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

Find the value of the exponential expression.

1) $3^2$

A) 6 B) 9 C) 5 D) 3

Answer: B

2) $22^2$

A) 24 B) 968 C) 484 D) 44

Answer: C

3) $2^3$

A) 2 B) 23 C) 8 D) 6

Answer: C

4) $\left(\frac{3}{5}\right)^2$

A) $\frac{25}{9}$ B) $\frac{9}{25}$ C) $2\frac{3}{5}$ D) $\frac{9}{5}$

Answer: B

5) $(0.8)^4$

A) 3.2 B) 0.4096 C) 4,096 D) 0.2

Answer: B

Simplify.

6) $15 \cdot 14 + 13 \cdot 4$

A) 1,620 B) 262 C) 990 D) 892

Answer: B

7) $10.5 \cdot 5.3 + 10.6 \cdot 10.3$

A) 682.4 B) 164.83 C) 1,719.6 D) 1,202

Answer: B

8) $240 \div 8 - 2$

A) 40 B) 230 C) 234 D) 28

Answer: D

9) $3^2 + 6^2$

A) 36 B) 45 C) 18 D) 81

Answer: B

10) $14 + 28 \cdot 26$

A) 1,092 B) 418 C) 742 D) 68

Answer: C

11) $2 \cdot 6 - 3$

A) 6 B) 9 C) 15 D) 36

Answer: B

12) $7 \cdot 10 - 3 \cdot 9$

A) 43 B) 441 C) 1,890 D) 603

Answer: A

13) $79 - 2 \cdot 3 \cdot 5$

A) 1,155 B) 69 C) 365 D) 49

Answer: D

14) $6^3 \div 8 - 5$

A) 72 B) 213 C) 22 D) 8

Answer: C

15) $\frac{9}{5} \cdot \frac{2}{7} + \frac{5}{6} \cdot \frac{2}{5}$

A) $\frac{89}{55}$ B) $\frac{89}{105}$ C) $\frac{16}{21}$ D) $\frac{89}{80}$

Answer: B

Find the value of the expression.

16) $6[5 + 7(2^2)]$

A) 198 B) 12,996 C) 2,166 D) 1,206

Answer: A

17) $(5 + 6)[8 + (8 + 5)]$

A) 231 B) 630 C) 1,440 D) 115

Answer: A

18) $\frac{5(4 + 8) + 5 \cdot 5}{5(4 - 1)}$

A) $\frac{65}{19}$ B) $\frac{17}{3}$ C) $\frac{15}{19}$ D) $\frac{13}{3}$

Answer: B

19) $\frac{8(7 - 3) + 8 \cdot 4}{8(3 - 2)}$

A) 8 B) $\frac{4}{11}$ C) 3 D) $\frac{12}{11}$

Answer: A

20) $6[5^2 + 8(3 + 3)]$

A) 312 B) 78 C) 1,188 D) 438

Answer: D

21) $\frac{6(17 - 2^2)}{4 \cdot 9 \cdot 14}$

A) $\frac{13}{6}$ B) $\frac{25}{9}$ C) $\frac{13}{84}$ D) $\frac{84}{13}$

Answer: C

22) $\left(\frac{1}{2} + \frac{1}{3}\right) \cdot \frac{3}{11}$

A) $\frac{5}{22}$ B) $\frac{1}{6}$ C) $\frac{15}{11}$ D) $\frac{11}{23}$

Answer: A

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

A) $\frac{3}{4}$ B) 3 C) $\frac{3}{2}$ D) $\frac{3}{5}$

Answer: C

Determine whether the statement is true or false.

24) $6 \leq 19$

A) False B) True

Answer: B

25) $12 > 17$

A) True B) False

Answer: B

26) $4 \leq 19 - 2$

A) True B) False

Answer: A

27) $\frac{7 \cdot (5 + 3) + 7 \cdot 2}{7 \cdot (5 - 1)} < 7$

A) False B) True

Answer: B

28) $9^2 < 8^2 - 6^2$

A) False B) True

Answer: A

29) $(7 + 8)[8 + (4 + 4)] < 195$

A) False B) True

Answer: A

30) $2 \cdot 9 - 7 \cdot 3 \leq 0$

A) True B) False

Answer: A

31) $8[6 + (8 - 5)] < 29$

A) True B) False

Answer: B

32) $\frac{4(6 + 4) + 2 \cdot 9}{9(3 + 8)} \leq 18$

A) True B) False

Answer: A

33) $\frac{9(9 - 3) + 8(9 - 3)}{6(8 - 3) - 6(5 - 2)} \geq 2$

A) False B) True

Answer: B

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) $7 \leq 7$

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

35) $8 \neq 9$

Answer: Eight is not equal to nine. True

36) $5 \geq 2$

Answer: Five is greater than or equal to two. True

37) $12 > 5 + 6$

Answer: Twelve is greater than five plus six. True

38) $9 \leq 4 + 6$

Answer: Nine is less than or equal to four plus six. True

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

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

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

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

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

Write the word statement in symbols.

41) Seventeen is greater than nine plus seven.

A) $9 + 7 > 17$ B) $17 < 9 + 7$ C) $17 + 9 > 7$ D) $17 > 9 + 7$

Answer: D

42) One is less than or equal to seven.

A) $1 < 7$ B) $1 \leq 7$ C) $1 > 7$ D) $1 \geq 7$

Answer: B

43) Three is not equal to eight.

A) $3 < 8$ B) $3 > 8$ C) $3 \geq 8$ D) $3 \neq 8$

Answer: D

44) Fourteen is less than or equal to nine plus six.

A) $14 + 9 \geq 6$ B) $14 < 9 + 6$ C) $14 \leq 9 + 6$ D) $9 + 6 \leq 14$

Answer: C

45) Nine is equal to ten minus one.

A) $10 = 9 - 1$ B) $9 - 10 < 1$ C) $10 < 9 + 1$ D) $9 = 10 - 1$

Answer: D

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

46) $23 < 46$

A) $23 > 46$ B) $46 < 23$ C) $46 > 23$ D) $46 \geq 23$

Answer: C

47) $5 > 1$

A) $5 \geq 1$ B) $1 < 5$ C) $1 > 5$ D) $5 < 1$

Answer: B

48) $19 \geq 7$

A) $19 \leq 7$ B) $7 \geq 19$ C) $19 > 7$ D) $7 \leq 19$

Answer: D

49) $8 \leq 28$

A) $28 \leq 8$ B) $28 > 8$ C) $28 \geq 8$ D) $8 \geq 28$

Answer: C

50) $4.79 \geq 1.25$

A) $4.79 < 1.25$ B) $4.79 \leq 1.25$ C) $1.25 \leq 4.79$ D) $1.25 \geq 4.79$

Answer: C

51) $0.28 < 0.55$

A) $0.55 > 0.28$ B) $0.28 > 0.55$ C) $0.28 \geq 0.55$ D) $0.55 \leq 0.28$

Answer: A

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 rea peak exertion. One MET is the amount of energy used when sitting quietly. To calculate ideal METs, we can use t expression:

14.7 - age · 0.13 For women

or 14.7 - age · 0.11 For men

Researchers recommend that a person reach approximately 85% of his or her MET when exercising. Calculate 85 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) 6.418; Ballroom or square dancing
B) 7.55; Mowing lawn
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 rea peak exertion. One MET is the amount of energy used when sitting quietly. To calculate ideal METs, we can use t expression:

14.7 - age · 0.13 For women

or 14.7 - age · 0.11 For men

Researchers recommend that a person reach approximately 85% of his or her MET when exercising. Calculate 85 ideal MET for a 70-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; Jogging
B) 7; Swimming
C) 5.95; Cycling
D) 5.95; Golfing

Answer: C

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

Answer: D

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

Answer: D

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

Answer: B

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

Answer: B

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

Answer: A

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

Answer: B

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

Answer: C

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

Answer: B

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

Answer: D

Answer the question as instructed.

63) $20^4$ means?

A) $20 \cdot 20 \cdot 20 \cdot 20$ B) $20 \div 4$ C) $20 \cdot 4$ D) $20 \cdot 20 \cdot 20 \cdot 20 \cdot 20$

Answer: A

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

A) $4 + 4 \cdot 3 = 12 + 12 = 24$ B) $4 + 4 \cdot 3 = 8 \cdot 3 = 24$

C) $4 + 4 \cdot 3 = 4 + 12 = 16$ D) $4 + 4 \cdot 3 = 12 + 4 = 16$

Answer: C

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

A) true B) false

Answer: B

66) Which of the following statements is false?

A) $12 = 12$ B) $12 < 12$ C) $12 \leq 12$ D) $12 \geq 12$

Answer: B

67) Which of the following statements is true?

A) $5 > 5$ B) $5 \neq 5$ C) $10 < 5$ D) $10 > 5$

Answer: D

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) less than D) greater than or equal to

Answer: C

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

A) $3 \neq 8$ B) $3 \cdot 5 + 15$ C) $3 \cdot 5 = 15$ D) $3 < 5$

Answer: B

70) Evaluate $1^4$.

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

Answer: D

71) Using the rules for the order of operations, what should be done first when evaluating the expression $(9 + 7^2)^5$?

A) Evaluate $9^5$ B) Evaluate $7^2$ C) Add $9 + 7$ D) Evaluate $7^5$

Answer: B

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

72) $x + 8$

A) a) 26 b) 12 B) a) 4 b) 10 C) a) 12 b) 26 D) a) 32 b) 144

Answer: C

73) $x - 2$

A) a) 8 b) 36 B) a) 16 b) 2 C) a) 6 b) 20 D) a) 2 b) 16

Answer: D

74) $2x$

A) a) 36 b) 8 B) a) 20 b) 6 C) a) 8 b) 36 D) a) 6 b) 20

Answer: C

75) $\frac{x + 7}{6}$

A) a) $\frac{25}{6}$ b) $\frac{11}{6}$ B) a) $\frac{14}{3}$ b) 21 C) a) $\frac{6}{11}$ b) $\frac{6}{25}$ D) a) $\frac{11}{6}$ b) $\frac{25}{6}$

Answer: D

76) $\frac{2x - 7}{6x}$

A) a) $\frac{5}{36}$ b) $\frac{43}{108}$ B) a) $\frac{1}{108}$ b) $\frac{29}{108}$ C) a) $\frac{29}{108}$ b) $\frac{1}{24}$ D) a) $\frac{1}{24}$ b) $\frac{29}{108}$

Answer: D

77) $\frac{x + 7}{x - 1}$

A) a) $\frac{3}{5}$ b) $\frac{11}{19}$ B) a) $\frac{25}{17}$ b) $\frac{11}{3}$ C) a) $\frac{11}{19}$ b) $\frac{3}{5}$ D) a) $\frac{11}{3}$ b) $\frac{25}{17}$

Answer: D

78) $8x^2 + 6x$

A) a) 104 b) 2,484 B) a) 88 b) 396 C) a) 56 b) 252 D) a) 152 b) 2,700

Answer: D

79) $0.66x^2$

A) a) 10.56 b)213.84 B) a) 3.96 b) 17.16 C) a) 5.28 b) 17.16 D) a) 5.28 b) 23.76

Answer: A

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

80) $3x + 7y + 4$; $x = 0$, $y = 8$

A) 60 B) 63 C) 11 D) 28

Answer: A

81) $\frac{7x}{y} + y^2$ $x = 10$, $y = 3$

A) $\frac{76}{3}$ B) $\frac{1021}{10}$ C) $\frac{97}{3}$ D) $\frac{79}{3}$

Answer: C

82) $\frac{14x - 2y}{5}$ $x = 6$, $y = 5$

A) $\frac{58}{5}$ B) $\frac{74}{5}$ C) $\frac{94}{5}$ D) $\frac{82}{5}$

Answer: B

83) $\frac{x + y}{14x - 3}$ x = 5, y = 10

A) $\frac{15}{67}$ B) $\frac{3}{14}$ C) $\frac{5}{67}$ D) $\frac{15}{37}$

Answer: A

84) $\frac{12x + 3y}{2}$ x = 9, y = 4

A) 38 B) -48 C) 120 D) 60

Answer: D

85) $\frac{11x - 8y}{x + 12}$ x = 10, y = 2

A) $\frac{29}{7}$ B) $\frac{47}{11}$ C) $\frac{29}{11}$ D) $\frac{47}{7}$

Answer: B

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

A) 225 B) 15 C) 36 D) 30

Answer: A

87) $\frac{x(y + 3)}{2(x - y)}$ x = 10, y = 5

A) 2 B) 8 C) 5 D) 4

Answer: B

88) $2x^2 + 6y$ x = 4, y = 10

A) 440 B) 92 C) 124 D) 224

Answer: B

89) $0.142x^2 + 0.836y^2$ x = 4, y = 10

A) 85.9 B) 27.6 C) 239.1 D) 70.2

Answer: A

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

90) Six times a number

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

Answer: B

91) A number increased by eight

A) x + 8 B) 8 C) x - 8 D) 8x

Answer: A

92) A number multiplied by three hundred fifty-six

A) 356 - x B) 356 + x C) 356x D) $\frac{356}{x}$

Answer: C

93) A number minus six hundred seven

A) 607 B) x - 607 C) 607x D) x + 607

Answer: B

94) The difference between six times a number and four

A) 6 - x + 4 B) 4 + 6x C) 6x - 4 D) 4 - 6x

Answer: C

95) The quotient of a number and six

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

Answer: A

96) Three divided by a number

A) $\frac{3}{x}$ B) 3 + x C) 3 - x D) 3x

Answer: A

97) The product of four and five more than a number

A) $4 \cdot 5 + x$ B) 4(x + 5) C) $4 + 5 \cdot x$ D) (4 + 5)x

Answer: B

98) 210 divided by a number

A) 210x B) 210 + x C) 210 - x D) $\frac{210}{x}$

Answer: D

99) Nine times a number, added to 4

A) 9(x + 4) B) 9x C) $9 \cdot 4 + x$ D) 9x + 4

Answer: D

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

100) p + 3 = 15; 12

A) Yes B) No

Answer: A

101) p - 1 = 6; 7

A) No B) Yes

Answer: B

102) 3m + 6 = 23; 5

A) Yes B) No

Answer: B

103) 6y + 7(y - 5) = 43; 6

A) Yes B) No

Answer: A

104) $8p + 6p - 3 = 67$; 5

A) No B) Yes

Answer: B

105) $7x^2 + 13 = 69$; 4

A) No B) Yes

Answer: A

106) $\frac{x + 9}{7 - x} = \frac{4}{5}$; $-\frac{17}{9}$

A) No B) Yes

Answer: B

107) $\frac{x + 10}{x - 2} = \frac{4}{7}$; - 26

A) No B) Yes

Answer: B

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

108) A number minus 3 equals 1.

A) $3 - x = 1$ B) $x = 3 - 1$ C) $x - 3 = 1$

Answer: C

109) 2 times a number equals 10 less than 3 times the number.

A) $2x = 10 - 3$ B) $2x = 10 - 3x$ C) $2x = 3x - 10$

Answer: C

110) Twice a number less 2 equals 8.

A) $2 - 2x = 8$ B) $2(x - 2) = 8$ C) $2x - 2 = 8$

Answer: C

111) The product of twice a number and 7 is 182.

A) $14x = 182x$ B) $14x = 182$ C) $2x + 7 = 182$

Answer: C

112) $\frac{7}{5}$ of a number plus 1 equals 8.

A) $\frac{7}{5}(x + 1) = 8$ B) $\frac{7}{5}x = 1 + 8$ C) $\frac{7}{5}x + 1 = 8$

Answer: C

113) 1 divided by a number equals $\frac{1}{8}$ times that number."

A) $\frac{x}{1} = \frac{x}{8}$ B) $\frac{1}{x} = 8x$ C) $\frac{1}{x} = \frac{1}{8}x$

Answer: C

114) When 3 times a number is subtracted from 7 times the number, the result is 28.

A) $3x + 7x = 28$ B) $3x(7 - x) = 28$ C) $7x - 3x = 28$ D) $3(x - 7) = 28x$

Answer: C

115) The sum of two-thirds a number and 21 is 23.

A) $\frac{2}{3}x \cdot 21 = 23$ B) $\frac{2}{3}x + 23 = 21$ C) $\frac{2}{3}x - 21 = 23$ D) $\frac{2}{3}x + 21 = 23$

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 2 is 6.

A) $x + 6 = 2; 4$ B) $x + 2 = 6; 6$ C) $x = 2 + 6 ; 8$ D) $x + 2 = 6; 4$

Answer: D

117) A number minus 8 equals 3.

A) $8 = 3 - x; 11$ B) $8 = 3 - x; 5$ C) $x - 8 = 3; 11$ D) $8 - x = 3; 5$

Answer: C

118) The product of a number and 6 is 18.

A) $6x = 18; 3$ B) No Solution C) $6x = 18; 6$ D) $18x = 6; 3$

Answer: A

119) 12 divided by a number equals $\frac{1}{3}$ times that number.

A) $\frac{12}{x} = \frac{1}{3}x; 6$ B) $\frac{12}{x} = \frac{1}{3}x; 12$

C) $\frac{x}{12} = 3x; 6$ D) $\frac{x}{12} = \frac{1}{3}x;$ No solution

Answer: A

Decide whether the problem is an equation or an expression.

120) $4(3x + 9) = 5(7x - 4)$

A) Equation B) Expression

Answer: A

121) $9(5x + 8) - 6(4x - 6)$

A) Expression B) Equation

Answer: A

122) $\frac{5x + 8}{5} = \frac{4x}{3} - 2$

A) Expression B) Equation

Answer: B

123) $\frac{2x - 9}{x + 9} - \frac{x}{2} + 9$

A) Expression B) Equation

Answer: A

124) $9x + 7 = \frac{6x + 9}{7}$

A) Equation B) Expression

Answer: A

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

A) Equation B) Expression

Answer: B

126) $x + y = 9$

A) Expression B) Equation

Answer: B

127) $x + y - 7$

A) Equation B) Expression

Answer: B

Solve the problem.

128) The life expectancy of inhabitants of a country can be approximated by the equation $y = 0.301x - 468$, 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 1,947.

A) 539.2 yr B) 118.0 yr C) 286.0 yr D) 581.4 yr

Answer: B

Answer the question.

129) Which phrase correctly translates the expression $10 - x$?

A) 10 subtracted from x B) x less than 10

C) x minus 10 D) x take away 10

Answer: B

130) Which one of the following is the correct method for evaluating the expression $3x^2 - 4$ for $x = 6$?

A) $3 \cdot 6^2 - 4 = 18^2 - 4 = 324 - 4 = 320$ B) $3 \cdot 6^2 - 4 = 3 \cdot 36 - 4 = 108 - 4 = 104$

C) $3 \cdot 6^2 - 4 = 3 \cdot 2^2 = 3 \cdot 4 = 12$ D) $3 \cdot 6^2 - 4 = (18 - 4)^2 = 14 = 196$

Answer: B

131) According to the rules for order of operations, the first steps in evaluating the expression $56 - 5x^3$ for $x = 3$ are to substitute 3 for x and then _____.

A) subtract 56 from 5 B) multiply 5 by 3 C) find the cube of 3 D) subtract 5 from 56

Answer: C

132) What value for x makes the expression $2 + 5x$ equal to 17?

A) 6 B) 3 C) 2 D) 4

Answer: B

133) What value for x makes the expression $21 - x$ equal to 10?

A) 31 B) 12 C) 11 D) 21

Answer: C

134) Which pair of values of x and y makes 5x + y equal 13?
A) x = 2 and y = 3 B) x = 5 and y = 12 C) x = 3 and y = 2 D) x = 12 and y = 5
Answer: A

135) Which pair of values of x and y makes x - 4y equal 2?
A) x = 4 and y = 14 B) x = 10 and y = 2 C) x = 2 and y = 10 D) x = 14 and y = 4
Answer: B

136) In the equation 2x + y = 12, the value of x is 4. What is the corresponding value of y?
A) y = 6 B) y = 4 C) y = 10 D) y = 2
Answer: B

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

137) The stock market lost 43 points on Monday.
A) 43 B) -43
Answer: B

138) During one year, 17 employees quit their jobs at Newline Manufacturing Company.
A) 17 B) -17
Answer: B

139) A football team gained 30 yards on one play.
A) 30 B) -30
Answer: A

140) In one state, the highest point is 1,874 feet above sea level.
A) -1,874 B) 1,874
Answer: B

141) One country exported $60,900,000 more than it imported, giving it a positive trade balance.
A) 60,900,000 B) -60,900,000
Answer: A

142) Sales at Andrea's Formal Wear Shop were $5,411 more this week than the sales last week.
A) 5,411 B) -5,411
Answer: A

143) Mr. Voss decreased his speed by 5 miles per hour.
A) 5 B) -5
Answer: B

144) On a cloudy day, the water temperature in the swimming pool drops 4 degrees.
A) 4 B) -4
Answer: B

145) This year corn production increased 17,000 pounds from last year on Steve's farm.
A) 17,000 B) -17,000
Answer: A

146) Sales in Jeff's Toys Shop decline 2.5% from last month to this month.

A) 2.5 B) -2.5

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 -3.3 and less than -2.3

Answer: -3

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.

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

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

163) $\{0, \sqrt{5}, -3, \frac{5}{6}, -1\frac{1}{5}, 3.3, 3\}$

Integers

A) 0, -3, 3 B) 2 C) 2, $\sqrt{5}$ D) 2, -3

Answer: A

164) $\{15, \sqrt{7}, -2, 0, \frac{2}{9}, -4\frac{1}{2}, 2.9\}$

Whole numbers

A) 15 B) 15, -2 C) 15, -2, 0 D) 15, 0

Answer: D

165) $\{\sqrt{5}, -11, 0, \frac{3}{5}, -1\frac{2}{3}, 6.2, 4\}$

Natural numbers

A) -11, 0 B) 0, 4 C) 4 D) 0

Answer: C

166) $\{20, \sqrt{8}, -4, 0\}$

Real numbers

A) 20, 0 B) 20 C) 20, -4, 0 D) 20, $\sqrt{8}$, -4, 0

Answer: D

167) B = $\{2, \sqrt{7}, -11, 0, 0.52\}$

Rational numbers

A) 2, 0 B) $\sqrt{7}$, 0.52 C) $\sqrt{7}$ D) 2, -11, 0, 0.52

Answer: D

168) $\{10, \sqrt{6}, -15, 0, 0.21\}$

Irrational numbers

A) $\sqrt{6}$ B) $\sqrt{6}, 0.21$ C) $\sqrt{6}, 0, 0.21$ D) $\sqrt{6}, -15$

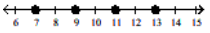
Answer: A

Graph the numbers on a number line.

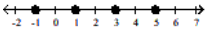
169) -1, 1, 3, 5



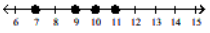
A)



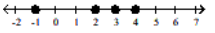

B)




C)




D)

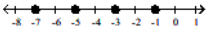



Answer: B

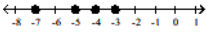
170) -7, -5, -3, -1



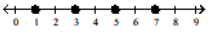
A)



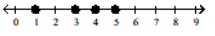

B)




C)




D)

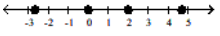



Answer: A

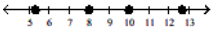
171) $-3\frac{2}{3}, -1, 1, 3\frac{2}{3}$



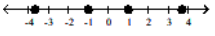
A)



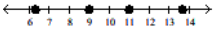

B)




C)




D)

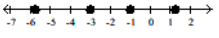



Answer: C

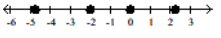
172) $-5\frac{3}{4}, -3, -1, 1\frac{1}{4}$



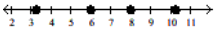
A)



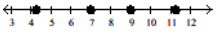

B)




C)




D)




Answer: A

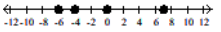
173) $-3\frac{7}{8}, -\frac{5}{4}, 0, \frac{8}{3}$



A) 

B) 

C) 

D) 

Answer: B

Find the opposite (additive inverse) of the number.

174) 20

A) -20 B) 0 C) $\frac{1}{20}$ D) 20

Answer: A

175) -12

A) -12 B) 0 C) 12 D) $-\frac{1}{12}$

Answer: C

Simplify by finding the absolute value.

176) |23|

A) 46 B) 23 C) -23 D) 0

Answer: B

177) |19|

A) 0 B) -19 C) 38 D) 19

Answer: D

178) |-8|

A) 16 B) 8 C) -8 D) 0

Answer: B

179) -|-10|

A) 20 B) 10 C) -10 D) 0

Answer: C

180) |6 - 7|

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

Answer: C

181) $-\left|-\frac{1}{3}\right|$

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

Answer: B

Select the smaller of the two given numbers.

182) $-13, -11$

A) $-13$ B) $-11$

Answer: A

183) $-\frac{13}{16}, -\frac{7}{16}$

A) $-\frac{13}{16}$ B) $-\frac{7}{16}$

Answer: A

184) $-141, 18$

A) $-141$ B) $18$

Answer: A

185) $25, |-29|$

A) $25$ B) $|-29|$

Answer: A

186) $|-14|, |-16|$

A) $|-16|$ B) $|-14|$

Answer: B

187) $-|-3|, -|-23|$

A) $-|-23|$ B) $-|-3|$

Answer: A

188) $|6 - 1|, |5 - 3|$

A) $|6 - 1|$ B) $|5 - 3|$

Answer: B

Decide if the statement is true or false.

189) $-(-8) < -22$

A) False B) True

Answer: A

190) $-(-30) > -8$

A) True B) False

Answer: A

191) $-13 > -5$

A) True B) False

Answer: B

192) $-3 \leq -3$

A) True B) False

Answer: A

193) $-25 \leq -(-4)$

A) False B) True

Answer: B

194) $-20 \geq -(-2)$

A) True B) False

Answer: B

195) $|-5| < |-6|$

A) True B) False

Answer: A

196) $-|-13| \geq -|-15|$

A) True B) False

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) Sales, '98-'99 B) Catalog, '98-'99

C) Public Relations, '98-'99 D) Public Relations, '99-'00

Answer: D

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

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

Answer: D

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.

204) A whole number less than 3.2.

Answer: One example is 3. There are others.

205) Fill in the blanks with the correct numbers.
The opposite of -9 is _____.
The absolute value of -9 is _____.
The opposite of the absolute value of -9 is _____.
The absolute value of the opposite of -9 is _____.

Answer: 9, 9, -9, 9

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

Find the sum.

206) 5 + (-14)

A) 19 B) 9 C) -19 D) -9

Answer: D

207) -11 + 5

A) 6 B) 16 C) -16 D) -6

Answer: D

208) -10 + (-19)

A) -29 B) -9 C) 29 D) 9

Answer: A

209) -13.3 + (-13.6)

A) 26.9 B) 0.3 C) -0.3 D) -26.9

Answer: D

210) -892 + 574

A) -1,466 B) 318 C) -318 D) 1,466

Answer: C

211) $\frac{3}{4} + \left( - \frac{3}{20} \right)$

A) $\frac{3}{5}$ B) 0 C) 3 D) $\frac{3}{20}$

Answer: A

212) $- \frac{3}{20} + \frac{3}{4}$

A) 0 B) $\frac{3}{5}$ C) 3 D) $\frac{3}{20}$

Answer: B

213) $15\frac{4}{7} + \left(-5\frac{6}{7}\right)$

A) $9\frac{5}{7}$ B) $19\frac{5}{7}$ C) $9\frac{4}{7}$ D) $20\frac{5}{7}$

Answer: A

214) $-8\frac{8}{9} + 11\frac{5}{9}$

A) $19\frac{2}{3}$ B) $18\frac{2}{3}$ C) $2\frac{2}{3}$ D) $2\frac{1}{3}$

Answer: C

215) 11 + [(-13) + (-18)]

A) -20 B) 6 C) 42 D) 16

Answer: A

216) 22 + [25 + (-16)]

A) 63 B) 13 C) 31 D) -19

Answer: C

217) -15 + [18 + (-7)]

A) -4 B) 26 C) 10 D) 40

Answer: A

218) 7.4 + [(-7.7) + (-8.0)]

A) 7.1 B) -8.3 C) 23.1 D) 7.7

Answer: B

219) -6.9 + [(-1.1) + (-1.6)]

A) -9.6 B) 7.4 C) 4.2 D) 6.4

Answer: A

220) [-13 + (-10)] + [(-14) + (-7)]

A) -44 B) -18 C) 10 D) 2

Answer: A

221) [2 + (-19)] + [24 + (-25)]

A) 70 B) -66 C) -16 D) -18

Answer: D

222) -20.4 + [18.8 + (-10.5)]

A) 49.7 B) 8.9 C) 28.7 D) -12.1

Answer: D

Find the difference.

223) 4 - 11

A) 15 B) -15 C) 7 D) -7

Answer: D

224) -8 - 15

A) 23 B) -23 C) 7 D) -7

Answer: B

225) -15 - (-1)

A) -14 B) -16 C) 14 D) 16

Answer: A

226) 5 - (-3)

A) 2 B) -2 C) -8 D) 8

Answer: D

227) -47 - 47

A) 0 B) -141 C) -94 D) 94

Answer: C

228) -29 - (-29)

A) 0 B) 58 C) -58 D) 87

Answer: A

229) -3.9 - 8.9

A) 5 B) -12.8 C) -5 D) 12.8

Answer: B

230) -13.0 - (-3.5)

A) -9.5 B) -16.5 C) 16.5 D) 9.5

Answer: A

231) $\frac{1}{9} - \left(-\frac{1}{3}\right)$

A) $-\frac{2}{9}$ B) $\frac{2}{9}$ C) $\frac{4}{9}$ D) $-\frac{4}{9}$

Answer: C

232) $-\frac{2}{3} - \frac{1}{2}$

A) $\frac{7}{6}$ B) $-\frac{7}{6}$ C) $-\frac{1}{6}$ D) $-\frac{5}{6}$

Answer: B

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

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

Answer: A

234) $\frac{11}{12} - \left(\frac{2}{9} - \frac{1}{6}\right)$

A) $-\frac{7}{12}$ B) $\frac{11}{12}$ C) $\frac{31}{36}$ D) $-\frac{31}{36}$

Answer: C

235) $\frac{4}{5} - \left(-\frac{2}{3}\right)$

A) $\frac{22}{15}$ B) $-\frac{7}{45}$ C) $\frac{2}{15}$ D) $-\frac{22}{15}$

Answer: A

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

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

Answer: B

237) $\frac{7}{10} - \left(-\frac{5}{9}\right)$

A) $-\frac{2}{15}$ B) $\frac{13}{90}$ C) $\frac{113}{90}$ D) $-\frac{113}{90}$

Answer: C

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

A) 6 B) $\frac{3}{4}$ C) $\frac{3}{2}$ D) $-\frac{7}{12}$

Answer: C

239) $\left(-\frac{2}{7} - \frac{1}{2}\right) - \left(-\frac{10}{7} - 5\right)$

A) $-\frac{101}{14}$ B) $\frac{79}{14}$ C) $-\frac{61}{14}$ D) $\frac{39}{14}$

Answer: B

Use order of operations to simplify the expression.

240) 8 - (9 + 5)

A) 4 B) 12 C) 22 D) -6

Answer: D

241) 11 + (-6 - 13)

A) 4 B) 30 C) 18 D) -8

Answer: D

242) (13 - 12) - 16

A) 9 B) 17 C) 41 D) -15

Answer: D

243) $-7 - |7 + (-9) + (-11)|$

A) -20 B) 20 C) -16 D) 16

Answer: A

244) $-9 + |8 + (-6) + 10|$

A) 3 B) 13 C) 21 D) -5

Answer: A

245) $14 - (6 - 10)$

A) 10 B) 18 C) -2 D) 30

Answer: B

246) $(-6 + 1) - (-15 + 17)$

A) -7 B) 3 C) -37 D) -9

Answer: A

247) $(21 + 10) - (16 - 18)$

A) 45 B) -45 C) 3 D) 33

Answer: D

248) $-13 - [(9 - 2) - (-4 - 2)]$

A) -18 B) -26 C) -8 D) 0

Answer: B

249) $[-25.2 + (16.1 - 3.4)] - 2.1$

A) -10.4 B) -42.6 C) -14.6 D) 35.8

Answer: C

Write a numerical expression for the phrase and simplify it.

250) The difference between 20 and -19

A) 19 - 20; -1 B) 20 - (-19); 1 C) -19 - 20; -39 D) 20 - (-19); 39

Answer: D

251) 15 less than -18

A) 15 - (-18); 33 B) -18 - 15; 33 C) 15 - 18; -3 D) -18 - 15; -33

Answer: D

252) The sum of 5 and -7, decreased by 8

A) [5 + (-7)] - 8; -10 B) [5 - (-7)] - 8; 4 C) [5 + (-7)] + 8; 6 D) [5 + (-8)] + 7; 4

Answer: A

253) 10 less than the difference between 9 and -3

A) 10 - [9 - (-3)]; -2 B) (9 - 3) - 10; -4 C) [9 - (-3)] - 10; -4 D) [9 - (-3)] - 10; 2

Answer: D

254) 7 less than the difference between 6 and -6

A) 6 - 6 - 7; -19 B) 7 - 6 - (-6); 7 C) [6 - (-6)] - 7; 5 D) -6 - 6 - 7; -19

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 Abe and the weight loss of Don?

A) 6,009 g B) -6,009 g C) 93 g D) -93 g

Answer: A

256) During one year 14 new employees began work at Daniel's Manufacturing Company and 36 employees left. At the beginning of the year there were 280 employees. What was the number of employees at the end of the year?

A) 230 employees B) 258 employees C) 294 employees D) 330 employees

Answer: B

257) A football team gained 12 yards on one play, lost 17 yards on another, and gained 24 yards on the last play of the first half. They had already gained 376 yards during the half. What was the total yardage gain for the first half?

A) 395 yd B) 429 yd C) 412 yd D) 357 yd

Answer: A

258) Your bank account has $75 in it when you write checks for $26, $39, and $22. You then deposit $52 and $47. How much is in the account? Are you overdrawn?

A) $63, no B) $87, no C) -$63, yes D) $109, no

Answer: B

259) A bike road race starts at an elevation of 890 feet and passes through 5 stages where the elevation changes by 215 feet, -421 feet, 68 feet, -430 feet, and 307 feet. At what elevation does the race end?

A) 2,331 ft B) 973 ft C) 629 ft D) -2,331 ft

Answer: C

260) The stock market gained 8 points on Tuesday and lost 19 points on Wednesday. Find the difference between these changes.

A) 11 points B) -27 points C) 27 points D) -11 points

Answer: C

261) Nikki is fishing from a bank 19 feet above water level. In this location, the fish tend to feed at 28 feet below the surface. How long must Nikki's fish line be to reach the fish?

A) 9 ft B) -19 ft C) -9 ft D) 47 ft

Answer: D

262) Company A showed a profit of $85,260 last year, while Company B had a loss of $66,740. Find the difference between these amounts.

A) -$152,000 B) $152,000 C) $18,520 D) -$18,520

Answer: B

263) The temperature at the South pole was -43° at 8 am. At 3 pm, it was 6°. By how many degrees did the temperature rise?

A) by -37° B) by -49° C) by 37° D) by 49°

Answer: D

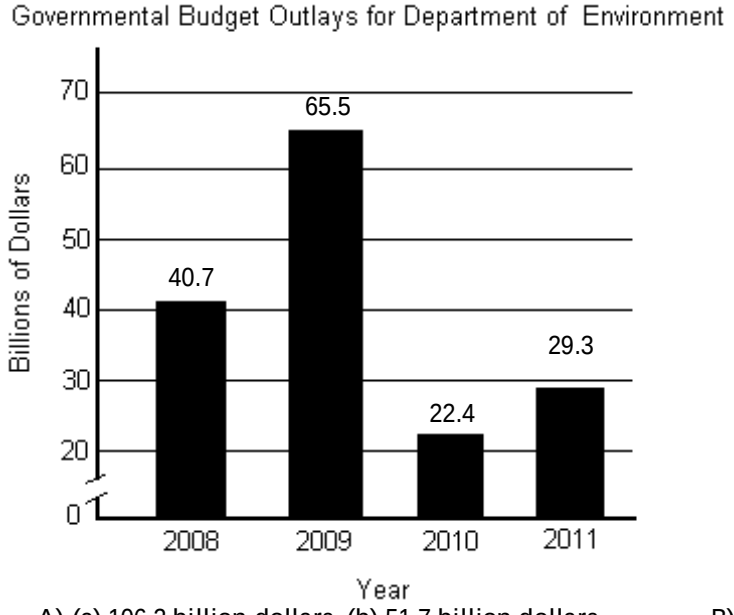
264) The ocean surface is at 0 ft elevation. A diver is underwater at an elevation of -210 ft near a rock formation. In this area, the ocean floor has an elevation of -337 ft. The rock formation rises to a peak 192 ft above the ocean floor. How many feet below the top of the rock formation is the diver?

A) 18 ft B) 145 ft C) 127 ft D) 65 ft

Answer: D

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.

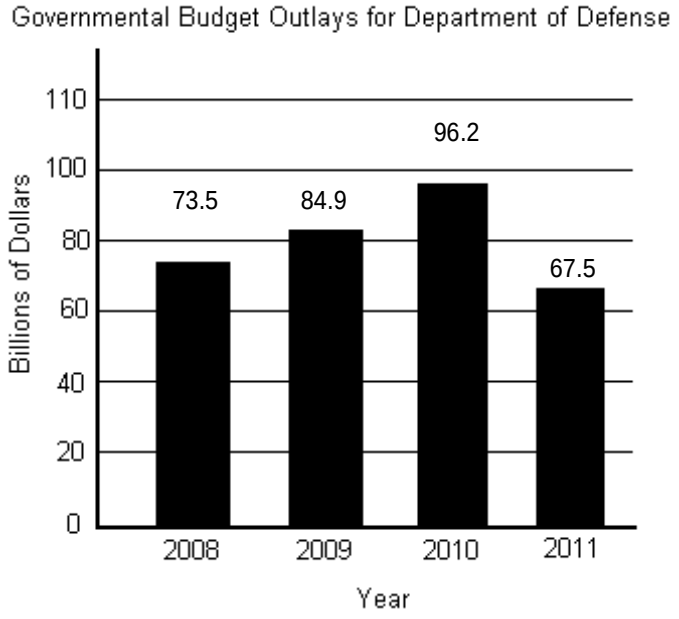



A) (a) 106.2 billion dollars, (b) 51.7 billion dollars B) (a) 24.8 billion dollars, (b) 6.9 billion dollars

C) (a) -24.8 billion dollars, (b) -6.9 billion dollars D) (a) -106.2 billion dollars, (b) -51.7 billion dollars

Answer: B

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) -28.7 billion dollars, (b) -6 billion dollars
B) (a) 6 billion dollars, (b) 17.4 billion dollars
C) (a) 141 billion dollars, (b) 152.4 billion dollars
D) (a) -6 billion dollars, (b) -17.4 billion dollars

Answer: D

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

267) In order to add -9 and 4, I should begin by finding the _____ of the _____ of -9 and 4.
A) Sum, opposites
B) Sum, absolute values
C) Difference, additive inverses
D) Difference, absolute values

Answer: D

268) In order to add -7 and -1, I should begin by finding the _____ of the _____ of -7 and -1.
A) Additive inverses, opposites
B) Sum, absolute values
C) Difference, absolute values
D) Opposite, additive inverses

Answer: B

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) Negative
B) Zero
C) Positive
D) Not known

Answer: B

270) According to the rules for the order of operations, what should be the first step when simplifying the expression [10 + (-3 + 1)] + (-9)?
A) Find the sum of 10 and -3
B) Find the sum of 10 and -9
C) Find the sum of 1 and -9
D) Find the sum of -3 and 1

Answer: D

271) According to the rules for the order of operations, what should be the first step when simplifying the expression $[-6 + (-10 + 4)] + (-4 + 9)$?

A) Find the sum of -6 and -4
B) Find the sum of -6 and -10
C) Find the sum of -10 and 4
D) Find the sum of 4 and -4

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) Positive
B) Negative

Answer: A

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) Negative
B) Positive

Answer: A

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

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

282) Is this statement true or false? Why? $(7 - 7) - 7 = 7 - (7 - 7)$

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 $8 - [4 - (-5 - 11)]$, is the first step in solving to subtract $-5$ from $-11$?

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 $-9 - (-12) = 3$.

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

Find the product.

286) $-6(19)$

A) 15 B) $-54$ C) $-114$ D) 60

Answer: C

287) $-8(-8)$

A) $-64$ B) 74 C) 64 D) $-74$

Answer: C

288) $-6(47)$

A) 382 B) $-282$ C) $-242$ D) 253

Answer: B

289) $-14(0)$

A) 14 B) 0 C) $-14$ D) 1

Answer: B

290) $-\frac{5}{8}\left(-\frac{12}{5}\right)$

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

Answer: C

291) $-10\left(-\frac{5}{4}\right)$

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

Answer: B

Find all integer factors of the given number.

292) 42

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

Answer: C

293) 13

A) -13, -6, -4, -3, -2, -1, 1, 2, 3, 4, 6, 13
B) -13, -1, 1, 13
C) -13, -6, -4, -4, -2, -1, 1, 2, 4, 4, 6, 13
D) -13, -6, -2, -1, 1, 2, 6, 13

Answer: B

294) 27

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

Answer: A

295) 125

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

Answer: B

296) 130

A) -130, -26, -13, -10, -5, -2, -1, 1, 2, 5, 10, 13, 26, 130
B) -130, -65, -26, -13, -10, -5, -4, -2, -1, 1, 2, 4, 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, -2, -1, 1, 2, 5, 10, 13, 26, 65, 130

Answer: D

Find the quotient.

297) $\frac{-80}{8}$

A) -20
B) $-\frac{1}{10}$
C) -10
D) 10

Answer: C

298) $\frac{115}{-5}$

A) -33
B) $-\frac{1}{23}$
C) -23
D) 23

Answer: C

299) $\frac{-183}{61}$

A) $-\frac{1}{3}$
B) 3
C) -13
D) -3

Answer: D

300) $\frac{-675}{-75}$

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

Answer: D

301) $\frac{0}{-34}$

A) 34 B) Undefined C) 1 D) 0

Answer: D

302) $-\frac{6}{11} \div \left(-\frac{5}{12}\right)$

A) $-\frac{5}{22}$ B) $\frac{72}{55}$ C) $\frac{55}{72}$ D) $-\frac{72}{55}$

Answer: B

303) $\frac{4}{7} \div \left(-\frac{1}{2}\right)$

A) $-\frac{8}{7}$ B) $-\frac{2}{7}$ C) $\frac{7}{8}$ D) $\frac{8}{7}$

Answer: A

304) $\frac{-4}{0}$

A) 0 B) Undefined C) 4 D) -4

Answer: B

305) $\frac{5.916}{4}$

A) -1.479 B) -0.37 C) 0.37 D) 1.479

Answer: D

Perform the indicated operations.

306) $9 - 8 \cdot 8$

A) -55 B) 55 C) 8 D) 73

Answer: A

307) $13 + 14 \cdot 29 - 11$

A) 45 B) 772 C) 486 D) 408

Answer: D

308) $20 + 5 \cdot 19 - (-24)$

A) 139 B) 1,075 C) 68 D) 499

Answer: A

309) $13 \cdot (-10) + 3 \cdot (-8)$

A) -154 B) -1,016 C) -728 D) 1,016

Answer: A

310) $17 \cdot 17 - 30 \cdot 15$

A) -3,315 B) 19 C) -161 D) 3,885

Answer: C

311) $8 - (-11) \cdot (-8) + 6$

A) 42 B) -74 C) -146 D) 11

Answer: B

312) $-3(4 - 5)$

A) -27 B) 3 C) -3 D) -17

Answer: B

313) $(53 - 82)(55 - 59)$

A) -116 B) 15,390 C) 116 D) 7,753

Answer: C

314) $3[(-6) + 3(-7 + 5)]$

A) 14 B) 18 C) -24 D) -36

Answer: D

315) $6(-4) + |2 - 19|$

A) -41 B) 7 C) 41 D) -7

Answer: D

Perform the indicated operation.

316) $\frac{-4(-5)}{4 - (-1)}$

A) 7 B) -7 C) 4 D) -4

Answer: C

317) $\frac{-8(2) + 6(2)}{-3 - (-1)}$

A) -14 B) 14 C) 2 D) -2

Answer: C

318) $\frac{-12(-8) - (-4)(-4)}{-6(3) - 2(-1)}$

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

Answer: A

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

319) $-6x - 9y - 4a$

A) 16 B) 1 C) 5 D) 36

Answer: B

320) $(-8x - 4y)(-7a)$

A) -112 B) 112 C) 64 D) -448

Answer: B

321) $-8a + 9y - 4x$

A) 67 B) 2 C) -51 D) -32

Answer: A

322) $(-9 + x)(6 + y)(-6 - a)$

A) 198 B) 990 C) 630 D) -198

Answer: A

323) $(-5a)(4x + 2y)$

A) -40 B) 40 C) 160 D) 280

Answer: A

324) $\left(\frac{1}{6}x + \frac{5}{9}y\right)\left(-\frac{1}{6}a\right)$

A) $\frac{16}{3}$ B) $\frac{4}{3}$ C) $\frac{8}{9}$ D) $-\frac{11}{27}$

Answer: C

325) $\frac{-6ax - 12y}{a - y}$

A) 12 B) -7 C) 5 D) -5

Answer: A

326) $8y - 6a^2$

A) -72 B) 0 C) 120 D) -24

Answer: A

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

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

Answer: D

Write a numerical expression for the phrase and simplify it.

328) The product of -2 and 6, added to 3

A) 3 + (-2)(6); -9 B) (-2)(6)(3); -36 C) (-2 + 3)(6); 6 D) (3)(-2 + 6); 12

Answer: A

329) The product of 4 and -7, added to -9

A) (-9 + 4)(-7); 35 B) (-9)(-7) + 4; 67 C) (-9)(-7)(4); 252 D) (-9) + (4)(-7); -37

Answer: D

330) The product of -6 and 2, subtracted from -5

A) -5 - (-6)(2); 7 B) (-5)(-6)(2); 60 C) -5 + (-6)(2); -17 D) [-5 - (-6)](2); 2

Answer: A

331) Twice the product of -6 and -8, subtracted from 3

A) (3)(2)(-6)(-8); 288 B) (3 - 2)(-6 · -8); 48 C) 3 - 2(-6 · -8); -93 D) (3)(2)(-6 + 8); 12

Answer: C

332) 2 subtracted from the product of -9.7 and 8.4

A) 2 - (-9.7)(8.4); 83.48 B) (2)(-9.7)(8.4); -162.96

C) (-9.7)(8.4) - 2; -83.48 D) [2 + (-9.7)](8.4); -64.68

Answer: C

333) The product of 4 and the difference between 1 and -7

A) 4[1 - (-7)]; 32 B) 4[-7 - 1]; -32 C) (4 - 1)(-7); -21 D) (4)(1) - (-7); 11

Answer: A

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

A) (-9)(8) + (-5); -77 B) -9[8 + (-5)]; -27 C) (-9)(-5) + 8; 53 D) -9 + (8)(-5); -49

Answer: B

335) Three-eighths of the sum of -2 and -6.

A) (3 + 8)(-2) + (-6); -28 B) $\frac{3}{8}$ + [(-2) + (-6)]; 2

C) $\frac{3}{8}$ [(-2) + (-6)]; -3 D) $\frac{3}{8}$ [(-2) + (-6)]; -6

Answer: C

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

A) $\frac{7}{9}$ [(-7) - (-25)]; 14 B) 7(9) [(-7) - (-25)]; 14

C) $\frac{7}{9}$ + [(-7) - (-25)]; 42 D) 7(9) [(-7) - (-25)]; 1,134

Answer: A

337) The quotient of -35 and -7

A) $\frac{-7}{-35}; \frac{1}{5}$ B) $\frac{-35}{-7}; \frac{1}{5}$ C) (-7)(-35); 245 D) $\frac{-35}{-7}$; 5

Answer: D

338) The quotient of -54 and the sum of 2 and -8

A) $\frac{2 + (-8)}{-54}; \frac{1}{9}$ B) $\frac{-54}{2 + (-8)}$; 9 C) $\frac{-54}{2 + (-8)}$; -9 D) -54 + 2 + (-8); -60

Answer: B

339) The quotient of -144 and the sum of 6 and 12

A) $-144 + 6 + 12; -126$ B) $\frac{-144}{6 - 8}; 8$ C) $\frac{6 + 12}{-144}; -\frac{1}{8}$ D) $\frac{-144}{6 + 12}; -8$

Answer: D

340) The sum of 38 and -8, divided by the product of 2 and -5

A) $38 + \frac{-8}{2(-5)}; -3$ B) $\frac{2(-5)}{38 + (-8)}; -\frac{1}{3}$ C) $\frac{38 + 8}{2 - (-5)}; -10$ D) $\frac{38 + (-8)}{2(-5)}; -3$

Answer: D

341) The sum of -8 and -8, divided by the product of 2 and -4

A) $\frac{-8 + (-8)}{2 - (-4)}; -\frac{8}{3}$ B) $-8 + \frac{-8}{2 + (-4)}; 3$ C) $-8 + \frac{-8}{2(-4)}; -\frac{3}{8}$ D) $\frac{-8 + (-8)}{2(-4)}; 2$

Answer: D

342) The product of $-\frac{1}{6}$ and $-\frac{3}{4}$, divided by $-\frac{3}{5}$.

A) $\frac{\left(-\frac{1}{6}\right)\left(-\frac{3}{4}\right)}{-\frac{3}{5}}; -\frac{3}{40}$ B) $\frac{\left(-\frac{3}{5}\right)}{\left(-\frac{1}{6}\right)\left(-\frac{3}{4}\right)}; -\frac{24}{5}$ C) $\frac{\left(-\frac{1}{6}\right)}{\left(-\frac{3}{4}\right)\left(-\frac{3}{5}\right)}; -\frac{10}{27}$ D) $\frac{\left(-\frac{1}{6}\right)\left(-\frac{3}{4}\right)}{-\frac{3}{5}}; -\frac{5}{24}$

Answer: D

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) 3 times a number is 6.

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

Answer: D

344) The quotient of a number and 2 is 3.

A) $\frac{x}{2} = 3; 6$ B) $2x = \frac{1}{3}; \frac{1}{6}$ C) $\frac{x}{3} = 2; 6$ D) $\frac{6}{x} = 2; 3$

Answer: A

345) 10 less than a number is -9.

A) $x + 10 = -9; -19$ B) $10 - x = -9; 19$ C) $x - 10 = -9; 1$ D) $x - 9 = 10; 19$

Answer: C

346) When 2 is added to another number the result is -9.

A) $x - 9 = 2; 11$ B) $2 - 9 = x; -7$ C) $x + 2 = -9; -11$ D) $-9 - 2 = x; -11$

Answer: C

Find the average of the numbers.

347) 9, 3, 14, 12, 7

A) 9 B) 10 C) 46 D) 11.25

Answer: A

348) 19, 14, 8, 12, 16, 17, 9, 1

A) 12 B) 20 C) 11 D) 13.71

Answer: A

349) -6, -4, 11, 10, -1

A) 1.7 B) 2.5 C) 2 D) 1

Answer: C

350) What is the average of all integers between -2 and 28, inclusive of both?

A) -14 B) 403 C) 13 D) 14

Answer: C

351) What is the average of all the even integers between -12 and 16, inclusive of both?

A) -27 B) 3 C) 30 D) 2

Answer: D

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

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 2x - 6y positive or negative?

Answer: Positive if $|6y|$ is greater than $|2x|$; 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? $\frac{3 - 3}{3 + 3}$

Answer: No

359) Is the following expression undefined? $\frac{6 + 6}{6 - 6}$

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 positive numbers is a _____ number.

Answer: positive

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) Cannot be determined B) Positive C) Negative

Answer: B

364) Assume a is positive, b is negative, and c is positive for the expression $(b + a) \cdot c$
Tell whether the value of the given expression is positive, negative or cannot be determined.

A) Positive B) Cannot be determined C) Negative

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) Positive B) Cannot be determined C) Negative

Answer: A

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

366) $2 + (-4) = -4 +$ __

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

Answer: D

367) $-4 \cdot 9 = 9 \cdot$ __

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

Answer: C

368) $4 + (7 + 9) = (4 +$ __ $) + 9$

A) 7; commutative property B) -7; commutative property
C) 7; associative property D) -7; associative property

Answer: C

369) $11 \cdot (10 \cdot 12) = (11 \cdot$ __ $) \cdot 12$

A) -10; associative property B) -10; commutative property
C) 10; associative property D) 10; commutative property

Answer: C

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

370) $5 \cdot 1 = 5$

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

Answer: D

371) $(1 + 4) + 3 = (4 + 1) + 3$

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

Answer: C

372) $9(x + 5) = 9x + 9 \cdot 5$

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

Answer: A

373) $2 + (-2) = 0$

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

Answer: D

374) $6 + 3 = 3 + 6$

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

Answer: D

375) $(6 \cdot 1) \cdot 2 = 6 \cdot (1 \cdot 2)$

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

Answer: A

376) $9 \cdot 2 = 2 \cdot 9$

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

Answer: C

377) $\left(\frac{8}{9}\right)\left(\frac{9}{8}\right) = 1$

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

Answer: C

378) $5(6f) - 5(4g) = 5(6f - 4g)$

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

Answer: C

Find the sum.

379) $196 + 34 + 4 + 6$

A) 250 B) 240 C) 220 D) 230

Answer: B

380) $1998 + 8 + 12 + 2$

A) 2010 B) 1020 C) 2020 D) 1010

Answer: C

381) 26 + 172 + 74 + 128

A) 500 B) 300 C) 410 D) 400

Answer: D

382) 107 + 8 + (-7) + (-8)

A) 100 B) 130 C) 114 D) 116

Answer: A

383) 638 + 842 + (-38) + (-42)

A) 1476 B) 1484 C) 1480 D) 1400

Answer: D

384) 1334 + 1216 + (-34) + (-16)

A) 2600 B) 2568 C) 2500 D) 2532

Answer: C

Find the product.

385) 2(67)(5)

A) 469 B) 672 C) 670 D) 345

Answer: C

386) -5(31)(2)

A) -313 B) -93 C) 52 D) -310

Answer: D

387) $-5 \cdot 4 \cdot 37 \cdot (-5)$

A) 370 B) 3,700 C) -3,700 D) -185

Answer: B

388) $25 \cdot (-2) \cdot 71 \cdot 2$

A) -7,100 B) 7,095 C) 1,775 D) -1,775

Answer: A

Use the properties of real numbers to simplify the expression.

389) $-\frac{16}{21} + \frac{7}{8} + \frac{9}{8} + \frac{16}{21}$

A) 0 B) 8 C) 4 D) 2

Answer: D

390) $\frac{2}{9}(-0.24)\left(\frac{9}{2}\right)$

A) $\frac{2}{9}$ B) 1 C) -1 D) -0.24

Answer: D

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

391) 4(x + 2)

A) 4x + 2 B) 4x + 8 C) 8x D) 4x + 4

Answer: B

392) 7(5x + 6y + 9)

A) 35x + 42y + 9 B) 35x + 6y + 9 C) 35x + 42y + 63 D) 35x + 6y + 63

Answer: C

393) 3(3r + 5 + 2s)

A) 9r + 15 + 2s B) 9r + 5 + 6s C) 9r + 15 + 6s D) 9r + 5 + 2s

Answer: C

394) 3(9x) + 3(8y)

A) 6(9x + 8y) B) 3x(9 + 8) = 51x C) 27x + 24y D) 3(9x + 8y)

Answer: D

395) $-\frac{3}{5}(5x - 15y)$

A) -3x - 9y B) 6x C) -3x + 9y D) 3x - 9y

Answer: C

396) 8x + 8z

A) 8(xz) B) 16(x + z) C) 64(x + z) D) 8(x + z)

Answer: D

397) $\frac{5}{6}(102x + 24y)$

A) 85x + 20y B) 17x + 4y C) 105(x + y) D) 105xy

Answer: A

Write the expression without parentheses.

398) -(7x + 3y)

A) -7x - 3y B) 7x - 3y C) 7x + 3y D) -7x + 3y

Answer: A

399) -(-5v - 2r)

A) -5v - 2r B) 5v + 2r C) 5v - 2r D) -5v + 2r

Answer: B

400) -(-3m + 9n - 4p)

A) -3m + 9n + 4p B) -3m + 9n - 4p C) 3m - 9n + 4p D) 3m - 9n - 4p

Answer: C

401) -(3z - 6w + 4y)

A) -3z - 6w + 4y B) -3z - 6w - 4y C) -3z + 6w + 4y D) -3z + 6w - 4y

Answer: D

402) -(-5t - 8r - 4s)

A) -5t - 8r - 4s B) 5t + 8r - 4s C) 5t + 8r + 4s D) -5t - 8r + 4s

Answer: C

403) -(7n + 6w + 8g)

A) -7n - 6w + 8g B) -7n - 6w - 8g C) 7n - 6w + 8g D) 7n + 6w + 8g

Answer: B

Answer the question.

404) There is an associative property for both addition and multiplication. Is there an associative property for division? 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 + 5b

A) 5 + b B) 5b C) -5b D) 0

Answer: B

407) Choose the expression that is equivalent to the following: $1(8x^3)$

A) $_{8x}3$ B) $_{8x}4$ C) $_{9x}3$ D) 1

Answer: A

408) Choose the expression that is equivalent to the following: 8(7a) + 8(6b)

A) 16(13ab) B) 16(7a + 6b) C) 8(7a + 6b) D) 8(13ab)

Answer: C

409) Choose the expression that is equivalent to the following: 15x + 5y

A) 5(3x + y) B) 5(10x + y) C) 20xy D) 5(3x + 5y)

Answer: A

410) Choose the expression that is equivalent to the following: (8x + 9y)(3y + 6x)

A) (8x + 9y)(6y + 3x) B) 14x + 12y C) (8x + 6x)(9y + 3y) D) (8x + 9y)(6x + 3y)

Answer: D

411) Choose the expression that is equivalent to the following: $(2x + 3y)(9y^3)$

A) $2x + (3y + 9y^3)$ B) $(9y^3)(2x + 3y)$ C) $(2x + 9y^3)(3y)$ D) $(2x) + (3y)(9y^3)$

Answer: B

412) Choose the expression that is equivalent to the following: $7(\frac{1}{7})$

A) $7 + \frac{1}{7}$ B) $\frac{7}{7}$ C) $7\frac{1}{7}$ D) $\frac{1}{49}$

Answer: B

413) Choose the expression that is equivalent to the following: 5 - 5

A) (-2)(5) B) (5)(5) C) 5 + (-5) D) 2(5)

Answer: C

Simplify the expression.

414) 6a - 2a + 4

A) 4a + 4 B) -4a + 4 C) 8a + 4 D) 8a

Answer: A

415) -7 + 3(17 - 9m)

A) 44 + 27m B) 51 - 27m C) 44 - 9m D) 44 - 27m

Answer: D

416) -3 - (8 - 15p)

A) 5 - 15p B) 11 + 15p C) -5 - 15p D) -11 + 15p

Answer: D

417) 9g + 18 - 3

A) 9g - 15 B) 24g C) 9g + 21 D) 9g + 15

Answer: D

Give the numerical coefficient of the term.

418) z

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

Answer: B

419) $-5y^2$

A) -5 B) $y^2$ C) 2 D) 5

Answer: A

420) -8y

A) 8y B) 8 C) y D) -8

Answer: D

421) -14

A) 0 B) 1 C) -14 D) 14

Answer: C

422) 6

A) 1 B) 0 C) 6 D) -1

Answer: C

423) uv

A) 0 B) uv C) 1 D) u

Answer: C

424) -w

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

Answer: D

425) $15k^2$

A) 30 B) 2 C) 225 D) 15

Answer: D

Identify the group of terms as like or unlike.

426) 11z, -7z

A) Unlike B) Like

Answer: B

427) $15a^7$, $15a^3$

A) Unlike B) Like

Answer: A

428) 12m, 2m, -3m

A) Like B) Unlike

Answer: A

429) 5, 8, -10

A) Like B) Unlike

Answer: A

430) 4b, 2, 9a

A) Like B) Unlike

Answer: B

431) 6m, 10m

A) Like B) Unlike

Answer: A

432) q, r

A) Unlike B) Like

Answer: A

433) $8v^5$, $-12v^4$

A) Unlike B) Like

Answer: A

434) $14v^5$, $-6v^5$

A) Unlike B) Like

Answer: B

Simplify the expression.

435) 5x + 12x

A) $17x^2$ B) 17x C) 34x D) 60x

Answer: B

436) -4p - 2p

A) 2p B) -6p C) -2p D) $2p^2$

Answer: B

437) $8x + x$

A) $8x$ B) $9x$ C) $8x + 1$ D) $10x$

Answer: B

438) $17x - 7 - 21x - 4$

A) $4x - 3$ B) $4x - 11$ C) $-4x - 11$ D) $-4x - 3$

Answer: C

439) $-9y + 2 - 4 + 6 + y - 4$

A) $-10y$ B) $-8y$ C) $-8y - 1$ D) $-10y + 1$

Answer: B

440) $-6b + 2 + 4b + 3b - 7$

A) $b - 5$ B) $b - 7$ C) $b + 2$ D) $b + 7$

Answer: A

441) $-\frac{7}{12} + 11y + \frac{17}{12}y - 15 + \frac{11}{12}y$

A) $\frac{38}{3}y$ B) $\frac{40}{3}y - \frac{187}{12}$ C) $\frac{21}{2}y - 8$ D) $\frac{40}{3} + 8$

Answer: B

442) $9p^2 + 9p^3 - 4p^2 - 4p^3$

A) $10p^2p^3$ B) $5p^2 + 5p^3$ C) $10p^2$ D) $18p^2 - 8p^3$

Answer: B

443) $11p + 6(3 - 4p)$

A) $7p + 18$ B) $13p - 18$ C) $35p - 18$ D) $-13p + 18$

Answer: D

444) $100[0.03(x - 13)$

A) $0.3x - 39$ B) $3x - 39$ C) $3x + 39$ D) $0.03x + 39$

Answer: B

445) $9(y + 10) - 7$

A) $9y + 27$ B) $9y + 3$ C) $9y + 83$ D) $19y - 7$

Answer: C

446) $-\frac{3}{4}(z - 10) - \frac{1}{8}z$

A) $\frac{7}{8}z - \frac{15}{2}$ B) $\frac{5}{8}z + 10$ C) $-\frac{7}{8}z + \frac{15}{2}$ D) $\frac{7}{8}z + \frac{15}{2}$

Answer: C

447) $-10(5r + 8) + 3(3r + 4)$

A) $-5r - 2$ B) $-41r + 8$ C) $-130r$ D) $-41r - 68$

Answer: D

448) (10z + 8) - (4z - 3)

A) 6z - 11 B) 6z + 11 C) 6z + 5 D) 14z + 11

Answer: B

449) -3(7t + 4) - (2t + 2) - 5t + 6

A) 28t + 6 B) -24t - 4 C) -28t + 16 D) -28t - 8

Answer: D

450) -3.3p + 5.6 - (8p + 0.3) + 5.6p

A) -5.7p + 5.3 B) 10.3p + 5.3 C) 10.3p + 5.9 D) -5.7p + 5.9

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 six

A) 3x + 6 B) 4x C) 9x D) (x + 6) + 3x; 4x + 6

Answer: D

452) A number multiplied by -9, subtracted from the sum of 16 and seven times the number

A) 9x - (16 + 7x); 2x - 16 B) (16 + 7x) - (-9)x; 16 + 16x

C) 9x - 23 D) (16 + 7x) + (-9)x; 16 - 2x

Answer: B

453) A number multiplied by 9, added to -2, subtracted from 6 times the sum of 5 times the number and 4

A) 9x - 2 + 6(5 + 4x); 33x + 39 B) 9(-2 + x) + 6(5 + 4x); 13x + 12

C) 6(5x + 4) - [9x + (-2)]; 21x + 26 D) 9(-2 + x) + 6(5x + 4); 39x - 14

Answer: C

454) 6 times a number added to -3, added to 4 times the sum of 3 times the number and 4

A) 6x - 3 + 4(3 + 4x); 22x + 18 B) 6(-3 + x) + 4(3x + 4); 18x - 14

C) 6(-3 + x) + 4(3 + 4x); 10x - 6 D) 4(3x + 4) + [6x + (-3)]; 18x + 13

Answer: D

455) Eight times a number added to 8, subtracted from twice the sum of nine times the number and -5

A) 2(9x - 5) - (8 + 8x); -18 + 10x B) (8 + 8x) - 2(9x - 5); 18 - 10x

C) 8(x + 8) - (2 + 9)(x - 5); 119 - 3x D) (2 + 9)(x + -5) - 8(x + 8); -119 + 3x

Answer: A

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) $4x^2y$ (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?

$8r^2 + 8r^2 = 16r^2$

A) False B) True

Answer: B

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

A) $4yw, 3wy$ B) $3t, -8w$ C) $-8t^4, 4t^6$ D) $-3v^2y, 3vy^2$

Answer: A

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

462) What property is used to combine 2y and 17y to get 19y? Explain.

Answer: Distributive. In 2y + 17y, the y has been distributed. Therefore, 2y + 17y = (2 + 17)y = 19y

463) Write the expression 5m - (m + 11) using words.

Answer: Answers may vary. One possible answer: The difference between 5 times a number and the sum of the number and 11.

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

Determine whether the statement is true or false.

464) $7[6 + (7 - 2)] \geq 28$

A) True B) False

Answer: A

465) $\left(\frac{1}{4}\right)^2 + \left(\frac{1}{7}\right)^2 = \left(\frac{1}{4} + \frac{1}{7}\right)^2$

A) False B) True

Answer: A

Provide an appropriate response.

466) To which of the following sets does $-\frac{3}{7}$ belong: natural numbers, whole numbers, integers, rational numbers, irrational numbers, real numbers?

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

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

Answer: D

467) Select the lesser number of 1 and $-|-6|$.

A) $-|-6|$ B) 1

Answer: A

Write the following phrase in symbols then simplify the expression.

468) The quotient of 3 and the sum of 23 and -8.

A) $3 + (23 - 8)$; 18 B) $\frac{23 - 8}{3}$; 5 C) $\frac{3}{23 + (-8)}$; $\frac{1}{5}$ D) $\frac{3}{23 - (-8)}$; $\frac{3}{31}$

Answer: C

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) Cannot be determined C) Positive

Answer: C

Perform the indicated operation.

470) $8 - (12 - 13) + (-17)$

A) -34 B) -8 C) 50 D) 0

Answer: B

471) $-3\frac{2}{5} + 6\frac{1}{7}$

A) $2\frac{26}{35}$ B) $-2\frac{26}{35}$ C) $\frac{18}{35}$ D) $\frac{8}{35}$

Answer: A

472) $-2 - [-12 + (5 - 2)]$

A) 13 B) 21 C) 7 D) 3

Answer: C

473) $9^2 + 11 \cdot 9 - (11 + 3 \cdot 4)$

A) 805 B) 181 C) 157 D) 124

Answer: C

474) $(-11) \cdot (-7) + 3 + (-6)^2$

A) 116 B) -38 C) 196 D) 182

Answer: A

475) $\frac{-5 - (-6 + 2)}{-9 - (-4)}$

A) $\frac{13}{5}$ B) $-\frac{1}{13}$ C) $\frac{1}{5}$ D) $\frac{1}{13}$

Answer: C

Evaluate the expression using the given values.

476) $6x - 8y^2$; $x = 3$, $y = -4$.

A) -14 B) 146 C) -46 D) -110

Answer: D

477) $\frac{9x + 1}{20 - 2y}$ ; x = 3, y = 9

A) 14 B) 11 C) 33 D) 28

Answer: A

Solve the problem.

478) The windchill temperature was -4° F, and the actual temperature was 24° F. Find the difference between the actual temperature and the windchill temperature.

A) 56°F B) 30°F C) 20°F D) 28°F

Answer: D

479) A baseball team won 3 of its games by 5 runs, lost 3 of its games by 4 runs, lost 1 game by 6 runs, and finished the season by winning its last 4 games by 3 runs. Express as a real number, how many more or fewer runs the did the team score versus their opponents in the 11 games.

A) -2 runs B) 3 runs C) 21 runs D) 9 runs

Answer: D

480) For 2009, the government of Country X collected $2.2 trillion in revenues, but spent $8.8 trillion. Write the government's budget deficit as a signed number.

A) $6.6 trillion B) $11 trillion C) -$11 trillion D) -$6.6 trillion

Answer: D

Match the property with the example of it.

481) Commutative property

A) (9 + 4) + 0 = (9 + 4) B) (9 + 4) + 3 - 9 = (4 + 9)

C) (9 + 4) + 3 = 9 + (4 + 3) D) (9 + 4) + 3 = 9 + (9 + 4)

Answer: D

482) Associative property

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

C) (3 + 7) + 7 = (7 + 3) + 7 D) (3 + 7) + 0 = (3 + 7)

Answer: A

483) Inverse property

A) $-\frac{5}{9}\left(-\frac{9}{5}\right) = 0$ B) $-\frac{5}{9} + \frac{9}{5} = 0$ C) $-\frac{5}{9}\left(-\frac{5}{9}\right) = 1$ D) $-\frac{5}{9}\left(-\frac{9}{5}\right) = 1$

Answer: D

484) Identity property

A) 6x + 0 = 6x B) 6x · 0 = 6x C) 6x - 6x = 0 D) 6x · 0 = 0

Answer: A

485) Distributive property

A) -9(x + y) = -9x - 9y B) -9(x + y) = 9x + 9y

C) -9(x + y) = -9(y + x) D) -9(x + y) = 9(-x - y)

Answer: A

Provide an appropriate response.

486) What property is used to clear parentheses and write $7(x + 5)$ as $7x + 35$?

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

Answer: D

Evaluate.

487) $-8[1 + (-2)]$

A) 8
B) -10
C) -8
D) -24

Answer: A

Simplify by combining like terms.

488) $2x - 15x + 14x - x - 4x$

A) 5
B) -4x
C) -3x
D) -5

Answer: B

489) $9(3x - 8) - (x - 9) + 5(5x - 3)$

A) 52x - 78
B) 51x - 78
C) 53x - 96
D) 51x - 96

Answer: B