Test Bank for Beginning Algebra 13th Lial

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the value of the exponential expression.

1) 2^3

A) 4 B) 8 C) 5 D) 6

Answer: B

2) 16^2

A) 256 B) 32 C) 512 D) 18

Answer: A

3) 3^6

A) 36 B) 729 C) 18 D) 5

Answer: B

4) $\left(\frac{4}{7}\right)^3$

A) $\frac{64}{343}$ B) $3\frac{4}{7}$ C) $\frac{343}{64}$ D) $\frac{64}{7}$

Answer: A

5) $(0.3)^4$

A) 81 B) 0.0081 C) 0.075 D) 1.2

Answer: B

Simplify.

6) $11 \cdot 3 + 4 \cdot 9$

A) 333 B) 429 C) 69 D) 693

Answer: C

7) $19.1 \cdot 5.9 + 12.3 \cdot 17.2$

A) 5979.1 B) 2149.8 C) 4153.5 D) 324.25

Answer: D

8) $240 \div 5 - 4$

A) 239 B) 240 C) 231 D) 44

Answer: D

9) $4^2 + 9^2$

A) 52 B) 97 C) 26 D) 169

Answer: B

10) $19 + 21 \cdot 27$

A) 586 B) 1080 C) 426 D) 67

Answer: A

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11) $7 \cdot 3 - 5$

A) 16 B) 105 C) 26 D) 14

Answer: A

12) $5 \cdot 9 - 7 \cdot 5$

A) 1575 B) 50 C) 190 D) 10

Answer: D

13) $79 - 6 \cdot 3 \cdot 2$

A) 122 B) 68 C) 43 D) 438

Answer: C

14) $6^3 \div 9 - 7$

A) 214 B) 27 C) 108 D) 17

Answer: D

15) $\frac{9}{5} \cdot \frac{1}{7} + \frac{5}{6} \cdot \frac{1}{5}$

A) $\frac{8}{21}$ B) $\frac{89}{110}$ C) $\frac{89}{160}$ D) $\frac{89}{210}$

Answer: D

Find the value of the expression.

16) $6[6 + 4(6^2)]$

A) 900 B) 32,400 C) 3492 D) 5400

Answer: A

17) $(5 + 4)[4 + (5 + 6)]$

A) 300 B) 680 C) 135 D) 53

Answer: C

18) $\frac{8(8 + 5) + 8 \cdot 5}{8(6 - 1)}$

A) $\frac{73}{40}$ B) $\frac{18}{5}$ C) $\frac{40}{47}$ D) $\frac{73}{47}$

Answer: B

19) $\frac{6(6 - 2) + 6 \cdot 3}{6(6 - 4)}$

A) $\frac{3}{2}$ B) $\frac{7}{2}$ C) $\frac{3}{8}$ D) $\frac{9}{16}$

Answer: B

20) $7[5^2 + 6(2 + 8)]$

A) 315 B) 595 C) 95 D) 2170

Answer: B

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21) $\frac{7(15 - 3^2)}{6 \cdot 2 \cdot 18}$

A) $\frac{17}{2}$ B) $\frac{36}{7}$ C) $\frac{7}{2}$ D) $\frac{7}{36}$

Answer: D

22) $\left(\frac{4}{7} + \frac{5}{7}\right) \cdot \frac{4}{13}$

A) $\frac{16}{91}$ B) $\frac{36}{91}$ C) $\frac{36}{13}$ D) $\frac{16}{27}$

Answer: B

23) $\frac{6(2 + 1) - 7(1 + 1)}{6(4 - 2) - 2^3}$

A) 1 B) $\frac{11}{4}$ C) $\frac{1}{2}$ D) $\frac{2}{5}$

Answer: A

Determine whether the statement is true or false.

24) $2 \le 14$

A) True B) False

Answer: A

25) $3 \ge 18$

A) True B) False

Answer: B

26) $4 \le 18 - 8$

A) False B) True

Answer: B

27) $\frac{7 \cdot (4 + 3) + 7 \cdot 4}{7 \cdot (3 - 1)} < 13$

A) False B) True

Answer: B

28) $5^2 < 4^2 - 3^2$

A) False B) True

Answer: A

29) $(8 + 7)[4 + (2 + 5)] < 132$

A) False B) True

Answer: A

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30) $2 \cdot 6 - 6 \cdot 9 \le 0$

A) True B) False

Answer: A

31) $9[6 + (6 - 4)] < 32$

A) True B) False

Answer: B

32) $\frac{3(4 + 7) + 6 \cdot 8}{5(3 + 7)} \le 18$

A) True B) False

Answer: A

33) $\frac{4(7 - 2) + 7(9 - 2)}{9(5 - 2) - 9(5 - 3)} \ge 2$

A) True B) False

Answer: A

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

Write the statement in words and decide whether it is true or false.

34) $7 \le 9$

Answer: Seven is less than or equal to nine. True

35) $7 \ne 8$

Answer: Seven is not equal to eight. True

36) $6 \ge 3$

Answer: Six is greater than or equal to three. True

37) $15 > 9 + 5$

Answer: Fifteen is greater than nine plus five. True

38) $11 \le 8 + 4$

Answer: Eleven is less than or equal to eight plus four. True

39) $\frac{13}{8} \ne \frac{5}{4}$

Answer: Thirteen–eighths is not equal to five–fourths. True.

40) $\frac{2}{5} \ne \frac{3}{10}$

Answer: Two–fifths is not equal to three–tenths. True.

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Write the word statement in symbols.

41) Fourteen is greater than six plus seven.

A) $14 > 6 + 7$ B) $14 < 6 + 7$ C) $6 + 7 > 14$ D) $14 + 6 > 7$

Answer: A

42) Six is less than or equal to six.

A) $6 > 6$ B) $6 < 6$ C) $6 \leq 6$ D) $6 \geq 6$

Answer: C

43) Eight is not equal to nine.

A) $8 > 9$ B) $8 < 9$ C) $8 \neq 9$ D) $8 \geq 9$

Answer: C

44) Fifteen is less than or equal to seven plus nine.

A) $15 \leq 7 + 9$ B) $15 + 7 \geq 9$ C) $7 + 9 \leq 15$ D) $15 < 7 + 9$

Answer: A

45) Six is equal to thirteen minus seven.

A) $6 = 13 - 7$ B) $13 < 6 + 7$ C) $6 - 13 < 7$ D) $13 = 6 - 7$

Answer: A

Rewrite the statement so the inequality symbol points in the opposite direction.

46) $17 < 19$

A) $19 > 17$ B) $19 < 17$ C) $19 \geq 17$ D) $17 > 19$

Answer: A

47) $25 > 6$

A) $25 \geq 6$ B) $6 > 25$ C) $6 < 25$ D) $25 < 6$

Answer: C

48) $33 \geq 1$

A) $33 \leq 1$ B) $1 \leq 33$ C) $33 > 1$ D) $1 \geq 33$

Answer: B

49) $6 \leq 39$

A) $39 > 6$ B) $39 \geq 6$ C) $39 \leq 6$ D) $6 \geq 39$

Answer: B

50) $7.83 \geq 2.47$

A) $2.47 \leq 7.83$ B) $7.83 \leq 2.47$ C) $7.83 < 2.47$ D) $2.47 \geq 7.83$

Answer: A

51) $8.78 < 8.89$

A) $8.89 > 8.78$ B) $8.89 \leq 8.78$ C) $8.78 \geq 8.89$ D) $8.78 > 8.89$

Answer: A

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Provide an appropriate response.

52) One way to measure a person's cardiofitness is to calculate how many METs, or metabolic units, he or she can reach at peak exertion. One MET is the amount of energy used when sitting quietly. To calculate ideal METs, we can use the expression:

$14.7 - \text{age} \cdot 0.13$ For women

or $14.7 - \text{age} \cdot 0.11$ For men

Researchers recommend that a person reach approximately 85% of his or her MET when exercising. Calculate 85% of the ideal MET for a 55–yr–old woman. Then refer to the following table. What activity can the woman do that is approximately this value?

Activity	METs	Activity	METS
Golfing (with cart)	2.5	Skiing (water or downhill)	6.8
Walking (3 mph)	3.3	Swimming	7.0
Mowing lawn (power mower)	4.5	Walking (5 mph)	8.0
Ballroom or square dancing	5.5	Jogging	10.2
Cycling	5.7	Skipping rope	12.0

A) 7.55; Mowing lawn
B) 6.418; Ballroom or square dancing
C) 6.418; Skiing
D) 7.55; Cycling

Answer: C

53) One way to measure a person's cardiofitness is to calculate how many METs, or metabolic units, he or she can reach at peak exertion. One MET is the amount of energy used when sitting quietly. To calculate ideal METs, we can use the expression:

$14.7 - \text{age} \cdot 0.13$ For women

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Walking (3 mph)	3.3	Swimming	7.0
Mowing lawn (power mower)	4.5	Walking (5 mph)	8.0
Ballroom or square dancing	5.5	Jogging	10.2
Cycling	5.7	Skipping rope	12.0

A) 8.65; Skiing
B) 7.353; Swimming
C) 7.353; Skiing
D) 8.65; Cycling

Answer: B

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54) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Alaska	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

Which counties have a figure greater than 14.7?

A) Addison, Branson, Cumberland, Kendall
B) Addison, Cumberland, Kendall
C) Addison, Cumberland, Dixson, Kendall
D) Addison, Branson, Cumberland

Answer: B

55) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

Which counties have a figure greater than 12.5?

A) Addison, Branson, Cumberland, Kendall, Putnum
B) Hendricks
C) Addison, Branson, Cumberland, Dixson, Kendall, Putnum
D) Dixson, Hendricks

Answer: A

56) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

Which counties have a figure greater than 16.7?

A) Addison, Cumberland, Kendall
B) Cumberland, Kendall
C) Addison, Branson, Dixson, Hendricks, Putnum
D) Kendall

Answer: B

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57) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

Which counties have a figure that is at most 14.7?

A) Addison, Cumberland, Kendall
B) Addison, Branson, Cumberland, Kendall
C) Dixson, Hendricks, Putnum
D) Branson, Dixson, Hendricks, Putnum

Answer: D

58) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

Which counties have a figure that is at most 12.5?

A) Hendricks
B) Addison, Branson, Cumberland, Kendall, Putnum
C) Addison, Branson, Cumberland, Dixson, Kendall, Putnum
D) Dixson, Hendricks

Answer: D

59) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

Which counties have a figure that is at most 16.7?

A) Addison, Branson, Dixson, Hendricks, Putnum
B) Addison, Cumberland, Kendall
C) Cumberland, Kendall
D) Branson, Dixson, Hendricks, Putnum

Answer: A

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60) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

For which counties are the values not less than 14.7?

A) Dixson, Hendricks, Putnum
B) Addison, Branson, Cumberland, Kendall
C) Addison, Cumberland, Kendall
D) Branson, Dixson, Hendricks, Putnum

Answer: B

61) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

For which counties are the values not less than 12.5?

A) Addison, Branson, Cumberland, Dixson, Kendall, Putnum
B) Hendricks
C) Addison, Branson, Cumberland, Kendall, Putnum
D) Dixson, Hendricks

Answer: A

62) The table shows the number of pupils per teacher in selected counties in a certain state.

County	Pupils per Teacher
Addison	16.7
Branson	14.7
Cumberland	20.5
Dixson	12.5
Hendricks	12.3
Kendall	17.8
Putnum	13.9

For which counties are the values not less than 16.7?

A) Addison, Cumberland, Kendall
B) Branson, Dixson, Hendricks, Putnum
C) Addison, Branson, Dixson, Hendricks, Putnum
D) Cumberland, Kendall

Answer: A

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Answer the question as instructed.

63) 28^4 means?

A) $28 \cdot 28 \cdot 28 \cdot 28 \cdot 28$ B) $28 \cdot 28 \cdot 28 \cdot 28$

C) $28 \div 4$ D) $28 \cdot 4$

Answer: B

64) Which of the following is the correct way to evaluate the expression $3 + 7 \cdot 4$?

A) $3 + 7 \cdot 4 = 3 + 28 = 31$ B) $3 + 7 \cdot 4 = 28 + 7 = 19$

C) $3 + 7 \cdot 4 = 12 + 28 = 40$ D) $3 + 7 \cdot 4 = 10 \cdot 4 = 40$

Answer: A

65) True or false? In an inequality using > or <, the inequality symbol should point toward the smaller number for the inequality to be true.

A) false B) true

Answer: B

66) Which of the following statements is false?

A) $15 \leq 15$ B) $15 = 15$ C) $15 < 15$ D) $15 \geq 15$

Answer: C

67) Which of the following statements is true?

A) $4 > 4$ B) $8 > 4$ C) $8 < 4$ D) $4 \neq 4$

Answer: B

68) If Tony is lighter than Steve, then Tony's weight is _____ Steve's weight.

A) less than or equal to B) greater than

C) greater than or equal to D) less than

Answer: D

69) Which of the following is not a mathematical sentence?

A) $5 < 8$ B) $5 \neq 13$ C) $5 \cdot 8 + 40$ D) $5 \cdot 8 = 40$

Answer: C

70) Evaluate 1^9.

A) 9^1 B) $\frac{1}{9}$ C) 1 D) 9

Answer: C

71) Using the rules for the order of operations, what should be done first when evaluating the expression $(7 + 10^5)^3$?

A) Add $7 + 10$ B) Evaluate 7^3 C) Evaluate 10^5 D) Evaluate 10^3

Answer: C

Find the numerical value of the expression for a) $x = 4$ and b) $x = 18$.

72) $x + 5$

A) a) 23 b) 9 B) a) 9 b) 23 C) a) 1 b) 13 D) a) 20 b) 90

Answer: B

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73) $x - 3$

A) a) 7 b) 21 B) a) 12 b) 54 C) a) 1 b) 15 D) a) 15 b) 1

Answer: C

74) $7x$

A) a) 25 b) 11 B) a) 11 b) 25 C) a) 28 b) 126 D) a) 126 b) 28

Answer: C

75) $\frac{x + 1}{7}$

A) a) $\frac{5}{7}$ b) $\frac{19}{7}$ B) a) $\frac{7}{5}$ b) $\frac{7}{19}$ C) a) $\frac{4}{7}$ b) $\frac{18}{7}$ D) a) $\frac{19}{7}$ b) $\frac{5}{7}$

Answer: A

76) $\frac{2x - 9}{5x}$

A) a) $\frac{17}{90}$ b) $\frac{1}{2}$ B) a) $-\frac{1}{90}$ b) $\frac{3}{10}$ C) a) $-\frac{1}{20}$ b) $\frac{3}{10}$ D) a) $\frac{3}{10}$ b) $-\frac{1}{20}$

Answer: C

77) $\frac{x + 6}{x - 1}$

A) a) $\frac{2}{5}$ b) $\frac{12}{19}$ B) a) $\frac{24}{17}$ b) $\frac{10}{3}$ C) a) $\frac{12}{19}$ b) $\frac{2}{5}$ D) a) $\frac{10}{3}$ b) $\frac{24}{17}$

Answer: D

78) $2x^2 + 4x$

A) a) 16 b) 576 B) a) 48 b) 720 C) a) 24 b) 108 D) a) 32 b) 144

Answer: B

79) $0.61x^2$

A) a) 4.88 b) 21.96 B) a) 9.76 b)197.64 C) a) 3.66 b) 15.86 D) a) 4.88 b) 15.86

Answer: B

Evaluate the expression for the given values. If necessary, round to the nearest tenth.

80) $6x + 7y + 6$; $x = 0$, $y = 5$

A) 36 B) 47 C) 13 D) 41

Answer: D

81) $\frac{11x}{y} + y^3$ $x = 3$, $y = 2$

A) $\frac{49}{2}$ B) $\frac{41}{2}$ C) $\frac{103}{3}$ D) $\frac{39}{2}$

Answer: A

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82) $\frac{5x - 6y}{11}$ x = 8, y = 3

A) $\frac{58}{11}$ B) 3 C) $\frac{34}{11}$ D) 2

Answer: D

83) $\frac{x + y}{4x - 10}$ x = 6, y = 5

A) $\frac{11}{14}$ B) $\frac{11}{34}$ C) $\frac{3}{7}$ D) $\frac{11}{24}$

Answer: A

84) $\frac{9x + 14y}{6}$ x = 4, y = 6

A) 8 B) 18 C) 20 D) 120

Answer: C

85) $\frac{15x - 9y}{x + 13}$ x = 6, y = 4

A) $\frac{6}{19}$ B) $\frac{54}{17}$ C) $\frac{54}{19}$ D) $\frac{6}{17}$

Answer: C

86) $(x + 4y)^2$ x = 4, y = 3

A) 32 B) 256 C) 64 D) 16

Answer: B

87) $\frac{x(y + 9)}{12(x - y)}$ x = 6, y = 3

A) 2 B) 3 C) 1 D) 0

Answer: A

88) $5x^2 + 7y$ x = 2, y = 9

A) 419 B) 163 C) 495 D) 83

Answer: D

89) $0.506x^2 + 0.47y^2$ x = 5, y = 10

A) 28.5 B) 1288.8 C) 59.7 D) 62.4

Answer: C

State the phrase as a mathematical expression. Use x to represent the variable.

90) Eight times a number

A) 8 − x B) 8 + x C) $\frac{8}{x}$ D) 8x

Answer: D

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91) A number increased by two

A) $x + 2$ B) $2x$ C) $x - 2$ D) 2

Answer: A

92) A number multiplied by four hundred fifty-seven

A) $457 + x$ B) $457 - x$ C) $\frac{457}{x}$ D) $457x$

Answer: D

93) A number minus seven hundred nine

A) $x + 709$ B) 709 C) $709x$ D) $x - 709$

Answer: D

94) The difference between two times a number and eleven

A) $11 - 2x$ B) $2x - 11$ C) $11 + 2x$ D) $2 - x + 11$

Answer: B

95) The quotient of a number and six

A) $6 - x$ B) $\frac{x}{6}$ C) $6 + x$ D) $6x$

Answer: B

96) Six divided by a number

A) $6 + x$ B) $6x$ C) $\frac{6}{x}$ D) $6 - x$

Answer: C

97) The product of eight and two more than a number

A) $8(x + 2)$ B) $8 + 2 \cdot x$ C) $(8 + 2)x$ D) $8 \cdot 2 + x$

Answer: A

98) 312 divided by a number

A) $312x$ B) $312 - x$ C) $\frac{312}{x}$ D) $312 + x$

Answer: C

99) Three times a number, added to 9

A) $3x + 9$ B) $3 \cdot 9 + x$ C) $3x$ D) $3(x + 9)$

Answer: A

Decide if the given number is a solution to the given equation.

100) $p + 7 = 8$; 1

A) Yes B) No

Answer: A

101) $p - 6 = 4$; 10

A) Yes B) No

Answer: A

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102) $8m + 7 = 41$; 4

A) No B) Yes

Answer: A

103) $7y + 6(y - 3) = 86$; 8

A) No B) Yes

Answer: B

104) $4p + 5p - 8 = 55$; 7

A) Yes B) No

Answer: A

105) $9x^2 + 8 = 80$; 4

A) No B) Yes

Answer: A

106) $\frac{x + 8}{6 - x} = \frac{5}{2}$; 2

A) Yes B) No

Answer: A

107) $\frac{x + 4}{x - 8} = \frac{2}{7}$; $-\frac{44}{5}$

A) No B) Yes

Answer: B

Change the word statement to an equation. Use x as the variable.

108) A number minus 2 equals 4.

A) $2 - x = 4$ B) $x = 2 - 4$ C) $x - 2 = 4$

Answer: C

109) 4 times a number equals 4 less than 5 times the number.

A) $4x = 5x - 4$ B) $4x = 4 - 5$ C) $4x = 4 - 5x$

Answer: A

110) Twice a number less 4 equals 2.

A) $2(x - 4) = 2$ B) $4 - 2x = 2$ C) $2x - 4 = 2$

Answer: C

111) The product of twice a number and 9 is 180.

A) $18x = 180x$ B) $18x = 180$ C) $2x + 9 = 180$

Answer: C

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112) $-\frac{8}{9}$ of a number plus 14 equals 6.

A) $-\frac{8}{9}(x + 14) = 6$ B) $-\frac{8}{9}x + 14 = 6$ C) $-\frac{8}{9}x = 14 + 6$

Answer: B

113) 50 divided by a number equals $\frac{1}{2}$ times that number."

A) $\frac{x}{50} = \frac{x}{2}$ B) $\frac{50}{x} = \frac{1}{2}x$ C) $\frac{50}{x} = 2x$

Answer: B

114) When 2 times a number is subtracted from 7 times the number, the result is 35.

A) $2(x - 7) = 35x$ B) $2x + 7x = 35$ C) $7x - 2x = 35$ D) $2x(7 - x) = 35$

Answer: C

115) The sum of two–thirds a number and 81 is 48.

A) $\frac{2}{3}x + 48 = 81$ B) $\frac{2}{3}x - 81 = 48$ C) $\frac{2}{3}x \cdot 81 = 48$ D) $\frac{2}{3}x + 81 = 48$

Answer: D

Write this word statement as an equation. Use x as the variable, and find all solutions from the set {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}.

116) The sum of a number and 5 is 6.

A) $x + 5 = 6$; 6 B) $x = 5 + 6$; 11 C) $x + 6 = 5$; 1 D) $x + 5 = 6$; 1

Answer: D

117) A number minus 8 equals 3.

A) $\mathbf{x} - 8 = 3$; 11 B) $8 = 3 - \mathbf{x}$; 11 C) $8 - \mathbf{x} = 3$; 5 D) $8 = 3 - \mathbf{x}$; 5

Answer: A

118) The product of a number and 10 is 30.

A) $30x = 10$; 3 B) $10x = 30$; 3 C) $10x = 30$; 10 D) No Solution

Answer: B

119) 32 divided by a number equals $\frac{1}{2}$ times that number.

A) $\frac{32}{x} = \frac{1}{2}x$; 32 B) $\frac{x}{32} = \frac{1}{2}x$; No solution

C) $\frac{32}{x} = \frac{1}{2}x$; 8 D) $\frac{x}{32} = 2x$; 8

Answer: C

Decide whether the problem is an equation or an expression.

120) $4(2x + 9) = 3(8x - 4)$

A) Equation B) Expression

Answer: A

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121) $9(3x + 7) - 7(6x - 4)$

A) Equation B) Expression

Answer: B

122) $\frac{5x + 7}{6} = \frac{2x}{3} - 4$

A) Expression B) Equation

Answer: B

123) $\frac{4x - 6}{x + 4} - \frac{x}{3} + 4$

A) Equation B) Expression

Answer: B

124) $9x + 4 = \frac{5x + 8}{5}$

A) Expression B) Equation

Answer: B

125) $6(7 - x) + \frac{9x + 8}{3}$

A) Expression B) Equation

Answer: A

126) $x + y = 8$

A) Expression B) Equation

Answer: B

127) $x + y - 1$

A) Equation B) Expression

Answer: B

Solve the problem.

128) The life expectancy of inhabitants of a country can be approximated by the equation $y = 0.289x - 364$, where x is a year between 1940 and 2006 and y is age in years. Use this mathematical model to approximate life expectancy (to the nearest tenth of a year) in 1974.

A) 566.8 yr B) 270.5 yr C) 206.5 yr D) 534.1 yr

Answer: C

Answer the question.

129) Which phrase correctly translates the expression $9 - x$?

A) x less than 9 B) 9 subtracted from x

C) x minus 9 D) x take away 9

Answer: A

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130) Which one of the following is the correct method for evaluating the expression $3x^2 - 4$ for $x = 7$?

A) $3 \cdot 7^2 - 4 = 21^2 - 4 = 441 - 4 = 437$ B) $3 \cdot 7^2 - 4 = 3 \cdot 3^2 = 3 \cdot 9 = 27$

C) $3 \cdot 7^2 - 4 = (21 - 4)^2 = 17 = 289$ D) $3 \cdot 7^2 - 4 = 3 \cdot 49 - 4 = 147 - 4 = 143$

Answer: D

131) According to the rules for order of operations, the first steps in evaluating the expression $49 - 4x^3$ for $x = 2$ are to substitute 2 for x and then _____.

A) subtract 4 from 49 B) subtract 49 from 4 C) find the cube of 2 D) multiply 4 by 2

Answer: C

132) What value for x makes the expression $8 + 2x$ equal to 16?

A) 5 B) 7 C) 4 D) 3

Answer: C

133) What value for x makes the expression $17 - x$ equal to 14?

A) 3 B) 4 C) 31 D) 13

Answer: A

134) Which pair of values of x and y makes $5x + y$ equal 13?

A) $x = 2$ and $y = 3$ B) $x = 3$ and $y = 2$ C) $x = 12$ and $y = 5$ D) $x = 5$ and $y = 12$

Answer: A

135) Which pair of values of x and y makes $x - 7y$ equal 1?

A) $x = 8$ and $y = 1$ B) $x = 6$ and $y = 1$ C) $x = 1$ and $y = 6$ D) $x = 1$ and $y = 8$

Answer: A

136) In the equation $5x + y = 15$, the value of x is 3. What is the corresponding value of y?

A) $y = 3$ B) $y = 0$ C) $y = 10$ D) $y = 5$

Answer: B

Use an integer or rational number to express the number representing change.

137) The stock market gained 25 points on Monday.

A) 25 B) –25

Answer: A

138) During one year, 29 employees quit their jobs at Newline Manufacturing Company.

A) 29 B) –29

Answer: B

139) A football team gained 23 yards on one play.

A) 23 B) –23

Answer: A

140) In one state, the lowest point is 1319 feet below sea level.

A) 1319 B) –1319

Answer: B

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141) One country exported $84,100,000 less than it imported, giving it a negative trade balance.
A) 84,100,000 B) –84,100,000

Answer: B

142) Sales at Andrea's Formal Wear Shop were $2022 less this week than the sales last week.
A) –2022 B) 2022

Answer: A

143) Mr. Voss increased his speed by 8 miles per hour.
A) 8 B) –8

Answer: A

144) On a sunny day, the water temperature in the swimming pool rises 4 degrees.
A) 4 B) –4

Answer: A

145) This year corn production increased 56,000 pounds from last year on Steve's farm.
A) 56,000 B) –56,000

Answer: A

146) Sales in Jeff's Toys Shop decline 13.6% from last month to this month.
A) 13.6 B) –13.6

Answer: B

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

Give a number that satisfies the given condition.

147) An integer greater than –7.3 and less than –6.3

Answer: –7

148) A whole number greater than 3.5

Answer: One example is 4. There are others.

149) A whole number less than 3.5

Answer: One example is 3. There are others.

150) A number between –8 and 8 that is a negative real number but not an integer

Answer: One example is –4.513. There are others.

151) A number between –10 and 10 that is a real number but not not an integer

Answer: One example is $\sqrt{5}$. There are others.

152) A number between –6 and 6 that is a rational number but not an integer

Answer: One example is $-\frac{3}{7}$. There are others.

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Tell whether the statement is true or false.

153) Every rational number is an integer.
A) True B) False
Answer: B

154) Every irrational number is an integer.
A) True B) False
Answer: B

155) Every whole number is a real number.
A) True B) False
Answer: A

156) Some rational numbers are irrational.
A) True B) False
Answer: B

157) Some rational numbers are integers.
A) True B) False
Answer: A

158) Every integer is an irrational number.
A) True B) False
Answer: B

159) The absolute value of any number is positive.
A) True B) False
Answer: B

160) Some real numbers are integers.
A) True B) False
Answer: A

161) The absolute value of any nonzero number is positive.
A) True B) False
Answer: A

162) The absolute value of any nonzero number is an irrational number.
A) True B) False
Answer: B

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List the numbers from the set that are of the type indicated.

163) {0, $\sqrt{5}$, –24, $\frac{3}{4}$, – $1\frac{1}{3}$, 9.5, 2}

Integers

A) 20 B) 0, –24, 2 C) 20, –24 D) 20, $\sqrt{5}$

Answer: B

164) {17, $\sqrt{7}$, –6, 0, $\frac{5}{9}$, – $1\frac{4}{5}$, 7.4}

Whole numbers

A) 17, 0 B) 17 C) 17, –6 D) 17, –6, 0

Answer: A

165) {$\sqrt{7}$, –18, 0, $\frac{1}{7}$, – 7, 9.3, 2}

Natural numbers

A) 2 B) 0 C) –18, 0 D) 0, 2

Answer: A

166) {11, $\sqrt{8}$, –9, 0}

Real numbers

A) 11, $\sqrt{8}$, –9, 0 B) 11, 0 C) 11, –9, 0 D) 11

Answer: A

167) B = {3, $\sqrt{5}$, –7, 0, 0.26}

Rational numbers

A) 3, –7, 0, 0.26 B) $\sqrt{5}$, 0.26 C) $\sqrt{5}$ D) 3, 0

Answer: A

168) {9, $\sqrt{8}$, –2, 0, 0.98}

Irrational numbers

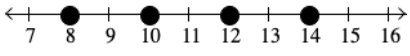
A) $\sqrt{8}$, 0, 0.98 B) $\sqrt{8}$, 0.98 C) $\sqrt{8}$ D) $\sqrt{8}$, –2

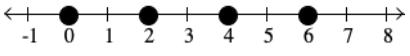
Answer: C

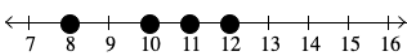
Graph the numbers on a number line.

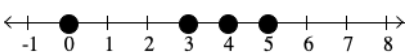
169) 0, 2, 4, 6



A) 

B) 

C) 

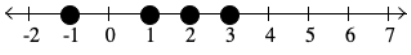
D) 

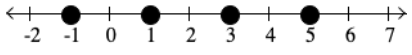
Answer: B

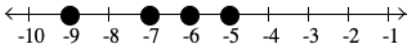
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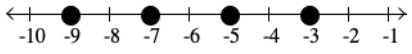
170) –9, –7, –5, –3



A) 

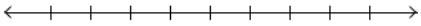
B) 

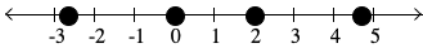
C) 

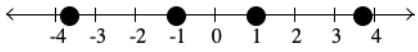
D) 

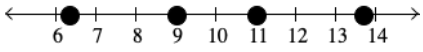
Answer: D

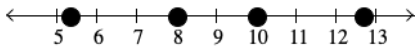
171) $-3\frac{2}{3}$, –1, 1, $3\frac{2}{3}$



A) 

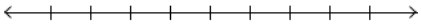
B) 

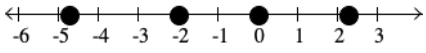
C) 

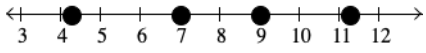
D) 

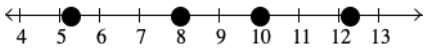
Answer: B

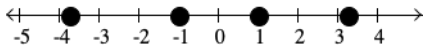
172) $-4\frac{3}{4}$, –2, 0, $2\frac{1}{4}$



A) 

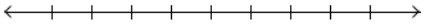
B) 

C) 

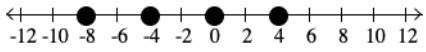
D) 

Answer: A

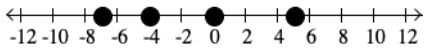
173) $-3\frac{7}{8}$, $-\frac{7}{4}$, 0, $\frac{5}{3}$



A) 

B) 

C) 

D) 

Answer: C

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Find the opposite (additive inverse) of the number.

174) 20

A) –20 B) 20 C) $\frac{1}{20}$ D) 0

Answer: A

175) –26

A) 0 B) –26 C) $-\frac{1}{26}$ D) 26

Answer: D

Simplify by finding the absolute value.

176) |16|

A) 16 B) 0 C) –16 D) 32

Answer: A

177) |10|

A) 10 B) 0 C) –10 D) 20

Answer: A

178) |–12|

A) 12 B) 0 C) 24 D) –12

Answer: A

179) –|–8|

A) 8 B) 0 C) –8 D) 16

Answer: C

180) |13 – 3|

A) –10 B) 0 C) 20 D) 10

Answer: D

181) $-\left|-\frac{1}{8}\right|$

A) –8 B) 8 C) $\frac{1}{8}$ D) $-\frac{1}{8}$

Answer: C

Select the smaller of the two given numbers.

182) –16, –6

A) –16 B) –6

Answer: A

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183) $-\frac{11}{20}, -\frac{4}{5}$

A) $-\frac{4}{5}$ B) $-\frac{11}{20}$

Answer: A

184) –106, 12

A) 12 B) –106

Answer: B

185) 26, |–30|

A) 26 B) |–30|

Answer: A

186) |–5|, |–29|

A) |–5| B) |–29|

Answer: A

187) –|–4|, –|–9|

A) –|–9| B) –|–4|

Answer: A

188) |9 – 2|, |8 – 3|

A) |9 – 2| B) |8 – 3|

Answer: B

Decide if the statement is true or false.

189) –(–13) < –8

A) False B) True

Answer: A

190) –(–15) > –27

A) True B) False

Answer: A

191) –19 > –5

A) False B) True

Answer: A

192) –16 ≤ –5

A) False B) True

Answer: B

193) –21 ≤ –(–12)

A) False B) True

Answer: B

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194) $-16 \geq -(-13)$

A) True B) False

Answer: B

195) $|-19| < |-20|$

A) False B) True

Answer: B

196) $-|-11| \leq -|-20|$

A) False B) True

Answer: A

Refer to the table to answer the question.

Production Category	Change '98–'99	Change '99–'00
Public Relations	**3.5**	**4.2**
Training	**1.7**	**2.8**
Sales	**–4.3**	**1.6**
Catalog	**2.3**	**–1.1**

197) Which category and year shows the largest increase?

A) Public Relations, '98–'99 B) Public Relations, '99–'00

C) Catalog, '98–'99 D) Sales, '98–'99

Answer: B

198) Which category and year shows the smallest absolute change?

A) Catalog '99–'00 B) Sales, '99–'00 C) Catalog, '98–'99 D) Training '98–'99

Answer: A

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

Provide an appropriate response.

199) Is the integer 0 positive or negative? Explain.

Answer: The integer is neither. It is not a signed integer.
It is the starting point on a number line.

200) How is the order of operations applied to integers?

Answer: The same way as for whole numbers.

201) What is the additive inverse of 0?

Answer: 0 itself

202) How can you rewrite a subtraction of integers problem to make it easier to solve? Give an example.

Answer: Change subtraction to addition, and change the sign of the subtrahend to its opposite.
$-6 - (-3) = -6 + (+3) = -3$

203) Explain what happens when an integer is multiplied by 1, –1, and 0.

Answer: An integer multiplied by 1 gives the same integer, multiplied by –1 gives the opposite of the integer, and multiplied by 0 gives 0.

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204) A whole number less than 6.7.

Answer: One example is 6. There are others.

205) Fill in the blanks with the correct numbers.
The opposite of –5 is _____.
The absolute value of –5 is _____.
The opposite of the absolute value of –5 is _____.
The absolute value of the opposite of –5 is _____.

Answer: 5, 5, –5, 5

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the sum.

206) 13 + (–3)

A) –10 B) –16 C) 16 D) 10

Answer: D

207) –17 + 7

A) –24 B) –10 C) 24 D) 10

Answer: B

208) –24 + (–15)

A) –39 B) 9 C) –9 D) 39

Answer: A

209) –4.5 + (–11.7)

A) –16.2 B) –7.2 C) 16.2 D) 7.2

Answer: A

210) –535 + 768

A) –1303 B) 1303 C) –233 D) 233

Answer: D

211) $\frac{3}{4} + \left(-\frac{1}{12}\right)$

A) $\frac{1}{4}$ B) 2 C) $\frac{1}{6}$ D) $\frac{2}{3}$

Answer: D

212) $-\frac{5}{8} + \frac{3}{4}$

A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) $\frac{1}{8}$ D) $\frac{1}{32}$

Answer: C

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213) $14\frac{1}{7} + \left(-5\frac{4}{7}\right)$

A) $8\frac{3}{7}$ B) $19\frac{4}{7}$ C) $8\frac{4}{7}$ D) $18\frac{4}{7}$

Answer: C

214) $-8\frac{6}{7} + 16\frac{2}{7}$

A) $24\frac{3}{7}$ B) $23\frac{3}{7}$ C) $7\frac{3}{7}$ D) $7\frac{2}{7}$

Answer: C

215) 19 + [(–4) + (–14)]

A) 9 B) 37 C) 1 D) 29

Answer: C

216) 6 + [21 + (–25)]

A) 52 B) 2 C) 10 D) –40

Answer: B

217) –23 + [23 + (–3)]

A) 49 B) 43 C) –3 D) 3

Answer: C

218) 1.6 + [(–8.3) + (–5.0)]

A) –1.7 B) 14.9 C) 4.9 D) –11.7

Answer: D

219) –1.2 + [(–2.7) + (–1.5)]

A) –5.4 B) –2.220446049e–16 C) 2.4 D) –3

Answer: A

220) [–8 + (–2)] + [(–1) + (–12)]

A) –7 B) –3 C) –5 D) –23

Answer: D

221) [13 + (–8)] + [10 + (–18)]

A) –3 B) –23 C) 13 D) 49

Answer: A

222) –16.3 + [21.1 + (–21.4)]

A) 16 B) 58.8 C) –16.6 D) 26.2

Answer: C

Find the difference.

223) 2 – 15

A) 13 B) –13 C) 17 D) –17

Answer: B

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224) –3 – 8

A) –5 B) –11 C) 5 D) 11

Answer: B

225) –14 – (–9)

A) 23 B) –23 C) 5 D) –5

Answer: D

226) 15 – (–10)

A) –25 B) 5 C) 25 D) –5

Answer: C

227) –37 – 37

A) 74 B) 0 C) –111 D) –74

Answer: D

228) –26 – (–26)

A) 78 B) –52 C) 52 D) 0

Answer: D

229) –1.7 – 6.7

A) –5 B) 8.4 C) –8.4 D) 5

Answer: C

230) –10.3 – (–6.9)

A) 3.4 B) –3.4 C) 17.2 D) –17.2

Answer: B

231) $\frac{1}{10} - \left(-\frac{1}{5}\right)$

A) $\frac{3}{10}$ B) $-\frac{1}{10}$ C) $-\frac{3}{10}$ D) $\frac{1}{10}$

Answer: A

232) $-\frac{4}{5} - \frac{7}{10}$

A) $-\frac{3}{10}$ B) $\frac{3}{2}$ C) $-\frac{3}{2}$ D) $-\frac{11}{10}$

Answer: C

233) $-\frac{3}{4} - \left(-\frac{5}{8}\right)$

A) $\frac{1}{8}$ B) -1 C) $-\frac{1}{8}$ D) $-\frac{1}{4}$

Answer: C

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234) $\frac{9}{10} - \left(\frac{1}{6} - \frac{3}{10}\right)$

A) $-\frac{31}{30}$ B) $-\frac{2}{5}$ C) 1 D) $\frac{31}{30}$

Answer: D

235) $\frac{1}{8} - \left(-\frac{8}{9}\right)$

A) $-\frac{55}{72}$ B) $\frac{73}{72}$ C) $-\frac{73}{72}$ D) $-\frac{1}{8}$

Answer: B

236) $-\frac{4}{5} - \left(-\frac{7}{10}\right)$

A) $-\frac{3}{10}$ B) $-\frac{11}{10}$ C) $-\frac{1}{10}$ D) $\frac{1}{10}$

Answer: C

237) $\frac{1}{2} - \left(-\frac{5}{7}\right)$

A) $\frac{17}{14}$ B) $-\frac{9}{56}$ C) $-\frac{3}{14}$ D) $-\frac{17}{14}$

Answer: A

238) $\frac{1}{2} - \left(-\frac{1}{3} - \frac{1}{3}\right)$

A) $\frac{14}{3}$ B) $\frac{2}{3}$ C) $-\frac{1}{3}$ D) $\frac{7}{6}$

Answer: D

239) $\left(-\frac{3}{8} - \frac{1}{3}\right) - \left(-\frac{11}{8} - 5\right)$

A) $\frac{35}{12}$ B) $-\frac{13}{3}$ C) $\frac{17}{3}$ D) $-\frac{85}{12}$

Answer: C

Use order of operations to simplify the expression.

240) 22 – (16 + 23)

A) 61 B) –17 C) 15 D) 29

Answer: B

241) 1 + (–21 – 10)

A) –30 B) 12 C) 32 D) –10

Answer: A

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242) (7 – 20) – 13
A) 0 B) 14 C) 40 D) –26
Answer: D

243) –6 – | 3 + (–9) + (–11) |
A) –19 B) 17 C) 13 D) –23
Answer: D

244) –7 + | 5 + (–7) + 11 |
A) –6 B) 8 C) 16 D) 2
Answer: D

245) 11 – (12 – 13)
A) –14 B) 10 C) 12 D) 36
Answer: C

246) (–5 – 8) – (–12 + 18)
A) 7 B) –3 C) –19 D) –43
Answer: C

247) (25 + 7) – (14 – 18)
A) 0 B) 36 C) 50 D) –50
Answer: B

248) –18 – [(7 – 4) – (–4 – 4)]
A) –7 B) –29 C) –15 D) –21
Answer: B

249) [–20.6 + (16.6 – 3.9)] – 2.1
A) –10 B) –39 C) –5.8 D) 31.2
Answer: A

Write a numerical expression for the phrase and simplify it.

250) The difference between 16 and –20
A) 16 – (–20); –4 B) 20 – 16; 4 C) –20 – 16; –36 D) 16 – (–20); 36
Answer: D

251) 11 less than –14
A) 11 – 14; –3 B) –14 – 11; 25 C) 11 – (–14); 25 D) –14 – 11; –25
Answer: D

252) The sum of 3 and –2, decreased by 3
A) [3 – (–2)] – 3; 2 B) [3 + (–3)] + 2; 2 C) [3 + (–2)] + 3; 4 D) [3 + (–2)] – 3; –2
Answer: D

253) 15 less than the difference between 4 and –7
A) (4 – 7) – 15; –18 B) 15 – [4 – (–7)]; 4 C) [4 – (–7)] – 15; –4 D) [4 – (–7)] – 15; –18
Answer: C

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254) 9 less than the difference between 17 and –8

A) –8 – 17 – 9; –34 B) 9 – 17 – (–8); 0 C) [17 – (–8)] – 9; 16 D) 8 – 17 – 9; –34

Answer: C

Solve the problem.

255) The two charts show the weight gain of some people and the weight loss of other people. Use the information given to answer the question below.

Weight gain (in grams)		Weight loss (in grams)	
Abe	3,051	Don	-2,958
Bob	4,208	Ed	-2,177
Carl	1,695	Frank	-857

What is the difference between the weight gain of Carl and the weight loss of Don?

A) 4653 g B) –1263 g C) 1263 g D) –4653 g

Answer: A

256) During one year 30 new employees began work at Daniel's Manufacturing Company and 28 employees left. At the beginning of the year there were 242 employees. What was the number of employees at the end of the year?

A) 244 employees B) 300 employees C) 272 employees D) 184 employees

Answer: A

257) A football team gained 26 yards on one play, lost 22 yards on another, and gained 21 yards on the last play of the first half. They had already gained 305 yards during the half. What was the total yardage gain for the first half?

A) 280 yd B) 330 yd C) 374 yd D) 352 yd

Answer: B

258) Your bank account has $69 in it when you write checks for $45, $19, and $47. You then deposit $16 and $51. How much is in the account? Are you overdrawn?

A) $72, no B) $25, no C) –$113, yes D) $113, no

Answer: B

259) A bike road race starts at an elevation of 670 feet and passes through 5 stages where the elevation changes by –13 feet, 284 feet, 317 feet, 539 feet, and –574 feet. At what elevation does the race end?

A) 2397 ft B) –2397 ft C) 364 ft D) 1223 ft

Answer: D

260) The stock market gained 60 points on Tuesday and lost 12 points on Wednesday. Find the difference between these changes.

A) –48 points B) 72 points C) 48 points D) –72 points

Answer: B

261) Nikki is fishing from a bank 30 feet above water level. In this location, the fish tend to feed at 49 feet below the surface. How long must Nikki's fish line be to reach the fish?

A) –19 ft B) 19 ft C) 79 ft D) –30 ft

Answer: C

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262) Company A showed a profit of $61,930 last year, while Company B had a loss of $61,310. Find the difference between these amounts.

A) $620 B) $123,240 C) –$123,240 D) –$620

Answer: B

263) The temperature at the South pole was –2° at 8 am. At 3 pm, it was 3°. By how many degrees did the temperature rise?

A) by –1° B) by –5° C) by 1° D) by 5°

Answer: D

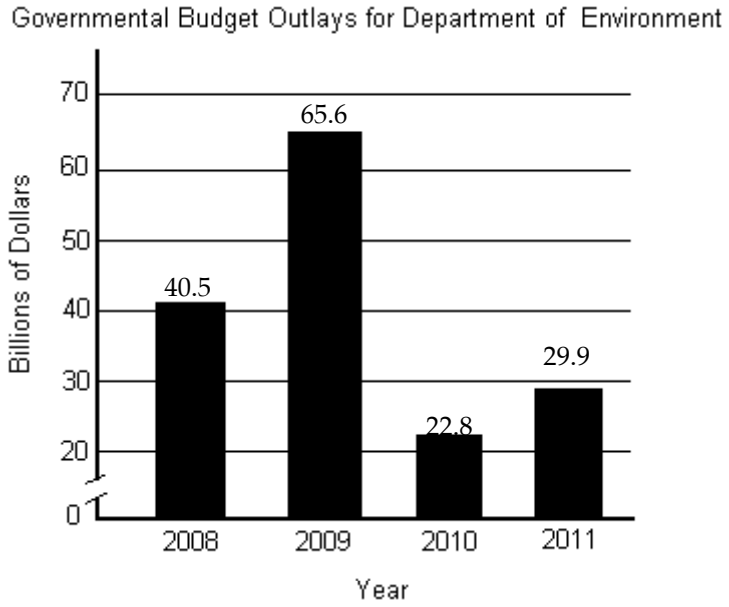
264) The ocean surface is at 0 ft elevation. A diver is underwater at an elevation of –210 ft near a rock formation. In this area, the ocean floor has an elevation of –385 ft. The rock formation rises to a peak 124 ft above the ocean floor. How many feet above the top of the rock formation is the diver?

A) 261 ft B) 51 ft C) 175 ft D) 86 ft

Answer: B

Provide an appropriate response.

265) The bar graph shows governmental budget outlays for Country X's Department of the Environment for the years 2008 through 2011. Use a signed number to represent the change in outlay for (a) 2008 to 2009 and (b) 2010–2011.

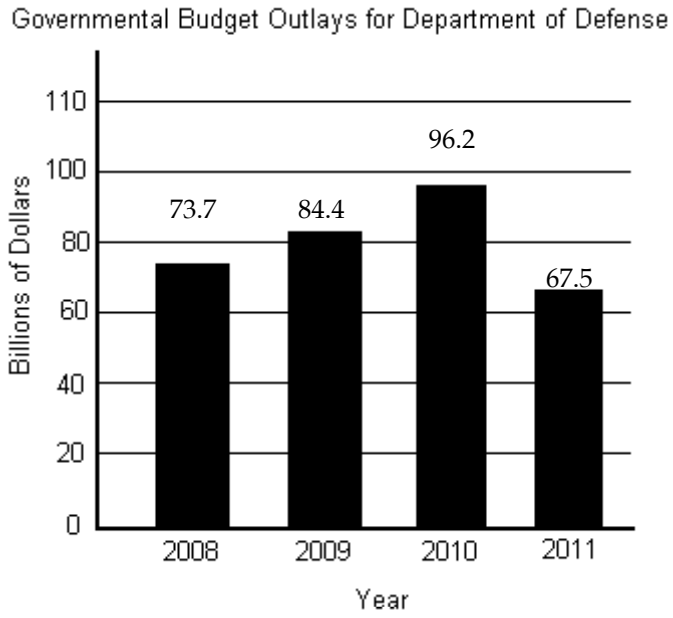


A) (a) –106.1 billion dollars, (b) –52.7 billion dollars
B) (a) 106.1 billion dollars, (b) 52.7 billion dollars
C) (a) 25.1 billion dollars, (b) 7.1 billion dollars
D) (a) –25.1 billion dollars, (b) –7.1 billion dollars

Answer: C

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266) The bar graph shows governmental budget outlays for Country X's Department of Defense for the years 2008 through 2011. Use a signed number to represent the change in outlay for (a) 2008 to 2011 and (b) 2009–2011.



A) (a) 141.2 billion dollars, (b) 151.9 billion dollars
B) (a) –6.2 billion dollars, (b) –16.9 billion dollars
C) (a) 6.2 billion dollars, (b) 16.9 billion dollars
D) (a) –28.7 billion dollars, (b) –6.2 billion dollars

Answer: B

Answer the question or complete the sentence to make a true statement.

267) In order to add –9 and 5, I should begin by finding the _____ of the _____ of –9 and 5.
A) Sum, absolute values
B) Difference, additive inverses
C) Difference, absolute values
D) Sum, opposites

Answer: C

268) In order to add –8 and –2, I should begin by finding the _____ of the _____ of –8 and –2.
A) Opposite, additive inverses
B) Difference, absolute values
C) Additive inverses, opposites
D) Sum, absolute values

Answer: D

269) When the absolute value of a positive number equals the absolute value of a negative number, the sum of the positive and the negative number is _____.
A) Not known
B) Negative
C) Positive
D) Zero

Answer: D

270) According to the rules for the order of operations, what should be the first step when simplifying the expression $[7 + (-1 + 3)] + (-8)$?
A) Find the sum of –1 and 3
B) Find the sum of 7 and –8
C) Find the sum of 7 and –1
D) Find the sum of 3 and –8

Answer: A

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271) According to the rules for the order of operations, what should be the first step when simplifying the expression $[-6 + (-10 + 7)] + (-3 + 6)$?

A) Find the sum of −6 and −10
B) Find the sum of −6 and −3
C) Find the sum of −10 and 7
D) Find the sum of 7 and −3

Answer: C

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

272) Under what condition will the sum of a positive number and a negative number be negative?

Answer: The absolute value of the negative number must be larger than the absolute value of the positive number.

273) Under what condition will the sum of a positive number and a negative number be positive?

Answer: The absolute value of the positive number must be larger than the absolute value of the negative number.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

274) The sum of two positive numbers will always be a _____ number.

A) Negative
B) Positive

Answer: B

275) The sum of a negative number and 0 will always be a _____ number.

A) Negative
B) Positive

Answer: A

276) The sum of three negative numbers will always be a _____ number.

A) Positive
B) Negative

Answer: B

Provide an appropriate response.

277) If a, b, and c are real numbers, is this statement true or false? $0 - a = -a$

A) True
B) False

Answer: A

278) If a, b, and c are real numbers, is this statement true or false? If $a = b$, then $a - b = b - c$.

A) True
B) False

Answer: B

279) If a, b, and c are real numbers, is this statement true or false? $-(-a) = -a$

A) True
B) False

Answer: B

280) If a, b, and c are real numbers, is this statement true or false? $-(a + b) = -a - b$

A) True
B) False

Answer: A

281) If a, b, and c are real numbers, is this statement true or false? $a - 0 = -a$

A) True
B) False

Answer: B

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

282) Is this statement true or false? Why? $(8 - 8) - 8 = 8 - (8 - 8)$

Answer: False. Answers will vary.

283) Is this statement true or false? Why? $(6 + 6) - 6 = 6 + (6 - 6)$

Answer: True. Answers will vary.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

284) Given the problem $8 - [8 - (-9 - 16)]$, is the first step in solving to subtract -9 from -16?

A) Yes B) No

Answer: B

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

285) Make up a subtraction problem in which the difference between two negative numbers results in a positive number.

Answer: Answers may vary. One possible answer is $-9 - (-15) = 6$.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the product.

286) $-8(18)$

A) 16 B) 80 C) -144 D) -64

Answer: C

287) $-7(-7)$

A) -59 B) 49 C) -49 D) 59

Answer: B

288) $-4(27)$

A) 208 B) -88 C) -108 D) 91

Answer: C

289) $-18(0)$

A) -18 B) 0 C) 1 D) 18

Answer: B

290) $-\frac{7}{4}\left(-\frac{6}{7}\right)$

A) 3 B) -1 C) $\frac{1}{3}$ D) $\frac{3}{2}$

Answer: D

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291) $-40\left(-\frac{5}{16}\right)$

A) $\frac{5}{2}$ B) $-\frac{5}{2}$ C) $-\frac{25}{2}$ D) $\frac{25}{2}$

Answer: D

Find all integer factors of the given number.

292) 42

A) −42, −7, −1, 1, 7, 42
B) −42, −21, −14, −6, −7, −3, −2, −1, 1, 2, 3, 7, 6, 14, 21, 42
C) −42, −28, −14, −6, −7, −3, −2, −1, 1, 2, 3, 7, 6, 14, 28, 42
D) −42, −14, −6, −7, 7, 6, 14, 42

Answer: B

293) 19

A) −19, −9, −6, −3, −2, −1, 1, 2, 3, 6, 9, 19
B) −19, −9, −6, −4, −2, −1, 1, 2, 4, 6, 9, 19
C) −19, −1, 1, 19
D) −19, −9, −2, −1, 1, 2, 9, 19

Answer: C

294) 27

A) −27, −9, −3, −1, 1, 3, 9, 27
B) −27, −9, −3, 3, 9, 27
C) −9, −3, −1, 1, 3, 9
D) −27, −13, −3, 3, 13, 27

Answer: A

295) 125

A) −25, −5, −1, 1, 5, 25
B) −125, −62, −5, 5, 62, 125
C) −125, −25, −5, 5, 25, 125
D) −125, −25, −5, −1, 1, 5, 25, 125

Answer: D

296) 130

A) −130, −26, −13, −10, −5, −2, −1, 1, 2, 5, 10, 13, 26, 130
B) −130, −65, −26, −13, −10, −5, −2, −1, 1, 2, 5, 10, 13, 26, 65, 130
C) −130, −65, −13, −10, −5, −2, 2, 5, 10, 13, 65, 130
D) −130, −65, −26, −13, −10, −5, −4, −2, −1, 1, 2, 4, 5, 10, 13, 26, 65, 130

Answer: B

Find the quotient.

297) $\frac{-168}{6}$

A) 28 B) −28 C) −38 D) $-\frac{1}{28}$

Answer: B

298) $\frac{56}{-2}$

A) −38 B) 28 C) $-\frac{1}{28}$ D) −28

Answer: D

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299) $\frac{-225}{75}$

A) –13 B) –3 C) $-\frac{1}{3}$ D) 3

Answer: B

300) $\frac{-306}{-51}$

A) –6 B) $\frac{1}{6}$ C) 6 D) –4

Answer: C

301) $\frac{0}{-43}$

A) 0 B) 43 C) Undefined D) 1

Answer: A

302) $-\frac{3}{5} \div \left(-\frac{4}{9}\right)$

A) $-\frac{27}{20}$ B) $\frac{20}{27}$ C) $-\frac{4}{15}$ D) $\frac{27}{20}$

Answer: D

303) $\frac{1}{2} \div \left(-\frac{8}{15}\right)$

A) $-\frac{15}{16}$ B) $-\frac{4}{15}$ C) $\frac{16}{15}$ D) $\frac{15}{16}$

Answer: A

304) $\frac{-9}{0}$

A) –9 B) 0 C) 9 D) Undefined

Answer: D

305) $\frac{4.312}{4}$

A) 0.27 B) 1.078 C) –0.27 D) –1.078

Answer: B

Perform the indicated operations.

306) 2 – 6 • 6

A) 38 B) –34 C) –24 D) 34

Answer: B

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307) $28 + 17 \cdot 28 - 28$

A) 476 B) 1232 C) 45 D) 0

Answer: A

308) $23 + 16 \cdot 5 - (-9)$

A) 204 B) 112 C) 53 D) 546

Answer: B

309) $6 \cdot (-5) + 21 \cdot (-23)$

A) −207 B) 2208 C) 207 D) −513

Answer: D

310) $16 \cdot 11 - 29 \cdot 18$

A) 16 B) −346 C) −5184 D) 2646

Answer: B

311) $3 - (-7) \cdot (-2) + 11$

A) 9 B) 0 C) −9 D) 52

Answer: B

312) $-3(5 - 9)$

A) −12 B) −42 C) −24 D) 12

Answer: D

313) $(74 - 79)(15 - 75)$

A) 7035 B) −300 C) 13,770 D) 300

Answer: D

314) $8[(-2) + 4(-8 + 2)]$

A) −100 B) −208 C) −40 D) −96

Answer: B

315) $5(-6) + |2 - 14|$

A) −42 B) 18 C) 42 D) −18

Answer: D

Perform the indicated operation.

316) $\dfrac{-4(9)}{2 - (-1)}$

A) 12 B) 36 C) −12 D) −36

Answer: C

317) $\dfrac{-8(2) + 8(8)}{-3 - (-7)}$

A) −20 B) 20 C) −12 D) 12

Answer: D

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318) $\frac{-20(-4) - (-12)(-4)}{-6(4) - 4(2)}$

A) –1 B) 4 C) –2 D) 1

Answer: A

Evaluate the expression, given x = –2, y = 3, and a = –4.

319) –2x – 7y – 5a

A) 17 B) 3 C) –3 D) 28

Answer: B

320) (–5x – 6y)(3a)

A) 96 B) –96 C) 36 D) –480

Answer: A

321) 5a – 5y – 7x

A) –11 B) –31 C) 49 D) –21

Answer: D

322) (–4 + x)(–8 + y)(3 – a)

A) –10 B) –210 C) 210 D) –30

Answer: C

323) (–3a)(3x + 4y)

A) 12 B) 72 C) 216 D) –72

Answer: B

324) $\left(\frac{1}{4}x + \frac{2}{7}y\right)\left(-\frac{1}{6}a\right)$

A) $\frac{5}{42}$ B) $\frac{5}{21}$ C) $\frac{10}{7}$ D) $\frac{19}{21}$

Answer: B

325) $\frac{5ax - 10y}{a + y}$

A) 20 B) –20 C) –1 D) –10

Answer: D

326) $8y - 3a^2$

A) –24 B) 0 C) 12 D) 72

Answer: A

327) $\frac{3a^2 - y}{x + 2}$

A) $\frac{45}{4}$ B) $-\frac{51}{4}$ C) 0 D) Undefined

Answer: D

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Write a numerical expression for the phrase and simplify it.

328) The product of –5 and 2, added to 5

A) (5)(–5 + 2); –15 B) (–5 + 5)(2); 0 C) (–5)(2)(5); –50 D) 5 + (–5)(2); –5

Answer: D

329) The product of 3 and –4, added to –2

A) (–2)(–4) + 3; 11 B) (–2)(–4)(3); 24 C) (–2) + (3)(–4); –14 D) (–2 + 3)(–4); –4

Answer: C

330) The product of –1 and 6, subtracted from –2

A) –2 + (–1)(6); –8 B) [–2 – (–1)](6); –6 C) (–2)(–1)(6); 12 D) –2 – (–1)(6); 4

Answer: D

331) Twice the product of –7 and –3, subtracted from 9

A) (9)(2)(–7 + 3); –72 B) (9 – 2)(–7 • –3); 147

C) (9)(2)(–7)(–3); 378 D) 9 – 2(–7 • –3); –33

Answer: D

332) 3 subtracted from the product of –9.4 and 8.6

A) [3 + (–9.4)](8.6); –55.04 B) (–9.4)(8.6) – 3; –83.84

C) 3 – (–9.4)(8.6); 83.84 D) (3)(–9.4)(8.6); –242.52

Answer: B

333) The product of 2 and the difference between 5 and –6

A) 2[5 – (–6)]; 22 B) (2 – 5)(–6); 18 C) (2)(5) – (–6); 16 D) 2[–6 – 5]; –22

Answer: A

334) The product of –8 and the sum of 5 and –9

A) (–8)(5) + (–9); –49 B) –8 + (5)(–9); –53 C) (–8)(–9) + 5; 77 D) –8[5 + (–9)]; 32

Answer: D

335) Three-eighths of the sum of –3 and –5.

A) $\frac{3}{8}$ [(–3) + (–5)]; –3 B) $\frac{3}{8}$ + [(–3) + (–5)]; 2

C) (3 + 8)(–3) + (–5); –38 D) $\frac{3}{8}$ [(–3) + (–5)]; –6

Answer: A

336) Five-ninths of the difference between –7 and –25.

A) 5(9) [(–7) – (–25)]; 10 B) $\frac{5}{9}$ + [(–7) – (–25)]; 30

C) 5(9) [(–7) – (–25)]; 810 D) $\frac{5}{9}$ [(–7) – (–25)]; 10

Answer: D

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337) The quotient of −12 and −2

A) $\frac{-12}{-2}$; 6 B) $\frac{-12}{-2}$; $\frac{1}{6}$ C) $\frac{-2}{-12}$; $\frac{1}{6}$ D) (−2)(−12); 24

Answer: A

338) The quotient of −12 and the sum of 3 and −5

A) $\frac{-12}{3 + (-5)}$; −6 B) $\frac{-12}{3 + (-5)}$; 6 C) $\frac{3 + (-5)}{-12}$; $\frac{1}{6}$ D) −12 + 3 + (−5); −14

Answer: B

339) The quotient of −133 and the sum of 13 and 6

A) $\frac{-133}{13 - 7}$; 7 B) −133 + 13 + 6; −114

C) $\frac{13 + 6}{-133}$; $-\frac{1}{7}$ D) $\frac{-133}{13 + 6}$; −7

Answer: D

340) The sum of 44 and −8, divided by the product of 3 and −6

A) $\frac{44 + (-8)}{3(-6)}$; −2 B) $\frac{3(-6)}{44 + (-8)}$; $-\frac{1}{2}$ C) $44 + \frac{-8}{3(-6)}$; −2 D) $\frac{44 + 8}{3 - (-6)}$; −12

Answer: A

341) The sum of −19 and −5, divided by the product of 3 and −1

A) $\frac{-19 + (-5)}{3 - (-1)}$; −6 B) $\frac{-19 + (-5)}{3(-1)}$; 8 C) $-19 + \frac{-5}{3 + (-1)}$; 9 D) $-19 + \frac{-5}{3(-1)}$; $-\frac{1}{6}$

Answer: B

342) The product of $\frac{2}{5}$ and $\frac{3}{5}$, divided by $-\frac{1}{4}$.

A) $\frac{\left(-\frac{1}{4}\right)}{\left(\frac{2}{5}\right)\left(\frac{3}{5}\right)}$; $-\frac{25}{24}$ B) $\frac{\left(\frac{2}{5}\right)\left(\frac{3}{5}\right)}{-\frac{1}{4}}$; $-\frac{3}{50}$ C) $\frac{\left(\frac{2}{5}\right)\left(\frac{3}{5}\right)}{-\frac{1}{4}}$; $-\frac{24}{25}$ D) $\frac{\left(\frac{2}{5}\right)}{\left(\frac{3}{5}\right)\left(-\frac{1}{4}\right)}$; $-\frac{8}{3}$

Answer: C

Write the statement in symbols, using x as the variable, and find the solution by guessing or by using trial and error. All solutions come from the list of integers between −12 and 12 inclusive.

343) 2 times a number is −6.

A) $\frac{-6}{-3} = x$; 2 B) −3x = −6; 2 C) 2x = −6; −3 D) −2x = −6; 3

Answer: C

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344) The quotient of a number and 2 is 4.

A) $2x = \frac{1}{4}; \frac{1}{8}$ B) $\frac{8}{x} = 2; 4$ C) $\frac{x}{4} = 2; 8$ D) $\frac{x}{2} = 4; 8$

Answer: D

345) 5 less than a number is –1.

A) $x - 5 = -1; 4$ B) $x - 1 = 5; 6$ C) $x + 5 = -1; -6$ D) $5 - x = -1; 6$

Answer: A

346) When 7 is added to another number the result is 18.

A) $x + 18 = 7; -11$ B) $18 - 7 = x; 11$ C) $7 + 18 = x; 25$ D) $x + 7 = 18; 11$

Answer: D

Find the average of the numbers.

347) 15, 7, 11, 5, 7

A) 46 B) 8 C) 11.25 D) 9

Answer: D

348) 8, 9, 20, 18, 6, 9, 1, 9

A) 17 B) 9 C) 10 D) 11.43

Answer: C

349) 11, 12, 1, –2, –2

A) 4 B) 5 C) 3 D) 3.3

Answer: A

350) What is the average of all integers between 5 and 26, inclusive of both?

A) 16.5 B) 341 C) 15.5 D) 99

Answer: C

351) What is the average of all the odd integers between –11 and 9, inclusive of both?

A) –11 B) 0 C) –1 D) –22

Answer: C

Provide an appropriate response.

352) The product of two negative numbers is negative.

A) True B) False

Answer: B

353) The product of three negative numbers is positive.

A) True B) False

Answer: B

354) The cube of a negative number is negative.

A) True B) False

Answer: A

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

355) What values of a and b make the result negative? $-(a - b)$

Answer: a must be greater than b

356) If x and y are both replaced by negative numbers, is the value of $3x - 4y$ positive or negative?

Answer: Positive if $|4y|$ is greater than $|3x|$; negative if the opposite is true.

Answer the question.

357) The reciprocal of a negative number is a _____ number.

Answer: Negative

358) Is the following expression undefined? $\frac{5 - 5}{5 - 5}$

Answer: Yes

359) Is the following expression undefined? $\frac{5 - 5}{5 - 5}$

Answer: Yes

360) A positive number multiplied by two negative numbers and then divided by a positive number is _____.

Answer: Positive

361) The average of a group of negative numbers is a _____ number.

Answer: negative

362) The only real number that does not have a reciprocal is _____.

Answer: zero

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

363) Assume a is positive, b is negative, and c is positive for the expression
$a - (b / c)$
Tell whether the value of the given expression is positive, negative or cannot be determined.
A) Negative B) Cannot be determined C) Positive

Answer: C

364) Assume a is positive, b is negative, and c is positive for the expression $(b - a) / c$
Tell whether the value of the given expression is positive, negative or cannot be determined.
A) Cannot be determined B) Negative C) Positive

Answer: B

365) Assume a is positive, b is negative, and c is positive for the expression
$a \cdot b^2 \cdot c$
Tell whether the value of the given expression is positive, negative or cannot be determined.
A) Cannot be determined B) Positive C) Negative

Answer: B

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Use the commutative or the associative property to complete the statement. State which property is used.

366) $1 + (-2) = -2 +$ ___

A) –1; commutative property
B) 1; associative property
C) 1; commutative property
D) –1; associative property

Answer: C

367) $-2 \cdot 4 = 4 \cdot$ ___

A) –2; associative property
B) –2; commutative property
C) 2; commutative property
D) 2; associative property

Answer: B

368) $11 + (5 + 6) = (11 +$ ___ $) + 6$

A) –5; commutative property
B) 5; commutative property
C) 5; associative property
D) –5; associative property

Answer: C

369) $8 \cdot (4 \cdot 2) = (8 \cdot$ ___ $) \cdot 2$

A) 4; associative property
B) –4; commutative property
C) 4; commutative property
D) –4; associative property

Answer: A

Decide whether the statement is an example of the commutative, associative, identity, inverse, or distributive property.

370) $4 \cdot 1 = 4$

A) Distributive
B) Commutative
C) Inverse
D) Identity

Answer: D

371) $(8 + 6) + 1 = (6 + 8) + 1$

A) Identity
B) Commutative
C) Associative
D) Distributive

Answer: B

372) $5(x + 6) = 5x + 5 \cdot 6$

A) Commutative
B) Associative
C) Distributive
D) Identity

Answer: C

373) $9 + (-9) = 0$

A) Commutative
B) Associative
C) Identity
D) Inverse

Answer: D

374) $4 + 9 = 9 + 4$

A) Distributive
B) Associative
C) Identity
D) Commutative

Answer: D

375) $(7 \cdot 7) \cdot 6 = 7 \cdot (7 \cdot 6)$

A) Commutative
B) Identity
C) Associative
D) Distributive

Answer: C

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376) $7 \cdot 4 = 4 \cdot 7$

A) Distributive B) Identity C) Associative D) Commutative

Answer: D

377) $\left(\frac{5}{7}\right)\left(\frac{7}{5}\right) = 1$

A) Identity B) Commutative C) Associative D) Inverse

Answer: D

378) $6(2f) - 6(8g) = 6(2f - 8g)$

A) Distributive B) Associative C) Commutative D) Identity

Answer: A

Find the sum.

379) 191 + 89 + 9 + 1

A) 280 B) 300 C) 270 D) 290

Answer: D

380) 2994 + 4 + 16 + 6

A) 2010 B) 3010 C) 3020 D) 2020

Answer: C

381) 26 + 222 + 74 + 178

A) 510 B) 400 C) 500 D) 600

Answer: C

382) 157 + 6 + (–7) + (–6)

A) 150 B) 164 C) 176 D) 162

Answer: A

383) 836 + 544 + (–36) + (–44)

A) 1380 B) 1388 C) 1300 D) 1372

Answer: C

384) 1236 + 1314 + (–36) + (–14)

A) 2572 B) 2500 C) 2600 D) 2528

Answer: B

Find the product.

385) 2(53)(5)

A) 532 B) 371 C) 530 D) 275

Answer: C

386) –5(71)(2)

A) 132 B) –213 C) –713 D) –710

Answer: D

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387) $-5 \cdot 4 \cdot 61 \cdot (-5)$

A) −6100 B) 610 C) −305 D) 6100

Answer: D

388) $25 \cdot (-2) \cdot 61 \cdot 2$

A) −1525 B) −6100 C) 1525 D) 6095

Answer: B

Use the properties of real numbers to simplify the expression.

389) $-\frac{1}{3} + \frac{3}{8} + \frac{5}{8} + \frac{1}{3}$

A) 1 B) 4 C) 2 D) 0

Answer: A

390) $\frac{8}{3}(-0.18)\left(\frac{3}{8}\right)$

A) 1 B) −1 C) $\frac{8}{3}$ D) −0.18

Answer: D

Use the distributive property to rewrite the expression. Simplify if possible.

391) $7(x + 4)$

A) $7x + 4$ B) $7x + 28$ C) $28x$ D) $7x + 7$

Answer: B

392) $5(8x + 9y + 4)$

A) $40x + 45y + 4$ B) $40x + 9y + 20$ C) $40x + 45y + 20$ D) $40x + 9y + 4$

Answer: C

393) $9(3r + 6 + 2s)$

A) $27r + 6 + 2s$ B) $27r + 6 + 18s$ C) $27r + 54 + 2s$ D) $27r + 54 + 18s$

Answer: D

394) $-9(3x) - 9(9y)$

A) $-27x - 81y$ B) $-9x(3 + 9) = -108x$ C) $-18(3x + 9y)$ D) $-9(3x + 9y)$

Answer: D

395) $-\frac{2}{9}(-9x + 18y)$

A) $2x + 4y$ B) $-2x$ C) $-2x + 4y$ D) $2x - 4y$

Answer: D

396) $4x + 4z$

A) $4(x + z)$ B) $4(xz)$ C) $8(x + z)$ D) $16(x + z)$

Answer: A

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397) $\frac{8}{3}(81x + 12y)$

A) 248xy B) 248(x + y) C) 27x + 4y D) 216x + 32y

Answer: D

Write the expression without parentheses.

398) –(3x + 6y)

A) –3x – 6y B) 3x + 6y C) –3x + 6y D) 3x – 6y

Answer: A

399) –(–5v – 3r)

A) –5v – 3r B) 5v + 3r C) 5v – 3r D) –5v + 3r

Answer: B

400) –(–4m + 5n – 9p)

A) 4m – 5n – 9p B) –4m + 5n – 9p C) 4m – 5n + 9p D) –4m + 5n + 9p

Answer: C

401) –(2z – 8w + 3y)

A) –2z – 8w + 3y B) –2z + 8w – 3y C) –2z + 8w + 3y D) –2z – 8w – 3y

Answer: B

402) –(–4t – 9r – 4s)

A) 4t + 9r – 4s B) –4t – 9r – 4s C) 4t + 9r + 4s D) –4t – 9r + 4s

Answer: C

403) –(9n + 4w + 4g)

A) 9n + 4w + 4g B) –9n – 4w + 4g C) 9n – 4w + 4g D) –9n – 4w – 4g

Answer: D

Answer the question.

404) There is an associative property for both addition and multiplication. Is there an associative property for subtraction? If so, state the property.

A) Yes. x – (y – z) = (x – y) – z B) No.

Answer: B

405) There is a distributive property for multiplication with respect to addition: a(b + c) = ab + ac. Is there a distributive property for multiplication with respect to subtraction? If so, state the property.

A) No. B) Yes. a(b – c) = ab – ac

Answer: B

406) Choose the expression that is equivalent to the following: 0 + 4a

A) 0 B) 4a C) 4 + a D) –4a

Answer: B

407) Choose the expression that is equivalent to the following: $1(6x^3)$

A) $_{6x^3}$ B) 1 C) $_{7x^3}$ D) $_{6x^4}$

Answer: A

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408) Choose the expression that is equivalent to the following: 5(7a) + 5(6b)

A) 10(13ab) B) 5(7a + 6b) C) 10(7a + 6b) D) 5(13ab)

Answer: B

409) Choose the expression that is equivalent to the following: 18x + 3y

A) 21xy B) 3(6x + y) C) 3(6x + 3y) D) 3(15x + y)

Answer: B

410) Choose the expression that is equivalent to the following: (7x + 9y)(4y + 8x)

A) (7x + 8x)(9y + 4y) B) (7x + 9y)(8x + 4y) C) 15x + 13y D) (7x + 9y)(8y + 4x)

Answer: B

411) Choose the expression that is equivalent to the following: $(7x + 5y)(9y^3)$

A) $(7x) + (5y)(9y^3)$ B) $7x + (5y + 9y^3)$ C) $(7x + 9y^3)(5y)$ D) $(9y^3)(7x + 5y)$

Answer: D

412) Choose the expression that is equivalent to the following: $9(\frac{1}{9})$

A) $9\frac{1}{9}$ B) $\frac{9}{9}$ C) $\frac{1}{81}$ D) $9 + \frac{1}{9}$

Answer: B

413) Choose the expression that is equivalent to the following: 7 – 7

A) 2(7) B) 7 + (–7) C) (–2)(7) D) (7)(7)

Answer: B

Simplify the expression.

414) 5a – 2a + 3

A) 6a B) –3a + 3 C) 3a + 3 D) 7a + 3

Answer: C

415) –1 + 8(8 – 7m)

A) 63 – 7m B) 63 + 56m C) 64 – 56m D) 63 – 56m

Answer: D

416) –14 – (9 – 5q)

A) –5 – 5q B) 23 + 5q C) 5 – 5q D) –23 + 5q

Answer: D

417) 9g + 16 – 5

A) 9g + 11 B) 20g C) 9g – 11 D) 9g + 21

Answer: A

Give the numerical coefficient of the term.

418) z

A) 1 B) –1 C) 0 D) z

Answer: A

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419) $-10y^3$

A) -10 B) 3 C) y^3 D) 10

Answer: A

420) $-9y$

A) y B) $9y$ C) 9 D) -9

Answer: D

421) -5

A) 0 B) -5 C) 5 D) 1

Answer: B

422) 10

A) 10 B) 0 C) 1 D) -1

Answer: A

423) rv

A) r B) rv C) 1 D) 0

Answer: C

424) $-w$

A) 0 B) 1 C) -1 D) $-w$

Answer: C

425) $11k^2$

A) 11 B) 121 C) 2 D) 22

Answer: A

Identify the group of terms as like or unlike.

426) $13z, -6z$

A) Like B) Unlike

Answer: A

427) $17a^2, 17a^3$

A) Unlike B) Like

Answer: A

428) $9m, 11m, -2m$

A) Unlike B) Like

Answer: B

429) $9, 10, -2$

A) Like B) Unlike

Answer: A

430) $9b, 5, 14a$

A) Unlike B) Like

Answer: A

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431) 13m, –11m

A) Unlike B) Like

Answer: B

432) u, v

A) Like B) Unlike

Answer: B

433) $13v^3$, $-7v^5$

A) Unlike B) Like

Answer: A

434) $14v^7$, $-6v^7$

A) Unlike B) Like

Answer: B

Simplify the expression.

435) 5x + 14x

A) $19x^2$ B) 38x C) 70x D) 19x

Answer: D

436) –8p – 4p

A) –12p B) 4p C) –4p D) $4p^2$

Answer: A

437) 5x + x

A) 5x + 1 B) 11x C) 5x D) 6x

Answer: D

438) 6x – 7 – 12x – 5

A) –6x – 2 B) –6x – 12 C) 6x – 12 D) 6x – 2

Answer: B

439) –3y + 3 – 1 + 5 + y – 7

A) –2y B) –2y – 1 C) –4y D) –4y + 1

Answer: A

440) –9b + 5 + 7b + 3b – 10

A) b + 5 B) b + 10 C) b – 10 D) b – 5

Answer: D

441) $-\frac{17}{12} + 9y + \frac{13}{12}y - 11 + \frac{7}{12}y$

A) $\frac{67}{6}y$ B) $\frac{17}{2}y + 6$ C) $\frac{32}{3}y - \frac{149}{12}$ D) $\frac{32}{3} - 6$

Answer: C

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442) $7p^2 + 3p^3 - 5p^2 - 8p^3$

A) $2p^2 - 5p^3$ B) $-3p^2$ C) $-3p^2p^3$ D) $10p^2 - 13p^3$

Answer: A

443) $8k + 2(5 - 5k)$

A) $3k + 10$ B) $2k - 10$ C) $-2k + 10$ D) $18k - 10$

Answer: C

444) $100[0.04(x - 13)$

A) $0.04x + 52$ B) $0.4x - 52$ C) $4x - 52$ D) $4x + 52$

Answer: C

445) $10(y + 9) - 5$

A) $19y - 5$ B) $10y + 40$ C) $10y + 85$ D) $10y + 4$

Answer: C

446) $-\frac{3}{7}(z - 11) - \frac{1}{14}z$

A) $\frac{1}{2}z - \frac{33}{7}$ B) $\frac{1}{2}z + \frac{33}{7}$ C) $\frac{5}{14}z + 11$ D) $-\frac{1}{2}z + \frac{33}{7}$

Answer: D

447) $-3(7r + 7) + 9(3r + 6)$

A) $4r + 4$ B) $6r + 7$ C) $-42r$ D) $6r + 33$

Answer: D

448) $(12z + 7) - (4z - 5)$

A) $16z + 12$ B) $8z + 12$ C) $8z + 2$ D) $8z - 12$

Answer: B

449) $-2(-2j + 8) - (7j + 3) - 4j + 11$

A) $7j + 11$ B) $-7j - 8$ C) $7j - 2$ D) $-7j + 24$

Answer: B

450) $-2.3p + 5.8 - (8p + 0.4) + 5.8p$

A) $-4.5p + 5.4$ B) $11.5p + 5.4$ C) $11.5p + 6.2$ D) $-4.5p + 6.2$

Answer: A

Write the phrase as a mathematical expression. Use x to represent the number. Combine like terms if possible.

451) Three times a number, added to the sum of the number and two

A) $(x + 2) + 3x; 4x + 2$ B) $3x + 2$ C) $4x$ D) $5x$

Answer: A

452) A number multiplied by −6, subtracted from the sum of 15 and four times the number

A) $6x - 19$ B) $(15 + 4x) - (-6)x; 15 + 10x$

C) $(15 + 4x) + (-6)x; 15 - 2x$ D) $6x - (15 + 4x); 2x - 15$

Answer: B

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453) A number multiplied by 2, added to −5, subtracted from 2 times the sum of 9 times the number and 4

A) 2x − 5 + 2(9 + 4x); 10x + 20
B) 2(−5 + x) + 2(9x + 4); 20x − 6
C) 2(−5 + x) + 2(9 + 4x); 6x + 8
D) 2(9x + 4) − [2x + (−5)]; 16x + 13

Answer: D

454) 9 times a number added to −9, added to 6 times the sum of 5 times the number and 4

A) 9(−9 + x) + 6(5x + 4); 39x − 77
B) 6(5x + 4) + [9x + (−9)]; 39x + 15
C) 9x − 9 + 6(5 + 4x); 33x + 39
D) 9(−9 + x) + 6(5 + 4x); 13x − 51

Answer: B

455) Six times a number added to −5, subtracted from twice the sum of seven times the number and 9

A) (−5 + 6x) − 2(7x + 9); −23 − 8x
B) 6(x − 5) − (2 + 7)(x + 9); −111 − 3x
C) (2 + 7)(x + 9) − 6(x − 5); 111 + 3x
D) 2(7x + 9) − (−5 + 6x); 23 + 8x

Answer: D

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

Provide an appropriate response.

456) What are some word phrases that mean addition?

Answer: Sum of, increased by, more than, the total of, plus, longer than, added to

457) What are some word phrases that mean multiplication?

Answer: Times, product of, fraction of the number

458) What are some word phrases that mean subtraction?

Answer: Less than, decreased by, take away, minus, subtract

459) Which is an example of a term with numerical coefficient 4?

(a) x^4 (b) $4x^5y$ (c) 4^2x^2 (d) $\frac{x}{4}$

Answer: (b)

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

460) Is the statement true or false?

$3x^3 + 2x^4 = 5x^7$

A) False
B) True

Answer: A

461) Which one of the following is an example of a pair of like terms?

A) $-4r^4, -6r^5$
B) 3r, −4z
C) −6xz, 3zx
D) $-3s^2x, -7sx^2$

Answer: C

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

462) What property is used to combine 3y and 12y to get 15y? Explain.

Answer: Distributive. In 3y + 12y, the y has been distributed. Therefore, 3y + 12y = (3 + 12)y = 15y

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463) Write the expression 6m – (m + 10) using words.

Answer: Answers may vary. One possible answer: The difference between 6 times a number and the sum of the number and 10.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the statement is true or false.

464) $4[6 + (6 - 5)] \geq 21$

A) True B) False

Answer: A

465) $\left(\frac{1}{2}\right)^2 + \left(\frac{1}{5}\right)^2 = \left(\frac{1}{2} + \frac{1}{5}\right)^2$

A) False B) True

Answer: A

Provide an appropriate response.

466) To which of the following sets does $-\frac{3}{8}$ belong: natural numbers, whole numbers, integers, rational numbers, irrational numbers, real numbers?

A) Irrational numbers, natural numbers B) Irrational numbers, real numbers

C) Rational numbers, real numbers D) Rational numbers, natural numbers

Answer: C

467) Select the lesser number of 1 and $-|-8|$.

A) $-|-8|$ B) 1

Answer: A

Write the following phrase in symbols then simplify the expression.

468) The quotient of 2 and the sum of 15 and –8.

A) $\frac{2}{15 + (-8)}; \frac{2}{7}$ B) $2 + (15 - 8); 9$ C) $\frac{15 - 8}{2}; \frac{7}{2}$ D) $\frac{2}{15 - (-8)}; \frac{2}{23}$

Answer: A

Provide an appropriate response.

469) Assume a is positive, b is negative, and c is positive for the expression

$a \cdot b^2 \cdot c$

Tell whether the value of the given expression is positive, negative or cannot be determined.

A) Negative B) Positive C) Cannot be determined

Answer: B

Perform the indicated operation.

470) $18 - (18 - 22) + (-21)$

A) 79 B) –1 C) –43 D) 1

Answer: D

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471) $-3\frac{3}{5} + 6\frac{2}{7}$

A) $2\frac{24}{35}$ B) $\frac{16}{35}$ C) $-\frac{4}{35}$ D) $-2\frac{24}{35}$

Answer: A

472) $-4 - [-18 + (14 - 7)]$

A) 7 B) 21 C) –7 D) 43

Answer: A

473) $10^2 + 9 \cdot 7 - (11 + 4 \cdot 6)$

A) 73 B) 176 C) 128 D) 728

Answer: C

474) $(-8) \cdot (-3) + 4 + (-11)^2$

A) 101 B) 351 C) 102 D) 149

Answer: D

475) $\frac{-6 - (-8+ 5)}{-7 - (-2)}$

A) $\frac{1}{3}$ B) $\frac{19}{5}$ C) $\frac{3}{5}$ D) $-\frac{1}{3}$

Answer: C

Find the solution of the equation from the given set.

476) $-x + 4 = -1$; {–9, –5, –1, 0, 1, 5, 9}

A) 5 B) 1 C) 9 D) –9

Answer: A

477) $-7x = -119$; {–17, –14, –7, 0, 7, 14, 17}

A) –14 B) 0 C) 17 D) 7

Answer: C

Evaluate the expression using the given values.

478) $9x - 4y^2$; $x = 3, y = -4$.

A) 91 B) –5 C) –37 D) 11

Answer: C

479) $\frac{3x + 5}{42 - 2y}$; $x = 3, y = 20$

A) 4 B) 19 C) 7 D) 14

Answer: C

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Solve the problem.

480) The windchill temperature was −2° F, and the actual temperature was 27° F. Find the difference between the actual temperature and the windchill temperature.

A) 29°F B) 25°F C) 31°F D) 58°F

Answer: A

481) A baseball team won 2 of its games by 3 runs, lost 1 of its games by 3 runs, lost 1 game by 6 runs, and finished the season by winning its last 2 games by 2 runs. Express as a real number, how many more or fewer runs the did the team score versus their opponents in the 6 games.

A) 13 runs B) 1 runs C) 2 runs D) −4 runs

Answer: B

482) For 2009, the government of Country X collected $2.6 trillion in revenues, but spent $8.9 trillion. Write the government's budget deficit as a signed number.

A) $6.3 trillion B) −$11.5 trillion C) $11.5 trillion D) −$6.3 trillion

Answer: D

Match the property with the example of it.

483) Commutative property

A) (7 + 1) + 8 = 7 + (1 + 8) B) (7 + 1) + 0 = (7 + 1)

C) (7 + 1) + 8 − 7 = (1 + 7) D) (7 + 1) + 8 = 7 + (7 + 1)

Answer: D

484) Associative property

A) (3 + 4) + 7 = (4 + 3) + 7 B) (3 + 4) + 0 = (3 + 4)

C) (3 + 4) + 7 = 3 + (4 + 7) D) (3 + 4) + 7 = 3 + (4 + 3)

Answer: C

485) Inverse property

A) $-\frac{9}{2}\left(-\frac{2}{9}\right) = 0$ B) $-\frac{9}{2}\left(-\frac{9}{2}\right) = 1$ C) $-\frac{9}{2}\left(-\frac{2}{9}\right) = 1$ D) $-\frac{9}{2} + \frac{2}{9} = 0$

Answer: C

486) Identity property

A) 2x + 0 = 2x B) 2x − 2x = 0 C) 2x • 0 = 0 D) 2x • 0 = 2x

Answer: A

487) Distributive property

A) −5(x + y) = 5x + 5y B) −5(x + y) = −5x − 5y

C) −5(x + y) = −5(y + x) D) −5(x + y) = 5(−x − y)

Answer: B

Provide an appropriate response.

488) What property is used to clear parentheses and write 7(x + 8) as 7x + 56?

A) Identity property B) Associative property

C) Distributive property D) Commutative property

Answer: C

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Evaluate.

489) $-5[3 + (-5)]$

A) -40 B) -10 C) -20 D) 10

Answer: D

Simplify by combining like terms.

490) $5x - 4x + 3x - x - 8x$

A) -6 B) $-4x$ C) 6 D) $-5x$

Answer: D

491) $4(5x - 4) - (x - 8) + 2(4x - 5)$

A) $28x - 18$ B) $29x - 34$ C) $27x - 34$ D) $27x - 18$

Answer: D

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1) B
2) A
3) B
4) A
5) B
6) C
7) D
8) D
9) B
10) A
11) A
12) D
13) C
14) D
15) D
16) A
17) C
18) B
19) B
20) B
21) D
22) B
23) A
24) A
25) B
26) B
27) B
28) A
29) A
30) A
31) B
32) A
33) A
34) Seven is less than or equal to nine. True
35) Seven is not equal to eight. True
36) Six is greater than or equal to three. True
37) Fifteen is greater than nine plus five. True
38) Eleven is less than or equal to eight plus four. True
39) Thirteen-eighths is not equal to five-fourths. True.
40) Two-fifths is not equal to three-tenths. True.
41) A
42) C
43) C
44) A
45) A
46) A
47) C
48) B
49) B

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50) A
51) A
52) C
53) B
54) B
55) A
56) B
57) D
58) D
59) A
60) B
61) A
62) A
63) B
64) A
65) B
66) C
67) B
68) D
69) C
70) C
71) C
72) B
73) C
74) C
75) A
76) C
77) D
78) B
79) B
80) D
81) A
82) D
83) A
84) C
85) C
86) B
87) A
88) D
89) C
90) D
91) A
92) D
93) D
94) B
95) B
96) C
97) A
98) C

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99) A
100) A
101) A
102) A
103) B
104) A
105) A
106) A
107) B
108) C
109) A
110) C
111) C
112) B
113) B
114) C
115) D
116) D
117) A
118) B
119) C
120) A
121) B
122) B
123) B
124) B
125) A
126) B
127) B
128) C
129) A
130) D
131) C
132) C
133) A
134) A
135) A
136) B
137) A
138) B
139) A
140) B
141) B
142) A
143) A
144) A
145) A
146) B
147) –7

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148) One example is 4. There are others.
149) One example is 3. There are others.
150) One example is −4.513. There are others.
151) One example is $\sqrt{5}$. There are others.
152) One example is $-\frac{3}{7}$. There are others.

153) B
154) B
155) A
156) B
157) A
158) B
159) B
160) A
161) A
162) B
163) B
164) A
165) A
166) A
167) A
168) C
169) B
170) D
171) B
172) A
173) C
174) A
175) D
176) A
177) A
178) A
179) C
180) D
181) C
182) A
183) A
184) B
185) A
186) A
187) A
188) B
189) A
190) A
191) A
192) B
193) B
194) B

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195) B
196) A
197) B
198) A
199) The integer is neither. It is not a signed integer.
It is the starting point on a number line.
200) The same way as for whole numbers.
201) 0 itself
202) Change subtraction to addition, and change the sign of the subtrahend to its opposite.
−6 − (−3) = −6 + (+3) = −3
203) An integer multiplied by 1 gives the same integer, multiplied by −1 gives the opposite of the integer, and multiplied by 0 gives 0.
204) One example is 6. There are others.
205) 5, 5, −5, 5
206) D
207) B
208) A
209) A
210) D
211) D
212) C
213) C
214) C
215) C
216) B
217) C
218) D
219) A
220) D
221) A
222) C
223) B
224) B
225) D
226) C
227) D
228) D
229) C
230) B
231) A
232) C
233) C
234) D
235) B
236) C
237) A
238) D
239) C
240) B

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241) A
242) D
243) D
244) D
245) C
246) C
247) B
248) B
249) A
250) D
251) D
252) D
253) C
254) C
255) A
256) A
257) B
258) B
259) D
260) B
261) C
262) B
263) D
264) B
265) C
266) B
267) C
268) D
269) D
270) A
271) C
272) The absolute value of the negative number must be larger than the absolute value of the positive number.
273) The absolute value of the positive number must be larger than the absolute value of the negative number.
274) B
275) A
276) B
277) A
278) B
279) B
280) A
281) B
282) False. Answers will vary.
283) True. Answers will vary.
284) B
285) Answers may vary. One possible answer is $-9 - (-15) = 6$.
286) C
287) B
288) C
289) B

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290) D
291) D
292) B
293) C
294) A
295) D
296) B
297) B
298) D
299) B
300) C
301) A
302) D
303) A
304) D
305) B
306) B
307) A
308) B
309) D
310) B
311) B
312) D
313) D
314) B
315) D
316) C
317) D
318) A
319) B
320) A
321) D
322) C
323) B
324) B
325) D
326) A
327) D
328) D
329) C
330) D
331) D
332) B
333) A
334) D
335) A
336) D
337) A
338) B

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339) D
340) A
341) B
342) C
343) C
344) D
345) A
346) D
347) D
348) C
349) A
350) C
351) C
352) B
353) B
354) A
355) a must be greater than b
356) Positive if |4y| is greater than |3x|; negative if the opposite is true.
357) Negative
358) Yes
359) Yes
360) Positive
361) negative
362) zero
363) C
364) B
365) B
366) C
367) B
368) C
369) A
370) D
371) B
372) C
373) D
374) D
375) C
376) D
377) D
378) A
379) D
380) C
381) C
382) A
383) C
384) B
385) C
386) D
387) D

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388) B
389) A
390) D
391) B
392) C
393) D
394) D
395) D
396) A
397) D
398) A
399) B
400) C
401) B
402) C
403) D
404) B
405) B
406) B
407) A
408) B
409) B
410) B
411) D
412) B
413) B
414) C
415) D
416) D
417) A
418) A
419) A
420) D
421) B
422) A
423) C
424) C
425) A
426) A
427) A
428) B
429) A
430) A
431) B
432) B
433) A
434) B
435) D
436) A

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437) D
438) B
439) A
440) D
441) C
442) A
443) C
444) C
445) C
446) D
447) D
448) B
449) B
450) A
451) A
452) B
453) D
454) B
455) D
456) Sum of, increased by, more than, the total of, plus, longer than, added to
457) Times, product of, fraction of the number
458) Less than, decreased by, take away, minus, subtract
459) (b)
460) A
461) C
462) Distributive. In $3y + 12y$, the y has been distributed. Therefore, $3y + 12y = (3 + 12)y = 15y$
463) Answers may vary. One possible answer: The difference between 6 times a number and the sum of the number and 10.
464) A
465) A
466) C
467) A
468) A
469) B
470) D
471) A
472) A
473) C
474) D
475) C
476) A
477) C
478) C
479) C
480) A
481) B
482) D
483) D
484) C

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485) C
486) A
487) B
488) C
489) D
490) D
491) D

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