CHAPTERS 1–13 **End-of-Course Test**
For use after Chapters 1–13

Evaluate the expression.

Answers

1. $35 - [6 + (4^2 \div 2)]$

2. $\dfrac{27 - 13}{4^2 - 9}$

3. $7x^2 - 4x$ when $x = 3$

4. $-\sqrt{x}$ when $x = 121$

5. A golf course charges $45 to play 18 holes of golf. It charges $24.75 to play 9 holes. Find the cost per hole for each game. Which game costs less per hole played?

6. You have 26 CDs and plan to buy 2 more each month. Write a rule for the number of CDs as a function of the number of months from now. Identify the independent and dependent variables, the domain, and the range.

Find the sum, difference, product, or quotient.

7. $-12 + (-13)$ **8.** $27 - (-15)$ **9.** $-17 - 18$

10. $(-0.2)(-0.8)$ **11.** $-15 \div \dfrac{3}{5}$ **12.** $-\dfrac{14}{21} \div \left(-\dfrac{6}{15}\right)$

13. Find the mean of the numbers: $-3, 5, 8, -6, 12, 9, -4$.

Solve the equation.

14. $\dfrac{k}{7} - 9 = 33$

15. $17 = -5x - 6x + 14$

16. $\dfrac{1}{2} = 4(5x - 3)$

17. $2(x + 3) = \dfrac{3}{4}(8x - 12)$

18. An architect is making a scale drawing of a building using a scale of 1 inch : 4 feet. The height of the building on the drawing is 23 inches. What is the height of the actual building?

19. 55% of a zoo's animals are herbivores. How many of the zoo's 360 animals are herbivores?

Identify the slope and *y*-intercept of the line with the given equation.

20. $y = -\dfrac{9}{7}x + 2$

21. $9x + 3y = 6$

Write an equation in slope intercept form of the line that passes through the given point and has the given slope *m*.

22. $(1, 3); m = 4$

23. $(-2, 5); m = -3$

Answers

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
   _____
   _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
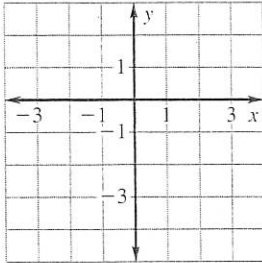18. _____
19. _____
20. _____
   _____
21. _____
   _____
22. _____
23. _____
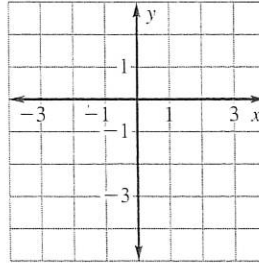
CHAPTERS 1–13 **End-of-Course Test** *continued*
For use after Chapters 1–13

Graph the equation.

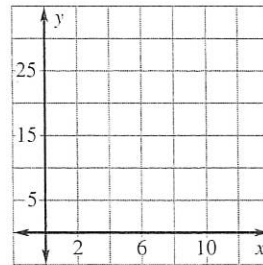**Answers**

24. $y = 3x - 4$

25. $2x - 3y = 1$

24. _____See left._____

25. _____See left._____

26. _____See left._____

26. Make a scatter plot of the data. Draw a line of fit. Then write an equation of the line.

x	0	2	4	6	8
y	8	12	16	20	24

27. _____

_____See left._____

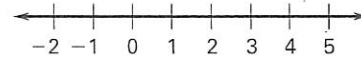**28.** _____

_____See left._____

Solve the inequality, if possible. Graph your solution.

27. $7 - 3x > 16$

28. $4(8x - 1) < 3(9x + 2)$

29. _____

_____See left._____

29. $9 \le 2x + 5 \le 17$

30. $2|x - 1| + 3 > 7$

30. _____
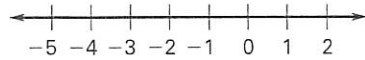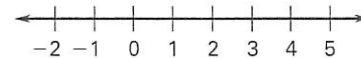
_____See left._____

Graph the inequality.

31. $y > x + 7$

32. $y \le \frac{1}{2}x - 3$

31. _____See left._____

32. _____See left._____

33. _____

34. _____
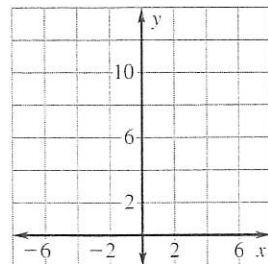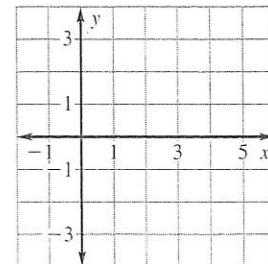
Solve the linear system.

33. $9x - 7y = 31$
$\quad -9x + 3y = -39$

34. $3x + 8y = 2$
$\quad 5x - 4y = 38$

CHAPTERS	**End-of-Course Test** continued
1–13	For use after Chapters 1–13

35. Graph the system of linear inequalities.

$$y < 2x - 3$$

$$y \geq \frac{1}{2}x + 2$$

Answers

35. _____ See left. _____

36. _____

37. _____

38. _____

39. _____

40. _____

41. _____

42. _____

43. _____

44. _____

45. _____

46. _____

47. _____

48. _____

49. _____

50. _____

51. _____

52. _____
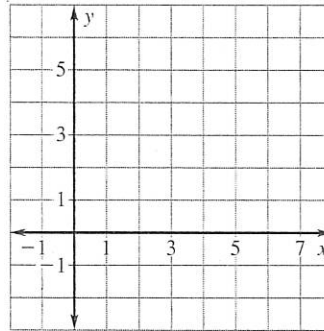
Simplify the expression. Write your answers using only positive exponents.

36. $\dfrac{6^7 \cdot 6^{12}}{6^8}$

37. $\left(\dfrac{y^7}{z^2}\right)^3$

38. $\dfrac{(3mn)^2}{4m^3} \cdot \dfrac{(2m)^3}{n^4}$

39. Write 0.00093 in scientific notation.

In Exercises 40 and 41, use the following information.

Your parents open an account with an initial investment of $6000. The account pays interest at a rate of 4% compounded yearly.

40. Write a function that models the account balance over time.

41. Use the function to find the account balance after 10 years.

Find the sum, difference, or product.

42. $(7a^2 - 3a + 14) + (9a^2 + 11a)$

43. $(b^3 - 2b^2 + 6b - 1) - (3b^3 + 11b)$

44. $(6c - 1)(2c + 7)$

45. $(9d + 7)(9d - 7)$

Factor the polynomial.

46. $2x^2 + 7x - 30$

47. $9y^2 + 66y + 121$

48. A frog jumps straight up off the ground with an initial vertical velocity of 2 feet per second. After how many seconds does the frog land on the ground?

Solve the equation. Round the solutions to the nearest hundredth, if necessary.

49. $12x^2 - 15 = 0$

50. $-t^2 + 2t + 15 = 0$

51. $4x^2 - 11x + 3 = 5x + 4$

52. $9x^2 + 4x + 7 = 3x^2 - 8$

Name _____ Date _____

Simplify the expression.

Answers

53. $\sqrt{36y^5}$ **54.** $\sqrt{14x} \cdot 3\sqrt{7xy}$ **55.** $\dfrac{11}{\sqrt{3}}$

53. _____

54. _____

Solve the equation. Check for extraneous solutions.

55. _____

56. $\sqrt{x} - 11 = 0$ **57.** $\sqrt{2x - 7} = \sqrt{3x - 17}$

56. _____

58. A right triangle has one leg that is 4 times as long as the other leg. The hypotenuse is $3\sqrt{17}$ inches. Find the length of the legs.

_____

Given that y varies inversely with x, use the specified values to write an inverse variation equation that relates x and y. Then find y when x = 18.

57. _____

_____

59. $x = 6, y = 9$ **60.** $x = \dfrac{2}{3}, y = 12$

58. _____

_____

Divide.

59. _____

61. $\left(3x^2 + 25x - 14\right) \div (x + 9)$ **62.** $\left(15x^2 + x + 1\right) \div (3x - 1)$

_____

Solve the equation. Check your solutions.

60. _____

63. $\dfrac{8}{y + 8} = \dfrac{y}{6}$ **64.** $\dfrac{2}{x + 4} + 1 = \dfrac{12}{x^2 + 9x + 20}$

_____

65. There are 13 teams of cheerleaders at a competition. The order of performance is determined at random. What is the probability that your team performs first and your friend's team is second?

61. _____

62. _____

66. There are 24 members on a swim team. How many different combinations of 5 swimmers can be chosen to sit in the front row for a team photo.

63. _____

64. _____

In Exercises 67–69, use the following information. The test scores for an algebra class are: 75, 85, 97, 72, 86, 93, 91, 81, 85, 82, 88.

65. _____

66. _____

67. Find the mean, median, mode(s), and range of the data.

67. _____

68. Make a stem-and-leaf plot of the scores.

68. ____ See left.

69. ____ See left.

69. Make a box-and-whisker plot of the scores.

Chapters 1–13

End-of-Course Test
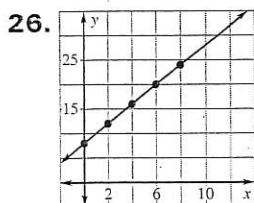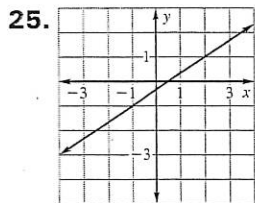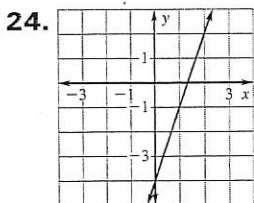
1. 21 **2.** 2 **3.** 51 **4.** -11 **5.** $2.50, $2.75, 18-holes **6.** $y = 2x + 26$; independent variable: x, dependent variable: y, domain: $x \geq 0$, range: $y \geq 26$ **7.** -25 **8.** 42 **9.** -35 **10.** 0.16

11. -25 **12.** $\frac{5}{3}$ **13.** 3 **14.** 294 **15.** $-\frac{3}{11}$

16. $\frac{5}{8}$ **17.** $\frac{15}{4}$ **18.** 92 ft **19.** 198 animals

20. $m = -\frac{9}{7}, b = 2$ **21.** $m = -3, b = 2$

22. $y = 4x - 1$ **23.** $y = -3x - 1$

24. **25.**

26.
$y = 2x + 8$

27. $x < -3$;

28. $x < 2$;

29. $2 \leq x \leq 6$;

30. $x > 3$ or $x < -1$;

31. **32.**

33. $(5, 2)$ **34.** $(6, -2)$

35.
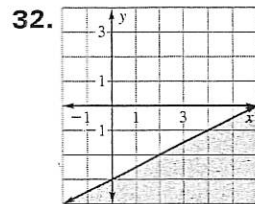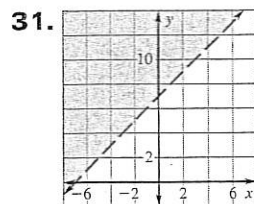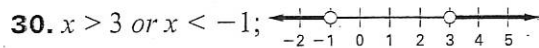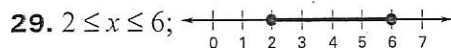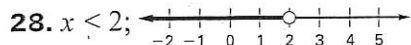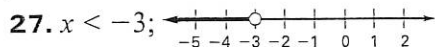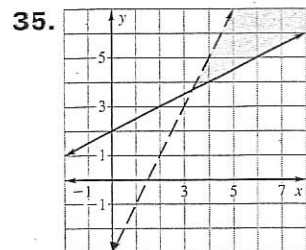
36. 6^{11} **37.** $\frac{y^{21}}{z^6}$ **38.** $\frac{18m^2}{n^2}$ **39.** 9.3×10^{-4}

40. $y = a(1 + r)^t$ **41.** $8881.47

42. $16a^2 + 8a + 14$ **43.** $-2b^3 - 2b^2 - 5b - 1$

44. $12c^2 + 40c - 7$ **45.** $81d^2 - 49$

46. $(x + 6)(2x - 5)$ **47.** $(3y + 11)^2$

48. 0.125 sec **49.** $-1.12, 1.12$ **50.** $-3, 5$

51. $4.06, -0.06$ **52.** no solution **53.** $6y^2\sqrt{y}$

54. $21x\sqrt{2y}$ **55.** $\frac{11\sqrt{3}}{3}$ **56.** 121 **57.** 10

58. 3 in.; 12 in. **59.** $y = \frac{54}{x}$; 3 **60.** $y = \frac{8}{x}; \frac{4}{9}$

61. $3x - 2 + \frac{4}{x + 9}$ **62.** $5x + 2 + \frac{3}{3x - 1}$

63. $-12, 4$ **64.** $-9, -2$ **65.** $\frac{1}{156}$ **66.** 42,504

67. 85; 85; 85; 25

68.
```
7 | 2 5              Key: 7 | 2 = 72
8 | 1 2 5 5 6 8
9 | 1 3 7
```

69.