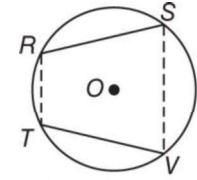


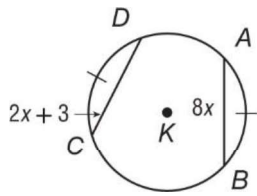
### Arcs and Chords

**Arcs and Chords** Points on a circle determine both chords and arcs. Several properties are related to points on a circle. In a circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.

**Example:** In  $\odot K$ ,  $\widehat{AB} \cong \widehat{CD}$ . Find  $AB$ .

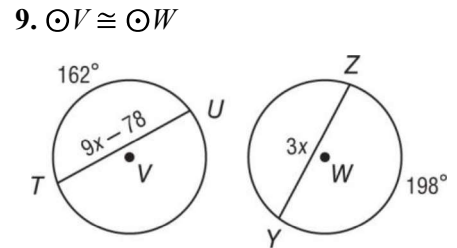
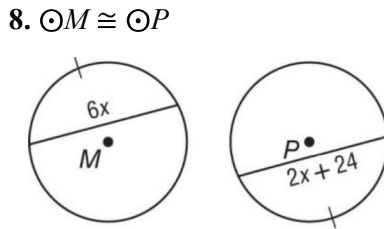
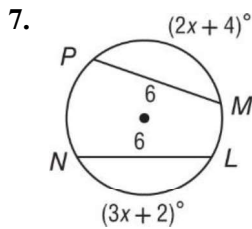
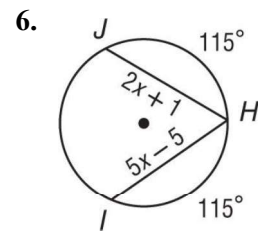
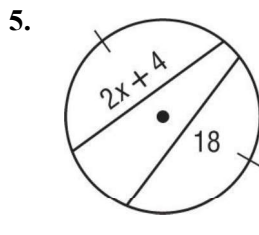
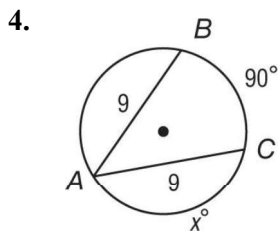
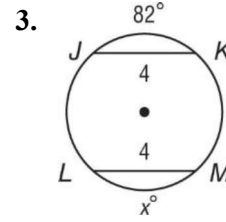
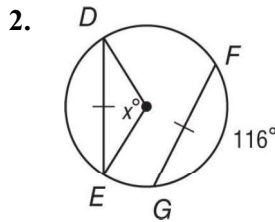
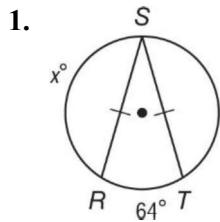


$\widehat{RS} \cong \widehat{TV}$  if and only if  $\overline{RS} \cong \overline{TV}$ .



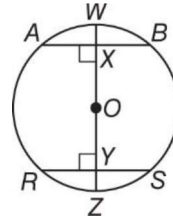
### Exercises

**ALGEBRA** Find the value of  $x$  in each circle.



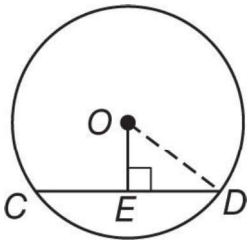
## Diameters and Chords

- In a circle, if a diameter (or radius) is perpendicular to a chord, then it bisects the chord and its arc.
- In a circle, the perpendicular bisector of a chord is the diameter (or radius).
- In a circle or in congruent circles, two chords are congruent if and only if they are equidistant from the center.



If  $\overline{WZ} \perp \overline{AB}$ , then  $\overline{AX} \cong \overline{XB}$  and  $\widehat{AW} \cong \widehat{WB}$ .  
 If  $OX = OY$ , then  $\overline{AB} \cong \overline{RS}$ .  
 If  $\overline{AB} \cong \overline{RS}$ , then  $\overline{AB}$  and  $\overline{RS}$  are equidistant from point  $O$ .

**Example:** In  $\odot O$ ,  $\overline{CD} \perp \overline{OE}$ ,  $OD = 15$ , and  $CD = 24$ . Find  $OE$ .



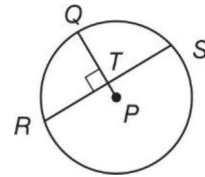
## Exercises

In  $\odot P$ , the radius is 13 and  $RS = 24$ . Find each measure. Round to the nearest hundredth.

1.  $RT$

2.  $PT$

3.  $TQ$

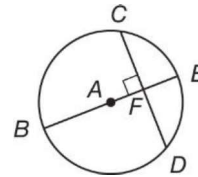


In  $\odot A$ , the diameter is 12,  $CD = 8$ , and  $m\widehat{CD} = 90$ . Find each measure. Round to the nearest hundredth.

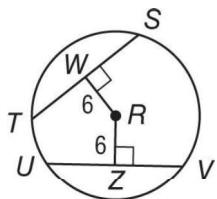
4.  $m\widehat{DE}$

5.  $FD$

6.  $AF$



7. In  $\odot R$ ,  $TS = 21$  and  $UV = 3x$ . What is  $x$ ?



8. In  $\odot Q$ ,  $\overline{CD} \cong \overline{CB}$ ,  $GQ = x + 5$  and  $EQ = 3x - 6$ . What is  $x$ ?

