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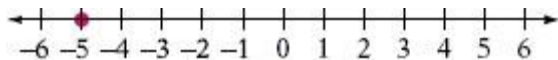
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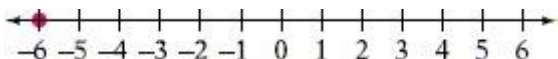
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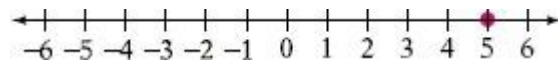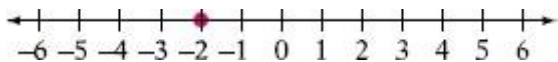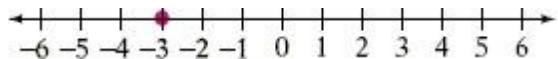
1. Graph the number –2 on the number line.

A)

B)

C)

D)

E)

2. If H is –2 and I is –1, what number is D?
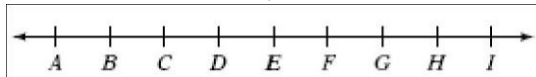
A) –5
B) –6
C) –7
D) –8
E) –4

3. Place the correct symbol, < or >, between the two numbers.

   –13 ? 9

A) <
B) >

4. Write the given numbers in order from smallest to largest.

3, –3, –7, 11, 8

A) –3, –7, 3, 8, 11
B) 11, 8, 3, –3, –7
C) –7, –3, 3, 8, 11
D) 11, 8, 3, –7, –3
E) –3, 8, 3, –7, 11

5. Find the opposite of the number 35.

A) 53
B) –53
C) –8
D) 35
E) –35

6. Find the opposite of the number d.

A) d
B) $-d$
C) 0
D) 1
E) -1

7. Write the expression in words.

$-10 - 3$

A) negative ten minus three
B) ten minus three
C) negative ten plus three
D) three minus ten
E) negative three plus ten

8. Simplify.

$-(-m)$

A) $-m$
B) m
C) $-2m$
D) 0
E) $2m$

9. Find the absolute value of the number 5.
   A) –5
   B) 5
   C) 0
   D) –10
   E) 10

10. Evaluate.
    $-|16|$
    A) 16
    B) 19
    C) –16
    D) 0
    E) –12

11. Evaluate $|x|$, for $x = 15$.

    A) –15
    B) 0
    C) 18
    D) 13
    E) 15

12. Place the correct symbol, <, = , or >, between the two numbers.
    $|-12|?|9|$
    A) >
    B) <
    C) =

13. Write the numbers $-|-4|, -(8), |-5|, -7$ in order from smallest to largest.
    A) $-|-4|, -7, -(8), |-5|$
    B) $-7, -|-4|, |-5|, -(8)$
    C) $-(8), -|-4|, -7, |-5|$
    D) $-(8), -7, -|-4|, |-5|$
    E) $-(8), -7, |-5|, -|-4|$

14. Some businesses show a profit as a positive number and a loss as a negative number. During the first quarter of last year, the loss experienced by a company was –$25,400. During the second quarter of last year the loss was –$27,300. During the third quarter of last year the company experienced a loss of –$26,900. During the fourth quarter of last year, the loss experienced by the company was –$27,000. During which quarter was the loss greater?
   A) third quarter
   B) second quarter
   C) fourth quarter
   D) first quarter

15. The figure below shows the predicted earnings per share (in cents) for Mycopen for the years 2004 through 2009. What are the predicted earnings per share for Mycopen in 2006?
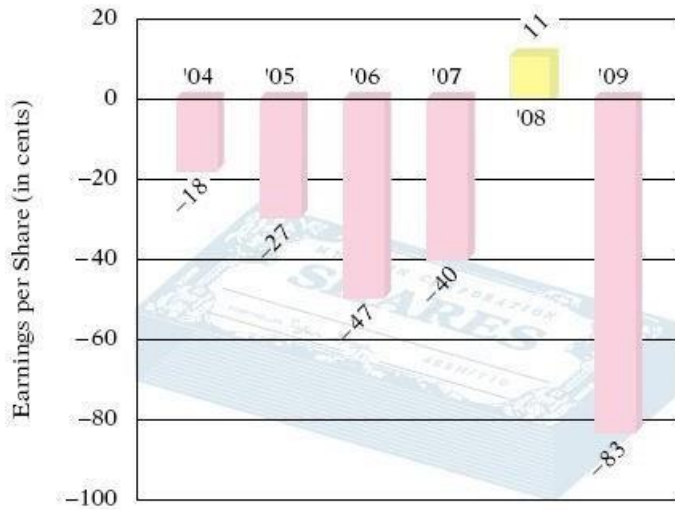
Mycopen Earnings per Share (in cents)

   A) –40 cent
   B) 11 cent
   C) –47 cent
   D) –83 cent
   E) –18 cent

16. The figure below shows the predicted earnings per share (in cents) for Mycopen for the years 2004 through 2009. In which year did Mycopen have the greatest loss?

Mycopen Earnings per Share (in cents)
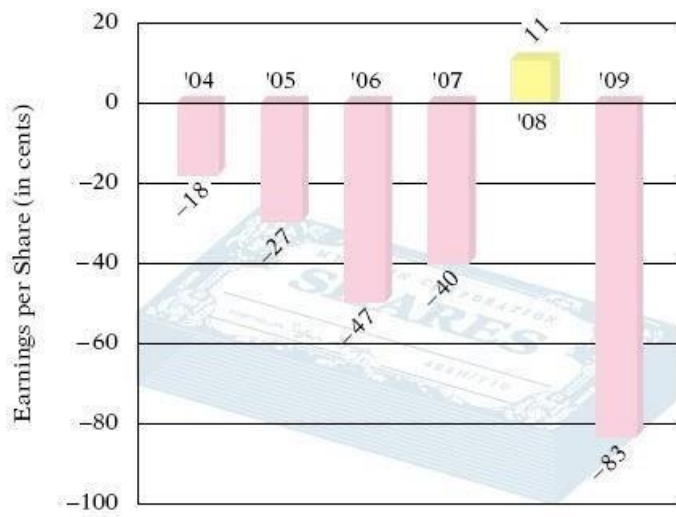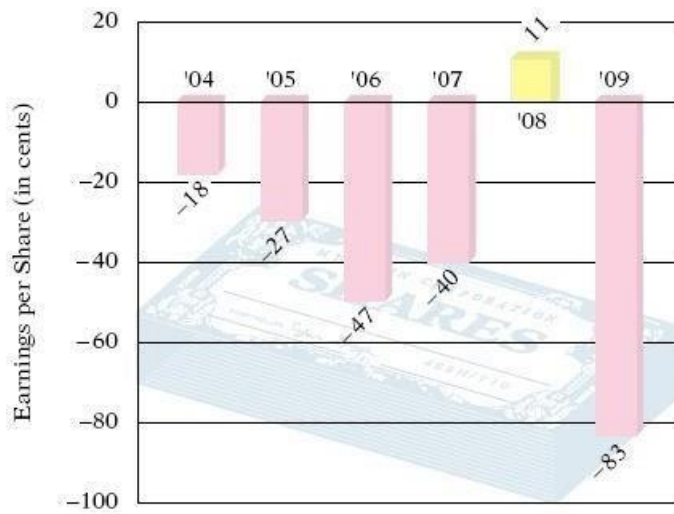
A) 2006
B) 2008
C) 2005
D) 2007
E) 2009

17. The figure below shows the predicted earnings per share (in cents) for Mycopen for the years 2004 through 2009. For which year were the earnings per share lower, 2004 or 2007?

Mycopen Earnings per Share (in cents)

A) 2004
B) 2007

18. Find the wind chill factor when the temperature is 0°F and the wind speed is 20 mph.

Wind Speed (mph)	Thermometer Reading (degrees Fahrenheit)														
	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93

Wind Chill Factors

A) 13°F
B) −15°F
C) −22°F
D) −32°F
E) −29°F

19. Find the cooling power of a temperature –20°F and a 25-mile-per-hour wind.

Wind Speed (mph)	Wind Chill Factors Thermometer Reading (degrees Fahrenheit)														
	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93

A) –31°F
B) 51°F
C) –51°F
D) –48°F
E) 48°F

20. Which feels colder, a temperature of 0°F with a 20-mile-per-hour wind or a temperature of –10°F with a 10-mile-per-hour wind?.

Wind Speed (mph)	Wind Chill Factors Thermometer Reading (degrees Fahrenheit)														
	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93

A) a temperature of –10°F with a 10-mile-per-hour wind
B) a temperature of 0°F with a 20-mile-per-hour wind

21. Given that *y* is an integer, find all values of *y* for which $|y| < 4$.

    A)   0,1,2,3

    B)   −3,−2,−1,0,1,2,3

    C)   −3,3

    D)   −4,−3,−2,−1,0,1,2,3,4

    E)   0,1,2,3,4

22. Add.
$$-5 + (-8)$$

    A)   3

    B)   −13

    C)   −3

    D)   0

    E)   −26

23. Add.
$$-5 + (-8) + (-16)$$

    A)   −29

    B)   19

    C)   −19

    D)   −13

    E)   −32

24. Find the total of 5, −7, and −15.

    A)   −13

    B)   13

    C)   −3

    D)   −17

    E)   17

25. Evaluate the expression $a + b + c$, for $a = -3$, $b = -7$, and $c = 7$.

    A)   −3

    B)   −17

    C)   11

    D)   0

    E)   3

26. Which property justifies the statement $3 + 0 = 3$?
    A) The Commutative Property of Addition
    B) The Inverse Property of Addition
    C) The Associative Property of Addition
    D) The Addition Property of Zero

27. Use the Addition Property of Zero to complete the statement $7 + ? = 7$.
    A) 7
    B) 12
    C) 2
    D) 0

28. Is –4 a solution of the equation $7 + z = z + 8$?
    A) no
    B) yes

29. Subtract.
    $9 - (-3)$
    A) 6
    B) –12
    C) 12
    D) 11
    E) –6

30. Subtract.
    $-30 - (-56)$
    A) –86
    B) –26
    C) 86
    D) 25
    E) 26

31. What is 8 more than –5?
    A) 13
    B) 3
    C) –13
    D) –3
    E) 4

32. Simplify.

$7 - 2 - (-4)$

A) 1
B) 13
C) −5
D) 9
E) −9

33. Simplify.

$12 - (-5) - 7$

A) 10
B) 0
C) −14
D) 24
E) −10

34. Simplify.

$2 + 2 - 10 + 10$

A) −4
B) 0
C) 24
D) 4
E) 20

35. Evaluate the variable expression $x - (-y)$, for $x = 5$ and $y = -6$.

A) −1
B) 11
C) −11
D) 1
E) 0

36. Identify the solution of the equation $-6 + w = 4$.

A) $w = -2$
B) $w = 10$
C) $w = 2$
D) $w = -10$
E) $w = 24$

37. What is the difference in elevation (in meters) between Mt. Everest and Lake Assal?

Continent	Highest Elevation (in meters)		Lowest Elevation (in meters)	
Africa	Mt. Kilimanjaro	5,895	Lake Assal	–156
Asia	Mt. Everest	8,850	Dead Sea	–411
Europe	Mt. Elbrus	5,642	Caspian Sea	–28
America	Mt. Aconcagua	6,960	Death Valley	–86

A) 9,261 m
B) 5,798 m
C) 9,006 m
D) 6,053 m
E) 7,116 m

38. What is the difference between the average temperatures at cruising altitudes of 20,000 ft and 30,000 ft?

Cruising Altitude	Average Temperature
12,000 ft	16°
20,000 ft	–12°
30,000 ft	–48°
40,000 ft	–70°
50,000 ft	–70°

A) 58°
B) 86°
C) 64°
D) 36°
E) 0°

39. How much colder is the average temperatures at cruising altitudes of 50,000 ft than at 30,000 ft?

Cruising Altitude	Average Temperature
12,000 ft	16°
20,000 ft	–12°
30,000 ft	–48°
40,000 ft	–70°
50,000 ft	–70°

A) –22°
B) 22°
C) 36°
D) 58°
E) –36°

40. Use the equation $S = N - P$, where S is the golfer's score relative to par in a tournament, N is the number of strokes made by the golfer, and P is par, to find a golfer's score relative to par when the golfer made 79 strokes and par is 70.
    A) 149
    B) –9
    C) 9
    D) 11
    E) 6

41. The distance d between point a and point b on the number line is given by the formula $d = |a - b|$. Find d when $a = 4$ and $b = 6$.
    A) 3 units
    B) 4 units
    C) 5 units
    D) 2 units
    E) 6 units

42. Multiply.
    $-5(-8)$
    A) 40
    B) –40
    C) –13
    D) 13
    E) 45

43. Multiply.
    $(19)(3)$
    A) 22
    B) 16
    C) –57
    D) –22
    E) 57

44. Multiply.
    $-3(7)$
    A) 21
    B) 4
    C) –4
    D) –21
    E) –19

45. Multiply.

$9(0)$

A) 9
B) 0
C) 1
D) –9
E) 4

46. Multiply.

$-6 \cdot (12)$

A) 6
B) –18
C) –72
D) 72
E) –6

47. Multiply.

$(2)(-5)(-5)$

A) 50
B) –50
C) –15
D) –8
E) 15

48. Identify the property that justifies the statement.

$0(-6) = 0$

A)   The Commutative Property of Zero
B)   The Multiplication Property of Zero
C)   The Associative Property of Zero
D)   The Multiplication Property of One

49. Identify the property that justifies the statement.

$5(4 \cdot 6) = (5 \cdot 4)6$

A)   The Commutative Property of Multiplication
B)   The Multiplication Property of Zero
C)   The Associative Property of Multiplication
D)   The Multiplication Property of One

50. Use the Multiplication Property of Zero to complete the statement.
$2 \cdot ? = 0$
A) 1
B) 2
C) –2
D) 0
E) 4

51. Evaluate the expression $-xyz$ for $x = 2$, $y = 4$, and $z = -1$.
A) –5
B) 5
C) 8
D) –8
E) –6

52. Evaluate the expression $-3st$ for $s = -9$ and $t = -23$.
A) 96
B) –621
C) –96
D) –35
E) 621

53. Is –3 a solution of the equation $15 = 5c$?
A) no
B) yes

54. Divide.
$12 \div (-3)$
A) 4
B) –36
C) –4
D) –3
E) 36

55. Divide.

$65 \div (-13)$

A) 5
B) –5
C) 1
D) –1
E) –3

56. Divide.

$-35 \div 1$

A) 35
B) 1
C) –15
D) –35
E) –25

57. Divide.

$-20 \div (-4)$

A) 5
B) –5
C) 1
D) –1
E) 6

58. Divide.

$\dfrac{-42}{-7}$

A) 8
B) 1
C) –6
D) –1
E) 6

59. Find 450 divided by –3 .

A) 150
B) –15
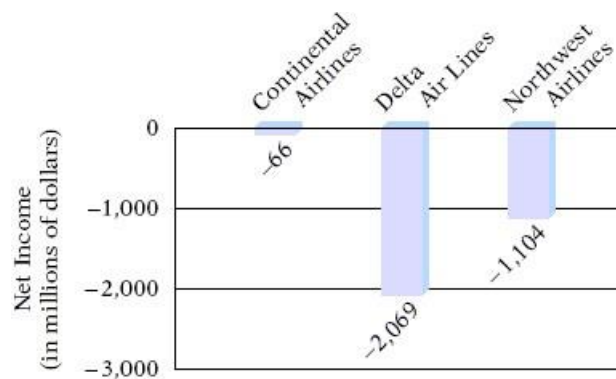C) 15
D) –150
E) –30

60. Write –3 divided by m.

A) $\dfrac{3}{m}$

B) $-3m$

C) $\dfrac{-3}{m}$

D) 3m

E) $\dfrac{m}{-3}$

61. For the quarter shown, what was the average monthly net income for Northwest Airlines? Round your answer to the nearest million.

Net Income (in millions of dollars)

0

–1,000

–2,000

–3,000

Continental Airlines   Delta Air Lines   Northwest Airlines

–66   –2,069   –1,104

Net Income for First Quarter of 2006

Source: finance.yahoo.com

A) $368 million
B) -$1,1044 million
C) $1,1044 million
D) -$368 million
E) -$2,069 million

62. Evaluate the expression $(-a) \div (-b)$, for $a = -8$ and $b = -2$.

A) 4
B) –4
C) 16
D) –10
E) –16

63. Evaluate the expression $\dfrac{-x}{y}$, for $x = 18$ and $y = -3$.

   A)   54
   B)   –6
   C)   –54
   D)   15
   E)   6

64. Evaluate the expression $\dfrac{-x}{-y}$, for $x = 28$ and $y = -7$.

   A)   196
   B)   –4
   C)   –196
   D)   21
   E)   4
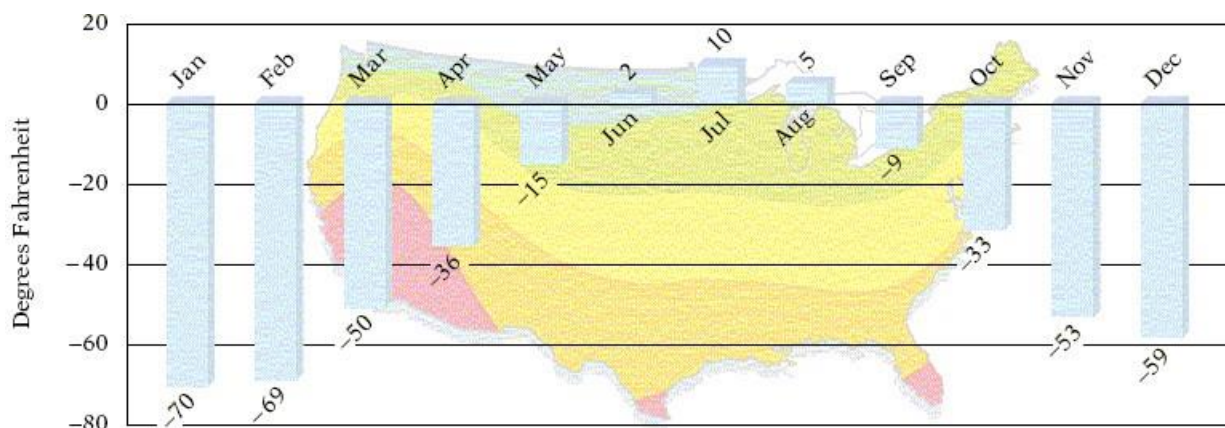
65. Is 7 a solution of the equation $\dfrac{21}{c} = 3$?

   A)   yes
   B)   no

66. The combined scores of the top 3 golfers in a golf tournament equaled –9 (9 under par). What was the average score of the 3 golfers?
   A)   3
   B)   –4
   C)   –9
   D)   –3
   E)   –2

67. What is the average record low temperature for the months of May, June, and July?

Degrees Fahrenheit

Jan Feb Mar Apr May 10 2 5 Sep Oct Nov Dec
Jun Jul Aug
−15 −9 −33
−36 −53
−50 −59
−70 −69

Record Low Temperatures, in Degrees Fahrenheit, in the United States P
Source: National Climatic Data Center, Asheville, NC, and Storm Phillips, STORMFAX, Inc.
A) 1°
B) 2°
C) −1°
D) −4°
E) −6°

68. The daily low temperature during one week were –4°, –7°, –8°, 5°, 1°, –4°, and 3°. Find the average daily low temperature for the week.
A) –3°
B) –2°
C) –1°
D) 2°
E) –4°

69. Find the next three numbers in the geometric sequence, 5, –15, 45,… .
A) 135, –405, 1,215
B) 30, 15, 0
C) –135, –405, –1,215
D) –135, 405, –1,215
E) 135, 405, 1,215

70. Find the next three numbers in the geometric sequence, –3, –12, –48,… .
A) 192, –768, 3,072
B) –60, –72, –84
C) –192, 768, –3,072
D) 192, 768, 3,072
E) –192, –768, –3,072

71. Solve.
   8 = m-5
   A) $m = 3$
   B) $m = 13$
   C) $m = -13$
   D) $m = -3$
   E) no solution

72. Solve.
   $x - 3 = -16$
   A) 12
   B) 6
   C) −12
   D) −13
   E) no solution

73. Solve.
   $-11 = h+8$
   A) $h = -3$
   B) $h = 19$
   C) $h = 3$
   D) $h = -19$
   E) no solution

74. Solve.
   $-17 = j-17$
   A) $j = 0$
   B) $j = -34$
   C) $j = 34$
   D) $j = -1$
   E) no solution

75. Solve.
   6 + t=3
   A) $t = 3$
   B) $t = 9$
   C) $t = -9$
   D) $t = 0$
   E) $t = -3$

76. Solve.

   $4d = -8$

   A) $d = -2$
   B) $d = 2$
   C) $d = -12$
   D) $d = 12$
   E)   no solution

77. Solve.

   $-6 = 3c$

   A) $c = 2$
   B) $c = -9$
   C) $c = -2$
   D) $c = -1$
   E)   no solution

78. Solve.

   $-5w = -30$

   A) $w = -6$
   B) $w = 6$
   C) $w = -25$
   D) $w = 25$
   E)   no solution

79. Solve.

   $-4r = 0$

   A) $r = -8$
   B) $r = 4$
   C) $r = -4$
   D) $r = 0$
   E)   no solution

80. Fifteen less than a number is forty-eight. Find the number.
   A)   63
   B)   33
   C)   −63
   D)   −33
   E)   65

81. Zero is equal to eighteen more than a number. Find the number.
   A) 18
   B) –36
   C) –18
   D) 36
   E) 0

82. Fifty equals five times a number. Find the number.
   A) 45
   B) 20
   C) –10
   D) 10
   E) 250

83. The temperature now is 5° higher than it was this morning. The temperature now is 10°C. What was the temperature this morning?
   A) 5°C
   B) –5°C
   C) 15°C
   D) –15°C
   E) 3°C

84. An office supplier wants to make a profit of $110 on the sale of a software package that cost the supplier $450. Use the equation $P = S - C$, where P is the profit on an item, S is the selling price, and C is the cost, to find the selling price of the software.
   A) $340
   B) $560
   C) $575
   D) $355
   E) $555

85. The net worth of ABL Electronics is $53 million and it has liabilities of $18 million. Use the net worth formula $N = A - L$, where N is the net worth, A is the assets of the business (or the amount owned), and L is the liabilities of the business (or the amount owed), to find the assets of ABL Electronics.
   A) $35 million
   B) $74 million
   C) $70 million
   D) $71 million
   E) $36 million

86. To simplify the expression $12 - 12 \div (-3)$, identify the first operation to be performed.
    A) addition
    B) subtraction
    C) multiplication
    D) division

87. Simplify.
    $16 - 12 \div 4$
    A) 1
    B) 13
    C) 8
    D) 19
    E) 15

88. Simplify.
    $3 - (-4)^2 + (-1)$
    A) 14
    B) 48
    C) −14
    D) 18
    E) −22

89. Simplify.
    $3^3 - 5(2)$
    A) 44
    B) −16
    C) −17
    D) −44
    E) 17

90. Simplify.
    $4 \cdot (8 - 4) \div 8$
    A) 3
    B) 2
    C) 1
    D) 4
    E) −3

91. Simplify.

$-3^2 - 7(4) - 8$

A) -27
B) 19
C) 37
D) -33
E) -45

92. Simplify.

$5 \cdot 2^3 + 4 \cdot (5 + 2) - 7$

A) 61
B) $1{,}021$
C) 55
D) 40
E) $1{,}000$

93. Simplify.

$-11(7 - 4) + 2^3 \cdot 4^2 \cdot 3 - 6(2)$

A) 207
B) 149
C) 251
D) 147
E) 255

94. Simplify.

$14 - 3 \cdot 6 + 3^2 - (-21) - (-5)$

A) 101
B) 31
C) -21
D) 21
E) -5

95. Evaluate the expression $3a + 2b$ for $a = -2$ and $b = 6$.

A) 6
B) 18
C) -18
D) -6
E) 9

96. Evaluate the expression $b^2 - c^2$ for $b = 5$ and $c = -6$.
    A) -61
    B) 11
    C) -11
    D) 61
    E) 22

97. Evaluate the expression $(b - a)^2 + 4c$ for $a = -2$, $b = 3$, and $c = -6$.
    A) -49
    B) 1
    C) -23
    D) 37
    E) -1

98. Evaluate the expression $\dfrac{b - d}{c - a}$ for $a = 5$, $b = 8$, $c = 7$, and $d = 2$.

    A) -3
    B) 4
    C) 3
    D) 0
    E) 9

99. Evaluate the expression $(d - a)^2 - 2c$ for $a = -6$, $c = -3$, and $d = 3$
    A) 87
    B) -21
    C) -87
    D) 75
    E) -33

100. Insert one set of parentheses in the expression $11 - 5 \div 2 \cdot 3 - 6^2$ to make the equation
    $11 - 5 \div 2 \cdot 3 - 6^2 = -27$ true.
    A) $11 - (5 \div 2) \cdot 3 - 6^2$
    B) $11 - 5 \div (2 \cdot 3) - 6^2$
    C) $11 - 5 \div 2 \cdot (3 - 6)^2$
    D) $11 - 5 \div (2 \cdot 3 - 6)^2$
    E) $(11 - 5) \div 2 \cdot 3 - 6^2$

Answer Key

1. D
2. B
3. A
4. C
5. E
6. B
7. A
8. B
9. B
10. C
11. E
12. A
13. D
14. B
15. C
16. E
17. B
18. C
19. C
20. A
21. B
22. B
23. A
24. D
25. A
26. D
27. D
28. A
29. C
30. E
31. B
32. D
33. A
34. D
35. A
36. B
37. C
38. D
39. B
40. C
41. D
42. A
43. E
44. D

45. B
46. C
47. A
48. B
49. C
50. D
51. C
52. B
53. A
54. C
55. B
56. D
57. A
58. E
59. D
60. C
61. D
62. A
63. E
64. B
65. A
66. D
67. C
68. B
69. D
70. E
71. B
72. D
73. D
74. A
75. E
76. A
77. C
78. B
79. D
80. A
81. C
82. D
83. A
84. B
85. D
86. D
87. B
88. C
89. E
90. B

91. E
92. A
93. D
94. B
95. A
96. C
97. B
98. C
99. A
100. E