

CHAPTERS
1-13 **End-of-Course Test**
For use after Chapters 1-13
Evaluate the expression.

1. $35 - [6 + (4^2 \div 2)]$
2. $\frac{27 - 13}{4^2 - 9}$
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. $-15 \div \frac{3}{5}$
12. $-\frac{14}{21} \div \left(-\frac{6}{15}\right)$
13. Find the mean of the numbers: $-3, 5, 8, -6, 12, 9, -4$.

Solve the equation.

14. $\frac{k}{7} - 9 = 33$
15. $17 = -5x - 6x + 14$
16. $\frac{1}{2} = 4(5x - 3)$
17. $2(x + 3) = \frac{3}{4}(8x - 12)$
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. $y = -\frac{9}{7}x + 2$
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

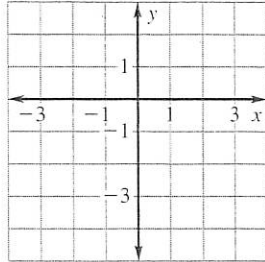
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CHAPTERS
1-13

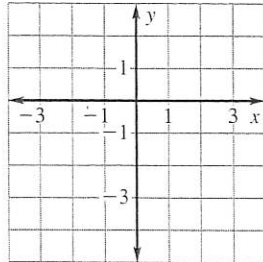
End-of-Course Test *continued*
For use after Chapters 1-13

Graph the equation.

24. $y = 3x - 4$

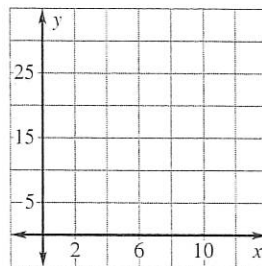


25. $2x - 3y = 1$



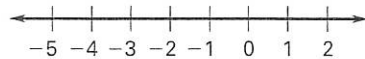
26. Make a scatter plot of the data. Draw a line of fit. Then write an equation of the line.

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

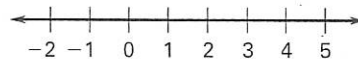


Solve the inequality, if possible. Graph your solution.

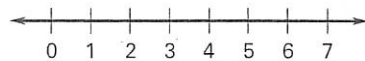
27. $7 - 3x > 16$



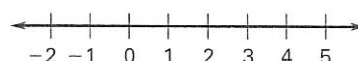
28. $4(8x - 1) < 3(9x + 2)$



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

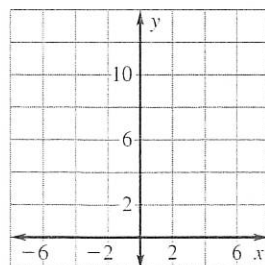


30. $2|x - 1| + 3 > 7$

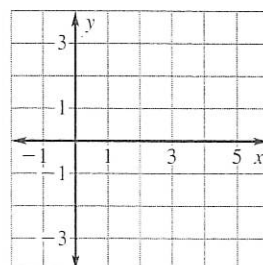


Graph the inequality.

31. $y > x + 7$



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



Solve the linear system.

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

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

Answers

24. See left.

25. See left.

26. See left.

27. _____

See left.

28. _____

See left.

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See left.

30. _____

See left.

31. See left.

32. See left.

33. _____

34. _____

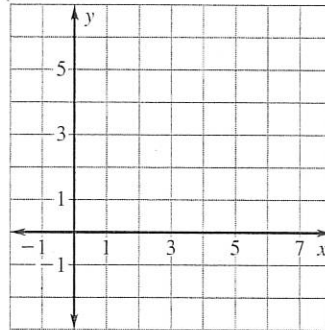
CHAPTERS
1-13

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

35. Graph the system of linear inequalities.

$$y < 2x - 3$$

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



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

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

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

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

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

Answers

35. See left.

36. _____

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CHAPTERS
1–13

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

Simplify the expression.

53. $\sqrt{36y^5}$

54. $\sqrt{14x} \cdot 3\sqrt{7xy}$

55. $\frac{11}{\sqrt{3}}$

Solve the equation. Check for extraneous solutions.

56. $\sqrt{x} - 11 = 0$

57. $\sqrt{2x - 7} = \sqrt{3x - 17}$

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 $x = 18$.

59. $x = 6, y = 9$

60. $x = \frac{2}{3}, y = 12$

Divide.

61. $(3x^2 + 25x - 14) \div (x + 9)$

62. $(15x^2 + x + 1) \div (3x - 1)$

Solve the equation. Check your solutions.

63. $\frac{8}{y+8} = \frac{y}{6}$

64. $\frac{2}{x+4} + 1 = \frac{12}{x^2 + 9x + 20}$

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?
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.

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.

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

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

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

Answers

53. _____

54. _____

55. _____

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69. _____

67. See left.

68. See left.

Chapters 1-13

End-of-Course Test

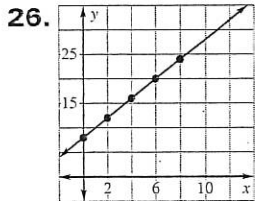
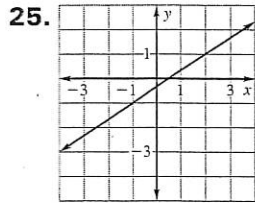
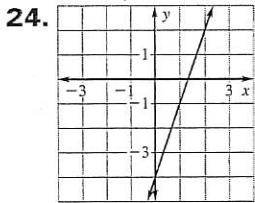
1. 21 2. 2 3. 51 4. -11 5. \$2.50, \$2.75, 18-holes 6. $y = 2x + 26$; independent variable: x , dependent variable: y , domain: $x \geq 0$, range: $y \geq 26$ 7. -25 8. 42 9. -35 10. 0.16

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

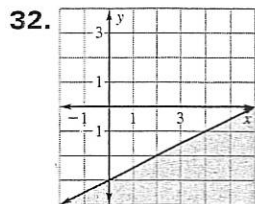
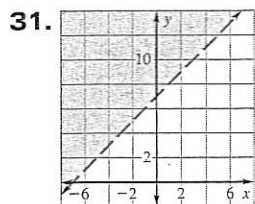
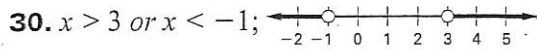
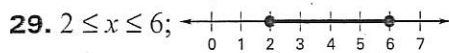
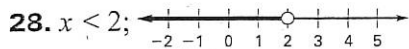
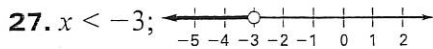
16. $\frac{5}{8}$ 17. $\frac{15}{4}$ 18. 92 ft 19. 198 animals

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

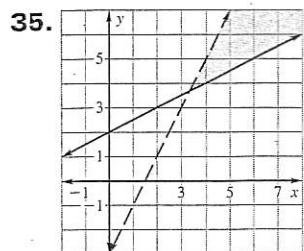
22. $y = 4x - 1$ 23. $y = -3x - 1$



$y = 2x + 8$



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



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. $\begin{array}{r|l} 7 & 2 \ 5 \\ 8 & 1 \ 2 \ 5 \ 5 \ 6 \ 8 \\ 9 & 1 \ 3 \ 7 \end{array}$ Key: $7 \mid 2 = 72$

