



**MM1G1a** Determine the distance between two points.

**MM1G1c** Determine the midpoint of a segment.

**Find the distance between the two points.**

- |                     |                      |                       |
|---------------------|----------------------|-----------------------|
| 1. (8, 3), (10, 4)  | 2. (2, 7), (5, 6)    | 3. (9, 6), (4, 1)     |
| 4. (0, 4), (8, -2)  | 5. (-5, 3), (1, 2)   | 6. (1, -6), (-2, 4)   |
| 7. (8, -7), (4, -3) | 8. (-10, -2), (6, 5) | 9. (-1, -8), (-5, -2) |

**The distance  $d$  between two points is given. Find the possible values of  $b$ .**

- |                                     |                                      |  |
|-------------------------------------|--------------------------------------|--|
| 10. $(b, 4), (2, -1); d = 5$        | 11. $(-3, 2), (7, b); d = 10$        | 12. $(3, 2), (b, -9); d = 11$          |
| 13. $(4, 1), (5, b); d = \sqrt{17}$ | 14. $(b, 2), (3, -1); d = \sqrt{58}$ | 15. $(-4, b), (5, -2); d = \sqrt{106}$ |

**Find the midpoint of the line segment with the given endpoints.**

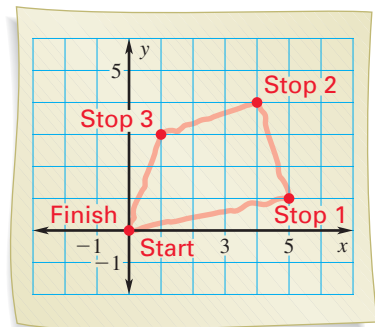
- |                     |                        |                        |
|---------------------|------------------------|------------------------|
| 16. (2, 5), (4, 12) | 17. (-7, 2), (-10, 14) | 18. (-9, -5), (7, -14) |
| 19. (8, -8), (3, 5) | 20. (20, 5), (30, -5)  | 21. (-11, 7), (8, -3)  |

22. **Error Analysis** Describe and correct the error in finding the midpoint of the line segment with endpoints  $(-15, -4)$  and  $(3, 6)$ .

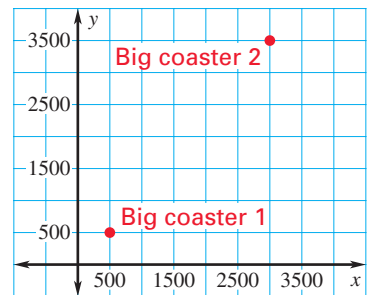
$$\left(\frac{3 - (-15)}{2}, \frac{6 - (-4)}{2}\right) = (9, 5)$$



23. **Walking Trail** A walking trail follows the path shown on the map. The distance between consecutive grid lines is 1 mile. Find the total distance of the trail from start to finish. Round your answer to the nearest mile.



24. **Amusement Park** An amusement park designer wants to place a Ferris wheel midway between the two largest coasters. The distance between consecutive grid lines is 500 feet.
- Determine the coordinates of where the Ferris wheel should be.
  - How far will the Ferris wheel be from each of the coasters? Round your answer to the nearest foot.



25. **Reading** You have 30 days left to read the books on your summer reading list. As of today, you have read 5 books. By the end of the 30 days, you have to have read 12 books. Assume that the books are all approximately the same length and you read at a relatively constant pace. After 15 days, how many books should you have read?



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**Find the distance between the two points.**

- |                          |   |  |
|--------------------------|---|--|
| 1. $(1, -5), (6, 7)$     | 2. $(-3, -3), (8, -2)$                  | 3. $(14, -5), (-3, 8)$                                       |
| 4. $(-11, -4), (9, -2)$  | 5. $(4, -15), (-2, 10)$                 | 6. $(1.5, 6), (1.5, -2)$                                     |
| 7. $(4.1, 6), (5.1, 17)$ | 8. $(\frac{1}{2}, 8), (\frac{3}{2}, 5)$ | 9. $(-\frac{1}{3}, \frac{2}{3}), (\frac{5}{3}, \frac{1}{3})$ |

**The distance  $d$  between two points is given. Find the possible values of  $b$ .**

- |                                       |  |  |
|---------------------------------------|--|--|
| 10. $(7, b), (-1, 3); d = 2\sqrt{17}$ | 11. $(4, -2), (b, 9); d = 5\sqrt{5}$   | 12. $(b, 1), (-2, 8); d = 5\sqrt{2}$     |
| 13. $(9, -5), (b, 6); d = \sqrt{290}$ | 14. $(-8, b), (1, -3); d = 3\sqrt{10}$ | 15. $(10, -10), (b, -2); d = 2\sqrt{65}$ |

**Find the midpoint of the line segment with the given endpoints.**

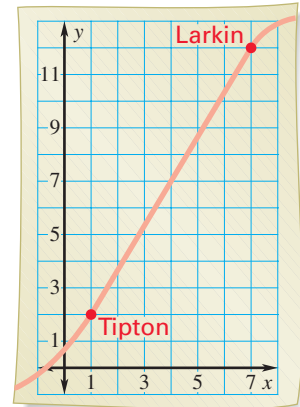
- |                           |                                |                                |
|---------------------------|--------------------------------|--------------------------------|
| 16. $(-14, 3), (10, -4)$  | 17. $(-11, -6), (16, 22)$      | 18. $(105, -214), (97, 45)$    |
| 19. $(3.5, 8), (4, 10.5)$ | 20. $(7.25, -1.5), (2.25, -2)$ | 21. $(-8.4, 3.5), (-2.6, 4.5)$ |

**The midpoint and an endpoint of a line segment are given. Find the other endpoint.**

- |   |   |   |
|---|---|---|
| 22. Midpoint: $(-4, 6)$<br>Endpoint: $(2, 1)$ | 23. Midpoint: $(-3, 3)$<br>Endpoint: $(-4, -2)$ | 24. Midpoint: $(\frac{3}{2}, 1)$<br>Endpoint: $(5, -7)$ |
|---|---|---|

**25. Biking** You are biking a straight-line distance between the two towns shown on the map. The distance between consecutive grid lines is 1 mile.

- How far is your bike ride one way? Round your answer to the nearest mile.
- You stop halfway between the two towns to eat a snack. What are the coordinates of your location?
- On the way back, you stop one-quarter of the way from your destination to visit a friend. How far are you from your destination? Round your answer to the nearest mile. What are the coordinates of your location? *Explain* how you got your answers.



**26. Treasure Hunt** You set up a treasure hunt with the items placed according to the map shown. The distance between consecutive grid lines is 200 feet. What is the distance between each pair of objects? Which two objects are closest together? Which two objects are farthest apart? Round your answers to the nearest foot.

