10-3 Skills Practice

Arcs and Chords

In $\odot H$, $m\widehat{RS} = 82$, $m\widehat{TU} = 82$, $RS = 46$, and $\overline{TU} \cong \overline{RS}$.
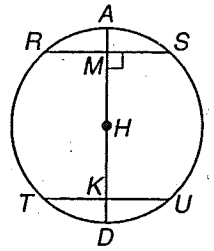Find each measure.

1. TU

2. TK

3. MS

4. $m\angle HKU$

5. $m\widehat{AS}$

6. $m\widehat{AR}$

7. $m\widehat{TD}$

8. $m\widehat{DU}$

The radius of $\odot Y$ is 34, $AB = 60$, and $m\widehat{AC} = 71$. Find each measure.
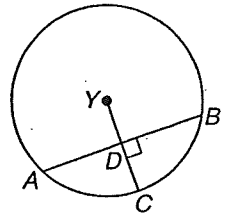
9. $m\widehat{BC}$

10. $m\widehat{AB}$

11. AD

12. BD

13. YD

14. DC

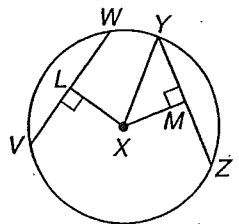In $\odot X$, $LX = MX$, $XY = 58$, and $VW = 84$. Find each measure.

15. YZ

16. YM

17. MX

18. MZ

19. LV

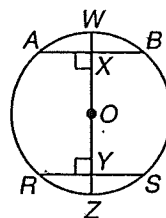20. LX

10-3 Study Guide and Intervention (continued)

Arcs and Chords

Diameters and Chords

- In a circle, if a diameter is perpendicular to a chord, then it bisects the chord and its arc.

- 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 $\overarc{AW} \cong \overarc{WB}$.

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.

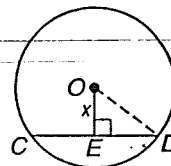**Example** In $\odot O$, $\overline{CD} \perp \overline{OE}$, $OD = 15$, and $CD = 24$. Find x.

A diameter or radius perpendicular to a chord bisects the chord, so ED is half of CD.

$ED = \frac{1}{2}(24)$

$\quad = 12$

Use the Pythagorean Theorem to find x in $\triangle OED$.

$(OE)^2 + (ED)^2 = (OD)^2$ Pythagorean Theorem

$\quad x^2 + 12^2 = 15^2$ Substitution

$\quad x^2 + 144 = 225$ Multiply.

$\quad\quad\quad x^2 = 81$ Subtract 144 from each side.

$\quad\quad\quad\quad x = 9$ Take the square root of each side.

Exercises

In $\odot P$, $CD = 24$ and $m\overarc{CY} = 45$. Find each measure.

1. AQ

2. RC

3. QB

4. AB

5. $m\overarc{DY}$

6. $m\overarc{AB}$

7. $m\overarc{AX}$

8. $m\overarc{XB}$

9. $m\overarc{CD}$
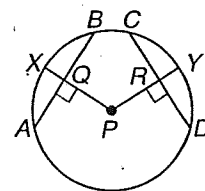
In $\odot G$, $DG = GU$ and $AC = RT$. Find each measure.

10. TU

11. TR

12. $m\overarc{TS}$

13. CD

14. GD

15. $m\overarc{AB}$
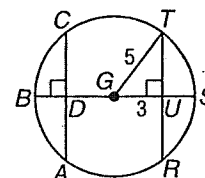
16. A chord of a circle 20 inches long is 24 inches from the center of a circle. Find the length of the radius.

Lesson 10