

**Practice**

Form G

## Midpoint and Distance in the Coordinate Plane

Find the coordinate of the midpoint of the segment with the given endpoints.

1. 3 and 5                      2.  $-7$  and  $4$                       3.  $5$  and  $-9$                       4.  $-6$  and  $-10$

Find the coordinates of the midpoint of  $\overline{AB}$ .

5.  $A(6, 7), B(4, 3)$                       6.  $A(-1, 5), B(2, -3)$   
 7.  $A(14, -2), B(7, -8)$                       8.  $A(0, 0), B(-5, 12)$   
 9.  $A(2.8, 1.1), B(-3.4, 5.7)$                       10.  $A(2\frac{1}{2}, -\frac{1}{4}), B(3\frac{1}{4}, -1)$

The coordinates of point  $Y$  are given. The midpoint of  $\overline{XY}$  is  $(3, -5)$ . Find the coordinates of point  $X$ .

11.  $Y(0, 2)$                       12.  $Y(-10, 5)$                       13.  $Y(7, 1)$   
 14.  $Y(4, -8)$                       15.  $Y(-1, -9)$                       16.  $Y(2.5, -6.5)$

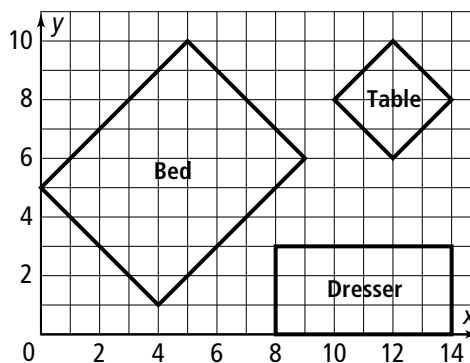
Find the distance between each pair of points. If necessary, round to the nearest tenth.

17.  $A(6, 7), B(-1, 7)$                       18.  $C(5, -5), D(5, 3)$   
 19.  $E(-1, 0), F(12, 0)$                       20.  $Q(2, -6), T(10, 0)$   
 21.  $H(20, -4), I(-4, 3)$                       22.  $J(-5, 5), K(-3, -2)$

The room shown below right is 14 ft by 10 ft. Find the dimensions of each piece of furniture to the nearest tenth.

23. length and width of the dresser  
 24. length and width of the table  
 25. length and width of the bed

26. **Reasoning** The midpoint of  $\overline{AB}$  is on the  $y$ -axis, and  $\overline{AB}$  is parallel to the  $x$ -axis. Point  $A$  is located in Quadrant III. Which quadrant contains point  $B$ ? Explain.

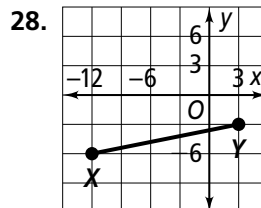
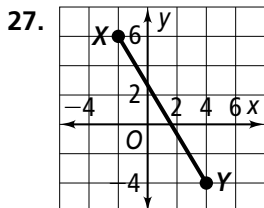


**Practice** (continued)

Form G

Midpoint and Distance in the Coordinate Plane

For each graph, find (a)  $XY$  to the nearest tenth and (b) the coordinates of the midpoint of  $\overline{XY}$ .



29. **Coordinate Geometry** Graph the points  $A(0, 0)$ ,  $B(3, 3)$ ,  $C(9, 3)$ , and  $D(12, 0)$ . Draw trapezoid  $ABCD$  and diagonals  $\overline{AC}$  and  $\overline{BD}$ . Add point  $E(6, 2)$  at the intersection of diagonals  $\overline{AC}$  and  $\overline{BD}$ .

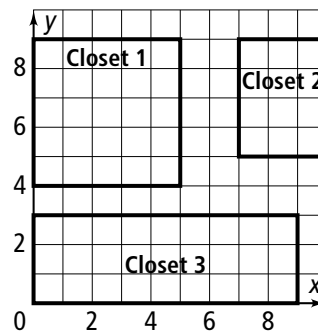
- Find  $BE$  and  $CE$ . What do you notice?
- Find  $AE$  and  $DE$ . What do you notice?
- Make a Conjecture** What appears to be true about the diagonals of a trapezoid?

30. **Open-Ended** Point  $B(-3, -3)$  is the endpoint of many segments.

- Find the coordinates of the midpoint and the other endpoint of four noncollinear segments that have point  $B$  as their endpoint.
- You know that a segment with endpoint  $B$  lies entirely in Quadrant III. What does that tell you about the other endpoint?
- How many possible segments parallel to either the  $y$ -axis or the  $x$ -axis match this description? Explain.

31. The plan at the right shows three storage closets in an apartment building. Find the center of each closet and the length of the closet's diagonal to the nearest tenth of a foot. (*Hint: The diagonals bisect each other, so the center is the midpoint of each diagonal.*)

- closet 1
- closet 2
- closet 3



32. **Writing** In your own words, describe how to find the distance between two points on a coordinate plane.