

**Cumulative Review**

For use after Chapters 1–10

Write the verbal phrase as an algebraic expression. Use  $x$  for the variable in your expression. (1.5)

- Ten more than a number
- Product of one third and a number
- Difference of eight and a number
- Five cubed divided by a number

Evaluate the expression for the given value. (2.5)

- $2y^3 - 10$  when  $y = -2$
- $5 - (-b^4)(b)(b^2)$  when  $b = -3$
- $\frac{7}{10}(-w)(10w^2)$  when  $w = 4$
- $|5 - t^3| - |t^3|$  when  $t = 6$

In Exercises 9–11, decide whether the relation is a function. If it is, give the domain and the range. (4.8)

9. Input    Output

1	→	8
2	→	9
3	→	13
4	→	20

10. Input    Output

2	→	2
3	→	2
4	→	2

11. Input    Output

10	→	2
12	→	3
18	→	5
22	→	5

Graph the line that passes through the points. Write its equation in slope-intercept form. (5.3)

- $(3, 8), (9, 0)$
- $(7, 9), (-6, 9)$
- $(-3, -2), (-8, 1)$
- $(1, -2), (5, -8)$
- $(12, 0), (0, 8)$
- $(-6, -3), (-9, 2)$

Make a box-and-whisper plot of the data. (6.7)

- 3, 5, 6, 6, 8, 9
- 1, 1, 2, 3, 5, 10
- 4, 7, 2, 3, 5, 6, 20

Use the substitution method or linear combinations to solve the linear system. (7.5)

- $7 = 5x - y$   
 $x = -4y + 16$
- $6x + y - 8 = 0$   
 $-4x = 9 - 2y$
- $16x - 20y = -400$   
 $2x = 8 - 3y$

Simplify the expression. The expression should have no negative exponents. (8.3)

24.  $\left(\frac{2}{x}\right)^{-2}$

25.  $\left(\frac{y^3}{x^{-5}}\right)^{-9}$

26.  $\left(\frac{6x^3y^{-7}}{9xy}\right)^{-1}$

27.  $\frac{(r^{-3})^5}{(r^{-4})^8}$

28.  $\left(\frac{m^{-3}}{m^7m^{-4}}\right)^{-3}$

29.  $\left(\frac{15x^3}{6x^{-5}}\right)^{-1} \cdot x^{-10}$

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**Use the quadratic formula to solve. (9.5)**

30.  $y^2 - 12y + 1 = 0$

31.  $x^2 - 15x + 5 = 0$

32.  $7x^2 + x + 1 = 0$

33.  $0.2x^2 - 0.3x - 0.5 = 0$

**Tell if the equation has *two solutions*, *one solution*, or *no solution*. (9.6)**

34.  $5x^2 - 9x + 16 = 0$

35.  $x^2 = 2x - 1$

36.  $3x^2 - x - 1 = 0$

**Use a vertical format or a horizontal format to find the sum or difference. (10.1)**

37.  $(8x^4 + 11) + (12x^4 + x - 10)$

38.  $(-2t^3 + 4t^2 - 4) - (4t^3 + 5t^2 + t + 6)$

39.  $(x^4 - \frac{5}{3}x^2) + (x^2 - 2) - (\frac{2}{3}x^2 - 1)$

40.  $(4.8m^4 + 2.3m) - (4.23m^4 + 23.2m)$

**Use the FOIL pattern to find the product. (10.2)**

41.  $(r - 2)(3r + 4)$

42.  $(2y - 7)(3y + 1)$

43.  $(6t - 9)(t + 2)$

44.  $(7 - 3x)(4 - 2x)$

45.  $(q - 4)(2.2q + 0.5)$

46.  $(s - \frac{1}{2})(s + \frac{1}{4})$

**Write the square of a binomial as a trinomial. (10.3)**

47.  $(x + 6)^2$

48.  $(2y - 1)^2$

49.  $(4s + 2)^2$

50.  $(x - 2.3)^2$

51.  $(\frac{1}{4}x - 1)^2$

52.  $(5w - 1.2)^2$

**Solve the equation. (10.4)**

53.  $(3x - 2)(x + 1)(2x - 5) = 0$

54.  $(6b - 3)(4b - 3)(8b - 1) = 0$

55.  $(9x - 4.1)^2(7x - 5.4)$

56.  $(9n - \frac{8}{9})(n - 2)(\frac{1}{6}n + 1)$

**Factor the trinomial. (10.5–10.7)**

57.  $4n^2 + 4n + 1$

58.  $16x^2 - 49$

59.  $2x^2 + 3x - 9$

60.  $6x^2 + 8x + 2$

61.  $3y^2 - 8y - 3$

62.  $\frac{1}{4}x^2 + \frac{1}{2}x - 6$

**Factor the expression completely. (10.8)**

63.  $24x^2 - 30$

64.  $7a^2 - 28$

65.  $18u^2 + 9u$

66.  $-x^4 + 5x^2$

67.  $t^3 - t^2 - 81t + 81$

68.  $c^4 + 2c^3 + c + 2$