

9.1 EXERCISES

HOMEWORK KEY

 = **WORKED-OUT SOLUTIONS**
on p. WS1 for Exs. 7, 27, and 53

 = **TAKS PRACTICE AND REASONING**
Exs. 18, 19, 37, 56, 58, and 59

SKILL PRACTICE

- VOCABULARY** State the distance and midpoint formulas.
- WRITING** When finding the midpoint of a line segment joining two points, does it matter which point you choose as (x_1, y_1) ? *Explain.*

EXAMPLES 1 and 3

on pp. 614–615
for Exs. 3–21

USING THE FORMULAS Find the distance between the two points. Then find the midpoint of the line segment joining the two points.

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|----------------------------|------------------------|-------------------------------|
| 3. (0, 0), (8, 15) | 4. (0, 0), (4, 2) | 5. (0, 6), (5, -4) |
| 6. (-7, 0), (5, 3) | 7. (2, -1), (6, -5) | 8. (-1, -2), (8, 4) |
| 9. (-4, 8), (8, -4) | 10. (6, -3), (10, -9) | 11. (-4, 4), (5, -4) |
| 12. (11, -12), (18, 12) | 13. (-5, 1), (15, 8) | 14. (9, 9), (-16, -16) |
| 15. (-3.8, 15), (6.2, -11) | 16. (1.5, 4), (2.3, 9) | 17. (-2.4, -6.7), (3.1, -5.3) |

18.  **TAKS REASONING** What is the distance between $(-4, 3)$ and $(6, 6)$?

- (A) $\sqrt{13}$ (B) $\sqrt{85}$ (C) $\sqrt{109}$ (D) $\sqrt{181}$

19.  **TAKS REASONING** What is the midpoint of the line segment joining $(-3, 7)$ and $(5, -2)$?


- (A) $(1, \frac{5}{2})$ (B) $(-4, \frac{5}{2})$ (C) $(1, \frac{9}{2})$ (D) $(-4, \frac{9}{2})$

ERROR ANALYSIS Describe and correct the error in finding the distance between the two points.


20. (5, -1), (2, 6)

21. (-4, 3), (2, 8)

$$d = \sqrt{(2 - 5)^2 + (6 - 1)^2}$$

$$= \sqrt{9 + 25} = \sqrt{34}$$


$$d = \sqrt{(2 - (-4))^2 - (8 - 3)^2}$$

$$= \sqrt{36 - 25} = \sqrt{11}$$


EXAMPLE 2

on p. 614
for Exs. 22–30

CLASSIFYING TRIANGLES The vertices of a triangle are given. Classify the triangle as *scalene*, *isosceles*, or *equilateral*.

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| 22. (-5, 0), (0, 6), (5, 0) | 23. (0, -3), (0, 3), (3, 0) | 24. (3, 5), (5, -3), (7, -3) |
| 25. (-2, 5), (1, -1), (4, 6) | 26. (1, 4), (4, 1), (7, 4) | 27. (-4, 1), (-2, 6), (0, -1) |
| 28. (-1, -6), (1, 1), (4, -5) | 29. (-4, 3), (2, -1), (8, -1) | 30. (3, 5), (6, 9), (11, 9) |

EXAMPLE 4

on p. 615
for Exs. 31–36

WRITING EQUATIONS Write an equation for the perpendicular bisector of the line segment joining the two points.

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|---------------------|-----------------------|-----------------------|
| 31. (3, 8), (7, 14) | 32. (-5, 6), (1, 8) | 33. (-3, -6), (-1, 2) |
| 34. (1, 4), (6, -6) | 35. (-3, -5), (9, -2) | 36. (5, 10), (10, 7) |

37.  **TAKS REASONING** Find two points not on the lines $x = 4$ or $y = 2$ such that the midpoint of the line segment joining the points is $(4, 2)$.