

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

**Simplify.**

1)  $[5(x - 4) - 2] + [5(x - 1) + 5]$  1) \_\_\_\_\_

2)  $(-25 - 15)(-11 - 29)$  2) \_\_\_\_\_

3)  $10 + 4^2(23) - (-21)$  3) \_\_\_\_\_

4)  $(-2 - 7)[5 + (8 + 5)]$  4) \_\_\_\_\_

5)  $\frac{3 \cdot (8 + 2) + 3 \cdot 4}{3 \cdot (3 - 1)}$  5) \_\_\_\_\_

6)  $-|-11| - |-12 - 11|$  6) \_\_\_\_\_

7)  $\frac{12 - 4^2}{3^2 + 8^2}$  7) \_\_\_\_\_

8)  $14 + 30 \cdot 5 - (-2)$  8) \_\_\_\_\_

9)  $21(-29) + 29(-4)$  9) \_\_\_\_\_

10)  $(-3 - 2)(-9 - 5)$  10) \_\_\_\_\_

**Classify the following as either a pair of equivalent equations or a pair of equivalent expressions.**

11)  $7(y - 6) = 14, 7y - 42 = 14$  11) \_\_\_\_\_

12)  $5x - 4, 8x - 4 - 3x$  12) \_\_\_\_\_

**Determine whether the two equations in the pair are equivalent.**

13)  $4x - 6 = 22$  and  $10x = 50$  13) \_\_\_\_\_

**Solve the equation.**

14)  $6x = 24$  14) \_\_\_\_\_

15)  $36 = -10x + 6$  15) \_\_\_\_\_

16)  $y + 9.5 = -4.8$  16) \_\_\_\_\_

**Simplify by using the distributive law and combining like terms.**

17)  $9x - 5 - (7 - 3x)$  17) \_\_\_\_\_

18)  $7x - (2x - 6) - (-7x + 1)$  18) \_\_\_\_\_

19)  $4(2t + 5) + 2(5t - 2) + 2t$  19) \_\_\_\_\_

20)  $3x - [6 - 2(3x - 8)]$

20) \_\_\_\_\_

**Solve the equation.**

21)  $10y - 7 = 9 - 4y$

21) \_\_\_\_\_

22)  $6x - 4x = 16$

22) \_\_\_\_\_

23)  $9x - 13 + 2x = 7x + 1 - 5x$

23) \_\_\_\_\_

24)  $\frac{1}{4}a - \frac{1}{4} = -3$

24) \_\_\_\_\_

**Solve.**

25)  $34(x - 136) = 68$

25) \_\_\_\_\_

26)  $5(2x - 1) = 20$

26) \_\_\_\_\_

27)  $3(2z - 2) = 5(z + 5)$

27) \_\_\_\_\_

28)  $3x - (6 - x) = 9[3 - (2 + 7x - 3)]$

28) \_\_\_\_\_

29)  $\frac{1}{3}(r + 6) = \frac{1}{6}(r + 8)$

29) \_\_\_\_\_

**Decide whether the equation is conditional, an identity, or a contradiction. Give the solution set.**

30)  $8m + 10 = 2(2m - 5)$

30) \_\_\_\_\_

31)  $5(2f - 31) = 10f - 155$

31) \_\_\_\_\_

32)  $2(x - 5) + (2x) = 4(x - 7) - 2$

32) \_\_\_\_\_

33)  $12(x + 3) = 2(6x + 1) + 34$

33) \_\_\_\_\_

**Solve the problem.**

34) An employee earned \$17,027 this year. This was a raise of 10% over last year. What was his salary last year? Round to the nearest dollar, if necessary.

34) \_\_\_\_\_

35) A high school graduating class is made up of 407 students. There are 131 more girls than boys. How many boys are in the class?

35) \_\_\_\_\_

36) The price that Tia paid for her textbook, \$93, is less than what Kalli paid by \$14. How much did Kalli pay for her textbook?

36) \_\_\_\_\_

37) If the first and third of three consecutive odd integers are added, the result is 69 less than five times the second integer. Find the third integer.

37) \_\_\_\_\_

38) A rectangle's length is twice its width and its perimeter is 108 m. Find the dimensions.

38) \_\_\_\_\_

39) If Gloria received a 9 percent raise and is now making \$21,800 a year, what was her salary before the raise? 39) \_\_\_\_\_

**Solve.**

40)  $A = bh$ , for  $h$  40) \_\_\_\_\_

41)  $I = Prt$ , for  $r$  41) \_\_\_\_\_

42)  $w = \frac{y - x}{z}$ , for  $x$  42) \_\_\_\_\_

43)  $M = \frac{e + h + y}{5}$ , for  $h$  43) \_\_\_\_\_

44)  $A = \frac{1}{2}bh$ , for  $b$  44) \_\_\_\_\_

45)  $S = 2\pi rh + 2\pi r^2$ , for  $h$  45) \_\_\_\_\_

46)  $V = \frac{1}{3}Bh$ , for  $B$  46) \_\_\_\_\_

**Solve the problem.**

47) A garden is being constructed in the shape of a trapezoid. Given that the height of the trapezoid is 14 m, the length of one of the bases is 17 m, and the area of the garden is  $280 \text{ m}^2$ , what is the length of the unknown base? 47) \_\_\_\_\_

**State whether the equation is an example of the product rule, the quotient rule, the power rule, raising a product to a power, or raising a quotient to a power.**

48)  $(y^4)^3 = y^{12}$  48) \_\_\_\_\_

49)  $r^3 \cdot r^8 = r^{11}$  49) \_\_\_\_\_

**Multiply and simplify. Leave your answer in exponential notation.**

50)  $(7n^5) \cdot (8n^7)$  50) \_\_\_\_\_

51)  $(x^7y^6)(x^3y^4z^0)$  51) \_\_\_\_\_

**Divide and simplify.**

52)  $\frac{48x^8y^7}{8x^2y}$  52) \_\_\_\_\_

**Evaluate.**

53) Evaluate  $-7x^0$  for  $x = -2$ . 53) \_\_\_\_\_

Write an equivalent expression without a negative exponent.

54)  $x^2y^{-4}$

54) \_\_\_\_\_

55)  $\frac{1}{3^{-7}}$

55) \_\_\_\_\_

Simplify using only positive exponents. Leave the answer in exponential notation.

56)  $x^{-8} \cdot x^2 \cdot x^{-6}$

56) \_\_\_\_\_

57)  $\frac{2^{-4}}{2^{-2}}$

57) \_\_\_\_\_

Simplify. Write the answer using only positive exponents. Leave the answer in exponential notation.

58)  $(x^3y)^3$

58) \_\_\_\_\_

59)  $(-2x^{-6}y)^{-3}$

59) \_\_\_\_\_

Simplify. Write the answer using positive exponents only. Leave the answer in exponential notation.

60)  $(4x^{-5})^4(x^2)^{-4}$

60) \_\_\_\_\_

61)  $\left(\frac{2x^3y^{-3}}{x^{-3}y^4}\right)^{-5}$

61) \_\_\_\_\_

62)  $(r^4s)^2(r^2s^2)^5$

62) \_\_\_\_\_

Express the number in scientific notation.

63) 0.000101

63) \_\_\_\_\_

64) 0.00000080807

64) \_\_\_\_\_

65) 85,000,000,000

65) \_\_\_\_\_

66) 7,707,000,000

66) \_\_\_\_\_

Express the number in decimal notation.

67)  $4.70 \times 10^7$

67) \_\_\_\_\_

68)  $2.8818 \times 10^5$

68) \_\_\_\_\_

69)  $4.57 \times 10^{-4}$

69) \_\_\_\_\_

70)  $2.676 \times 10^{-6}$

70) \_\_\_\_\_

**Simplify and write the answer using scientific notation. Use the correct number of significant digits.**

71)  $(4.3 \times 10^4)(2.2 \times 10^5)$  71) \_\_\_\_\_

72)  $(3.46 \times 10^{-3})(4.8 \times 10^{-4})$  72) \_\_\_\_\_

73)  $\frac{20 \times 10^9}{4 \times 10^{-5}}$  73) \_\_\_\_\_

**Solve the problem. Use the correct number of significant digits.**

74) The national debt of a country is \$33,360,000,000 and the population is 4,170,000. What is the amount of debt per person? 74) \_\_\_\_\_

75) Assume that the volume of the earth is  $4.2 \times 10^{14}$  cubic meters and the volume of a bacterium is  $4.0 \times 10^{-16}$  cubic meters. If the earth could be filled with bacteria, how many would it contain? 75) \_\_\_\_\_

76) If the speed of light is  $3.00 \times 10^8$  m/sec, how long does it take light to travel  $2.29 \times 10^{11}$  m, the distance from the sun to Mars? 76) \_\_\_\_\_

**Simplify and write the answer using scientific notation. Use the correct number of significant digits.**

77)  $\frac{7.13 \times 10^{-5}}{3.1 \times 10^{-7}}$  77) \_\_\_\_\_

# Answer Key

Testname: CH 1S

1)  $10x - 22$

2) 1600

3) 399

4) -162

5) 7

6) -34

7)  $-\frac{4}{73}$

8) 166

9) -725

10) 70

11) Equivalent equations

12) Equivalent expressions

13) Not equivalent

14) 4

15) -3

16) -14.3

17)  $12x - 12$

18)  $12x + 5$

19)  $20t + 16$

20)  $9x - 22$

21)  $\frac{8}{7}$

22) 8

23)  $\frac{14}{9}$

24) -11

25) 138

26)  $\frac{5}{2}$

27) 31

28)  $\frac{42}{67}$

29) -4

30) Conditional;  $\{-5\}$

31) Identity;  $\{\text{all real numbers}\}$

32) Contradiction;  $\emptyset$

33) Identity;  $\{\text{all real numbers}\}$

34) \$15,479

35) 138 boys

36) \$107

37) 25

38) 36 m by 18 m

39) \$20,000

40)  $h = \frac{A}{b}$

41)  $r = \frac{I}{Pt}$

42)  $x = y - wz$

43)  $h = 5M - e - y$

44)  $b = \frac{2A}{h}$

45)  $h = \frac{S - 2\pi r^2}{2\pi r}$

46)  $B = \frac{3V}{h}$

47) 23 m

48) The power rule

49) The product rule

50)  $56n^{12}$

51)  $x^{10}y^{10}$

52)  $6x^6y^6$

53) -7

54)  $\frac{x^2}{y^4}$

55)  $3^7$

56)  $\frac{1}{x^{12}}$

57)  $\frac{1}{2^2}$

58)  $x^9y^3$

59)  $-\frac{x^{18}}{8y^3}$

60)  $\frac{4^4}{x^{28}}$

61)  $\frac{y^{35}}{32x^{30}}$

62)  $r^{18}s^{12}$

63)  $1.01 \times 10^{-4}$

64)  $8.0807 \times 10^{-7}$

65)  $8.5 \times 10^{10}$

66)  $7.707 \times 10^9$

67) 47,000,000

68) 288,180

69) 0.000457

70) 0.000002676

71)  $9.5 \times 10^9$

72)  $1.7 \times 10^{-6}$

73)  $5 \times 10^{14}$

74) \$8000

75)  $1.1 \times 10^{30}$  bacteria

76)  $7.63 \times 10^2$  sec

77)  $2.3 \times 10^2$