1-3 Additional Practice

Midpoint and Distance

1. What is the midpoint formula? $M = \left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2} \right)$

For Exercises 2–5, find the midpoint of each segment with the given endpoints.

2. $A(-4, 6)$ and $B(10, -10)$ **(3, −2)**

3. $C(-3, -8)$ and $D(-6.5, -4.5)$ **(−4.75, −6.25)**

4. $E(3, 7)$ and $F(-8, -10)$ **(−2.5, −1.5)**

5. $G(-6, -13)$ and $H(-6.4, -3.8)$ **(−6.2, −8.4)**

For Exercises 6–9, find the coordinates of each point described in relation to line segment *CD*.

6. $\frac{1}{3}$ of the way from C to D **(1, 5)**

7. $\frac{2}{3}$ of the way from D to C **(1, 5)**

8. $\frac{2}{3}$ of the way from C to D **(3, 3)**

9. $\frac{1}{3}$ of the way from D to C **(3, 3)**
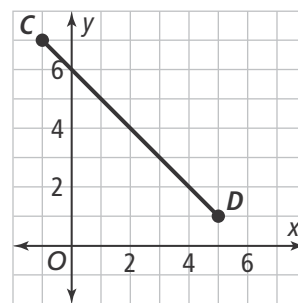
10. What is the distance formula? $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

For Exercises 11–14, find the distance between each pair of points.

11. $A(6, 8)$, $B(-1, 8)$ **7**

12. $C(5, -6)$, $D(5, 6)$ **12**

13. $E(-2, 0)$, $F(11, 0)$ **13**

14. $Q(1, -5)$, $T(9, 1)$ **10**

15. **Understand** If M is the midpoint of $\overline{ST}$, write an equation that describes the relationship between ST and MT. **ST = 2(MT)**

16. **Apply** The axes in the coordinate grid at the right represent the walls of a bedroom. One corner of the room is at the origin. What is the distance from that corner of the room to the corner of the bed that is farthest away? If necessary, round to the nearest tenth of a foot.
11.2 feet