

**GUIDED PRACTICE** for Examples 3 and 4

- Find the midpoint of the line segment with endpoints (4, 3) and (2, 5).
- WHAT IF?** In Example 4, suppose you are at the Smithsonian and your friend is at the National Portrait Gallery. Which landmark on the map is closest to the midpoint of your locations?

11.5 EXERCISES

HOMWORK KEY

= **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 7, 23, and 49

= **TAKS PRACTICE AND REASONING**
Exs. 15, 34, 37, 50, and 53

SKILL PRACTICE

- VOCABULARY** Copy and complete: The point on a line segment that is equidistant from its endpoints is called the ? of the line segment.
- WRITING** You want to know the distance between the points (3, 2) and (6, 8). Does it matter which point represents (x_1, y_1) and which point represents (x_2, y_2) ? *Explain.*

EXAMPLE 1

on p. 744
for Exs. 3–15

FINDING DISTANCE Find the distance between the two points.

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|-----------------------|-------------------------|--|---|
| 3. (4, 8), (4, 7) | 4. (5, -9), (8, -9) | 5. (2, -2), (6, 1) | 6. (5, 1), (0, 3) |
| 7. (-4, 1), (3, -1) | 8. (2, 4), (-5, 0) | 9. (-6, 7), (2, 9) | 10. (-10, 8), (2, -3) |
| 11. (7, 5), (-12, -1) | 12. (4, 2.5), (2.5, -3) | 13. $(5, -\frac{1}{2}), (-3, \frac{5}{2})$ | 14. $(-\frac{3}{4}, \frac{7}{2}), (\frac{5}{4}, \frac{1}{4})$ |

- TAKS REASONING** What is the distance between (4.5, 1) and (-2.5, -5)?

- (A) $\sqrt{13}$ (B) $\sqrt{24}$ (C) $\sqrt{68.5}$ (D) $\sqrt{85}$

EXAMPLE 2

on p. 745
for Exs. 16–21

FINDING MISSING COORDINATES The distance d between two points is given. Find the value of b .

- | | | |
|------------------------------------|--|---|
| 16. (0, b), (3, 1); $d = 5$ | 17. (13, -3), (b , 2); $d = 13$ | 18. (-9, -2), (b , 5); $d = 7$ |
| 19. (b , -6), (-5, 2); $d = 10$ | 20. (-6, 8), (-1, b); $d = \sqrt{29}$ | 21. (b , -4), (4, 7); $d = 11\sqrt{2}$ |

EXAMPLE 3

on p. 746
for Exs. 22–34

FINDING THE MIDPOINT Find the midpoint of the line segment with the given endpoints.

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|-------------------------|-------------------------|-------------------------|
| 22. (0, 1), (8, 3) | 23. (6, -3), (4, -7) | 24. (-5, 0), (1, 14) |
| 25. (11, -4), (-9, -4) | 26. (-6, 6), (4, -4) | 27. (-17, -8), (-5, -4) |
| 28. (2, 7), (5, 3) | 29. (-2, 3), (-2, -3) | 30. (12, -5), (-12, 4) |
| 31. (-15, -8), (-1, -1) | 32. (18, -17), (12, -7) | 33. (-50, -75), (8, 9) |

- TAKS REASONING** What is the midpoint of the line segment with endpoints (2, 1) and (4, 7)?

- (A) (1, 3) (B) (1.5, 5.5) (C) (3, 4) (D) (4, 3)