x - 5$  and angle UWV is labeled 18. Angle VUS is labeled 18 and angle USV is labeled  $13 + 4x$ . Angle X is labeled  $9$ .

11.

A circle with center N. Chords JM and KL intersect at point N. Angle JNM is labeled 12 and angle MNL is labeled 12. Angle X is labeled  $4$ .

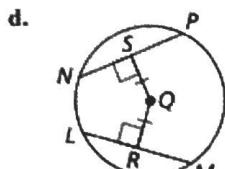
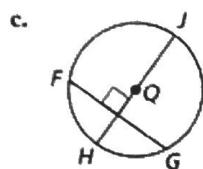
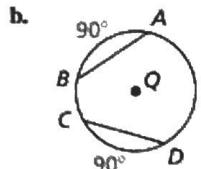
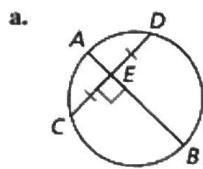
12.

A circle with center Z. Chords VW and XY intersect at point Z. Angle VZW is labeled  $14x - 9$  and angle XZY is labeled  $9x + 21$ . Angle X is labeled  $6$ .

### 7.3 Properties of Chords

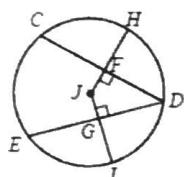
Name: \_\_\_\_\_

**HOW DO YOU SEE IT?** What can you conclude from each diagram? Name a theorem that justifies your answer.



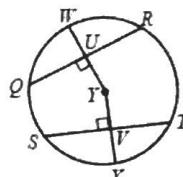
- |  |   |
|--|---|
| a. $\widehat{AC} \cong \widehat{AD}$   | If a radius is $\perp$ to a chord it bisects the chord and arc    |
| b. $\overline{AD} \cong \overline{CD}$ | If arcs are $\cong$ then the chords forming them are $\cong$      |
| c. $\widehat{FH} \cong \widehat{HG}$   | If a radius is $\perp$ to a chord it bisects the chord and arc    |
| d. $\overline{NP} \cong \overline{LM}$ | If chords are equidistant from the center then they are $\cong$ . |

9. If  $JG = JF$ ,  $GD = 13$ , and  $m\widehat{CD} = 136^\circ$ , find each measure.



$$\begin{aligned} ED &= 26 \\ CF &= 13 \\ m\widehat{ED} &= 136^\circ \\ m\widehat{HD} &= 68^\circ \\ m\widehat{CE} &= 88^\circ \end{aligned}$$

10. If  $YU = YV$ ,  $ST = 16$ ,  $m\widehat{QS} = 34^\circ$ , and  $m\widehat{RT} = 98^\circ$ , find each measure.

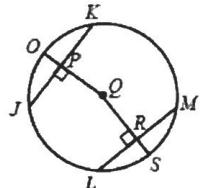


$$\begin{aligned} QU &= 8 \\ QR &= 16 \\ m\widehat{ST} &= 114^\circ \\ m\widehat{QR} &= 114^\circ \\ m\widehat{XT} &= 57^\circ \end{aligned}$$

11. If  $PQ = QR$ ,  $JK = 3x + 23$  and  $LM = 9x - 19$ , find  $PK$ .

$$x = 7$$

$$PK = 22$$



12. If  $DH = HE$ ,  $m\widehat{BG} = (9x - 20)^\circ$  and  $m\widehat{GC} = (5x + 28)^\circ$ , find  $m\widehat{AB}$ .

$$x = 12$$

$$m\widehat{AB} = 176^\circ$$

