Name: _____ **Class:** _____ **Date:** _____ **ID: A**

A1-Chapter 1 Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

Write an algebraic expression for the phrase.

____ 1. the sum of b and 11

a. $b - 11$ b. $\frac{b}{11}$ c. $b + 11$ d. $11b$

____ 2. the product of g and 4

a. $4g$ b. $g + 4$ c. $\frac{g}{4}$ d. $g - 4$

____ 3. 4 times the sum of q and p

a. $4q + p$ b. $4 + q + p$ c. $4qp$ d. $4(q + p)$

____ 4. -2 times the quantity q minus 3

a. $-2q - 3$ b. $q(-2 - 3)$ c. $\frac{-2}{q-3}$ d. $-2(q - 3)$

Define a variable and write an expression for the phrase.

____ 5. the quotient of 6 times a number and 16

a. $\frac{16x}{6}$ b. $\frac{6x}{16}$ c. $96x$ d. $\frac{x}{96}$

____ 6. 4 minus a number

a. $4 - n$ b. $4n$ c. $\frac{4}{n}$ d. $\frac{n}{4}$

____ 7. The total cost to rent a row boat is \$18 times the number of hours the boat is used. Write an equation to model this situation if c = total cost and h = number of hours.

a. $c = 18h$ b. $c - 18 = h$ c. $h = 18c$ d. $c = \frac{h}{18}$

____ 8. What equation models the data in the table if d = number of days and c = cost?

Days	Cost
2	44
3	66
5	110
6	132

a. $d = 22c$ b. $c = 22d$ c. $c = d + 22d$ d. $c = d + 22$

____ 9. An equilateral triangle has three sides of equal length. What is the equation for the perimeter of an equilateral triangle if P = perimeter and s = length of a side?

a. $s = 3P$ b. $P = 3s$ c. $P = 3 + s$ d. $P = 3(s + s + s)$

____ 10. Evaluate $u + xy$, for $u = 18$, $x = 10$, and $y = 8$.

a. 188 b. 36 c. 98 d. 224

____ 11. A pair of shoes costs $52.99 and the state sales tax is 8%. Use the formula $C = p + rp$ to find the total cost of the shoes, where C is the total cost, p is the price, and r is the sales tax rate.
a. $95.38 b. $60.99 c. $57.23 d. $78.19

____ 12. When simplifying an expression, you ____ perform operations inside grouping symbols first.
a. always b. sometimes c. never

____ 13. Evaluate the expression $(ab)^2$ for $a = 4$ and $b = 3$.
a. 36 b. 24 c. 81 d. 144

____ 14. You can use the formula $C = \frac{5}{9}(F - 32)$ to convert temperature in degrees Fahrenheit, F, to temperature in degrees Celsius, C. What is 62°F in degrees Celsius? Round your answer to the nearest tenth.
a. 30°C b. 16.7°C c. 52.2°C d. 2.4°C

Simplify the expression.

____ 15. $3\left[(15 - 3)^2 \div 4\right]$
a. 108 b. 36 c. 18 d. 9

____ 16. $4(20 + 12) \div (4 - 3)$
a. 29 b. 80 c. 128 d. 92

____ 17. $3^3 \cdot 32 + 12 \div 4$
a. 297 b. 868 c. 437 d. 867

____ 18. $13\left[6^2 \div \left(5^2 - 4^2\right) + 9\right]$
a. 585 b. 169 c. 26 d. 181

____ 19. $-9 + 6$
a. 15 b. –3 c. –15 d. 3

____ 20. $-4.8 - (-4.9) + 5.7$
a. –4 b. –5.8 c. 5.8 d. –15.4

____ 21. $-\frac{1}{8} - \frac{2}{7}$
a. $\frac{1}{5}$ b. $-\frac{23}{56}$ c. $\frac{23}{56}$ d. $-\frac{1}{8}$

____ 22. $|18 - 6|$
a. 13 b. –13 c. 12 d. –12

____ 23. $3.7 - 1.8 - 3.67 + 4.4 - 1.34$
a. –7.51 b. –1.29 c. 1.29 d. 8.63

____ 24. $-6.5(-4.9)$
a. –16.25 b. –31.85 c. –12.25 d. 31.85

____ 25. $(-2)^5$
a. –32 b. 16 c. –10 d. 32

____ 26. -5^4
a. 20 b. 125 c. –625 d. 625

____ 27. $\dfrac{(-9)(-8)}{(-2)}$

a. 36 b. –72 c. 72 d. –36

____ 28. $\dfrac{1}{2}(-12m + 38)$

a. $-6m + 38$
b. $-24m + 19$
c. $-6m + 76$
d. $-6m + 19$

____ 29. $(-5 - c)(-1)$

a. $-5 + c$ b. $5 + c$ c. $5 - c$ d. $-5 - c$

____ 30. $1.7m^2 + 6.5n - 4n + 2.5m^2 - n$

a. $4.2m^2 + 1.5n$
b. $4.2m^2 - 1.5n$
c. $1.5m^2 - 4.2n$
d. $1.5m^2 + 4.2n$

____ 31. $\dfrac{1}{3}n\left(-6 + 27m - 51p\right)$

a. $-18n + 81mn - 153np$
b. $-2n + 9m - 17p$
c. $-2n + 9mn - 17np$
d. $-2n - 9mn + 17np$

____ 32. Evaluate the formula $V = \dfrac{Bh}{3}$ for $B = 9$ in.^{2} and $h = 32$ in.

a. 288 in.^{3} b. 9.6 in.^{3} c. 32 in.^{3} d. 96 in.^{3}

____ 33. A rational number is ____ a real number.

a. always b. sometimes c. never

____ 34. Write the number 2.4 in the form $\dfrac{a}{b}$, using integers, to show that it is a rational number.

a. $\dfrac{4}{10}$ b. $\dfrac{24}{100}$ c. $\dfrac{24}{10}$ d. $\dfrac{4}{11}$

____ 35. Name the set(s) of numbers to which 1.68 belongs.

a. rational numbers
b. natural numbers, whole numbers, integers, rational numbers
c. rational numbers, irrational numbers
d. none of the above

____ 36. Name the set(s) of numbers to which –5 belongs.

a. whole numbers, natural numbers, integers
b. rational numbers
c. whole numbers, integers, rational numbers
d. integers, rational numbers

____ 37. Which set of numbers is the most reasonable to describe the number of desks in a classroom?

a. whole numbers
b. irrational numbers
c. rational numbers
d. integers

____ 38. Order the numbers from least to greatest.

$3\frac{39}{40}, 3\frac{19}{20}, 3\frac{1}{2}$

a. $3\frac{39}{40}, 3\frac{1}{2}, 3\frac{19}{20}$

b. $3\frac{1}{2}, 3\frac{19}{20}, 3\frac{39}{40}$

c. $3\frac{19}{20}, 3\frac{39}{40}, 3\frac{1}{2}$

d. $3\frac{1}{2}, 3\frac{39}{40}, 3\frac{19}{20}$

____ 39. The opposite of a negative number is ____ negative.

a. always b. sometimes c. never

____ 40. Write $-\frac{1}{6}, \frac{5}{3}, -\frac{5}{6}$ in order from least to greatest.

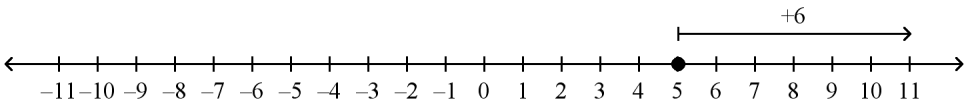
a. $-\frac{1}{6}, -\frac{5}{6}, \frac{5}{3}$ b. $-\frac{1}{6}, \frac{5}{3}, -\frac{5}{6}$ c. $\frac{5}{3}, -\frac{5}{6}, -\frac{1}{6}$ d. $-\frac{5}{6}, -\frac{1}{6}, \frac{5}{3}$

____ 41. $|-2.8|$

a. 2.8 b. –2.8

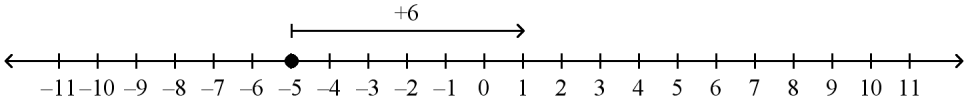
____ 42. Which number line model can you use to simplify $-5 + 6$?

a.



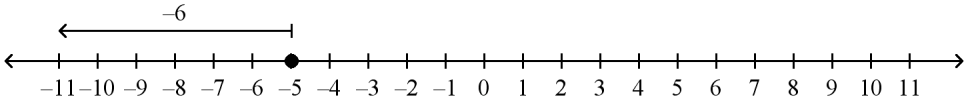
$-5 + 6 = 11$

b.



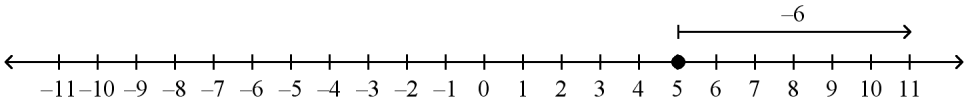
$-5 + 6 = 1$

c.



$-5 + 6 = -11$

d.



$-5 + 6 = 11$

____ 43. A mountain climber ascends a mountain to its peak. The peak is 12,740 ft above sea level. The climber then descends 200 ft to meet a fellow climber. Find the climber's elevation above sea level after meeting the other climber.

a. 12,540 ft b. –12,540 ft c. 10,740 ft d. 12,940 ft

____ 44. Evaluate $-x + 2.7$ for $x = 0.9$.

a. –1.8 b. –3.6 c. 1.8 d. 3.6

____ 45. The temperature on a summer afternoon is 85°F. Define a variable and write an expression to find the temperature after it changes. Then evaluate your expression for a decrease of 11 degrees Fahrenheit.

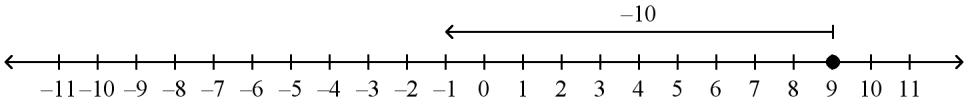
a. $11 + c$; $11 + (-85) = 96$ c. $11 - c$; $11 - (-85) = 74$

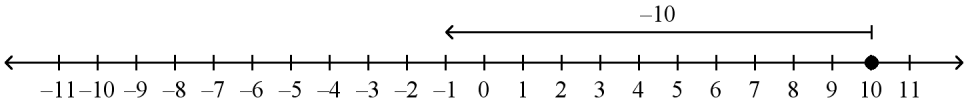
b. $85 + c$; $85 + (-11) = 74$ d. $85 - c$; $85 - (-11) = 96$

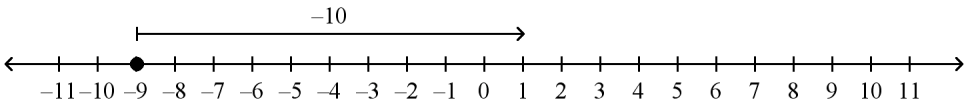
____ 46. Evaluate $\left|-x - 2y\right|$ for $x = -2$ and $y = 3$.

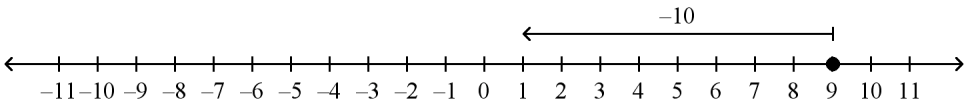
a. 4 b. 8 c. –4 d. –8

____ 47. Simplify 9 – 10 using a number line.

a.


b.


c.


d.


____ 48. Evaluate $b - 2a - c$ for $a = -7$, $b = 3$, and $c = -7$.
a. 24 b. 3 c. 10 d. –18

____ 49. The closing price of a share of stock in Company XYZ is $25.69 on Thursday. If the change from the closing price on Wednesday is –$0.75, find the closing price on Wednesday.
a. $26.44 b. $24.94 c. $25.75 d. $25.06

____ 50. You made two deposits to your bank account this month. One deposit was $17.92, and the second deposit was $15.33. Your balance at the end of the month is $72.31, and you made no withdrawals. Write and evaluate an expression for your balance at the beginning of the month.
a. $72.31 + ($17.92 – $15.33); $74.90
b. $72.31 – $17.92 – $15.33; $39.06
c. $72.31 + $17.92 + $15.33; $105.56
d. $72.31 – ($17.92 – $15.33); $69.72

____ 51. Evaluate $x(-y + z)$ for $x = 3$, $y = 3$, and $z = 1$.
a. –6 b. 10 c. 12 d. –8

____ 52. The expression $-5.5\left(\frac{a}{1000}\right)$ can be used to calculate the change in temperature in degrees Fahrenheit for an increase in altitude a, measured in feet. A plane starts on the ground and then rises 23,000 ft. Find the change in temperature at the altitude of the plane.
a. 126.5 degrees
b. –126.5 degrees
c. –125 degrees
d. 125 degrees

____ 53. The product of two negative numbers is ____ positive.
a. always b. sometimes c. never

____ 54. $-12 \div (-2)$
a. 24 b. –6 c. –24 d. 6

____ 55. Evaluate $7m + 2n - \frac{8p}{n}$ for $m = -4$, $n = 2$, and $p = 1.5$.
a. –10 b. –19 c. –30 d. –22

____ 56. If a is a negative number, then $a\left(\frac{1}{a}\right)$ is ____ equal to –1.
a. always b. sometimes c. never

____ 57. Evaluate $\frac{a}{b}$ for $a = -6$ and $b = -2$.

a. 12 b. 3 c. $\frac{4}{3}$ d. -12

____ 58. Simplify 7(499) using the Distributive Property.

a. 3500 b. 3493 c. 3514 d. 3486

____ 59. Use the Distributive Property to find the price of 7 CDs that cost $14.99 each.

a. $105.00 b. $98.00 c. $104.93 d. $105.70

____ 60. For every real number x, y, and z, the statement $(x - y)z = xz - yz$ is ____ true.

a. always b. sometimes c. never

____ 61. $-10z - 28z$

a. $38z$ b. $-38z$ c. 18 d. $18z$

Name the property the equation illustrates.

____ 62. $-2.1 \times 1 = -2.1$

a. Inverse Property of Multiplication
b. Multiplication Property of –1
c. Identity Property of Addition
d. Identity Property of Multiplication

____ 63. $0 + x = x$

a. Identity Property of Addition
b. Multiplication Property of 0
c. Commutative Property of Addition
d. Inverse Property of Multiplication

____ 64. $8 \times \frac{1}{8} = 1$

a. Identity Property of Division
b. Inverse Property of Addition
c. Inverse Property of Multiplication
d. Multiplication Property of –1

____ 65. $8.2 + (-8.2) = 0$

a. Inverse Property of Addition
b. Addition Property of 0
c. Identity Property of Addition
d. Inverse Property of Multiplication

____ 66. $8 + 3.4 = 3.4 + 8$

a. Inverse Property of Addition
b. Associative Property of Addition
c. Commutative Property of Addition
d. Inverse Property of Multiplication

____ 67. $7 + (4 + 4) = (7 + 4) + 4$

a. Inverse Property of Addition
b. Associative Property of Addition
c. Commutative Property of Multiplication
d. Commutative Property of Addition

____ 68. $2\left(-\frac{3}{9}\right) = \left(-\frac{3}{9}\right)2$

a. Associative Property of Addition
b. Commutative Property of Multiplication
c. Inverse Property of Multiplication
d. Commutative Property of Addition

____ 69. $(ab)3 = a(b3)$

a. Inverse Property of Multiplication
b. Associative Property of Addition
c. Associative Property of Multiplication
d. Commutative Property of Multiplication

____ 70. At the grocery store, you buy a carton of milk for $1.95, a loaf of bread for $0.85, and a bag of cookies for $2.05. Use mental math to find the total cost of the groceries.

a. $5.15 b. $4.90 c. $5.00 d. $4.85

Short Answer

71. **a.** Write an equation to show how the amount of money in a jar of nickels is related to the number of nickels in the jar.
b. If the jar contains 40 nickels, how much money is this?

Essay

72. **a.** Simplify the following expressions.
$(-1)^1, (-1)^2, (-1)^3, (-1)^4, (-1)^5$
b. What is the sign of the final answer when the exponent is odd? When the exponent is even?
c. Use your answer from part (b) to simplify $(-1)^{19}$.

73. Justify each step.

a. $7 + 2(x - 3) + 5x = 7 + 2x - 6 + 5x$
b. $= 7 + 2x + (-6) + 5x$
c. $= 7 + (-6) + 2x + 5x$
d. $= 7 + (-6) + (2 + 5)x$
e. $= 7 + (-6) + 7x$
f. $= 1 + 7x$
g. $= 7x + 1$

74. Simplify the expression. Justify each step.
$13x - 4 + 9x$

Other

75. Is the statement below *true* or *false*? If the statement is false, give a counterexample.
All real numbers are rational.

76. Is the following statement *true* or *false* for all values of a and b? If false, give a counterexample.
$|a + b| > |b|$

A1-Chapter 1 Review
Answer Section

MULTIPLE CHOICE

1. ANS: C PTS: 1 DIF: L2 REF: 1-1 Using Variables
   OBJ: 1-1.1 Modeling Relationships With Variables STA: CA A1 1.1
   TOP: 1-1 Example 1 KEY: algebraic expression | modeling relationships
2. ANS: A PTS: 1 DIF: L2 REF: 1-1 Using Variables
   OBJ: 1-1.1 Modeling Relationships With Variables STA: CA A1 1.1
   TOP: 1-1 Example 1 KEY: algebraic expression | modeling relationships
3. ANS: D PTS: 1 DIF: L3 REF: 1-1 Using Variables
   OBJ: 1-1.1 Modeling Relationships With Variables STA: CA A1 1.1
   TOP: 1-1 Example 1 KEY: algebraic expression | modeling relationships
4. ANS: D PTS: 1 DIF: L3 REF: 1-7 The Distributive Property
   OBJ: 1-7.2 Simplifying Algebraic Expressions
   STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 6
   KEY: Distributive Property | algebraic expression | modeling relationships
5. ANS: B PTS: 1 DIF: L2 REF: 1-1 Using Variables
   OBJ: 1-1.1 Modeling Relationships With Variables STA: CA A1 1.1
   TOP: 1-1 Example 2 KEY: algebraic expression | modeling relationships
6. ANS: A PTS: 1 DIF: L2 REF: 1-1 Using Variables
   OBJ: 1-1.1 Modeling Relationships With Variables STA: CA A1 1.1
   TOP: 1-1 Example 2 KEY: algebraic expression | modeling relationships
7. ANS: A PTS: 1 DIF: L2 REF: 1-1 Using Variables
   OBJ: 1-1.2 Modeling Relationships With Equations STA: CA A1 1.1
   TOP: 1-1 Example 3
   KEY: algebraic expression | open sentence | modeling relationships | word problem | problem solving
8. ANS: B PTS: 1 DIF: L2 REF: 1-1 Using Variables
   OBJ: 1-1.2 Modeling Relationships With Equations STA: CA A1 1.1
   TOP: 1-1 Example 4
   KEY: algebraic expression | open sentence | modeling relationships
9. ANS: B PTS: 1 DIF: L3 REF: 1-1 Using Variables
   OBJ: 1-1.2 Modeling Relationships With Equations STA: CA A1 1.1
   TOP: 1-1 Example 3
   KEY: algebraic expression | open sentence | word problem | problem solving
10. ANS: C PTS: 1 DIF: L2
    REF: 1-2 Exponents and Order of Operations
    OBJ: 1-2.1 Using the Order of Operations With Exponents STA: CA A1 25.2
    TOP: 1-2 Example 2 KEY: order of operations
11. ANS: C PTS: 1 DIF: L2
    REF: 1-2 Exponents and Order of Operations
    OBJ: 1-2.1 Using the Order of Operations With Exponents STA: CA A1 25.2
    TOP: 1-2 Example 3 KEY: order of operations | word problem | problem solving

12. ANS: A PTS: 1 DIF: L3
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.1 Using the Order of Operations With Exponents STA: CA A1 25.2
KEY: order of operations | reasoning
13. ANS: D PTS: 1 DIF: L2
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.2 Using the Order of Operations With Grouping Symbols
STA: CA A1 25.2 TOP: 1-2 Example 5
KEY: exponential expression | order of operations | power
14. ANS: B PTS: 1 DIF: L3
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.2 Using the Order of Operations With Grouping Symbols
STA: CA A1 25.2 TOP: 1-2 Example 7
KEY: order of operations | word problem | problem solving
15. ANS: A PTS: 1 DIF: L2
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.2 Using the Order of Operations With Grouping Symbols
STA: CA A1 25.2 TOP: 1-2 Example 6
KEY: exponential expression | order of operations
16. ANS: C PTS: 1 DIF: L2
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.2 Using the Order of Operations With Grouping Symbols
STA: CA A1 25.2 TOP: 1-2 Example 4 KEY: order of operations
17. ANS: D PTS: 1 DIF: L2
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.1 Using the Order of Operations With Exponents STA: CA A1 25.2
TOP: 1-2 Example 1 KEY: order of operations | exponential expression | power
18. ANS: B PTS: 1 DIF: L3
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.2 Using the Order of Operations With Grouping Symbols
STA: CA A1 25.2 TOP: 1-2 Example 6
KEY: order of operations | exponential expression
19. ANS: B PTS: 1 DIF: L2 REF: 1-4 Adding Real Numbers
OBJ: 1-4.1 Adding Real Numbers STA: CA A1 1.0 | CA A1 2.0
TOP: 1-4 Example 2 KEY: integers | real numbers
20. ANS: C PTS: 1 DIF: L4 REF: 1-4 Adding Real Numbers
OBJ: 1-4.1 Adding Real Numbers STA: CA A1 1.0 | CA A1 2.0
TOP: 1-4 Example 2 KEY: real numbers
21. ANS: B PTS: 1 DIF: L2 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.1 Subtracting Real Numbers STA: CA A1 1.0 | CA A1 2.0
TOP: 1-5 Example 2 KEY: Real Numbers | real numbers
22. ANS: C PTS: 1 DIF: L2 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.2 Applying Subtraction STA: CA A1 1.0 | CA A1 2.0
TOP: 1-5 Example 3 KEY: absolute value | real numbers
23. ANS: C PTS: 1 DIF: L3 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.1 Subtracting Real Numbers STA: CA A1 1.0 | CA A1 2.0
KEY: real numbers

24. ANS: D PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.1 Multiplying Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 1
KEY: real numbers
25. ANS: A PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.1 Multiplying Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 4
KEY: exponential expression | real numbers
26. ANS: C PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.1 Multiplying Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 4
KEY: exponential expression | real numbers
27. ANS: D PTS: 1 DIF: L3
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.2 Dividing Real Numbers
STA: CA A1 1.0 | CA A1 1.1 KEY: real numbers
28. ANS: D PTS: 1 DIF: L2 REF: 1-7 The Distributive Property
OBJ: 1-7.2 Simplifying Algebraic Expressions
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 3
KEY: Distributive Property | Real Numbers | real numbers
29. ANS: B PTS: 1 DIF: L2 REF: 1-7 The Distributive Property
OBJ: 1-7.2 Simplifying Algebraic Expressions
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 4
KEY: Distributive Property | real numbers
30. ANS: A PTS: 1 DIF: L3 REF: 1-7 The Distributive Property
OBJ: 1-7.2 Simplifying Algebraic Expressions
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 5
KEY: Distributive Property | like terms
31. ANS: C PTS: 1 DIF: L4 REF: 1-7 The Distributive Property
OBJ: 1-7.2 Simplifying Algebraic Expressions
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 3
KEY: Distributive Property | real numbers
32. ANS: D PTS: 1 DIF: L2
REF: 1-2 Exponents and Order of Operations
OBJ: 1-2.2 Using the Order of Operations With Grouping Symbols
STA: CA A1 25.2 TOP: 1-2 Example 7 KEY: order of operations
33. ANS: A PTS: 1 DIF: L3 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
KEY: Real Numbers | real numbers | reasoning
34. ANS: C PTS: 1 DIF: L3 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
KEY: Real Numbers | word problem | reasoning
35. ANS: A PTS: 1 DIF: L2 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 1
KEY: natural numbers | whole numbers | integers | Real Numbers | irReal Numbers
36. ANS: D PTS: 1 DIF: L2 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 1 KEY: integers | Real Numbers

37. ANS: A PTS: 1 DIF: L2 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 2 KEY: whole numbers
38. ANS: B PTS: 1 DIF: L2 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.2 Comparing Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 4 KEY: inequality | Real Numbers
39. ANS: C PTS: 1 DIF: L3 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.2 Comparing Numbers STA: CA A1 1.0 | CA A1 1.1
KEY: opposites | reasoning
40. ANS: D PTS: 1 DIF: L2 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.2 Comparing Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 4 KEY: Real Numbers | real numbers | comparing numbers
41. ANS: A PTS: 1 DIF: L2 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.2 Comparing Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 5 KEY: absolute value
42. ANS: B PTS: 1 DIF: L2 REF: 1-4 Adding Real Numbers
OBJ: 1-4.1 Adding Real Numbers STA: CA A1 1.0 | CA A1 2.0
TOP: 1-4 Example 1 KEY: real numbers | number line
43. ANS: A PTS: 1 DIF: L2 REF: 1-4 Adding Real Numbers
OBJ: 1-4.1 Adding Real Numbers STA: CA A1 1.0 | CA A1 2.0
TOP: 1-4 Example 3
KEY: additive inverse | real numbers | word problem | problem solving
44. ANS: C PTS: 1 DIF: L2 REF: 1-4 Adding Real Numbers
OBJ: 1-4.2 Applying Addition STA: CA A1 1.0 | CA A1 2.0
TOP: 1-4 Example 4 KEY: real numbers | algebraic expression
45. ANS: B PTS: 1 DIF: L3 REF: 1-4 Adding Real Numbers
OBJ: 1-4.2 Applying Addition STA: CA A1 1.0 | CA A1 2.0
TOP: 1-4 Example 5
KEY: algebraic expression | integers | word problem | problem solving | multi-part question
46. ANS: A PTS: 1 DIF: L3 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.2 Applying Subtraction STA: CA A1 1.0 | CA A1 2.0
KEY: absolute value | real numbers
47. ANS: A PTS: 1 DIF: L2 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.1 Subtracting Real Numbers STA: CA A1 1.0 | CA A1 2.0
TOP: 1-5 Example 1 KEY: real numbers | number line
48. ANS: A PTS: 1 DIF: L2 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.2 Applying Subtraction STA: CA A1 1.0 | CA A1 2.0
TOP: 1-5 Example 4 KEY: real numbers | algebraic expression
49. ANS: A PTS: 1 DIF: L2 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.2 Applying Subtraction STA: CA A1 1.0 | CA A1 2.0
TOP: 1-5 Example 5 KEY: real numbers | word problem | problem solving
50. ANS: B PTS: 1 DIF: L4 REF: 1-5 Subtracting Real Numbers
OBJ: 1-5.2 Applying Subtraction STA: CA A1 1.0 | CA A1 2.0
TOP: 1-5 Example 5
KEY: real numbers | word problem | problem solving | multi-part question

51. ANS: A PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.1 Multiplying Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 2
KEY: real numbers | algebraic expression
52. ANS: B PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.1 Multiplying Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 3
KEY: algebraic expression | real numbers | word problem | problem solving
53. ANS: A PTS: 1 DIF: L3
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.1 Multiplying Real Numbers
STA: CA A1 1.0 | CA A1 1.1 KEY: real numbers | reasoning
54. ANS: D PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.2 Dividing Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 5
KEY: real numbers
55. ANS: C PTS: 1 DIF: L2
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.2 Dividing Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 6
KEY: algebraic expression | real numbers
56. ANS: C PTS: 1 DIF: L3
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.2 Dividing Real Numbers
STA: CA A1 1.0 | CA A1 1.1
KEY: multiplicative inverse | reciprocal | Inverse Property of Multiplication | real numbers | reasoning
57. ANS: B PTS: 1 DIF: L3
REF: 1-6 Multiplying and Dividing Real Numbers OBJ: 1-6.2 Dividing Real Numbers
STA: CA A1 1.0 | CA A1 1.1 TOP: 1-6 Example 7
KEY: algebraic expression | multiplicative inverse | reciprocal
58. ANS: B PTS: 1 DIF: L2 REF: 1-7 The Distributive Property
OBJ: 1-7.1 Using the Distributive Property
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 1
KEY: Distributive Property | real numbers
59. ANS: C PTS: 1 DIF: L2 REF: 1-7 The Distributive Property
OBJ: 1-7.1 Using the Distributive Property
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 2
KEY: Distributive Property | real numbers
60. ANS: A PTS: 1 DIF: L3 REF: 1-7 The Distributive Property
OBJ: 1-7.1 Using the Distributive Property
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0
KEY: Distributive Property | real numbers | reasoning
61. ANS: B PTS: 1 DIF: L2 REF: 1-7 The Distributive Property
OBJ: 1-7.2 Simplifying Algebraic Expressions
STA: CA A1 1.0 | CA A1 4.0 | CA A1 10.0 TOP: 1-7 Example 5
KEY: Distributive Property | like terms
62. ANS: D PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | Identity Property of Multiplication | reasoning

63. ANS: A PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | Identity Property of Addition | reasoning
64. ANS: C PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | multiplicative inverse | Inverse Property of Multiplication | reasoning
65. ANS: A PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | additive inverse | Inverse Property of Addition | reasoning
66. ANS: C PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | Commutative Property of Addition | reasoning
67. ANS: B PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | Associative Property of Addition | reasoning
68. ANS: B PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | Commutative Property of Multiplication | reasoning
69. ANS: C PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 1
KEY: properties of real numbers | Associative Property of Multiplication | reasoning
70. ANS: D PTS: 1 DIF: L2 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.1 Identifying and Using Properties STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 2
KEY: properties of real numbers | real numbers | word problem | problem solving

SHORT ANSWER

71. ANS:
Choice of variables may vary. Sample: $t = 0.05n$, where t = total amount of money and n = number of nickels; \$2.00.

PTS: 1 DIF: L3 REF: 1-1 Using Variables
OBJ: 1-1.2 Modeling Relationships With Equations STA: CA A1 1.1
KEY: algebraic expression | open sentence | word problem | problem solving | multi-part question

ESSAY

72. ANS:

[4] **a.** –1, 1, –1, 1, –1
b. The sign of the final answer is negative when the exponent is odd. When the exponent is even, the sign of the final answer is positive.
c. –1

[3] (a) and (b) correct
[2] (a) and (c) correct, but (b) missing or incomplete
[1] only (a) correct

PTS: 1 DIF: L4 REF: 1-6 Multiplying and Dividing Real Numbers
OBJ: 1-6.1 Multiplying Real Numbers STA: CA A1 1.0 | CA A1 1.1
KEY: exponential expression | power | absolute value | word problem | problem solving | rubric-based question | extended response

73. ANS:

[4] a. Distributive Property
b. Definition of subtraction
c. Commutative Property of Addition
d. Distributive Property
e. Addition
f. Addition
g. Commutative Property of Addition

[3] 1 step labeled incorrectly
[2] 2 steps labeled incorrectly
[1] 3 steps labeled incorrectly

PTS: 1 DIF: L3 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.2 Using Deductive Reasoning STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 3
KEY: properties of real numbers | deductive reasoning | word problem | problem solving | rubric-based question | extended response

74. ANS:

[4] $13x - 4 + 9x$
$= 13x + (-4) + 9x$ Definition of subtraction
$= 13x + 9x + (-4)$ Commutative Property of Addition
$= (13 + 9)x + (-4)$ Distributive Property
$= 22x + (-4)$ Addition
$= 22x - 4$ Definition of subtraction
OR equivalent simplification with correct justifications
[3] correct steps and justification with one minor computational error
[2] correct steps with one error in justification
[1] correct steps with two errors in justification

PTS: 1 DIF: L4 REF: 1-8 Properties of Real Numbers
OBJ: 1-8.2 Using Deductive Reasoning STA: CA A1 1.0 | CA A1 1.1
TOP: 1-8 Example 3
KEY: properties of real numbers | deductive reasoning | word problem | problem solving | extended response | rubric-based question

OTHER

75. ANS:
False; counterexamples may vary. Sample: $\sqrt{3}$ is a real number, but it is not rational.

PTS: 1 DIF: L3 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 3
KEY: counterexample | Real Numbers | real numbers | reasoning

76. ANS:
False; counterexamples may vary. Sample: Choose $a = 2$ and $b = -3$ and substitute into the inequality: $|2 + (-3)| > |-3|$

$|-1| > |-3|$

$1 > 3$
The final statement is not true, so $|a + b| > |b|$ is not true for all a and b.

PTS: 1 DIF: L3 REF: 1-3 Exploring Real Numbers
OBJ: 1-3.1 Classifying Numbers STA: CA A1 1.0 | CA A1 1.1
TOP: 1-3 Example 3 KEY: counterexample | inequality | real numbers | reasoning