

Cumulative Review

For use with Chapters 1–3

Evaluate the expression for the given value(s) of the variable(s).**(1.2)**

1. $(x - y)^2$ when $x = 3$ and $y = -4$

2. $a + b^3$ when $a = 3.4$ and $b = 6$

3. $2(d - 5)^2$ when $d = 8$

4. $10 - (-x)^3 + y^2$ when $x = -1$ and $y = -4$

Check whether the given number is a solution of the inequality.**(1.4)**

5. $c - 7 < 9$; 15

6. $9 + 9x \geq 18$; 1

7. $14 \leq -(2x - 7)$; 20

8. $y^3 - 9 \leq 27$; 3

9. $n(34 - n) < 111$; -3

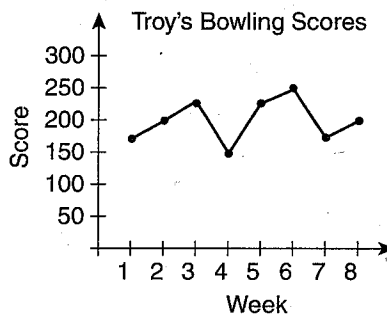
10. $\frac{c + 7}{9} \leq 7$; 100

Write the verbal phrase as an equation or an inequality. Use x for the variable in your expression. (1.5)

- Four is greater than five times a number.
- Twelve less than the product of eight and a number is less than fifty.
- The product of one half and a number is greater than or equal to one hundred.
- Two and five ninths decreased by a number is thirty-one.

Based on the graph, decide whether each statement is true or false. (1.7)

- Troy's bowling score increased each week.
- Troy's score was the same week 3 and week 5.
- Troy's high score was 275.
- Troy's score exceeded his average weeks 3, 5 and 6.

**Write the numbers in increasing order. (2.1)**

19. 3, -6, 0, $\frac{12}{8}$, 2, $-\frac{10}{3}$

20. 8.6, 8.599, 8.023, 8.06, 8.5, -8.9

21. $3\frac{2}{5}$, 3.25, -3, -3.023, -3.6, $-3\frac{6}{7}$

22. 9, $-\frac{4}{17}$, $-\frac{34}{9}$, -8.9, -9.01, -1

Find the sum or the difference. (2.2, 2.3)

23. $7.90 + (-12.01) + 9.14$

24. $\frac{2}{3} + 9 - \frac{1}{24}$

25. $7.23 - (-2.34) - 0.001$

26. $\frac{7}{15} - \frac{1}{120} + \frac{3}{4}$

27. $-10 - (-0.99)$

28. $(3 - 2.56) - (5.7 + 1.1)$

Solve the equation. (3.1)

29. $-8 = 3 - y$

30. $\frac{4}{9} = s - \frac{1}{18}$

31. $r + 6\frac{1}{5} = 10\frac{2}{15}$

32. $y - (-8.3) = 7.7$

33. $11 + x = 11$

34. $5.1 - (-2.1) = -y$

Cumulative Review

For use with Chapters 1–3

Solve the equation. (3.2)

35. $\frac{y}{3} = -17$

36. $0 = \frac{18}{7}t$

37. $42b = 7$

38. $\frac{1}{9}y = 12$

39. $-\frac{6}{7}x = 2\frac{1}{8}$

40. $-5a = -30$

Check whether the given number is a solution of the equation. (3.3)

41. $2x - x - 23 = -2, 7$

42. $\frac{5}{6}x + 2 = -8, 12$

43. $7x - 6(3 - x) = 26, 8$

44. $\frac{x}{3} - 4 = 5, 27$

Solve the equation if possible. (3.4, 3.5)

45. $8 - (-3n) = 3n - 2$

46. $3.8y - 4.7 = 3.8y + 17.5$

47. $9.1(1 - x) + 5x = -4.2(x - 8)$

48. $-2(a + 5) = 27 - 2a$

49. $\frac{5}{6}(24 - 36b) = 10(2b + 4)$

50. $-9(x - 3) = -(2 - 9x)$

Solve (3.6)

51. You are in a restaurant and your bill comes to \$25. You want to leave a 15% tip. What is your total bill?

52. Five people want to share equally in the cost of a birthday present. The present costs \$105.99. How much does each person pay?

Solve the equation. Round your answer to the nearest tenth. (3.6)

53. $3.6x + 0.9 = 8.8 - 1.5x$

54. $-0.389y - 0.974 = 6.789y$

55. $6.43 + 6.58x = 8.68(x - 4)$

56. $0.2n - 0.594 = 3.5n + 9.0$

Solve the equation for y. (3.7)

57. $5x - 2y = 8$

58. $x = 2y + 9$

59. $-2x + 3y = 7$

60. $14x - 7y = 28$

In Exercises 61–64, convert the measure. Round your answer to the nearest tenth. (3.8)

61. 224 days to weeks (1 week = 7 days)

62. 96 inches to centimeters (1 inch = 2.54 centimeters)

63. 1.5 miles to kilometers (1 mile = 1.609 kilometers)

64. \$32.50 Canadian dollars to U.S. dollars
(1 U.S. dollar = 1.1515 Canadian dollars)

Cumulative Review

For use after Chapters 1–6

Check whether the given number is a solution of the inequality. (1.4)

1. $2y - 21 < 0.9$; 8

2. $9 + 9x \geq 18$; 1

3. $14.2 \leq -(2x - 7)$; 20

4. $2k^4 - 100 \leq 89$; 3

5. $2z(56 - z) > 89$; -7

6. $\frac{8c - 9}{6} \leq 20$; 12

Write the numbers in increasing order. (2.1)

7. 8, -15, 10, $\frac{13}{30}$, -2.9, $-\frac{14}{5}$

8. -5.6, -5.05, -5, 5.1, 5.5, -5.5

9. $3\frac{2}{5}$, 3.25, -3, -3.3, -3.6, $-3\frac{6}{7}$

10. 9, $-\frac{1}{4}$, $-\frac{7}{2}$, -8.9, -9.1, -1

Solve the equation. (3.1, 3.2)

11. $y - 96 = 33$

12. $\frac{10}{9} = s - \frac{1}{9}$

13. $r - 156 = -150$

14. $y - (-3) = -7$

15. $2t = -6$

16. $-\frac{2}{5}x = -4$

Solve the equation if possible. (3.4)

17. $16 + 90n = 35n - 50$

18. $-x + 6 = 5 - x$

19. $-b = 2b - 10$

20. $4x - 5x + 8 = x - 2$

Solve for x. (3.5)

21. $3(x + 2) = 9(6 - x)$

22. $5(x + 7) = 4(2 - x)$

23. $7(2x - 4) = -2(6 + x)$

24. $6(4 - x) = 9(6 + x)$

Find the x-intercept and the y-intercept of the line. Graph the equation. Label the points where the line crosses the axes. (4.4)

25. $y = x$

26. $6x - 2y = 24$

27. $y = 3x - 3$

28. $x - 6y = 12$

Write the equation in slope-intercept form. Find the slope and y-intercept. (4.7)

29. $6y = -12x$

30. $2x - 3y = 18$

31. $4x + 3y - 12 = 0$

32. $x - y = 9$

33. $x - 3y = 21$

34. $4y - x = 1$

Cumulative Review

For use after Chapters 1–6

Write an equation of the line that is parallel to the given line and passes through the given point. (5.2)

35. $y = 9x + 6$, (6, 9)

36. $y = x - 1$, (-1, 4)

37. $y = -25x + 9$, (-1, -1)

38. $y = -\frac{11}{2}x - 12$, (2, -1)

Write an equation in slope-intercept form of the line that passes through the given points. (5.3)

39. (3, -2), (-3, 2)

40. (9, -5), (-6, 5)

41. (3, 0), (-3, 5)

42. $(\frac{3}{8}, 1)$, $(-\frac{1}{8}, -1)$

43. (5, 2), (3, 0)

44. (-5.6, 12), (6.4, 0)

Write in standard form an equation of the line that passes through the given point and has the given slope. (5.4)

45. (-9, 0), $m = -9$

46. (-15, -6), $m = 2$

47. (0, 5), $m = -\frac{1}{2}$

48. (2, -3), $m = -\frac{18}{5}$

49. (-3, -3), $m = -6$

50. (-1, 9), $m = 4$

Solve the inequality. (6.1–6.3)

51. $t - 3t < 16$

52. $\frac{6}{5}x + 6 \leq 48$

53. $-68y > 102$

54. $\frac{x}{16} \geq 48$

55. $s + 2 > 2(34 - s)$

56. $-8.3 \leq -(1.8 - m)$

Solve the inequality. Graph the solution. (6.3–6.5)

57. $-7 \leq 6x - 1 \leq 53$

58. $6x + 5 < 8$ or $3x - 9 > 27$

59. $-5x - 7 > 3x + 9$

60. $-3 \leq 6x - 1 < 3$

61. $-5x > 55$ or $8x > 64$

62. $-7x \geq 42$ or $4x \geq 12$

Solve the equation. (6.6)

63. $|x - 3| = 8$

64. $|7x| - 12 = 2$

65. $|2s - 1| = 7$

66. $|y - 6.5| = -2$

Sketch the graph in a coordinate plane. (6.8)

67. $x \geq 6$

68. $y > -5$

69. $x + y \leq 4$

70. $2 \leq 3x - 2y$

Cumulative Review

For use after Chapters 1–9

Simplify the expression. (2.8)

1. $45y \div \frac{5y}{6}$

2. $-\frac{8t}{9} \div \frac{9}{8t}$

3. $-65x^2 \div \frac{13x}{2}$

4. $-6 \cdot \left(\frac{2w}{-6}\right)$

5. $7 \cdot \left(-\frac{y}{14}\right)$

6. $\frac{18t}{24s} \div \frac{9t}{12s}$

Solve. Round to the nearest hundredth. (3.6)

7. $-56y + 57 = 290$

8. $57.1x - 9.2 = -122.3$

9. $2.009s = 3.990 + 3.992s$

10. $4 + 9.6 - 3.89 = 4.12a$

Find the slope and y-intercept of the graph of the equation. (4.7)

11. $y = \frac{2}{15}x - \frac{8}{5}$

12. $2x + 6y = 9$

13. $12 - 54x = 60y$

14. $35 = \frac{11}{2}y - x$

15. $4\frac{1}{3}y = 3\frac{1}{3}x$

16. $9.23y = 45$

Write in standard form an equation of the line that passes through the given point and has the given slope. (5.4)

17. $(3, 5), m = 8$

18. $(4.2, 8), m = -1$

19. $\left(\frac{3}{8}, -1\right), m = -9$

Write in slope-intercept form the equation of the line that is perpendicular to the given line and passes through the given point. (5.6)

20. $y = 2x - 8, (0, 2)$

21. $5x - 9y = 10, (-3, 7)$

22. $7y = 5x - 12, (4, -6)$

23. $8x = \frac{8}{11}y - 22, (1, -1)$

Solve the inequality. Then graph the solution. (6.1)

24. $-9 > n - 12$

25. $x + 34 \geq 36$

26. $\frac{a}{14} - \frac{1}{28} > \frac{1}{56}$

27. $3 \leq 6.5 + y$

28. $\frac{4}{3c} \geq \frac{16}{9}$

29. $12.0 > 13.9 - x$

Choose a method and solve the linear system. (7.1–7.3)

30. $8x + 2y = 16$

31. $4x - 6y = -6$

32. $3a + 3b = 7$

$5x - y = 28$

$10x + 7y = -4$

$3a + 5b = 3$

Simplify the expression. (8.1)

33. $7^3 - 6^3 - 7^2$

34. $-(4x)^2 \cdot (3x^3)^5$

35. $(-2xy)^4(-xy)^2$

36. $-(r^5s^9)(r^4s^5)^2$

37. $(a^4b^6c^7)(ab)^5$

38. $(-2xy^5)(6y^6)^3$

Evaluate the expression. Give the exact value if possible. Otherwise round to the nearest hundredth. (9.1, 9.3)

39. $-\sqrt{121}$

40. $\sqrt{15}$

41. $\sqrt{289}$

42. $\sqrt{\frac{2}{100}}$

43. $\pm\sqrt{\frac{1}{1000}}$

44. $\pm\sqrt{\frac{81}{4}}$

Cumulative Review

For use after Chapters 1–9

Solve the equation. (9.2)

45. $x^2 = 9$

46. $2x^2 - 32 = 0$

47. $5x^2 - 39 = 6$

Simplify the expression. (9.3)

48. $\sqrt{\frac{3}{16}}$

49. $\sqrt{\frac{8}{25}}$

50. $11\sqrt{\frac{36}{4}}$

51. $\sqrt{\frac{46}{81}}$

52. $\frac{1}{6}\sqrt{48} \cdot \sqrt{3}$

53. $-\frac{\sqrt{2}}{\sqrt{5}} \cdot \frac{\sqrt{8}}{\sqrt{9}}$

Decide whether the graph opens up or down and find an equation for the axis of symmetry. (9.4)

54. $y = 5x^2 - 4x$

55. $y + 3 = \frac{1}{9}x^2 - 7x$

56. $y = -14x^2 - \frac{5}{9}x + 2$

Solve the equation algebraically. Check the solution graphically. (9.5)

57. $5x^2 = 30$

58. $\frac{1}{3}x^2 = 48$

59. $4x^2 - 10 = 390$

Use the quadratic formula to solve the equation. (9.6)

60. $x^2 - 2x - 3 = 0$

61. $-\frac{1}{2}x^2 - x + 2 = 0$

62. $5x^2 + 2x - 1 = 0$

63. $3x^2 - 7x + 2 = 0$

64. $-c^2 = 3c - 3$

65. $5z = 12 - 4z^2$

Determine whether the equation has two solutions, one solution, or no solutions. (9.7)

66. $3x^2 - 8x + 4 = 0$

67. $-6y^2 + y - 8 = 0$

68. $x^2 - 12x + 36 = 0$

Sketch the graph of the inequality. (9.8)

69. $y < 2x^2 - x$

70. $y \geq x^2 + x - 5$

71. $y < 2x^2 + 3x - 6$

Cumulative Review

For use with chapter 1–12

Evaluate the expression. (1.3)

- $12 \div (10 - 7)^3 + 4$
- $y \div \frac{1}{2} - y + y^2$ when $y = -2$
- $\frac{r + 19}{2} - \frac{r}{s} + r^2$ when $r = -3, s = -2$
- $xy \div \frac{1}{x} - y^2 + 10$ when $x = -3, y = 8$

Solve the equations. (3.2)

- $\frac{x}{-3} = -12$
- $\frac{2}{3}y = 14$

Decide whether the graphs of the two equations are parallel. (4.7)

- $y = -7x + 15, 7y = x - 15$
- $4x - y = 12, \frac{1}{4}x + y = 9$
- $-x + y = 12, y = x - 20$
- $3x = -4y - 7, y = -\frac{3}{4}x - 3$

Graph the inequality. (6.8)

- $x + 2 \leq 5y$
- $7x + 9y \geq 16$
- $7x > 10y - 70$

You buy a used boat for \$15,000. It depreciates at the rate of 15% per year. Find the value of the boat in the given years. (8.7)

- 2 years
- 9 years
- 15 years

Simplify the expression. (9.3)

- $\sqrt{\frac{5}{12}}$
- $\frac{\sqrt{64}}{\sqrt{8}}$
- $\sqrt{\frac{800}{245}}$

Factor the expression completely. (10.8)

- $-96t^3 - 84t^2 + 12t$
- $3t^6 - 21t^5 - 24t^4$

Simplify the expression. (11.4)

- $\frac{x + 9}{x^2 + 8x - 9} \div \frac{1}{x^3 - x^2}$
- $\frac{x^2}{x^2 - 2x} \cdot \frac{x^4 - 4x^2}{x} \cdot \frac{x^3}{x^2 + 4x + 4}$

Cumulative Review

For use with Chapters 1-12

Find the domain of the function. (12.1)

24. $y = \sqrt{x - 4}$

25. $y = 6\sqrt{x}$

26. $x = \sqrt{8 + x}$

27. $y = \sqrt{9x - 1}$

28. $y = \sqrt{x + \frac{1}{2}}$

29. $y = \frac{\sqrt{1 - x}}{x}$

Simplify the expression. (12.2)

30. $\sqrt{8} + \sqrt{162} + \sqrt{288}$

31. $\sqrt{245} - \sqrt{320} + \sqrt{500}$

32. $(4 - \sqrt{19})(4 + \sqrt{19})$

33. $7\sqrt{6} + (2 - \sqrt{6})$

Solve the equation. Check for extraneous solutions. (12.3)

34. $\sqrt{x} - 34 = 0$

35. $\sqrt{4x + 1} + 3 = 10$

36. $\sqrt{24 - 5x} - x = 0$

37. $x = \sqrt{x + 2}$

Solve the equation by completing the square. (12.5)

38. $x^2 - 4x + 2 = 0$

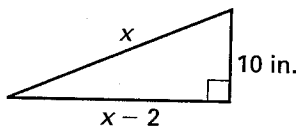
39. $x^2 + 5x = 8$

40. $x^2 = 4x + 7$

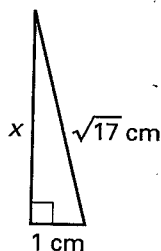
41. $x^2 - 7 = -6x$

Solve for x to find the missing lengths. (12.6)

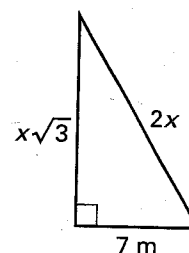
42.



43.



44.



Find the distance between the two points. Round the result to the nearest hundredth if necessary. (12.7)

45. $(3, 9), (1, -2)$

46. $(-1, 8), (-7, 9)$

47. $(2, 9), (-2, -9)$

48. $(3, 6), (2, 0)$

49. $(-1, 2), (3, -6)$

50. $(0, -8), (-2, 8)$