

CHAPTER 7 EXERCISES

Find the length of the segment between two points.

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

Identify whether each ordered pair of number is a solution of the equation.

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| 7. $x + 2y = 3$, (1, 1) | 8. $x + 2y = 3$, (-1, 2) | 9. $x + 2y = 3$, (3, 1) |
| 10. $2x - y = 5$, (2, 1) | 11. $2x - y = 5$, (2, -1) | 12. $2x - y = 5$, ($\frac{1}{2}$, -4) |
| 13. $2a - 4b = 1$, ($3, \frac{5}{4}$) | 14. $2a - 4b = 1$, ($-2, \frac{5}{3}$) | 15. $y = \frac{2}{3}x - 4$, (3, -2) |

Write each of the linear equations in standard form $ax + by = c$.

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| 16. $2x = y - 5$ | 17. $y = -2x + 5$ | 18. $-y = 2x - 5$ | 19. $-y = -2x + 5$ |
| 20. $4x = 5y + 7$ | 21. $3x - 9 = 8y$ | 22. $6y + 7 = 2x$ | 23. $\frac{2}{3}x = -2y + 1$ |

Solve each linear equation for y in terms of x .

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| 24. $2x + y = 4$ | 25. $-2x + y = 4$ | 26. $2x - y = 4$ | 27. $y - 4 = 2x$ |
| 28. $4x + 2y = 5$ | 29. $4x - 2y = 5$ | 30. $5x - 3y = 6$ | 31. $3x + 5y = 6$ |

Find the value for each function.

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| $f(x) = 2x - 7$ | 32. $f(1)$ | 33. $f(0)$ | 34. $f(-1)$ | 35. $f(2)$ |
| $f(x) = 7 - 2x$ | 36. $f(1)$ | 37. $f(0)$ | 38. $f(2)$ | 39. $f(-\frac{5}{4})$ |
| $p(n) = n^2 - n + 1$ | 40. $p(2)$ | 41. $p(0)$ | 42. $p(5)$ | 43. $p(\frac{1}{2})$ |
| $f: x \rightarrow 5x - 4$ | 44. $f(2)$ | 45. $f(-2)$ | 46. $f(\frac{1}{5})$ | 47. $f(-1\frac{1}{5})$ |

Given the domain of each function, find the range.

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| 48. $f(x) = 3x - 7$, $D = \{0, 1, 2, 3, 4\}$ | 49. $f(x) = 4x - 2$, $D = \{-2, -1, 0, 1, 2\}$ |
| 50. $f(x) = x^2 - 2$, $D = \{-3, -1, 0, 1, 3\}$ | 51. $f(x) = 2x^2 - 2$, $D = \{-2, 0, 1, 2\}$ |
| 52. $f(x) = x - 4$, $D = \{-5, -1, 0, 3\}$ | 53. $f(x) = 4 - x $, $D = \{-5, -1, 0, 3\}$ |

Find the domain and range of each relation (ordered pairs).

Determine whether or not it is a function.

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| 54. $\{(0, -2), (1, -1), (2, 1), (3, 4)\}$ | 55. $\{(-2, 1), (-2, 3), (0, 2), (2, 1)\}$ |
| 56. $\{(-2, -2), (-1, 1), (1, 0), (1, 2)\}$ | 57. $\{(-3, 1), (-1, 3), (2, -3), (3, -2)\}$ |
| 58. $\{(0, 2), (1, 1), (2, 0), (3, -1), (4, -2)\}$ | 59. $\{(1, 2), (2, 3), (8, 9)\}$ |
| 60. $\{(1, 2), (-4, 7), (1, -2)\}$ | |

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Find the x -intercept and y -intercept. Use the x -intercept and y -intercept to graph each equation.

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| 61. $y = x - 3$ | 62. $y = 3 - x$ | 63. $x + y = -3$ | 64. $y = 2x + 2$ |
| 65. $x + 2y = 6$ | 66. $x - 2y = 6$ | 67. $2x - 3y = 12$ | 68. $2x + 3y = 12$ |
| 69. $y = -2$ | 70. $x = 1$ | 71. $y = 2x$ | 72. $y = -2x$ |
| 73. $\frac{2}{3}x - y = 4$ | 74. $\frac{1}{2}x + \frac{1}{3}y = 4$ | 75. $\frac{1}{2}x - \frac{2}{3}y = 4$ | |

Find the slope of each line with its rise and run.

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| 76. rise 5, run 2 | 77. rise 2, run -5 | 78. rise 0, run 9 | 79. rise 9, run 0 |
| 80. rise 6, run $\frac{1}{2}$ | 81. rise $-\frac{2}{3}$, run $\frac{1}{6}$ | 82. rise $1\frac{1}{2}$, run $-\frac{5}{4}$ | 83. rise 2.5, run 0.5 |

Find the slope of each line containing the given two points.

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| 84. (3, 5) and (5, 3) | 85. (-3, 5) and (3, -5) | 86. (-3, -5) and (3, 5) |
| 87. (0, -4) and (0, 5) | 88. (-4, 0) and (5, 0) | 89. (-8, 7) and (-8, -7) |
| 90. (2, $\frac{2}{3}$) and (4, 2) | 91. ($\frac{1}{2}$, 2) and (2, -4) | 92. ($\frac{2}{5}$, $-\frac{3}{5}$) and ($\frac{1}{5}$, $\frac{1}{5}$) |
| 93. (-1.2, -1.5) and (1.3, 3) | 94. (0, 0) and (4.5, 7.2) | 95. ($\frac{1}{2}$, $\frac{1}{2}$) and ($\frac{2}{3}$, $-\frac{1}{3}$) |

Find the slope (m) and y -intercept (b) of each line.

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| 96. $y = -4x + 9$ | 97. $y = 9 + 4x$ | 98. $y = \frac{4}{5}x - 15$ | 99. $y = -\frac{4}{5}x + 15$ |
| 100. $8x + y = 10$ | 101. $8x - y = 10$ | 102. $y = 8x$ | 103. $y = -8$ |
| 104. $3x + 6y = 8$ | 105. $3x - 6y = -8$ | 106. $\frac{1}{2}y - 4x = 7$ | 107. $-5y + 10x = 7$ |

Find the equation in standard form $ax + by = c$ of each line described.

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| 108. slope 5, y -intercept 7 | 109. slope -4 , y -intercept -2 |
| 110. slope $\frac{3}{2}$, y -intercept 12 | 111. slope $-\frac{4}{5}$, y -intercept $-\frac{2}{3}$ |
| 112. slope 7, passes through (2, 3) | 113. slope $-\frac{1}{2}$, passes through (4, -5) |
| 114. slope $\frac{3}{4}$, passes through (-2, -1) | 115. slope 0, passes through (-7, 9) |
| 116. slope undefined, (5, 1) | 117. passes through (2, -3) and (6, 5) |
| 118. passes through (1, 7) and (-6, -7) | 119. passes through ($\frac{2}{3}$, 4) and (1, -5) |
| 120. passes through (3, -1) and ($\frac{1}{3}$, 3) | |

Tell whether or not they are parallel, perpendicular, or neither.

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| 121. $5x - 6y = 4$ | 122. $2x - 4y = 11$ | 123. $2x - 4y = 13$ | 124. $4x - 8y = 21$ |
| $6x + 5y = 7$ | $4x + 8y = 15$ | $4x - 8y = 19$ | $4x + 2y = 25$ |

125. If y varies directly as x , and $y = 48$ when $x = 4$. Find y when $x = \frac{2}{3}$.

126. If n varies directly as m , and $n = 210$ when $m = 21$. Find n when $m = 5\frac{1}{2}$.

127. If (x_1, y_1) and (x_2, y_2) are ordered pairs of the same variation, find y_2 .

$$x_1 = \frac{5}{8}, y_1 = \frac{1}{4}, x_2 = \frac{2}{3}, y_2 = ?$$