

Study Guide and Review - Chapter 2

Choose the correct term to complete each sentence.

1. A function is (discrete, one-to-one) if each element of the domain is paired to exactly one unique element of the range.
2. The (domain, range) of a relation is the set of all first coordinates from the ordered pairs which determine the relation.
3. The (constant, identity) function is a linear function described by $f(x) = x$.
4. If you are given the coordinates of two points on a line, you can use the (slope-intercept, point-slope) form to find the equation of the line that passes through them.
5. A set of bivariate data graphed as ordered pairs in a coordinate plane is called a (scatter plot, line of fit).
6. A function that is written using two or more expressions is called a (linear, piecewise) function.

State the domain and range of each relation. Then determine whether the relation is a function. If it is a function, determine if it is *one-to-one, onto, both, or neither*.

7. $\{(1, 2), (3, 4), (5, 6), (7, 8)\}$
8. $\{(-3, 0), (0, 2), (2, 4), (4, 5), (5, 2)\}$
9. $\{(-4, 1), (3, 3), (1, 1), (-2, 5), (3, -4)\}$
10. $\{(7, -4), (5, -2), (3, 0), (1, 2), (-1, 4)\}$

Find each value if $f(x) = -3x + 2$.

11. $f(4)$

12. $f(-3)$

13. $f(0)$

14. $f(y)$

15. $f(-a)$

16. $f(2w)$

17. **BOWLING** A bowling alley charges \$2.50 for shoe rental and \$3.25 per game bowled. The amount a bowler is charged can be expressed as $y = 2.50 + 3.25x$, where $x \geq 1$, and x is an integer. Find the domain and range. Then determine whether the equation is a function. Is the equation discrete or continuous?

State whether each function is a linear function. Write yes or no. Explain.

18. $3x + 4y = 12$

19. $x^2 + y^2 = 4$

20. $y = x^3 - 6$

21. $y = 6x - 19$

22. $f(x) = -2x + 9$

23. $\frac{1}{x} + 3y = -5$

Write each equation in standard form. Identify *A*, *B*, and *C*.

24. $2x + 5y = 10$

25. $y = 12x$

26. $-4y = 3x - 24$

27. $4x = 8y - 12$

28. **TRAVEL** The distance the Green family traveled during their family vacation is given by the equation $y = 65x$, where x represents the number of hours spent driving. How far does the Green family travel in 8 hours?

29. **RETAIL** The table shows the number of DVDs sold each week at the Super Movie store. Find the average rate of change of the number of DVDs sold from week 2 to week 5.

Week	1	2	3	4	5
DVDs Sold	76	58	94	83	112

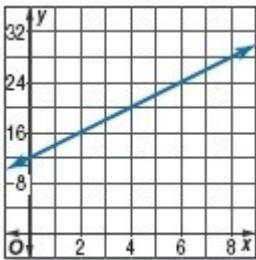
Study Guide and Review - Chapter 2

Find the slope of the line that passes through each pair of points.

30. $(2, 5), (6, -3)$

31. $(8, 2), (2, 8)$

32. Determine the rate of change of the graph.



Write an equation in slope-intercept form for the line that satisfies each set of conditions.

33. slope -2 , passes through $(-3, -5)$

34. slope $\frac{2}{3}$, passes through $(4, -1)$

35. passes through $(-2, 4)$ and $(0, 8)$

36. passes through $(3, 5)$ and $(-1, 5)$

Write an equation of the line passing through each pair of points.

37. $(6, 1), (4, 9)$

38. $(-4, 2), (6, 8)$

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

39. through $(1, 2)$, parallel to $y = 4x - 3$

40. through $(-3, 5)$, perpendicular to $y = \frac{2}{3}x - 8$

41. **PETS** Drew paid a \$250 fee when he adopted a puppy. The average monthly cost of feeding and caring for the puppy is \$32. Write an equation that represents the total cost of adopting and caring for the puppy for x months.

Make a scatter plot and a line of fit and describe the correlation for each set of data. Then, use two ordered pairs to write a prediction equation.

42. **HEATING** The table shows the monthly heating cost for a large home.

Month	Sep	Oct	Nov	Dec	Jan	Feb
Bill (\$)	72	114	164	198	224	185

43. **AMUSEMENT PARK** The table shows the annual attendance in thousands at an amusement park during the last 5 years.

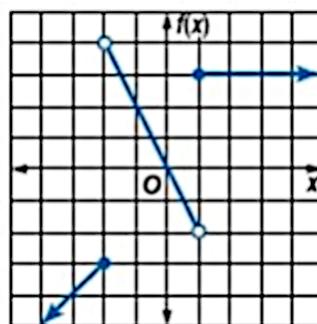
Year	1	2	3	4	5
People ($\times 1000$)	44	42	39	31	24

Graph each function. Identify the domain and range.

44. $f(x) = \begin{cases} -2x & \text{if } x \leq -1 \\ x+1 & \text{if } -1 < x < 3 \\ x & \text{if } x \geq 3 \end{cases}$

45. $f(x) = \begin{cases} -3 & \text{if } x < -1 \\ 4x - 3 & \text{if } -1 \leq x \leq 3 \\ x & \text{if } x > 3 \end{cases}$

46. Write the piecewise function shown in the graph.



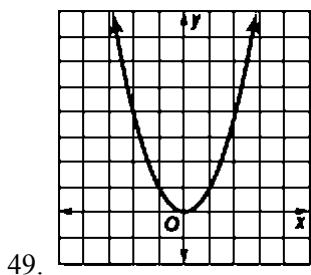
Graph each function. Identify the domain and range.

47. $f(x) = [x] + 2$

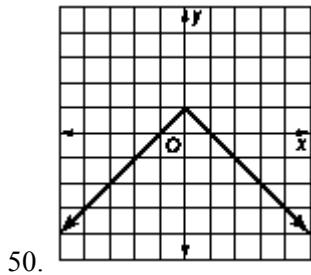
48. $f(x) = [x + 3]$

Study Guide and Review - Chapter 2

Identify the type of function represented by each graph.



49.



50.

51. Describe the translation in $y = x^2 - 3$.

52. Describe the reflection in $y = -x^2$.

53. **CONSTRUCTION** A large arch is being constructed at the entrance of a new city hall building. The shape of the arch resembles the graph of the function $f(x) = -0.025x^2 + 3.64x - 0.038$. Describe the shape of the arch.

Graph each inequality.

54. $x - 3y < 6$

55. $y \geq 2x + 1$

56. $2x + 4y \leq 12$

57. $y < -3x - 5$

58. $y > |2x|$

59. $y \geq |2x - 2|$

60. $y + 3 < |x + 1|$

61. $2y \leq |x - 3|$

62. **BOOKS** Spencer has saved \$96 for a trip to his favorite bookstore. Each paperback book costs \$8 and each hardback book costs \$12. Write and graph an inequality that shows the number of paperback books and hardback books Spencer can purchase.