



# Practice and Problem-Solving Exercises

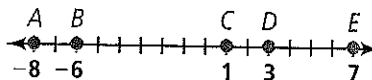


## A Practice

Find the length of each segment.

See Problem 1.

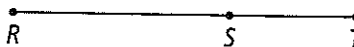
- 8.  $\overline{AB}$
- 9.  $\overline{BD}$
- 10.  $\overline{AD}$
- 11.  $\overline{CE}$



Use the number line at the right for Exercises 12–14.

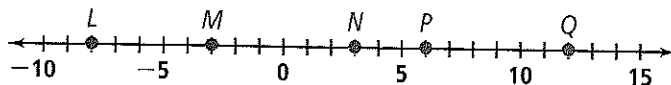
See Problem 2.

- 12. If  $RS = 15$  and  $ST = 9$ , then  $RT = \blacksquare$ .
- 13. If  $ST = 15$  and  $RT = 40$ , then  $RS = \blacksquare$ .
- 14. Algebra  $RS = 8y + 4$ ,  $ST = 4y + 8$ , and  $RT = 15y - 9$ .
  - a. What is the value of  $y$ ?
  - b. Find  $RS$ ,  $ST$ , and  $RT$ .



Use the number line below for Exercises 15–18. Tell whether the segments are congruent.

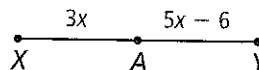
See Problem 3.



- 15.  $\overline{LN}$  and  $\overline{MQ}$
- 16.  $\overline{MP}$  and  $\overline{NQ}$
- 17.  $\overline{MN}$  and  $\overline{PQ}$
- 18.  $\overline{LP}$  and  $\overline{MQ}$

19. Algebra  $A$  is the midpoint of  $\overline{XY}$ .

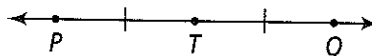
- a. Find  $XA$ .
- b. Find  $AY$  and  $XY$ .



See Problem 4.

Algebra For Exercises 20–22, use the figure below. Find the value of  $PT$ .

- 20.  $PT = 5x + 3$  and  $TQ = 7x - 9$
- 21.  $PT = 4x - 6$  and  $TQ = 3x + 4$
- 22.  $PT = 7x - 24$  and  $TQ = 6x - 2$



## B Apply

On a number line, the coordinates of  $X$ ,  $Y$ ,  $Z$ , and  $W$  are  $-7$ ,  $-3$ ,  $1$ , and  $5$ , respectively. Find the lengths of the two segments. Then tell whether they are congruent.

- 23.  $\overline{XY}$  and  $\overline{ZW}$
- 24.  $\overline{ZX}$  and  $\overline{WY}$
- 25.  $\overline{YZ}$  and  $\overline{XW}$

Suppose the coordinate of  $A$  is  $0$ ,  $AR = 5$ , and  $AT = 7$ . What are the possible coordinates of the midpoint of the given segment?

- 26.  $\overline{AR}$
- 27.  $\overline{AT}$
- 28.  $\overline{RT}$

29. Suppose point  $E$  has a coordinate of  $3$  and  $EG = 5$ . What are the possible coordinates of point  $G$ ?

- © **Visualization** Without using your ruler, sketch a segment with the given length. Use your ruler to see how well your sketch approximates the length provided.

30. 3 cm

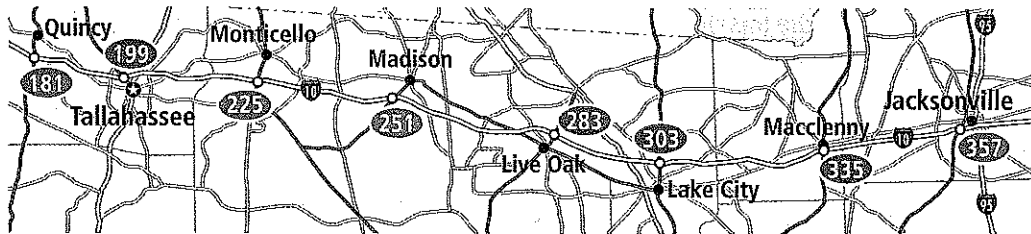
31. 3 in.

32. 6 in.

33. 10 cm

34. 65 mm

- © **35. Think About a Plan** The numbers labeled on the map of Florida are mile markers. Assume that Route 10 between Quincy and Jacksonville is straight.



Suppose you drive at an average speed of 55 mi/h. How long will it take to get from Live Oak to Jacksonville?

- How can you use mile markers to find distances between points?
- How do average speed, distance, and time all relate to each other?

36. On a number line,  $A$  is at  $-2$  and  $B$  is at  $4$ . What is the coordinate of  $C$ , which is  $\frac{2}{3}$  of the way from  $A$  to  $B$ ?

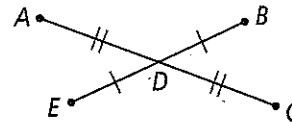
- © **Error Analysis** Use the highway sign for Exercises 37 and 38.

37. A driver reads the highway sign and says, "It's 145 miles from Mitchell to Watertown." What error did the driver make? Explain.

Hudson	9
Mitchell	65
Watertown	80

38. Your friend reads the highway sign and says, "It's 71 miles to Watertown." Is your friend correct? Explain.

**Algebra** Use the diagram at the right for Exercises 39 and 40.



39. If  $AD = 12$  and  $AC = 4y - 36$ , find the value of  $y$ . Then find  $AC$  and  $DC$ .

40. If  $ED = x + 4$  and  $DB = 3x - 8$ , find  $ED$ ,  $DB$ , and  $EB$ .

- © **41. Writing** Suppose you know  $PQ$  and  $QR$ . Can you use the Segment Addition Postulate to find  $PR$ ? Explain.



42.  $C$  is the midpoint of  $\overline{AB}$ ,  $D$  is the midpoint of  $\overline{AC}$ ,  $E$  is the midpoint of  $\overline{AD}$ ,  $F$  is the midpoint of  $\overline{ED}$ ,  $G$  is the midpoint of  $\overline{EF}$ , and  $H$  is the midpoint of  $\overline{DB}$ . If  $DC = 16$ , what is  $GH$ ?

43. a. **Algebra** Use the diagram at the right. What algebraic expression represents  $GK$ ?  
 b. If  $GK = 30$ , what are  $GH$  and  $JK$ ?

