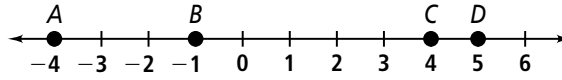


# 7.3 Practice

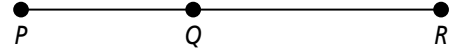
## Measuring Segments

In Exercises 1–6, use the figure below. Find the length of each segment.



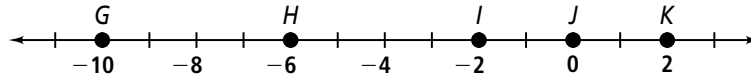
- 1.  $\overline{AB}$  **3**
- 2.  $\overline{BC}$  **5**
- 3.  $\overline{AC}$  **8**
- 4.  $\overline{AD}$  **9**
- 5.  $\overline{BD}$  **6**
- 6.  $\overline{CD}$  **1**

For Exercises 7–11, use the figure at the right.



- 7. If  $PQ = 7$  and  $QR = 10$ , then  $PR =$  **17**.
- 8. If  $PQ = 20$  and  $QR = 22$ , then  $PR =$  **42**.
- 9. If  $PR = 25$  and  $PQ = 12$ , then  $QR =$  **13**.
- 10. If  $PR = 19$  and  $QR = 12$ , then  $PQ =$  **7**.
- 11. If  $PR = 10$  and  $PQ = 4$ , then  $QR =$  **6**.

Use the number line below for Exercises 12–16. Tell whether the segments are congruent.



- 12.  $\overline{GH}$  and  $\overline{HI}$  **yes**
- 13.  $\overline{GH}$  and  $\overline{IK}$  **yes**
- 14.  $\overline{HJ}$  and  $\overline{IK}$  **no**
- 15.  $\overline{IJ}$  and  $\overline{JK}$  **yes**
- 16.  $\overline{HJ}$  and  $\overline{GI}$  **no**
- 17.  $\overline{HK}$  and  $\overline{GI}$  **yes**

- 18. **Reasoning** Points A, Q, and O are collinear.  $AO = 10$ ,  $AQ = 15$ , and  $OQ = 5$ . What must be true about their positions on the line?

**Point O is between points A and Q.**

**Algebra** Use the figure at the right for Exercises 19 and 20.



- 19. Given:  $ST = 3x + 3$  and  $TU = 2x + 9$ .
  - a. What is the value of  $ST$ ? **21**
  - b. What is the value of  $TU$ ? **21**
- 20. Given:  $ST = x + 3$  and  $TU = 4x - 6$ .
  - a. What is the value of  $ST$ ? **6**
  - b. What is the value of  $SU$ ? **12**
- 21. **Algebra** On a number line, suppose point E has a coordinate of 3,  $EG = 6$ , and  $EX = 12$ . Is point G the midpoint of  $\overline{EX}$ ? What are possible coordinates for G and X? **No; sample: Point G is at 9 or -3; point X is at -9 or 15.**

On a number line, the coordinates of  $P$ ,  $Q$ ,  $R$ , and  $S$  are  $-12$ ,  $-5$ ,  $0$ , and  $7$ , respectively.

22. Draw a sketch of this number line. Use this sketch to answer Exercises 23–26.



23. Which line segment is the shortest?  $\overline{QR}$

24. Which line segment is the longest?  $\overline{PS}$

25. Which line segments are congruent?  $\overline{PQ}$  and  $\overline{RS}$ ; also  $\overline{PR}$  and  $\overline{QS}$

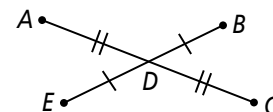
26. What is the coordinate of the midpoint of  $\overline{PR}$ ?  $-6$

27. You plan to drive north from city A to town B and then continue north to city C. The distance between city A and town B is 39 mi, and the distance between town B and city C is 99 mi.

- Assuming you follow a straight driving path, after how many miles of driving will you reach the midpoint between city A and city C? **69 mi**
- If you drive an average of 46 mi/h, how long will it take you to drive from city A to city C? **3 h**

28. **Algebra** Point  $O$  lies between points  $M$  and  $P$  on a line.  $OM = 34z$  and  $OP = 36z - 7$ . If point  $N$  is the midpoint of  $\overline{MP}$ , what algebraic equation can you use to find  $MN$ ?  **$MN = \frac{1}{2}[34z + (36z - 7)]$**

**Algebra** Use the diagram at the right for Exercises 29–32.



29. If  $AD = 20$  and  $AC = 3x + 4$ , find the value of  $x$ . Then find  $AC$  and  $DC$ .

**12; 40; 20**

30. If  $ED = 5y + 6$  and  $DB = y + 30$ , find the value of  $y$ . Then find  $ED$ ,  $DB$ , and  $EB$ .

**6; 36; 36; 72**

31. If  $DC = 6x$  and  $DA = 4x + 18$ , find the value of  $x$ . Then find  $AD$ ,  $DC$ , and  $AC$ .

**9; 54; 54; 108**

32. If  $EB = 4y - 12$  and  $ED = y + 17$ , find the value of  $y$ . Then find  $ED$ ,  $DB$ , and  $EB$ .

**23; 40; 40; 80**

33. **Writing** Is it possible that  $PQ + QR < PR$ ? Explain.

**Answers may vary. Sample: No; if  $Q$  lies on the segment connecting  $P$  and  $R$ , then  $PQ + QR = PR$ , but this is the least the sum  $PQ + QR$  can be, so the sum is always greater than or equal to  $PR$ .**