

## CHAPTER 2 EXERCISES

**Find the length of the segment between two points.**

- |                          |                        |                        |
|--------------------------|------------------------|------------------------|
| 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.**

- |                                        |                                         |                                        |
|----------------------------------------|-----------------------------------------|----------------------------------------|
| 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  $ax + by = c$ .**

- |                   |                   |                   |                              |
|-------------------|-------------------|-------------------|------------------------------|
| 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  $x$ .**

- |                   |                   |                   |                   |
|-------------------|-------------------|-------------------|-------------------|
| 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.**

- |                           |            |             |                      |                        |
|---------------------------|------------|-------------|----------------------|------------------------|
| $f(x) = 2x - 7$           | 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.**

- |                                                  |                                                 |
|--------------------------------------------------|-------------------------------------------------|
| 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.**

- |                                                    |                                              |
|----------------------------------------------------|----------------------------------------------|
| 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. $\{(1, 2), (-4, 7), (1, -2)\}$                 | -----Continued-----                          |

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

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.**

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.**

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.**

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.**

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.**

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  $y_2$ .

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