Beginning and Intermediate Algebra 8th edition Lial Test Bank

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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) 5^2

A) 3 B) 10 C) 7 D) 25

Answer: D

2) 10^2

A) 20 B) 200 C) 100 D) 12

Answer: C

3) 3^3

A) 9 B) 27 C) 2 D) 33

Answer: B

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

A) $\frac{9}{16}$ B) $\frac{9}{4}$ C) $2\frac{3}{4}$ D) $\frac{16}{9}$

Answer: A

5) $(0.2)^3$

A) 0.008 B) 8 C) 0.06666667 D) 0.6

Answer: A

Simplify.

6) $8 \cdot 16 + 18 \cdot 6$

A) 992 B) 236 C) 876 D) 1,632

Answer: B

7) $4.3 \cdot 10.5 + 7.8 \cdot 18.8$

A) 191.79 B) 995.5 C) 1,479.4 D) 675.7

Answer: A

8) $240 \div 5 - 2$

A) 237 B) 233 C) 80 D) 46

Answer: D

9) $5^2 + 6^2$

A) 22 B) 44 C) 61 D) 121

Answer: C

10) $15 + 24 \cdot 14$

A) 351 B) 53 C) 546 D) 374

Answer: A

11) $6 \cdot 4 - 5$

A) 29 B) 120 C) 19 D) 6

Answer: C

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12) $9 \cdot 8 - 3 \cdot 6$

A) 414 B) 1,296 C) 270 D) 54

Answer: D

13) $98 - 3 \cdot 4 \cdot 5$

A) 38 B) 430 C) 86 D) 1,900

Answer: A

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

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

Answer: D

15) $\frac{8}{5} \cdot \frac{1}{7} + \frac{5}{6} \cdot \frac{1}{5}$

A) $\frac{83}{210}$ B) $\frac{5}{14}$ C) $\frac{83}{160}$ D) $\frac{83}{110}$

Answer: A

Find the value of the expression.

16) $3[2 + 8(8^2)]$

A) 39,204 B) 12,294 C) 13,068 D) 1,542

Answer: D

17) $(3 + 6)[6 + (2 + 7)]$

A) 360 B) 135 C) 270 D) 63

Answer: B

18) $\frac{6(2 + 3) + 6 \cdot 7}{6(6 - 1)}$

A) $\frac{6}{7}$ B) $\frac{41}{35}$ C) $\frac{41}{30}$ D) $\frac{12}{5}$

Answer: D

19) $\frac{5(6 - 5) + 5 \cdot 3}{5(6 - 4)}$

A) $\frac{4}{13}$ B) $\frac{5}{13}$ C) 2 D) $\frac{4}{5}$

Answer: C

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

A) 124 B) 1,232 C) 212 D) 296

Answer: D

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21) $\frac{8(17 - 2^2)}{2 \cdot 5 \cdot 11}$

A) $\frac{55}{52}$ B) $\frac{52}{5}$ C) $\frac{52}{55}$ D) $\frac{67}{5}$

Answer: C

22) $\left(\frac{1}{3} + \frac{2}{3}\right) \cdot \frac{7}{10}$

A) $\frac{6}{11}$ B) $\frac{7}{10}$ C) $\frac{1}{5}$ D) $\frac{21}{5}$

Answer: B

23) $\frac{5(2 + 1) - 6(1 + 1)}{5(4 - 2) - 2^3}$

A) $\frac{1}{2}$ B) $\frac{3}{8}$ C) $\frac{9}{2}$ D) $\frac{3}{2}$

Answer: D

Determine whether the statement is true or false.

24) $3 < 16$

A) False B) True

Answer: B

25) $5 \geq 11$

A) True B) False

Answer: B

26) $7 < 14 - 7$

A) True B) False

Answer: B

27) $\frac{4 \cdot (7 + 5) + 4 \cdot 2}{4 \cdot (2 - 1)} < 17$

A) True B) False

Answer: A

28) $5^2 \leq 7^2 - 6^2$

A) True B) False

Answer: B

29) $(7 + 5)[7 + (5 + 2)] < 188$

A) False B) True

Answer: B

30) $9 \cdot 2 - 3 \cdot 8 \leq 0$

A) True B) False

Answer: A

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31) $8[3 + (9 - 2)] < 30$

A) True B) False

Answer: B

32) $\frac{7(9+8)+6\cdot 8}{6(2+8)} \le 10$

A) True B) False

Answer: A

33) $\frac{6(5-2)+7(8-1)}{8(9-1)-6(8-2)} \ge 2$

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) $4 \le 9$

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

35) $2 \ne 9$

Answer: Two is not equal to nine. True

36) $7 \ge 2$

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

37) $7 > 4 + 2$

Answer: Seven is greater than four plus two. True

38) $9 \le 8 + 2$

Answer: Nine is less than or equal to eight plus two. 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.

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

Write the word statement in symbols.

41) Ten is greater than one plus eight.

A) $10 < 1 + 8$ B) $10 > 1 + 8$ C) $10 + 1 > 8$ D) $1 + 8 > 10$

Answer: B

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42) Three is less than or equal to eight.

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

Answer: D

43) Five is not equal to six.

A) $5 \neq 6$ B) $5 \geq 6$ C) $5 < 6$ D) $5 > 6$

Answer: A

44) Ten is less than or equal to six plus five.

A) $6 + 5 \leq 10$ B) $10 \leq 6 + 5$ C) $10 + 6 \geq 5$ D) $10 < 6 + 5$

Answer: B

45) Seven is equal to sixteen minus nine.

A) $7 - 16 < 9$ B) $16 < 7 + 9$ C) $7 = 16 - 9$ D) $16 = 7 - 9$

Answer: C

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

46) $11 < 23$

A) $23 \geq 11$ B) $23 > 11$ C) $23 < 11$ D) $11 > 23$

Answer: B

47) $13 > 5$

A) $5 > 13$ B) $13 < 5$ C) $13 \geq 5$ D) $5 < 13$

Answer: D

48) $43 \geq 20$

A) $20 \leq 43$ B) $43 > 20$ C) $20 \geq 43$ D) $43 \leq 20$

Answer: A

49) $18 \leq 47$

A) $47 \leq 18$ B) $47 > 18$ C) $47 \geq 18$ D) $18 \geq 47$

Answer: C

50) $4.95 \geq 3.78$

A) $4.95 \leq 3.78$ B) $3.78 \geq 4.95$ C) $3.78 \leq 4.95$ D) $4.95 < 3.78$

Answer: C

51) $5.33 < 5.56$

A) $5.33 \geq 5.56$ B) $5.56 \leq 5.33$ C) $5.33 > 5.56$ D) $5.56 > 5.33$

Answer: D

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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 50- 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) 8.2; ,{55,Skiing
B) 8.2; Cycling
C) 6.97; Swimming/x,Skiing
D) 6.97; Ballroom or square dancing

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

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 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) 5.95; Cycling
C) 7; Swimming
D) 5.95; Golfing

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

Answer: B

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

Answer: C

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

Answer: C

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

Answer: D

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

Answer: D

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

Answer: D

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

Answer: D

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Answer the question as instructed.

63) 12^4 means?

A) $12 \cdot 12 \cdot 12 \cdot 12$ B) $12 \cdot 12 \cdot 12 \cdot 12 \cdot 12$ C) $12 \div 4$ D) $12 \cdot 4$

Answer: A

64) Which of the following is the correct way to evaluate the expression $4 + 5 \cdot 2$?

A) $4 + 5 \cdot 2 = 4 + 10 = 14$ B) $4 + 5 \cdot 2 = 10 + 5 = 13$

C) $4 + 5 \cdot 2 = 8 + 10 = 18$ D) $4 + 5 \cdot 2 = 9 \cdot 2 = 18$

Answer: A

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) $14 < 14$ B) $14 \geq 14$ C) $14 = 14$ D) $14 \leq 14$

Answer: A

67) Which of the following statements is true?

A) $6 > 3$ B) $3 \neq 3$ C) $3 > 3$ D) $6 < 3$

Answer: A

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

A) less than or equal to B) greater than or equal to

C) less than D) greater than

Answer: D

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

A) $8 < 8$ B) $8 \cdot 8 + 64$ C) $8 \cdot 8 = 64$ D) $8 \neq 16$

Answer: B

70) Evaluate 1^2.

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

Answer: A

71) Using the rules for the order of operations, what should be done first when evaluating the expression $(7 + 9^2)^4$?

A) Evaluate 7^4 B) Evaluate 9^2 C) Add $7 + 9$ D) Evaluate 9^4

Answer: B

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

72) $x + 8$

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

Answer: B

73) $x - 2$

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

Answer: A

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74) $9x$

A) a) 13 b) 27 B) a) 36 b) 162 C) a) 27 b) 13 D) a) 162 b) 36

Answer: B

75) $\frac{x+4}{2}$

A) a) 4 b) 11 B) a) 8 b) 36 C) a) 11 b) 4 D) a) $\frac{1}{4}$ b) $\frac{1}{11}$

Answer: A

76) $\frac{4x-9}{7x}$

A) a) $\frac{25}{126}$ b) $\frac{9}{14}$ B) a) $\frac{1}{2}$ b) $\frac{1}{4}$ C) a) $\frac{1}{4}$ b) $\frac{1}{2}$ D) a) $\frac{1}{18}$ b) $\frac{1}{2}$

Answer: C

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

A) a) $\frac{5}{6}$ b) $\frac{9}{20}$ B) a) $\frac{13}{2}$ b) $\frac{27}{16}$ C) a) $\frac{9}{20}$ b) $\frac{5}{6}$ D) a) $\frac{27}{16}$ b) $\frac{13}{2}$

Answer: B

78) $2x^2 + 7x$

A) a) 36 b) 162 B) a) 44 b) 198 C) a) 60 b) 774 D) a) 4 b) 522

Answer: C

79) $0.55x^2$

A) a) 8.8 b)178.2 B) a) 4.4 b) 14.3 C) a) 4.4 b) 19.8 D) a) 3.3 b) 14.3

Answer: A

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

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

A) 56 B) 60 C) 35 D) 14

Answer: A

81) $\frac{11x}{y} + y^2 \quad x = 3, y = 7$

A) $\frac{104}{3}$ B) $\frac{376}{7}$ C) $\frac{47}{7}$ D) $\frac{82}{7}$

Answer: B

82) $\frac{9x - 14y}{15} \quad x = 10, y = 5$

A) $\frac{76}{15}$ B) $\frac{32}{3}$ C) $\frac{19}{3}$ D) $\frac{4}{3}$

Answer: D

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83) $\frac{x+y}{10x-5}$ $x = 7, y = 3$

A) $\frac{1}{7}$ B) $\frac{7}{65}$ C) $\frac{10}{43}$ D) $\frac{2}{13}$

Answer: D

84) $\frac{7x+14y}{5}$ $x = 9, y = 3$

A) 21 B) - 4 C) 29 D) 105

Answer: A

85) $\frac{6x-7y}{x+10}$ $x = 6, y = 3$

A) $\frac{15}{13}$ B) $\frac{15}{16}$ C) $\frac{24}{13}$ D) $\frac{3}{2}$

Answer: B

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

A) 28 B) 25 C) 14 D) 196

Answer: D

87) $\frac{x(y+14)}{6(x-y)}$ $x = 6, y = 4$

A) 2 B) 9 C) 1 D) 6

Answer: B

88) $5x^2 + 8y$ $x = 9, y = 4$

A) 2,057 B) 1,780 C) 152 D) 437

Answer: D

89) $0.322x^2 + 0.873y^2$ $x = 5, y = 2$

A) 23.1 B) 5.6 C) 33.3 D) 11.5

Answer: D

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

90) Four times a number

A) 4 - x B) $\frac{4}{x}$ C) 4 + x D) 4x

Answer: D

91) A number increased by seven

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

Answer: C

92) A number multiplied by four hundred fifty- eight

A) 458 - x B) $\frac{458}{x}$ C) 458 + x D) 458x

Answer: D

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93) A number minus seven hundred five

A) $705x$ B) 705 C) $x + 705$ D) $x - 705$

Answer: D

94) The difference between three times a number and nine

A) $9 - 3x$ B) $9 + 3x$ C) $3x - 9$ D) $3 - x + 9$

Answer: C

95) The quotient of a number and seven

A) $7 - x$ B) $7 + x$ C) $7x$ D) $\frac{x}{7}$

Answer: D

96) Six divided by a number

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

Answer: D

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

A) $(6 + 5)x$ B) $6 \cdot 5 + x$ C) $6(x + 5)$ D) $6 + 5 \cdot x$

Answer: C

98) 134 divided by a number

A) $\frac{134}{x}$ B) $134 - x$ C) $134x$ D) $134 + x$

Answer: A

99) Nine times a number, added to 31

A) $9x + 31$ B) $9(x + 31)$ C) $9x$ D) $9 \cdot 31 + x$

Answer: A

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

100) $p + 1 = 4$; 3

A) Yes B) No

Answer: A

101) $p - 3 = 7$; 10

A) Yes B) No

Answer: A

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

A) Yes B) No

Answer: B

103) $8y + 6(y - 7) = 70$; 8

A) Yes B) No

Answer: A

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104) $7p + 8p - 7 = 98;\quad 7$

A) Yes B) No

Answer: A

105) $12x^2 + 6 = 78;\quad 3$

A) Yes B) No

Answer: B

106) $\frac{x+2}{10-x} = \frac{1}{3}; 1$

A) No B) Yes

Answer: B

107) $\frac{x+5}{x-2} = \frac{3}{2}; 16$

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: B

109) 5 times a number equals 2 less than 6 times the number.

A) $5x = 2 - 6x$ B) $5x = 6x - 2$ C) $5x = 2 - 6$

Answer: B

110) Twice a number less 3 equals 3.

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

Answer: A

111) The product of twice a number and 1 is 16.

A) $2x = 16x$ B) $2x + 1 = 16$ C) $2x = 16$

Answer: B

112) $-\frac{4}{3}$ of a number plus 7 equals 3.

A) $-\frac{4}{3}x = 7 + 3$ B) $-\frac{4}{3}x + 7 = 3$ C) $-\frac{4}{3}(x + 7) = 3$

Answer: B

113) 20 divided by a number equals $\frac{1}{5}$ times that number."

A) $\frac{x}{20} = \frac{x}{5}$ B) $\frac{20}{x} = \frac{1}{5}x$ C) $\frac{20}{x} = 5x$

Answer: B

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114) When 5 times a number is subtracted from 7 times the number, the result is 14.

A) $5x + 7x = 14$ B) $7x - 5x = 14$ C) $5x(7 - x) = 14$ D) $5(x - 7) = 14x$

Answer: B

115) The sum of two- thirds a number and 70 is 87.

A) $\frac{2}{3}x + 70 = 87$ B) $\frac{2}{3}x \cdot 70 = 87$ C) $\frac{2}{3}x + 87 = 70$ D) $\frac{2}{3}x - 70 = 87$

Answer: A

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 4 is 7.

A) $x = 4 + 7$; 11 B) $x + 7 = 4; 3$ C) $x + 4 = 7; 3$ D) $x + 4 = 7; 7$

Answer: C

117) A number minus 4 equals 3.

A) $\mathbf{x - 4 = 3; 7}$ B) $4 - \mathbf{x} = 3; 1$ C) $4 = 3 - \mathbf{x}; 1$ D) $4 = 3 - \mathbf{x}; 7$

Answer: A

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

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

Answer: B

119) 50 divided by a number equals $\frac{1}{2}$ times that number.

A) $\frac{x}{50} = \frac{1}{2}x$; No solution B) $\frac{50}{x} = \frac{1}{2}x; 10$

C) $\frac{x}{50} = 2x; 10$ D) $\frac{50}{x} = \frac{1}{2}x; 50$

Answer: B

Decide whether the problem is an equation or an expression.

120) $8(3x + 4) = 2(6x - 9)$

A) Expression B) Equation

Answer: B

121) $5(5x + 2) - 6(4x - 4)$

A) Equation B) Expression

Answer: B

122) $\frac{6x + 9}{2} = \frac{8x}{5} - 4$

A) Equation B) Expression

Answer: A

123) $\frac{7x - 9}{x + 2} - \frac{x}{9} + 4$

A) Equation B) Expression

Answer: B

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124) $4x + 6 = \frac{4x + 5}{2}$

A) Equation B) Expression

Answer: A

125) $6(7 - x) + \frac{2x + 5}{3}$

A) Expression B) Equation

Answer: A

126) $x + y = 9$

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 $y = 0.304x - 436$, 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 1,965.

A) 297.4 yr B) 593.0 yr C) 161.4 yr D) 553.8 yr

Answer: C

Answer the question.

129) Which phrase correctly translates the expression $6 - x$?

A) x minus 6 B) 6 subtracted from x C) x take away 6 D) x less than 6

Answer: D

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

A) $2 \cdot 7^2 - 4 = 14^2 - 4 = 196 - 4 = 192$ B) $2 \cdot 7^2 - 4 = 2 \cdot 3^2 = 2 \cdot 9 = 18$

C) $2 \cdot 7^2 - 4 = 2 \cdot 49 - 4 = 98 - 4 = 94$ D) $2 \cdot 7^2 - 4 = (14 - 4)^2 = 10 = 100$

Answer: C

131) According to the rules for order of operations, the first steps in evaluating the expression $55 - 4x^3$ for $x = 2$ are to substitute 2 for x and then _____.

A) subtract 4 from 55 B) subtract 55 from 4 C) multiply 4 by 2 D) find the cube of 2

Answer: D

132) What value for x makes the expression $4 + 3x$ equal to 10?

A) 3 B) 5 C) 1 D) 2

Answer: D

133) What value for x makes the expression $24 - x$ equal to 10?

A) 14 B) 15 C) 34 D) 24

Answer: A

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134) Which pair of values of x and y makes 6x + y equal 12?
A) x = 0 and y = 2 B) x = 2 and y = 0 C) x = 6 and y = 3 D) x = 3 and y = 6

Answer: B

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

Answer: A

136) In the equation 4x + y = 18, the value of x is 2. What is the corresponding value of y?
A) y = 5 B) y = 26 C) y = 10 D) y = 22

Answer: C

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

137) The stock market lost 54 points on Monday.
A) - 54 B) 54

Answer: A

138) During one year, 27 employees quit their jobs at Newline Manufacturing Company.
A) 27 B) - 27

Answer: B

139) A football team lost 7 yards on one play.
A) - 7 B) 7

Answer: A

140) In one state, the highest point is 4,001 feet above sea level.
A) - 4,001 B) 4,001

Answer: B

141) One country exported $77,800,000 less than it imported, giving it a negative trade balance.
A) - 77,800,000 B) 77,800,000

Answer: A

142) Sales at Andrea's Formal Wear Shop were $1,404 less this week than the sales last week.
A) 1,404 B) - 1,404

Answer: B

143) Mr. Voss increased his speed by 13 miles per hour.
A) 13 B) - 13

Answer: A

144) On a sunny day, the water temperature in the swimming pool rises 3 degrees.
A) 3 B) - 3

Answer: A

145) This year corn production decreased 21,000 pounds from last year on Steve's farm.
A) 21,000 B) - 21,000

Answer: B

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146) Sales in Jeff's Toys Shop decline 20.4% from last month to this month.

A) - 20.4 B) 20.4

Answer: A

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 - 1.3 and less than - 0.3

Answer: - 1

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

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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) $\{0, \sqrt{8}, -12, \frac{2}{3}, -1\frac{1}{2}, 6.8, 4\}$

Integers

A) 3 B) 3, - 12 C) 3, $\sqrt{8}$ D) 0, - 12, 4

Answer: D

164) $\{2, \sqrt{6}, -18, 0, \frac{3}{7}, -2\frac{1}{3}, 7.3\}$

Whole numbers

A) 2 B) 2, 0 C) 2, - 18, 0 D) 2, - 18

Answer: B

165) $\{\sqrt{5}, -16, 0, \frac{1}{3}, -3, 9.7, 5\}$

Natural numbers

A) - 16, 0 B) 0, 5 C) 5 D) 0

Answer: C

166) $\{10, \sqrt{6}, -13, 0\}$

Real numbers

A) 10 B) 10, 0 C) 10, $\sqrt{6}$, - 13, 0 D) 10, - 13, 0

Answer: C

167) B = $\{14, \sqrt{8}, -13, 0, 0.84\}$

Rational numbers

A) $\sqrt{8}$ B) 14, - 13, 0, 0.84 C) $\sqrt{8}$, 0.84 D) 14, 0

Answer: B

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168) $\{14, \sqrt{8}, -14, 0, 0.46\}$

Irrational numbers

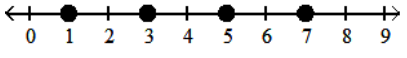
A) $\sqrt{8}, 0.46$ B) $\sqrt{8}, -14$ C) $\sqrt{8}, 0, 0.46$ D) $\sqrt{8}$

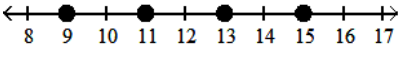
Answer: D

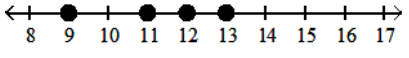
Graph the numbers on a number line.

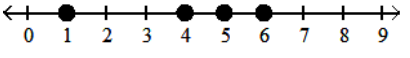
169) $1, 3, 5, 7$



A) 

B) 

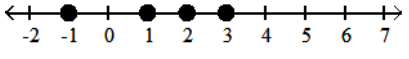
C) 

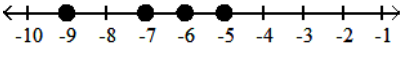
D) 

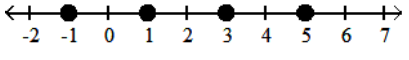
Answer: A

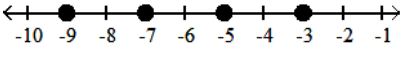
170) $-9, -7, -5, -3$



A) 

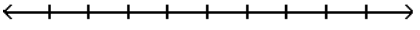
B) 

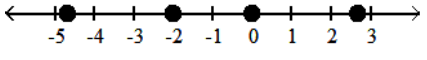
C) 

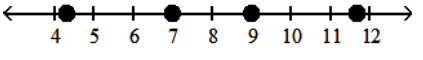
D) 

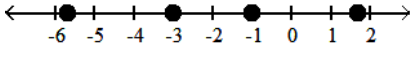
Answer: D

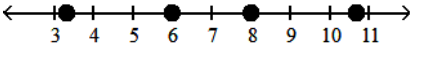
171) $-5\frac{2}{3}, -3, -1, 1\frac{2}{3}$



A) 

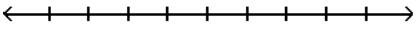
B) 

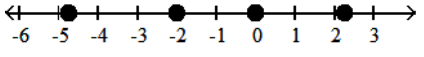
C) 

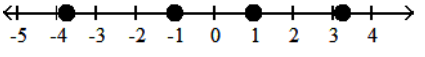
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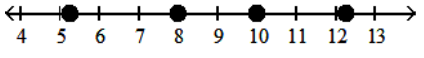
Answer: C

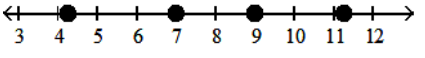
172) $-4\frac{3}{4}, -2, 0, 2\frac{1}{4}$



A) 

B) 

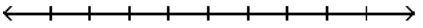
C) 

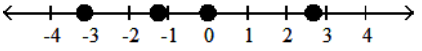
D) 

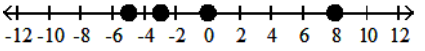
Answer: A

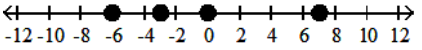
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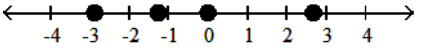
173) $-2\frac{7}{8}, -\frac{5}{4}, 0, \frac{8}{3}$



A) 

B) 

C) 

D) 

Answer: D

Find the opposite (additive inverse) of the number.

174) 25

A) 25 B) 0 C) $\frac{1}{25}$ D) - 25

Answer: D

175) - 12

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

Answer: D

Simplify by finding the absolute value.

176) $|-22|$

A) 0 B) - 22 C) 44 D) 22

Answer: D

177) $|12|$

A) 12 B) 0 C) 24 D) - 12

Answer: A

178) $|-11|$

A) 22 B) - 11 C) 0 D) 11

Answer: D

179) $-|-24|$

A) 48 B) 0 C) - 24 D) 24

Answer: C

180) $|6 - 7|$

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

Answer: A

181) $-\left|-\frac{1}{4}\right|$

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

Answer: B

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Select the smaller of the two given numbers.

182) - 18, - 15

A) - 18 B) - 15

Answer: A

183) $-\frac{2}{19}, -\frac{5}{7}$

A) $-\frac{5}{7}$ B) $-\frac{2}{19}$

Answer: A

184) - 149, 7

A) - 149 B) 7

Answer: A

185) 26, |- 29|

A) 26 B) |- 29|

Answer: A

186) |- 8|, |- 18|

A) |- 8| B) |- 18|

Answer: A

187) - |- 5|, - |- 26|

A) - |- 5| B) - |- 26|

Answer: B

188) |10 - 4|, |7 - 3|

A) |7 - 3| B) |10 - 4|

Answer: A

Decide if the statement is true or false.

189) - (- 30) < - 11

A) False B) True

Answer: A

190) - (- 7) > - 1

A) True B) False

Answer: A

191) - 10 > - 6

A) False B) True

Answer: A

192) - 13 ≤ - 11

A) True B) False

Answer: A

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193) $-12 \le -(-21)$

A) True B) False

Answer: A

194) $-4 \ge -(-23)$

A) False B) True

Answer: A

195) $|-6| < |-8|$

A) False B) True

Answer: B

196) $-|-13| \le -|-16|$

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) Sales, '98- '99 B) Public Relations, '99- '00

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

Answer: B

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

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

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.
$-6 - (-3) = -6 + (+3) = -3$

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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 4.3.

Answer: One example is 4. 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) 12 + (- 7)

A) 19 B) - 5 C) 5 D) - 19

Answer: C

207) - 14 + 9

A) - 5 B) 5 C) - 23 D) 23

Answer: A

208) - 6 + (- 16)

A) 22 B) - 22 C) 10 D) - 10

Answer: B

209) - 21.0 + (- 9.8)

A) - 30.8 B) 11.2 C) - 11.2 D) 30.8

Answer: A

210) - 679 + 596

A) - 83 B) - 1,275 C) 83 D) 1,275

Answer: A

211) $\frac{3}{4} + \left(-\frac{11}{16}\right)$

A) $\frac{1}{4}$ B) $\frac{2}{3}$ C) $\frac{1}{64}$ D) $\frac{1}{16}$

Answer: D

212) $-\frac{9}{16} + \frac{3}{4}$

A) $\frac{3}{4}$ B) $\frac{1}{2}$ C) $\frac{3}{64}$ D) $\frac{3}{16}$

Answer: D

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213) $14\frac{1}{5} + \left(-\ 9\frac{2}{5}\right)$

A) $22\frac{4}{5}$ B) $4\frac{3}{5}$ C) $23\frac{4}{5}$ D) $4\frac{4}{5}$

Answer: D

214) $-\ 6\frac{6}{7} + 12\frac{3}{7}$

A) $17\frac{4}{7}$ B) $5\frac{4}{7}$ C) $18\frac{4}{7}$ D) $5\frac{3}{7}$

Answer: B

215) 25 + [(- 12) + (- 25)]

A) - 12 B) 12 C) 38 D) 62

Answer: A

216) 11 + [25 + (- 11)]

A) - 3 B) 47 C) - 25 D) 25

Answer: D

217) - 17 + [3 + (- 10)]

A) 10 B) - 4 C) - 24 D) 30

Answer: C

218) 6.1 + [(- 2.6) + (- 4.8)]

A) - 1.3 B) 8.3 C) 13.5 D) 3.9

Answer: A

219) - 8.0 + [(- 6.1) + (- 2.5)]

A) 4.4 B) - 16.6 C) 11.6 D) - 0.6

Answer: B

220) [- 20 + (- 19)] + [(- 16) + (- 4)]

A) - 59 B) - 19 C) 19 D) 13

Answer: A

221) [21 + (- 3)] + [9 + (- 20)]

A) 29 B) - 11 C) 7 D) 53

Answer: C

222) - 6.4 + [23.2 + (- 24.7)]

A) 54.3 B) - 7.9 C) 41.5 D) 4.9

Answer: B

Find the difference.

223) 1 - 15

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

Answer: A

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224) - 9 - 14

A) - 5 B) 5 C) - 23 D) 23

Answer: C

225) - 8 - (- 6)

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

Answer: A

226) 2 - (- 1)

A) 1 B) 3 C) - 3 D) - 1

Answer: B

227) - 36 - 36

A) - 108 B) 0 C) - 72 D) 72

Answer: C

228) - 27 - (- 27)

A) 54 B) 81 C) 0 D) - 54

Answer: C

229) - 4.4 - 10.2

A) 14.6 B) - 14.6 C) - 5.8 D) 5.8

Answer: B

230) - 7.8 - (- 3.7)

A) 4.1 B) - 11.5 C) 11.5 D) - 4.1

Answer: D

231) $\frac{1}{11} - \left(-\frac{5}{11}\right)$

A) $\frac{4}{11}$ B) $-\frac{6}{11}$ C) $-\frac{4}{11}$ D) $\frac{6}{11}$

Answer: D

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

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

Answer: D

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

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

Answer: A

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234) $\frac{5}{6} - \left(\frac{1}{3} - \frac{1}{2}\right)$

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

Answer: A

235) $\frac{1}{3} - \left(-\frac{1}{4}\right)$

A) $\frac{1}{12}$ B) $\frac{7}{12}$ C) $-\frac{7}{12}$ D) $-\frac{1}{8}$

Answer: B

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

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

Answer: A

237) $\frac{7}{9} - \left(-\frac{4}{7}\right)$

A) $\frac{13}{63}$ B) $-\frac{85}{63}$ C) $-\frac{11}{63}$ D) $\frac{85}{63}$

Answer: D

238) $\frac{3}{8} - \left(-\frac{1}{4} - \frac{1}{4}\right)$

A) $-\frac{3}{16}$ B) $\frac{7}{8}$ C) $\frac{7}{2}$ D) $\frac{1}{2}$

Answer: B

239) $\left(-\frac{1}{4} - \frac{1}{2}\right) - \left(-\frac{11}{8} - 6\right)$

A) $-\frac{65}{8}$ B) $-\frac{43}{8}$ C) $\frac{53}{8}$ D) $\frac{31}{8}$

Answer: C

Use order of operations to simplify the expression.

240) 10 - (5 + 25)

A) - 10 B) 40 C) 30 D) - 20

Answer: D

241) 3 + (- 25 - 17)

A) 11 B) 45 C) - 5 D) - 39

Answer: D

242) (4 - 22) - 8

A) - 26 B) - 10 C) 34 D) 18

Answer: A

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243) $-1-|3+(-4)+(-6)|$
A) 12 B) - 4 C) 8 D) - 8
Answer: D

244) $-9+|6+(-7)+11|$
A) 11 B) 19 C) 1 D) - 7
Answer: C

245) $4-(18-6)$
A) - 8 B) 16 C) - 20 D) 28
Answer: A

246) $(2+6)-(-20+16)$
A) - 4 B) 12 C) - 28 D) 0
Answer: B

247) $(21+13)-(15-15)$
A) 34 B) 38 C) - 38 D) - 4
Answer: A

248) $-18-[(6-3)-(-5-3)]$
A) - 19 B) - 29 C) - 7 D) - 17
Answer: B

249) $[-20.3+(17.6-3.5)]-2.4$
A) - 3.8 B) 32 C) - 8.6 D) - 39
Answer: C

Write a numerical expression for the phrase and simplify it.

250) The difference between 17 and - 6
A) 6 - 17; - 11 B) - 6 - 17; - 23 C) 17 - (- 6); 23 D) 17 - (- 6); 11
Answer: C

251) 14 less than - 8
A) 14 - (- 8); 22 B) 14 - 8; 6 C) - 8 - 14; 22 D) - 8 - 14; - 22
Answer: D

252) The sum of 4 and - 5, decreased by 7
A) [4 - (- 5)] - 7; 2 B) [4 + (- 5)] - 7; - 8 C) [4 + (- 5)] + 7; 6 D) [4 + (- 7)] + 5; 2
Answer: B

253) 17 less than the difference between 2 and - 4
A) [2 - (- 4)] - 17; - 19 B) 17 - [2 - (- 4)]; 11 C) (2 - 4) - 17; - 19 D) [2 - (- 4)] - 17; - 11
Answer: D

254) 16 less than the difference between 19 and - 9
A) - 9 - 19 - 16; - 44 B) 9 - 19 - 16; - 44 C) 16 - 19 - (- 9); 6 D) [19 - (- 9)] - 16; 12
Answer: D

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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 Bob and the weight loss of Ed?

A) - 6,385 g B) 6,385 g C) 2,031 g D) - 2,031 g

Answer: B

256) During one year 29 new employees began work at Daniel's Manufacturing Company and 35 employees left. At the beginning of the year there were 263 employees. What was the number of employees at the end of the year?

A) 199 employees B) 292 employees C) 327 employees D) 257 employees

Answer: D

257) A football team gained 17 yards on one play, lost 19 yards on another, and gained 37 yards on the last play of the first half. They had already gained 293 yards during the half. What was the total yardage gain for the first half?

A) 366 yd B) 347 yd C) 258 yd D) 328 yd

Answer: D

258) Your bank account has $97 in it when you write checks for $40, $13, and $52. You then deposit $31 and $18. How much is in the account? Are you overdrawn?

A) - $153, yes B) $41, no C) $153, no D) $93, no

Answer: B

259) A bike road race starts at an elevation of 920 feet and passes through 5 stages where the elevation changes by - 450 feet, 401 feet, - 706 feet, - 177 feet, and 455 feet. At what elevation does the race end?

A) 1,247 ft B) 443 ft C) 3,109 ft D) - 3,109 ft

Answer: B

260) The stock market gained 15 points on Tuesday and lost 42 points on Wednesday. Find the difference between these changes.

A) - 27 points B) - 57 points C) 27 points D) 57 points

Answer: D

261) Nikki is fishing from a bank 47 feet above water level. In this location, the fish tend to feed at 50 feet below the surface. How long must Nikki's fish line be to reach the fish?

A) - 3 ft B) - 47 ft C) 97 ft D) 3 ft

Answer: C

262) Company A showed a profit of $88,790 last year, while Company B had a loss of $88,670. Find the difference between these amounts.

A) $120 B) - $120 C) $177,460 D) - $177,460

Answer: C

263) The temperature at the South pole was 30° at 8 am. At 3 pm, it was - 34°. By how many degrees did the temperature drop?

A) by 4° B) by - 64° C) by 64° D) by - 4°

Answer: C

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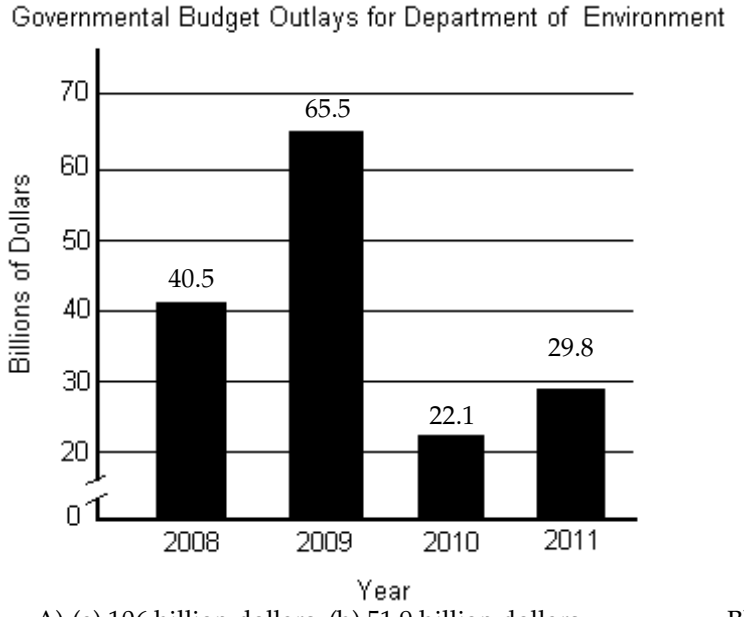
264) The ocean surface is at 0 ft elevation. A diver is underwater at an elevation of - 231 ft near a rock formation. In this area, the ocean floor has an elevation of - 376 ft. The rock formation rises to a peak 139 ft above the ocean floor. How many feet above the top of the rock formation is the diver?

A) 92 ft B) 6 ft C) 237 ft D) 145 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.



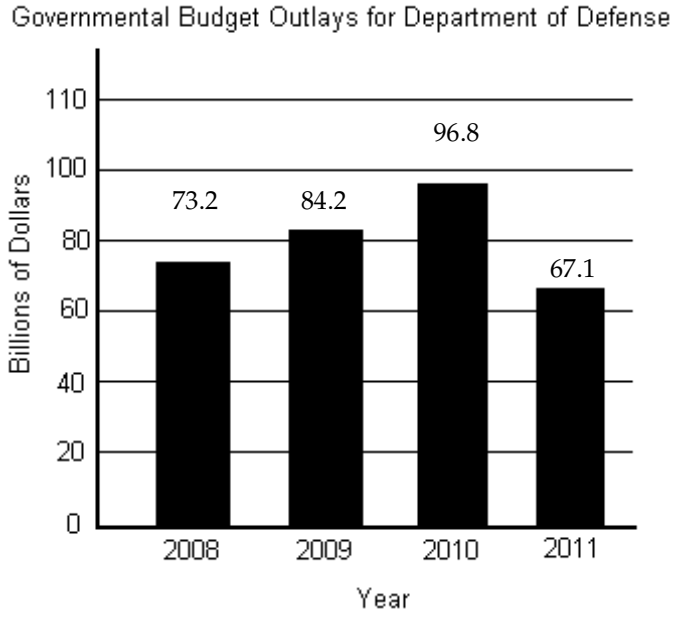
A) (a) 106 billion dollars, (b) 51.9 billion dollars B) (a) 25 billion dollars, (b) 7.7 billion dollars

C) (a) - 25 billion dollars, (b) - 7.7 billion dollars D) (a) - 106 billion dollars, (b) - 51.9 billion dollars

Answer: B

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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) 140.3 billion dollars, (b) 151.3 billion dollars
B) (a) - 29.7 billion dollars, (b) - 6.1 billion dollars
C) (a) - 6.1 billion dollars, (b) - 17.1 billion dollars
D) (a) 6.1 billion dollars, (b) 17.1 billion dollars

Answer: C

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

267) In order to add - 8 and 6, I should begin by finding the _____ of the _____ of - 8 and 6.

A) Sum, absolute values
B) Difference, absolute values
C) Difference, additive inverses
D) Sum, opposites

Answer: B

268) In order to add - 10 and - 8, I should begin by finding the _____ of the _____ of - 10 and - 8.

A) Opposite, additive inverses
B) Additive inverses, opposites
C) Sum, absolute values
D) Difference, absolute values

Answer: C

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) Not known
D) Positive

Answer: B

270) According to the rules for the order of operations, what should be the first step when simplifying the expression [9 + (- 1 + 4)] + (- 8)?

A) Find the sum of - 1 and 4
B) Find the sum of 4 and - 8
C) Find the sum of 9 and - 8
D) Find the sum of 9 and - 1

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 [- 2 + (- 8 + 5)] + (- 3 + 4)?

A) Find the sum of 5 and - 3
B) Find the sum of - 8 and 5
C) Find the sum of - 2 and - 3
D) Find the sum of - 2 and - 8

Answer: B

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? $(2 - 2) - 2 = 2 - (2 - 2)$

Answer: False. Answers will vary.

283) Is this statement true or false? Why? $(1 + 1) - 1 = 1 + (1 - 1)$

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 $-6 - (-11) = 5$.

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

Find the product.

286) $-7(13)$

A) - 21 B) - 91 C) 10 D) 70

Answer: B

287) $-11(-11)$

A) - 131 B) - 121 C) 121 D) 131

Answer: C

288) $-6(57)$

A) 313 B) 442 C) - 302 D) - 342

Answer: D

289) $-18(0)$

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

Answer: D

290) $-\frac{5}{4}\left(-\frac{6}{25}\right)$

A) $\frac{5}{3}$ B) $\frac{3}{5}$ C) $-\frac{1}{5}$ D) $\frac{3}{10}$

Answer: D

291) $-6\left(-\frac{5}{4}\right)$

A) $-\frac{5}{2}$ B) $\frac{15}{2}$ C) $-\frac{15}{2}$ D) $\frac{5}{2}$

Answer: B

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Find all integer factors of the given number.

292) 42

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

Answer: A

293) 41

A) - 41, - 20, - 2, - 1, 1, 2, 20, 41
B) - 41, - 1, 1, 41
C) - 41, - 20, - 13, - 3, - 2, - 1, 1, 2, 3, 13, 20, 41
D) - 41, - 20, - 13, - 4, - 2, - 1, 1, 2, 4, 13, 20, 41

Answer: B

294) 27

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

Answer: D

295) 125

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

Answer: A

296) 130

A) - 130, - 26, - 13, - 10, - 5, - 2, - 1, 1, 2, 5, 10, 13, 26, 130
B) - 130, - 65, - 13, - 10, - 5, - 2, 2, 5, 10, 13, 65, 130
C) - 130, - 65, - 26, - 13, - 10, - 5, - 4, - 2, - 1, 1, 2, 4, 5, 10, 13, 26, 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) $\frac{-126}{6}$

A) - 21
B) 21
C) - 31
D) $-\frac{1}{21}$

Answer: A

298) $\frac{144}{-9}$

A) - 16
B) - 26
C) 16
D) $-\frac{1}{16}$

Answer: A

299) $\frac{-279}{31}$

A) 9
B) - 19
C) - 9
D) $-\frac{1}{9}$

Answer: C

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300) $\frac{-252}{-36}$

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

Answer: B

301) $\frac{0}{-46}$

A) 46 B) 0 C) Undefined D) 1

Answer: B

302) $-\frac{3}{5} \div \left(-\frac{5}{6}\right)$

A) $\frac{25}{18}$ B) $-\frac{1}{2}$ C) $\frac{18}{25}$ D) $-\frac{18}{25}$

Answer: C

303) $\frac{2}{7} \div \left(-\frac{6}{13}\right)$

A) $\frac{13}{21}$ B) $\frac{21}{13}$ C) $-\frac{12}{91}$ D) $-\frac{13}{21}$

Answer: D

304) $\frac{-7}{0}$

A) 0 B) -7 C) 7 D) Undefined

Answer: D

305) $\frac{4.532}{4}$

A) -0.28 B) -1.133 C) 1.133 D) 0.28

Answer: C

Perform the indicated operations.

306) $6 - 8 \cdot 3$

A) -6 B) 18 C) -18 D) 30

Answer: C

307) $19 + 30 \cdot 4 - 23$

A) 116 B) 30 C) 173 D) -931

Answer: A

308) $9 + 9 \cdot 22 - (-23)$

A) 419 B) 230 C) 810 D) 63

Answer: B

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309) $19 \cdot (-30) + 11 \cdot (-30)$

A) - 16,770 B) - 900 C) - 10,830 D) 16,770

Answer: B

310) $30 \cdot 11 - 10 \cdot 21$

A) 120 B) 6,720 C) 52 D) 630

Answer: A

311) $8 - (-9) \cdot (-11) + 11$

A) - 80 B) 21 C) 22 D) - 176

Answer: A

312) $-3(1 - 5)$

A) 12 B) - 18 C) - 12 D) - 8

Answer: A

313) $(48 - 74)(44 - 58)$

A) 6,404 B) - 364 C) 364 D) 12,444

Answer: C

314) $8[(-6) + 6(-8 + 2)]$

A) - 336 B) - 4 C) - 0 D) - 84

Answer: A

315) $5(-9) + |6 - 17|$

A) - 34 B) 34 C) - 56 D) 56

Answer: A

Perform the indicated operation.

316) $\frac{-4(9)}{2 - (-7)}$

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

Answer: D

317) $\frac{-8(1) + 4(4)}{-3 - (-1)}$

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

Answer: A

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

A) 3 B) 6 C) - 6 D) - 3

Answer: D

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

319) $2x - 3y - 4a$

A) 3 B) - 9 C) - 4 D) 28

Answer: A

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320) $(2x - 5y)(-2a)$

A) 152 B) 128 C) -152 D) 88

Answer: C

321) $-7a + 2y + 3x$

A) 33 B) -40 C) 28 D) 15

Answer: C

322) $(-8 + x)(5 + y)(-4 - a)$

A) -0 B) 640 C) 384 D) 0

Answer: A

323) $(9a)(-4x - 3y)$

A) 216 B) 36 C) 612 D) -36

Answer: B

324) $\left(\frac{1}{6}x - \frac{9}{7}y\right)\left(-\frac{1}{3}a\right)$

A) $-\frac{352}{21}$ B) $-\frac{296}{63}$ C) $-\frac{352}{63}$ D) $\frac{86}{21}$

Answer: C

325) $\frac{-7ax - 14y}{a - y}$

A) 14 B) -7 C) 8 D) -8

Answer: A

326) $6y - 3a^2$

A) 66 B) -6 C) 6 D) -30

Answer: D

327) $\frac{4a^2 - y}{x + 2}$

A) $-\frac{67}{4}$ B) Undefined C) $\frac{61}{4}$ D) 0

Answer: B

Write a numerical expression for the phrase and simplify it.

328) The product of -9 and 2, added to 5

A) $(-9)(2)(5)$; -90 B) $(5)(-9 + 2)$; -35 C) $(-9 + 5)(2)$; -8 D) $5 + (-9)(2)$; -13

Answer: D

329) The product of 3 and -5, added to -9

A) $(-9 + 3)(-5)$; 30 B) $(-9)(-5) + 3$; 48 C) $(-9)(-5)(3)$; 135 D) $(-9) + (3)(-5)$; -24

Answer: D

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330) The product of - 7 and 6, subtracted from - 2

A) (- 2)(- 7)(6); 84 B) [- 2 - (- 7)](6); 30 C) - 2 + (- 7)(6); - 44 D) - 2 - (- 7)(6); 40

Answer: D

331) Twice the product of - 4 and - 2, subtracted from 9

A) (9 - 2)(- 4 · - 2); 56 B) (9)(2)(- 4 + 2); - 36 C) (9)(2)(- 4)(- 2); 144 D) 9 - 2(- 4 · - 2); - 7

Answer: D

332) 6 subtracted from the product of - 9.6 and 8.6

A) 6 - (- 9.6)(8.6); 88.56 B) [6 + (- 9.6)](8.6); - 30.96

C) (6)(- 9.6)(8.6); - 495.36 D) (- 9.6)(8.6) - 6; - 88.56

Answer: D

333) The product of 8 and the difference between 9 and - 5

A) 8[9 - (- 5)]; 112 B) (8 - 9)(- 5); 5 C) (8)(9) - (- 5); 77 D) 8[- 5 - 9]; - 112

Answer: A

334) The product of - 7 and the sum of 9 and - 8

A) (- 7)(- 8) + 9; 65 B) (- 7)(9) + (- 8); - 71 C) - 7[9 + (- 8)]; - 7 D) - 7 + (9)(- 8); - 79

Answer: C

335) Seven- eighths of the sum of - 1 and - 7.

A) $\frac{7}{8}$ + [(- 1) + (- 7)]; 6 B) $\frac{7}{8}$ [(- 1) + (- 7)]; - 14

C) $\frac{7}{8}$ [(- 1) + (- 7)]; - 7 D) (7 + 8)(- 1) + (- 7); - 22

Answer: C

336) Two- ninths of the difference between - 9 and - 27.

A) $\frac{2}{9}$ [(- 9) - (- 27)]; 4 B) $\frac{2}{9}$ + [(- 9) - (- 27)]; 12

C) 2(9) [(- 9) - (- 27)]; 4 D) 2(9) [(- 9) - (- 27)]; 324

Answer: A

337) The quotient of - 72 and - 8

A) $\frac{- 72}{- 8}$; 9 B) $\frac{- 72}{- 8}$; $\frac{1}{9}$ C) $\frac{- 8}{- 72}$; $\frac{1}{9}$ D) (- 8)(- 72); 576

Answer: A

338) The quotient of 16 and the sum of 9 and - 5

A) $\frac{16}{9 + (- 5)}$; - 4 B) 16 + 9 + (- 5); 20 C) $\frac{16}{9 + (- 5)}$; 4 D) $\frac{9 + (- 5)}{16}$; $\frac{1}{4}$

Answer: C

339) The quotient of - 36 and the sum of 15 and 3

A) $\frac{- 36}{15 - 2}$; 2 B) $\frac{15 + 3}{- 36}$; - $\frac{1}{2}$ C) $\frac{- 36}{15 + 3}$; - 2 D) - 36 + 15 + 3; - 18

Answer: C

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340) The sum of 43 and - 3, divided by the product of 4 and - 2

A) $43 + \frac{-3}{4(-2)}$; - 5 B) $\frac{4(-2)}{43 + (-3)}$; $-\frac{1}{5}$ C) $\frac{43 + 3}{4 - (-2)}$; 20 D) $\frac{43 + (-3)}{4(-2)}$; - 5

Answer: D

341) The sum of - 26 and - 6, divided by the product of 1 and - 4

A) $-26 + \frac{-6}{1 + (-4)}$; 9 B) $\frac{-26 + (-6)}{1 - (-4)}$; $-\frac{32}{5}$ C) $\frac{-26 + (-6)}{1(-4)}$; 8 D) $-26 + \frac{-6}{1(-4)}$; $-\frac{5}{32}$

Answer: C

342) The product of $-\frac{4}{5}$ and $-\frac{5}{9}$, divided by $-\frac{1}{4}$.

A) $\frac{\left(-\frac{4}{5}\right)\left(-\frac{5}{9}\right)}{-\frac{1}{4}}$; $-\frac{1}{9}$ B) $\frac{\left(-\frac{1}{4}\right)}{\left(-\frac{4}{5}\right)\left(-\frac{5}{9}\right)}$; $-\frac{9}{16}$ C) $\frac{\left(-\frac{4}{5}\right)}{\left(-\frac{5}{9}\right)\left(-\frac{1}{4}\right)}$; $-\frac{144}{25}$ D) $\frac{\left(-\frac{4}{5}\right)\left(-\frac{5}{9}\right)}{-\frac{1}{4}}$; $-\frac{16}{9}$

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 12.

A) $\frac{12}{4} = x$; 3 B) - 3x = 12; - 4 C) 3x = 12; 4 D) 4x = 12; 3

Answer: C

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

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

Answer: D

345) 3 less than a number is 2.

A) 3 - x = 2; 1 B) x + 2 = 3; 1 C) x - 3 = 2; 5 D) x + 3 = 2; - 1

Answer: C

346) When 4 is added to another number the result is - 8.

A) - 8 - 4 = x; - 12 B) 4 - 8 = x; - 4 C) x + 4 = - 8; - 12 D) x - 8 = 4; 12

Answer: C

Find the average of the numbers.

347) 9, 6, 6, 1, 13

A) 8 B) 8.75 C) 7 D) 36

Answer: C

348) 13, 1, 16, 15, 2, 2, 16, 15

A) 28 B) 11.43 C) 9 D) 10

Answer: D

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349) 15, - 1, 8, 12, 11

A) 7.5 B) 11 C) 9 D) 11.25

Answer: C

350) What is the average of all integers between - 4 and 18, inclusive of both?

A) 7 B) 8 C) - 24 D) 161

Answer: A

351) What is the average of all the odd integers between - 17 and 15, inclusive of both?

A) - 17 B) 0 C) - 34 D) - 1

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 4x - 4y positive or negative?

Answer: Positive if $|4y|$ is greater than $|4x|$; 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? $\frac{4 - 4}{4 + 4}$

Answer: No

359) Is the following expression undefined? $\frac{8 + 8}{8 + 8}$

Answer: No

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

Answer: Positive

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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) Negative C) Positive

Answer: C

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) Negative B) Positive C) Cannot be determined

Answer: C

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) $2 + (-7) = -7 +$ ___

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

Answer: A

367) $-9 \cdot 1 = 1 \cdot$ ___

A) 9; associative property B) -9; associative property
C) -9; commutative property D) 9; commutative property

Answer: C

368) $11 + (8 + 4) = (11 +$ ___ $) + 4$

A) 8; commutative property B) -8; commutative property
C) 8; associative property D) -8; associative property

Answer: C

369) $10 \cdot (7 \cdot 11) = (10 \cdot$ ___ $) \cdot 11$

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

Answer: B

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

370) $5 \cdot 1 = 5$

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

Answer: C

371) $(6 + 3) + 7 = (3 + 6) + 7$

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

Answer: D

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

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

Answer: A

373) $4 + (-4) = 0$

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

Answer: D

374) $3 + 1 = 1 + 3$

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

Answer: C

375) $(5 \cdot 9) \cdot 2 = 5 \cdot (9 \cdot 2)$

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

Answer: C

376) $3 \cdot 5 = 5 \cdot 3$

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

Answer: D

377) $\left(\frac{6}{5}\right)\left(\frac{5}{6}\right) = 1$

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

Answer: B

378) $5(3f) - 5(7g) = 5(3f - 7g)$

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

Answer: A

Find the sum.

379) $191 + 89 + 9 + 1$

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

Answer: D

380) $3998 + 8 + 12 + 2$

A) 3020 B) 4010 C) 3010 D) 4020

Answer: D

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381) $27 + 222 + 73 + 278$

A) 500 B) 600 C) 610 D) 700

Answer: B

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

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

Answer: C

383) $534 + 646 + (-34) + (-46)$

A) 1192 B) 1168 C) 1100 D) 1180

Answer: C

384) $1832 + 1218 + (-32) + (-18)$

A) 3064 B) 3036 C) 3100 D) 3000

Answer: D

Find the product.

385) $2(59)(5)$

A) 305 B) 413 C) 590 D) 592

Answer: C

386) $-5(41)(2)$

A) 72 B) -413 C) -123 D) -410

Answer: D

387) $-5 \cdot 4 \cdot 59 \cdot (-5)$

A) 5,900 B) -5,900 C) -295 D) 590

Answer: A

388) $25 \cdot (-2) \cdot 59 \cdot 2$

A) -5,900 B) -1,475 C) 5,895 D) 1,475

Answer: A

Use the properties of real numbers to simplify the expression.

389) $-\frac{16}{21} + \frac{5}{8} + \frac{11}{8} + \frac{16}{21}$

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

Answer: B

390) $\frac{4}{9}(-0.12)\left(\frac{9}{4}\right)$

A) -1 B) $\frac{4}{9}$ C) -0.12 D) 1

Answer: C

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

391) $3(x + 8)$

A) $24x$ B) $3x + 3$ C) $3x + 8$ D) $3x + 24$

Answer: D

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392) $9(4x + 2y + 9)$

A) $36x + 2y + 9$ B) $36x + 18y + 9$ C) $36x + 18y + 81$ D) $36x + 2y + 81$

Answer: C

393) $3(9r + 5 + 6s)$

A) $27r + 5 + 18s$ B) $27r + 15 + 18s$ C) $27r + 15 + 6s$ D) $27r + 5 + 6s$

Answer: B

394) $3(-6x) + 3(8y)$

A) $6(-6x + 8y)$ B) $3(-6x + 8y)$ C) $3x(-6 + 8) = 6x$ D) $-18x + 24y$

Answer: B

395) $-\frac{7}{9}(27x - 18y)$

A) $-21x + 14y$ B) $-21x - 14y$ C) $-7x$ D) $21x - 14y$

Answer: A

396) $9x + 9z$

A) $18(x + z)$ B) $9(x + z)$ C) $9(xz)$ D) $81(x + z)$

Answer: B

397) $\frac{3}{2}(16x + 8y)$

A) $24x + 12y$ B) $36xy$ C) $36(x + y)$ D) $8x + 4y$

Answer: A

Write the expression without parentheses.

398) $-(5x + 7y)$

A) $5x + 7y$ B) $-5x + 7y$ C) $-5x - 7y$ D) $5x - 7y$

Answer: C

399) $-(-3v - 5r)$

A) $3v + 5r$ B) $-3v + 5r$ C) $-3v - 5r$ D) $3v - 5r$

Answer: A

400) $-(-7m + 6n - 9p)$

A) $7m - 6n - 9p$ B) $-7m + 6n - 9p$ C) $-7m + 6n + 9p$ D) $7m - 6n + 9p$

Answer: D

401) $-(9z - 6w + 2y)$

A) $-9z + 6w + 2y$ B) $-9z + 6w - 2y$ C) $-9z - 6w + 2y$ D) $-9z - 6w - 2y$

Answer: B

402) $-(-8t - 2r - 8s)$

A) $-8t - 2r - 8s$ B) $8t + 2r + 8s$ C) $8t + 2r - 8s$ D) $-8t - 2r + 8s$

Answer: B

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403) $-(6n + 4w + 2g)$

A) $-6n - 4w + 2g$ B) $6n - 4w + 2g$ C) $-6n - 4w - 2g$ D) $6n + 4w + 2g$

Answer: C

Answer the question.

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

A) Yes. $x/x = 1$ B) No.

Answer: A

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

A) Yes. $a/(b - c) = a/b - a/c$ B) No.

Answer: B

406) Choose the expression that is equivalent to the following: $0 + 6a$

A) 0 B) $-6a$ C) $6 + a$ D) $6a$

Answer: D

407) Choose the expression that is equivalent to the following: $1(4y^3)$

A) 1 B) $5y^3$ C) $4y^4$ D) $4y^3$

Answer: D

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

A) $12(15ab)$ B) $6(15ab)$ C) $12(7a + 8b)$ D) $6(7a + 8b)$

Answer: D

409) Choose the expression that is equivalent to the following: $12x + 3y$

A) $3(9x + y)$ B) $3(4x + y)$ C) $15xy$ D) $3(4x + 3y)$

Answer: B

410) Choose the expression that is equivalent to the following: $(7x + 2y)(6y + 9x)$

A) $(7x + 2y)(9x + 6y)$ B) $(7x + 9x)(2y + 6y)$ C) $16x + 8y$ D) $(7x + 2y)(9y + 6x)$

Answer: A

411) Choose the expression that is equivalent to the following: $(4x + 5y)(9y^3)$

A) $(4x + 9y^3)(5y)$ B) $4x + (5y + 9y^3)$ C) $(4x) + (5y)(9y^3)$ D) $(9y^3)(4x + 5y)$

Answer: D

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

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

Answer: C

413) Choose the expression that is equivalent to the following: $4 - 4$

A) $(-2)(4)$ B) $(4)(4)$ C) $4 + (-4)$ D) $2(4)$

Answer: C

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Simplify the expression.

414) $7a - 5a + 2$

A) $12a + 2$ B) $-2a + 2$ C) $2a + 2$ D) $4a$

Answer: C

415) $-1 + 7(11 - 4m)$

A) $76 + 28m$ B) $77 - 28m$ C) $76 - 4m$ D) $76 - 28m$

Answer: D

416) $-11 - (9 - 10s)$

A) $20 + 10s$ B) $-2 - 10s$ C) $2 - 10s$ D) $-20 + 10s$

Answer: D

417) $5g + 29 - 6$

A) $5g - 23$ B) $5g + 35$ C) $5g + 23$ D) $28g$

Answer: C

Give the numerical coefficient of the term.

418) z

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

Answer: A

419) $-15y^{13}$

A) 15 B) -15 C) y^{13} D) 13

Answer: B

420) $-7y$

A) 7 B) $7y$ C) y D) -7

Answer: D

421) -6

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

Answer: C

422) 12

A) 12 B) 0 C) -1 D) 1

Answer: A

423) uy

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

Answer: B

424) $-w$

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

Answer: B

425) $18k^2$

A) 36 B) 324 C) 18 D) 2

Answer: C

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Identify the group of terms as like or unlike.

426) $4z, -6z$

A) Unlike B) Like

Answer: B

427) $14a^6, 14a^5$

A) Unlike B) Like

Answer: A

428) $10m, 6m, -15m$

A) Like B) Unlike

Answer: A

429) $15, 8, -2$

A) Like B) Unlike

Answer: A

430) $10b, 7, 7a$

A) Unlike B) Like

Answer: A

431) $3m, 6m$

A) Like B) Unlike

Answer: A

432) z, y

A) Like B) Unlike

Answer: B

433) $8v^2, -12v^5$

A) Unlike B) Like

Answer: A

434) $9v^4, -11v^4$

A) Unlike B) Like

Answer: B

Simplify the expression.

435) $2x + 4x$

A) $12x$ B) $6x^2$ C) $6x$ D) $8x$

Answer: C

436) $-5p - 8p$

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

Answer: A

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437) $4x + x$

A) $5x$ B) $7x$ C) $4x$ D) $4x + 1$

Answer: A

438) $11x - 8 - 30x - 6$

A) $19x - 14$ B) $-19x - 2$ C) $-19x - 14$ D) $19x - 2$

Answer: C

439) $-6y + 7 - 3 + 1 + y - 5$

A) $-7y$ B) $-5y - 1$ C) $-5y$ D) $-7y + 1$

Answer: C

440) $-8b + 2 + 6b + 3b - 7$

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

Answer: C

441) $-\frac{1}{12} + 16y + \frac{13}{12}y - 12 + \frac{5}{12}y$

A) $\frac{199}{12}y$ B) $\frac{46}{3}y - 11$ C) $\frac{35}{2} + 11$ D) $\frac{35}{2}y - \frac{145}{12}$

Answer: D

442) $2p^2 + 4p^3 - 8p^2 - 6p^3$

A) $-8p^2p^3$ B) $-6p^2 - 2p^3$ C) $6p^2 - 14p^3$ D) $-8p^2$

Answer: B

443) $14p + 3(2 - 4p)$

A) $26p - 6$ B) $-2p - 6$ C) $10p + 6$ D) $2p + 6$

Answer: D

444) $100[0.03(x - 9)$

A) $3x - 27$ B) $3x + 27$ C) $0.03x + 27$ D) $0.3x - 27$

Answer: A

445) $3(y + 10) - 9$

A) $3y + 1$ B) $3y + 3$ C) $13y - 9$ D) $3y + 21$

Answer: D

446) $-\frac{3}{5}(z - 11) - \frac{1}{10}z$

A) $\frac{7}{10}z - \frac{33}{5}$ B) $-\frac{7}{10}z + \frac{33}{5}$ C) $\frac{1}{2}z + 11$ D) $\frac{7}{10}z + \frac{33}{5}$

Answer: B

447) $-9(2r + 7) + 2(4r + 2)$

A) $-10r + 7$ B) $-81r$ C) $-10r - 59$ D) $-7r - 2$

Answer: C

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448) $(10z + 11) - (5z - 2)$

A) $15z + 13$ B) $5z + 9$ C) $5z - 13$ D) $5z + 13$

Answer: D

449) $-3(5j + 7) - (8j + 8) - 4j + 15$

A) $-27j - 14$ B) $27j + 15$ C) $-27j + 28$ D) $-11j + 2$

Answer: A

450) $-3.9p + 5.6 - (8p + 0.4) + 5.6p$

A) $9.7p + 6.0$ B) $9.7p + 5.2$ C) $-6.3p + 6.0$ D) $-6.3p + 5.2$

Answer: D

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

451) Five times a number, added to the sum of the number and seven

A) $12x$ B) $(x + 7) + 5x; 6x + 7$ C) $6x$ D) $5x + 7$

Answer: B

452) A number multiplied by -9, subtracted from the sum of 18 and six times the number

A) $(18 + 6x) + (-9)x; 18 - 3x$ B) $9x - 24$

C) $9x - (18 + 6x); 3x - 18$ D) $(18 + 6x) - (-9)x; 18 + 15x$

Answer: D

453) A number multiplied by 9, added to -5, subtracted from 4 times the sum of 7 times the number and 8

A) $9(-5 + x) + 4(7x + 8); 37x - 37$ B) $9(-5 + x) + 4(7 + 8x); 17x - 17$

C) $9x - 5 + 4(7 + 8x); 41x + 37$ D) $4(7x + 8) - [9x + (-5)]; 19x + 37$

Answer: D

454) 6 times a number added to -7, added to 2 times the sum of 3 times the number and 9

A) $2(3x + 9) + [6x + (-7)]; 12x + 11$ B) $6x - 7 + 2(3 + 9x); 24x + 12$

C) $6(-7 + x) + 2(3x + 9); 12x - 33$ D) $6(-7 + x) + 2(3 + 9x); 15x - 36$

Answer: A

455) Four times a number added to -4, subtracted from triple the sum of seven times the number and 1

A) $3(7x + 1) - (-4 + 4x); 7 + 17x$ B) $4(x - 4) - (3 + 7)(x + 1); -26 - 6x$

C) $(-4 + 4x) - 3(7x + 1); -7 - 17x$ D) $(3 + 7)(x + 1) - 4(x - 4); 26 + 6x$

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

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459) Which is an example of a term with numerical coefficient 5?

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

Answer: (b)

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

460) Is the statement true or false?

$2t^2 + 3t^4 = 5t^6$

A) False B) True

Answer: A

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

A) $-4v^2y, -6vy^2$ B) $-3yz, 4zy$ C) $4t, 2z$ D) $2t^2, -3t^3$

Answer: B

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 18y to get 21y? Explain.

Answer: Distributive. In $3y + 18y$, the y has been distributed. Therefore, $3y + 18y = (3 + 18)y = 21y$

463) Write the expression $7m - (m + 18)$ using words.

Answer: Answers may vary. One possible answer: The difference between 7 times a number and the sum of the number and 18.

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

Determine whether the statement is true or false.

464) $4[5 + (8 - 3)] \geq 25$

A) True B) False

Answer: A

465) $\left(\frac{1}{6}\right)^2 + \left(\frac{1}{9}\right)^2 = \left(\frac{1}{6} + \frac{1}{9}\right)^2$

A) False B) True

Answer: A

Provide an appropriate response.

466) To which of the following sets does $-\frac{4}{9}$ belong: natural numbers, whole numbers, integers, rational numbers, irrational numbers, real numbers?

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

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

Answer: C

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

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

Answer: B

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Write the following phrase in symbols then simplify the expression.

468) The quotient of 8 and the sum of 26 and - 7.

A) $\frac{8}{26 - (-7)}$; $\frac{8}{33}$ B) 8 + (26 - 7); 27 C) $\frac{8}{26 + (-7)}$; $\frac{8}{19}$ D) $\frac{26 - 7}{8}$; $\frac{19}{8}$

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) Cannot be determined B) Negative C) Positive

Answer: C

Perform the indicated operation.

470) 7 - (12 - 23) + (- 20)

A) - 2 B) - 8 C) - 48 D) 62

Answer: A

471) $-3\frac{3}{5} + 6\frac{4}{7}$

A) $-2\frac{34}{35}$ B) $-\frac{2}{5}$ C) $\frac{26}{35}$ D) $2\frac{34}{35}$

Answer: D

472) - 22 - [- 19 + (8 - 22)]

A) 71 B) - 17 C) - 33 D) 11

Answer: D

473) $12^2 + 9 \cdot 10 - (7 + 4 \cdot 4)$

A) 243 B) 190 C) 1,507 D) 211

Answer: D

474) $(-2) \cdot (-11) + 6 + (-8)^2$

A) 264 B) 48 C) 748 D) 92

Answer: D

475) $\frac{-3 - (-4+2)}{-4 - (-7)}$

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

Answer: A

Evaluate the expression using the given values.

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

A) 12 B) 0 C) 72 D) - 24

Answer: D

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477) $\frac{9x + 1}{30 - 2y}$; x = 3, y = 14

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

Answer: A

Solve the problem.

478) The windchill temperature was - 8° F, and the actual temperature was 21° F. Find the difference between the actual temperature and the windchill temperature.

A) 29°F B) 31°F C) 13°F D) 58°F

Answer: A

479) A baseball team won 3 of its games by 4 runs, lost 2 of its games by 4 runs, lost 1 game by 8 runs, and finished the season by winning its last 3 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 9 games.

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

Answer: D

480) For 2009, the government of Country X collected $2.2 trillion in revenues, but spent $8.7 trillion. Write the government's budget deficit as a signed number.

A) - $6.5 trillion B) $10.9 trillion C) $6.5 trillion D) - $10.9 trillion

Answer: A

Match the property with the example of it.

481) Commutative property

A) (2 + 6) + 0 = (2 + 6)
B) (2 + 6) + 6 = 2 + (2 + 6)
C) (2 + 6) + 6 - 2 = (6 + 2)
D) (2 + 6) + 6 = 2 + (6 + 6)

Answer: B

482) Associative property

A) (8 + 1) + 9 = (1 + 8) + 9
B) (8 + 1) + 9 = 8 + (1 + 9)
C) (8 + 1) + 0 = (8 + 1)
D) (8 + 1) + 9 = 8 + (1 + 8)

Answer: B

483) Inverse property

A) $-\frac{3}{4}\left(-\frac{4}{3}\right) = 0$ B) $-\frac{3}{4}\left(-\frac{4}{3}\right) = 1$ C) $-\frac{3}{4}\left(-\frac{3}{4}\right) = 1$ D) $-\frac{3}{4} + \frac{4}{3} = 0$

Answer: B

484) Identity property

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

Answer: B

485) Distributive property

A) - 6(x + y) = 6x + 6y
B) - 6(x + y) = 6(- x - y)
C) - 6(x + y) = - 6(y + x)
D) - 6(x + y) = - 6x - 6y

Answer: D

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Provide an appropriate response.

486) What property is used to clear parentheses and write $9(x + 7)$ as $9x + 63$?

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

Answer: B

Evaluate.

487) $-6[1 + (-9)]$

A) -15
B) -48
C) -60
D) 48

Answer: D

Simplify by combining like terms.

488) $9x - 11x + 11x - x + 3x$

A) $11x$
B) -14
C) 14
D) $12x$

Answer: A

489) $5(4x - 5) - (x - 9) + 6(5x - 8)$

A) $49x - 64$
B) $49x - 82$
C) $50x - 64$
D) $51x - 82$

Answer: A

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

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

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101) A
102) B
103) A
104) A
105) B
106) B
107) B
108) B
109) B
110) A
111) B
112) B
113) B
114) B
115) A
116) C
117) A
118) B
119) B
120) B
121) B
122) A
123) B
124) A
125) A
126) B
127) B
128) C
129) D
130) C
131) D
132) D
133) A
134) B
135) A
136) C
137) A
138) B
139) A
140) B
141) A
142) B
143) A
144) A
145) B
146) A
147) - 1
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.

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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) D
164) B
165) C
166) C
167) B
168) D
169) A
170) D
171) C
172) A
173) D
174) D
175) D
176) D
177) A
178) D
179) C
180) A
181) B
182) A
183) A
184) A
185) A
186) A
187) B
188) A
189) A
190) A
191) A
192) A
193) A
194) A
195) B
196) A
197) B
198) A

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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 4. There are others.
205) 9, 9, - 9, 9
206) C
207) A
208) B
209) A
210) A
211) D
212) D
213) D
214) B
215) A
216) D
217) C
218) A
219) B
220) A
221) C
222) B
223) A
224) C
225) A
226) B
227) C
228) C
229) B
230) D
231) D
232) D
233) A
234) A
235) B
236) A
237) D
238) B
239) C
240) D
241) D
242) A
243) D
244) C
245) A

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246) B
247) A
248) B
249) C
250) C
251) D
252) B
253) D
254) D
255) B
256) D
257) D
258) B
259) B
260) D
261) C
262) C
263) C
264) B
265) B
266) C
267) B
268) C
269) B
270) A
271) B
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 - 6 - (- 11) = 5.
286) B
287) C
288) D
289) D
290) D
291) B
292) A
293) B
294) D
295) A

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296) D
297) A
298) A
299) C
300) B
301) B
302) C
303) D
304) D
305) C
306) C
307) A
308) B
309) B
310) A
311) A
312) A
313) C
314) A
315) A
316) D
317) A
318) D
319) A
320) C
321) C
322) A
323) B
324) C
325) A
326) D
327) B
328) D
329) D
330) D
331) D
332) D
333) A
334) C
335) C
336) A
337) A
338) C
339) C
340) D
341) C
342) D
343) C
344) D
345) C

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346) C
347) C
348) D
349) C
350) A
351) D
352) B
353) B
354) A
355) a must be greater than b
356) Positive if |4y| is greater than |4x|; negative if the opposite is true.
357) Negative
358) No
359) No
360) Positive
361) positive
362) zero
363) C
364) C
365) A
366) A
367) C
368) C
369) B
370) C
371) D
372) A
373) D
374) C
375) C
376) D
377) B
378) A
379) D
380) D
381) B
382) C
383) C
384) D
385) C
386) D
387) A
388) A
389) B
390) C
391) D
392) C
393) B
394) B
395) A

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396) B
397) A
398) C
399) A
400) D
401) B
402) B
403) C
404) A
405) B
406) D
407) D
408) D
409) B
410) A
411) D
412) C
413) C
414) C
415) D
416) D
417) C
418) A
419) B
420) D
421) C
422) A
423) B
424) B
425) C
426) B
427) A
428) A
429) A
430) A
431) A
432) B
433) A
434) B
435) C
436) A
437) A
438) C
439) C
440) C
441) D
442) B
443) D
444) A
445) D

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446) B
447) C
448) D
449) A
450) D
451) B
452) D
453) D
454) A
455) A
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) B
462) Distributive. In $3y + 18y$, the y has been distributed. Therefore, $3y + 18y = (3 + 18)y = 21y$
463) Answers may vary. One possible answer: The difference between 7 times a number and the sum of the number and 18.
464) A
465) A
466) C
467) B
468) C
469) C
470) A
471) D
472) D
473) D
474) D
475) A
476) D
477) A
478) A
479) D
480) A
481) B
482) B
483) B
484) B
485) D
486) B
487) D
488) A
489) A

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