

TEST NAME: **EE.7 Schoolnet 2017**
TEST ID: **1411958**
GRADE: **08 - Eighth Grade**
SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

1. Which equation has only one solution?

- A. $6r = 5r + r$
- B. $4m + 5 = 25$
- C. $8v + 11 = 8v + 11$
- D. $2 - 3p = -3p + 5$

2. How many solutions does the equation $5(x - 2) = 8 + 5x$ have?

- A. no solution
- B. one solution
- C. two solutions
- D. infinitely many solutions

3. Solve the equation $2(3x - 4) = 8x - 4 - 2x$.

- A. no solution
- B. infinitely many solutions
- C. $x = -1$
- D. $x = 4$

4. Which statement correctly describes the solution(s) of the equation below?

$$-2 + x - 3 = 2x + 5 - x$$

- A. The equation has one solution, which is -5 .
- B. The equation has one solution, which is 5 .
- C. The equation has infinitely many solutions.
- D. The equation has no solution.

5. A student concluded that $8x - 12 = 4\left(\frac{1}{2}x - 6\right)$ has infinitely many solutions. Which statement best describes the student's conclusion?
- The conclusion is incorrect because the equation has no solution.
 - The conclusion is incorrect because there is exactly one solution to the equation.
 - The conclusion is correct because there are exactly two solutions to the equation.
 - The conclusion is correct because when simplified, both sides of the equation are equivalent.
6. Which of these equations does NOT have any solutions?
- $10 - 3x - 1 = 7 + 3x + 2$
 - $12 - 7x - 10 = x - 8x + 2$
 - $13 - 4x + 2 = 3x - 7x + 2$
 - $15 - 2x - 2 = 10x + 3x + 2$
7. A student solved an equation for the unknown value of n as $0 = 0$. Which set represents all of the possible values of n ?
- only zero can be the solution
 - only positive numbers can be the solution
 - only negative numbers can be the solution
 - any number can be the solution
8. Four students each wrote an equation.

Student Equations

Student	Equation
Beto	$3m = 3m + 5$
Lila	$9r + 4 = 4 + 9r$
Mark	$6 - n = -n + 2$
Wanda	$8u - 2 = 2u + 8$

Which two students wrote equations that have no solution?

- Beto and Wanda
- Beto and Mark
- Lila and Wanda
- Lila and Mark

9. The equation $-2x + 3 = 6 - 2x$ has no solution. Which step would change the given equation so that it has infinitely many solutions?
- A. adding 3 to the left side of the equation
 - B. adding 6 to the left side of the equation
 - C. subtracting 3 from the left side of the equation
 - D. subtracting 6 from the left side of the equation
10. Which equation has no solution?
- A. $3k - 20 = 12$
 - B. $8 + 15g = 15 + 8g$
 - C. $12x + 6 = 3(4x + 2)$
 - D. $9p + 7 = 6p - 2 + 3p$
11. How many solutions does the equation $2(x + 4) = 2x + 8$ have?
- A. no solutions
 - B. one solution
 - C. two solutions
 - D. infinite solutions
12. Which statement regarding the number of solutions for the linear equation shown below is true?
- $$4(3x + 8) - 9 = 2(6x - 8) + 39$$
- A. There are infinitely many solutions.
 - B. There are exactly two solutions.
 - C. There is exactly one solution.
 - D. There is no solution.
13. Which equation has no solution?
- A. $4x - 9 = -9$
 - B. $3x + 2 = 17$
 - C. $2x + 4 = 2x + 6$
 - D. $x + 3x = 8x - 4x$

14. How many solutions does the equation $3x - 2x + 4 = 2 + x + 2$ have?

- A. no solution
- B. one solution
- C. two solutions
- D. infinitely many solutions

15. Which statement regarding the number of solutions for the linear equation shown below is true?

$$\frac{1}{4}x - 13 = \frac{1}{4}(x + 13)$$

- A. There is no solution.
- B. There is exactly one solution.
- C. There are exactly two solutions.
- D. There are infinitely many solutions.

16. How many solutions does the equation $4r + 8 = 8 + 4r$ have?

- A. no solutions
- B. one unique solution
- C. two unique solutions
- D. infinitely many solutions

17. Which equation has infinitely many solutions?

- A. $8x = 8(x - 1) + 1$
- B. $2x - 5 = 2(x - 5)$
- C. $22 - 6x = 2(3x - 11)$
- D. $3(5x - 4) - 8x = 7x - 12$

18. Which statement about x in the equation $a - x = 2a$ is true?

- A. x is equal to twice a
- B. x must be greater than a
- C. x must be equal to the opposite of a
- D. x does not have any real number values

19. Which of the following equations has no solution?

- A. $7x - 3x - 4 = 4$
- B. $7x - 3x + 4 = 4$
- C. $3(2x - 4) = 6(x - 2)$
- D. $3(2x - 4) = 6(x + 2)$

20. Which equation has an infinite number of solutions?

- A. $12 = 3y$
- B. $8q + 5 = 21$
- C. $2x + 7 - 2x = 7$
- D. $4p - 4 = 4p + 4$

21. Which equation has no solution?

- A. $-5 + 8x - 9 = 3(x + 3)$
- B. $-2(6 - 3x) = -12 + 6x$
- C. $6 - 2(3 - 2x) = -4(3 - x)$
- D. $-(4x + 9) = 2x - 3(2x + 3)$

22. An equation is given below.

$$6 - 2(4 - x) + 3x = 5x - 2$$

Based on the equation, which of the following is a valid statement?

- A. The only value that satisfies the equation is $x = 0$.
- B. The only value that satisfies the equation is $x = 3$.
- C. There are no values of x that satisfy the equation.
- D. Any real number value of x satisfies the equation.

23. Which equation has an infinite number of solutions?

- A. $7(1 - 4x) + 3x = 7$
- B. $5(2 - 4x) + 4x = 10$
- C. $8(2 - 2x) + 16x = 9$
- D. $6(3 - 2x) + 12x = 18$

24. Which equation is equivalent to $7 - (3x + 10) = 4(x - 2)$?

- A. $-3 - 3x = 4x - 8$
- B. $-3 - 3x = 4x - 2$
- C. $17 - 3x = 4x - 8$
- D. $17 - 3x = 4x - 2$

25. What is the solution to the equation $\frac{x}{-15} = -5$?

- A. 75
- B. 20
- C. -20
- D. -75

26. Which set of equations represents the solution to $2x - 6 = 14$?

- A. $2x - 6 = 14$
 $2x = 8$
 $x = 4$
- B. $2x - 6 = 14$
 $2x = 20$
 $x = 10$
- C. $2x - 6 = 14$
 $2x = 8$
 $x = 16$
- D. $2x - 6 = 14$
 $2x = 20$
 $x = 40$

27. Emily is 4 years older than Grace. When their ages are added together, they equal 26. How old is Emily?

- A. 13 years old
- B. 15 years old
- C. 17 years old

28. What is the value of x in the equation $6(x + 5) = 3(x - 14)$?

- A. -1
- B. -4
- C. -6
- D. -24

29. Which value of x satisfies the equation $2(5x + 1) - 2x = 2 - 2(3x + 1)$?

- A. $-\frac{1}{4}$
- B. $-\frac{1}{7}$
- C. $\frac{1}{9}$
- D. $\frac{1}{7}$

30. Which equation is equivalent to $3 - (x - 5) = 7(x + 2)$?

- A. $-2 - x = 7x + 14$
- B. $-2 - x = 7x + 2$
- C. $8 - x = 7x + 14$
- D. $8 - x = 7x + 2$

31. Solve the equation $\frac{1}{4}(12x - 8) = 7$ for x .

- A. $x = \frac{5}{3}$
- B. $x = 3$
- C. $x = \frac{13}{3}$
- D. $x = 5$

32. Solve for x .

$$10x - 3x + 5 = 26$$

- A. $\frac{13}{6}$
- B. 3
- C. $\frac{31}{7}$
- D. 13

33. If $-3x = 57$, what is the value of x ?

- A. -171
- B. -19
- C. 54
- D. 60

34. What value of x makes the equation $-4 + \frac{1}{2}x = 8$ true?

- A. 6
- B. 8
- C. 12
- D. 24

35. Which equation is equivalent to $3 - (2x + 5) = 2(x - 3)$?

- A. $8 - 2x = 2x - 6$
- B. $8 - 2x = 2x - 3$
- C. $-2 - 2x = 2x - 6$
- D. $-2 - 2x = 2x - 3$

36. Which equation is equivalent to $3(2m + 7) = -5(6 + m)$?

- A. $6m + 7 = -30 + m$
- B. $6m + 7 = -30 - m$
- C. $6m + 21 = -30 + 5m$
- D. $6m + 21 = -30 - 5m$

37. The sum of three consecutive integers is 87. What is largest value of the three integers?

- A. 28
- B. 29
- C. 30
- D. 31

38. What is the value of y in the equation $4(5y - 9) - 24y + 70 = 4(1 - 21y)$?
- A. $-\frac{3}{8}$
 - B. $-\frac{5}{8}$
 - C. $-2\frac{2}{3}$
 - D. $-3\frac{1}{3}$
39. Which equation is equivalent to $\frac{3}{2}(x + 6) - \frac{1}{2}(x - 24) = 16$?
- A. $x - 18 = 16$
 - B. $x - 3 = 16$
 - C. $x + 3 = 16$
 - D. $x + 21 = 16$
40. Which equation has infinitely many solutions?
- A. $-5 + 6.2x = 6.2x - 6$
 - B. $3x + 10.5 = 10.5 - 3x$
 - C. $-2.5x - 8 = 8 - 2.5x$
 - D. $-4x - 12 = -12 - 4x$
41. Three times the difference of a number x and seven is twenty-three minus the sum of three times a number x and two. What is the value of x ?
- A. 5
 - B. 7
 - C. no solution
 - D. infinitely many solutions

42. What is the value of k in the equation below?

$$7^2 + 14^2 = 49k$$

- A. 2
- B. 3
- C. 4
- D. 5

43. What is the value of t in the equation $3(t - 4) = 2t + 1$?

- A. -3
- B. -2
- C. 5
- D. 13

44. Which equation is equivalent to $3(x + 2) - 5(x - 3) = 12$?

- A. $3x + 6 - 5x - 15 = 12$
- B. $3x + 2 - 5x - 3 = 12$
- C. $3x + 2 - 5x + 3 = 12$
- D. $3x + 6 - 5x + 15 = 12$

45. What value of x makes the equation below true?

$$2(x + 5) = 6x + 2$$

- A. $\frac{1}{2}$
- B. $\frac{3}{4}$
- C. 1
- D. 2

46. Which of the following equations is equivalent to $2 - 3(5x + 2) = 6$?

- A. $-15x - 4 = 6$
- B. $-15x + 4 = 6$
- C. $-5x - 2 = 6$
- D. $-5x + 2 = 6$

47. Patrick and his three friends went to an Italian-style restaurant and had lunch. They split the bill evenly and each paid \$9.78. Let b represent the original bill before they divided it four ways. How much was the original bill before it was split between the friends?

$$\frac{b}{4} = \$9.78$$

- A. \$2.45
B. \$5.78
C. \$13.78
D. \$39.12
48. Which equation is equivalent to $3(x - 5) = 4x$?
- A. $3x - 5 = 4x$
B. $3x - 5 = 12x$
C. $3x - 15 = 4x$
D. $3x - 15 = 12x$
49. Sara was asked by Mr. Rocha to solve the equation below.

$$-3x = y + 51$$

What is the value of x when y has a value of -9 ?

- A. -20
B. -14
C. 14
D. 20
50. Justin has read 89 pages of a novel. He has 214 pages to go. Let p represent the number of pages in the entire book.

$$p - 89 = 214$$

How many pages are in the entire book?

- A. 125
B. 235
C. 293
D. 303
51. Two hoses are used to fill a swimming pool. Together they fill the pool at a rate of 3 gallons every 5 seconds. An equation representing this is $g = \frac{3}{5}t$, where t is the time in seconds and g is the number of gallons. About how many hours will it take to fill the pool if it holds 80,000 gallons?
- A. 4
B. 7
C. 13
D. 37

52. Which equation is equivalent to $6x - 3 + 4x = 5 + 3x + 4$?

- A. $2x - 3 = 3x + 9$
- B. $2x - 3 = 8x + 4$
- C. $10x - 3 = 3x + 9$
- D. $10x - 3 = 8x + 4$

53. Which of the following would solve the equation below for x in one step?

$$10 = x - 15$$

- A. Adding 15 to both sides of the equation
- B. Adding 10 to both sides of the equation
- C. Subtracting 15 from both sides of the equation
- D. Subtracting 10 from both sides of the equation

54. What is the value of y in the equation $\frac{2}{3}(60y - 18) = \frac{1}{2}(8 - 16y)$?

- A. -4
- B. $-\frac{1}{4}$
- C. $\frac{1}{3}$
- D. 3

55. Which equation has the same solution as $(6 + 2x) - (3 - 4x) = 5$?

- A. $(6 - 3) + (2x - 4x) = 5$
- B. $(6 - 3) + (2x + 4x) = 5$
- C. $(6 + 3) + (2x - 4x) = 5$
- D. $(6 + 3) + (2x + 4x) = 5$

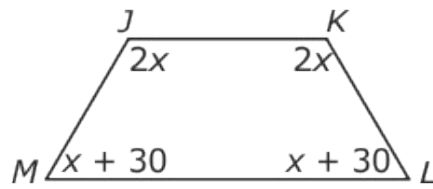
56. Which equation is equivalent to $-6(y - 3) = 2(3x + 7)$?

- A. $-6y - 3 = 6x + 7$
- B. $-6y + 3 = 6x + 7$
- C. $-6y - 18 = 6x + 14$
- D. $-6y + 18 = 6x + 14$

57. Which statement best describes how the equation $3 - \frac{4}{5}x = 12$ can be solved for the value of x in two steps?

- A. Add $\frac{1}{3}$ to both sides of the equation, then multiply both sides by $-\frac{4}{5}$.
- B. Add 3 to both sides of the equation, then multiply both sides by $\frac{4}{5}$.
- C. Subtract $\frac{1}{3}$ from both sides of the equation, then multiply both sides by $-\frac{5}{4}$.
- D. Subtract 3 from both sides of the equation, then multiply both sides by $-\frac{5}{4}$.

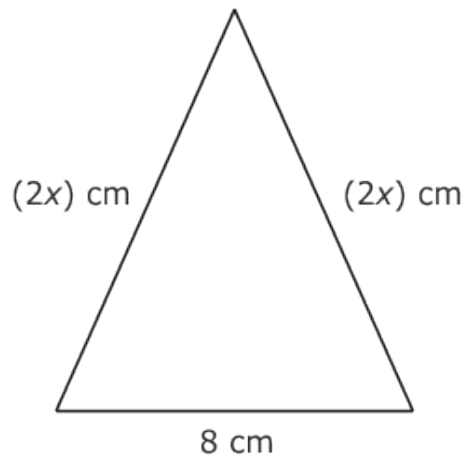
58. Trapezoid $JKLM$ is shown below.



What is the measure of angle J ?

- A. 50°
- B. 80°
- C. 100°
- D. 140°

59. The perimeter of the triangle below is 28 cm.



What is the value of x ?

- A. $x = 5$
- B. $x = 7$
- C. $x = 9$

60. What value of x makes the equation $6x + 12 = 42$ true?

- A. 2
- B. 5
- C. 8
- D. 9

61. Tia has a goldfish pond in her backyard. She has a white goldfish that is 11 inches long. This is 3 inches more than twice the length of her orange goldfish. This relationship can be represented by the equation, where x is the length of the orange goldfish, in inches.

$$2x + 3 = 11$$

What is the length of the orange goldfish?

- A. 2.2 inches
- B. 2.5 inches
- C. 4 inches
- D. 7 inches

62. Which equation is equivalent to $6(y - 6) - (y + 2) = 26$?

- A. $5y - 4 = 26$
- B. $5y - 34 = 26$
- C. $5y - 38 = 26$
- D. $5y + 3 = 26$

63. The equation $S = 180n - 360$ gives the sum of the interior angles of an n -sided polygon. Josh wants to reverse the process by finding the number of sides of a polygon when the sum of the interior angles is given. Which equation below will allow him to do this correctly?

- A. $n = 180S + 2$
- B. $n = 180S - 2$
- C. $n = \frac{1}{180}S + 2$
- D. $n = \frac{1}{180}S - 2$

64. Which equation is equivalent to $-2(x + 3) - 4x = 10$?

- A. $-6x - 3 = 10$
- B. $-6x + 3 = 10$
- C. $-6x - 6 = 10$
- D. $-6x + 6 = 10$

65. What is the value of w in the equation $6w + 36 = 2w$?

- A. -9
- B. 4
- C. 9

66. The table below shows the steps a student used to solve the equation. At least one step contains an error.

$$7 + 8x = 0$$

Step 1: $7 + 8x - 7 = 0 - 7$

Step 2: $8x = -7$

Step 3: $\frac{8x}{8} = -7(8)$

Step 4: $x = -56$

What is the first step that contains an error?

- A. Step 1
- B. Step 2
- C. Step 3
- D. Step 4

67. Ricky is building a rectangular fence. Two sides of the fence have lengths of 28 feet each. Ricky only has 100 feet of fencing. What is the greatest length of each of the remaining two sides?
- A. 22 feet
 - B. 44 feet
 - C. 56 feet
 - D. 72 feet
68. Which equation is equivalent to $6(y + 3) - 3(y - 2) = 18$?
- A. $6y + 3 - 3y - 2 = 18$
 - B. $6y + 3 + 3y - 2 = 18$
 - C. $6y + 18 - 3y - 6 = 18$
 - D. $6y + 18 - 3y + 6 = 18$
69. Which of the following describes how the value of x can be found in the equation $\frac{x}{3} + 4 = \frac{1}{2}$ in two steps?
- A. Subtract 4 from both sides of the equation, and then multiply both sides of the equation by 3.
 - B. Subtract 4 from both sides of the equation, and then multiply both sides of the equation by $\frac{1}{3}$.
 - C. Add 4 to both sides of the equation, and then multiply both sides of the equation by 3.
 - D. Add 4 to both sides of the equation, and then multiply both sides of the equation by $\frac{1}{3}$.
70. What is the solution to the equation $5.2(2a - 1) = 7a + 14.6$, rounded to the nearest tenth?
- A. 4.6
 - B. 5.8
 - C. 10.2
 - D. 16.4
71. A linear equation is shown below.
- $$10w + 19 + 3w = 6(9 + w) - 14$$
- Which statement is true?
- A. The equation has no solution.
 - B. The solution to the equation is 3.
 - C. The solutions to the equation are 3 and 7.
 - D. The equation has infinitely many solutions.

72. What is the value of x in the equation $\frac{3}{5}x - 2 = \frac{1}{3} + \frac{1}{4}x$?

A. $2\frac{1}{4}$

B. $3\frac{1}{3}$

C. $4\frac{3}{4}$

D. $6\frac{2}{3}$

73. Which equation is equivalent to $\frac{-20x}{2} - x = 1$?

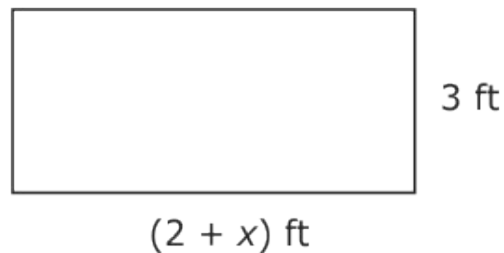
A. $-11x = 1$

B. $-10x = 1$

C. $10x = 1$

D. $11x = 1$

74. The perimeter of the rectangle below is 28 ft.



What is the value of x ?

A. 7

B. 9

C. 18

D. 20

75. Cassie sold fewer watches than Darrel. The equation shown can be used to determine d , the number of watches Darrel sold.

$$d = 2c - 7$$

If Cassie sold 54 watches, what number of watches did Darrel sell?

- A. 31
B. 94
C. 101
D. 115
76. A hexagon has two sides that are equal. The two equal sides are 2 inches longer than each of the four other sides. The perimeter of the hexagon is 22 inches. What is the measure of one of the shorter sides?
- A. 2 inches
B. 3 inches
C. 4 inches
D. 5 inches
77. Which equation is a simplified form of $3(x + 9) - (5x - 2) = 14$?
- A. $-2x + 29 = 14$
B. $-2x + 11 = 14$
C. $8x + 27 = 14$
D. $8x + 29 = 14$
78. Which of the following equations is equivalent to $3(4x - 9) = 28$?
- A. $12x - 6 = 28$
B. $12x - 9 = 28$
C. $12x - 27 = 28$
D. $12x - 18 = 28$
79. Which equation is equivalent to $12(4x - 5) = 18$?
- A. $4x - 5 = 6$
B. $4x - 5 = 30$
C. $48x + 60 = 18$
D. $48x - 60 = 18$

80. What is the value of x in the equation $3(x + 4) + 3 = 9$?

- A. -2
- B. -1
- C. 5
- D. 8

81. What is the value of x in the equation $3x - 1 = 2(x - 3)$?

- A. -7
- B. -5
- C. -3
- D. -2

82. If $10p = -720$, what is the value of p ?

- A. 7200
- B. 72
- C. -72
- D. -7200

83. Which of the following equations is equivalent to $2(5m + 4) = 7m - m$?

- A. $10m + 4 = 6m$
- B. $10m + 8 = 6m$
- C. $10m + 4 = 7$
- D. $10m + 8 = 7$

84. Twice a number m is 32 less than 6 times m . What is the value of m ?

- A. -8
- B. -4
- C. 4
- D. 8

85. Which equation is equivalent to $-3(x + 2) = -7$?

- A. $(-3)x + 2 = -7$
- B. $(-3)x + (-3)2 = -7$
- C. $(-3)x + (-3 + 2) = -7$
- D. $(-3)x + (-3)2 = (-3)(-7)$

86. Which equation is equivalent to $4x + 2(3x - 2) = 10$?
- $6x = 10$
 - $8x = 20$
 - $10x - 4 = 10$
 - $10x - 2 = 10$
87. The relationship between the temperature in degrees Fahrenheit, F , and the temperature in degrees Celsius, C , is given by the formula $F = \frac{9}{5}C + 32$. If a body temperature is 98.6°F , which is closest to the body temperature in degrees Celsius?
- 23°C
 - 37°C
 - 120°C
 - 145°C
88. Which steps could be used to solve for x in the equation $7x + \frac{1}{3} = 2\frac{2}{3}$?
- Divide both sides of the equation by $\frac{1}{7}$, and then subtract 3 from both sides of the equation.
 - Divide both sides of the equation by 7, and then subtract $\frac{1}{3}$ from both sides of the equation.
 - Subtract $\frac{1}{3}$ from both sides of the equation, and then divide both sides of the equation by 7.
 - Subtract 3 from both sides of the equation, and then multiply both sides of the equation by 7.
89. Which equation is equivalent to $-(5 - x) = 5 - x$?
- $-5 - x = 5 - x$
 - $-5 + x = 5 - x$
 - $5 - x = 5 - x$
 - $5 + x = 5 - x$
90. What is the solution to the equation $-2(6x + 8) + 7x = 3x - 2(12 + 4x)$?
- infinitely many solutions
 - no solution
 - $x = 2$
 - $x = 3$
91. The average high temperature in Miami, Florida, during the month of December is 77°F . What is this temperature in degrees Celsius? (Use $F = \frac{9}{5}C + 32$)
- 25°C
 - 60.6°C
 - 81°C
 - 170.6°C

92. What is the value of x in the equation $\frac{2x - 12}{-3} = 7$?

A. -1

B. $-4\frac{1}{2}$

C. -11

D. $-16\frac{1}{2}$

93. Three consecutive odd integers have a sum of 111. What is the smallest of the three integers?

A. 33

B. 35

C. 37

D. 39

94. Which of the following equations can be solved for x in one step by multiplying both sides of the equation by 2?

A. $x - 2 = -17$

B. $x + \frac{1}{2} = -17$

C. $2x = -17$

D. $\frac{1}{2}x = -17$

95. What is the value of x in the equation $7 - \frac{3}{4}x = \frac{1}{2}x - 3$?

A. 40

B. $\frac{25}{2}$

C. 8

D. $\frac{16}{5}$

96. Which equation represents the solution to

$$\frac{1}{3}(2x+6) - 4 = 6 - \frac{4}{3}x + 8?$$

- A. $x = 8$
- B. $x = 6$
- C. $x = 2$
- D. $x = 0$

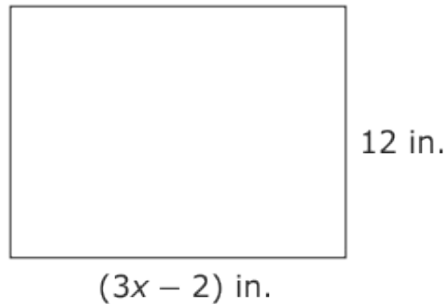
97. Which would be the first step for solving the equation $\frac{6}{7}x + 2 = 18$?

- A. add -2 to both sides of the equation
- B. add 18 to both sides of the equation
- C. divide both sides of the equation by $\frac{7}{6}$
- D. multiply both sides of the equation by $-\frac{7}{6}$

98. What is the value of x in the equation $0.25(3x - 4) - 0.5x = 2.75$?

- A. 27
- B. 15
- C. 7
- D. 3

99. The perimeter of the rectangle below is 56 in.



What is the value of x ?

- A. 6
- B. 12
- C. 18

100. Which equation is equivalent to $5(x - 3) + 4(x - 2) = 7$?

- A. $5x - 15 + 4x - 8 = 7$
- B. $5x - 3 + 4x - 2 = 7$
- C. $5x + 3 + 4x + 2 = 7$
- D. $5x + 15 + 4x + 8 = 7$

101. What is the value of n in the equation $\frac{60 + n}{3} = \frac{84 + n}{15}$?

- A. 96
- B. 64
- C. -36
- D. -54

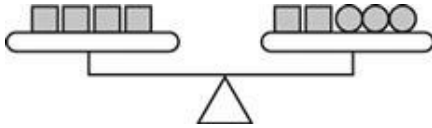
102. Bob works as a plumber. He charges \$45.00 for the first hour and \$33.75 for each additional hour. Bob was paid \$247.50 for his last job. How many hours did Bob work on his last job?

- A. 3
- B. 4
- C. 6
- D. 7

103. What value of x makes the equation $3x + 6 = 15$ true?

- A. 3
- B. 6
- C. 7
- D. 11

104. Based on the balance scale below, what is the weight in kilograms of a square if a circle weighs 4 kilograms?



- A. 2
- B. 3
- C. 5
- D. 6

105. The average high temperature in Valerie's city during the month of December is 50°F . Using the formula $F = \frac{9}{5}C + 32$, what is C , the average high temperature in degrees Celsius?

- A. 10°C
- B. 32.4°C
- C. 45.5°C
- D. 122°C

106. What value of x satisfies the equation $\frac{-4x - 2}{3} = -6$?

- A. -16
- B. -12
- C. 0
- D. 4

107. The lengths of the sides of a triangle are $2x + 5$, $x - 3$, and $3x + 1$. The perimeter of the triangle is 39 in. What are the lengths of the sides?

- A. 11 in., 3 in., and 7 in.
- B. 15 in., 2 in., and 16 in.
- C. 17 in., 3 in., and 19 in.
- D. 19 in., 4 in., and 22 in.

108. What is the solution to the equation $\frac{1}{2}(x+5) = 10$?
- A. $x = 0$
 - B. $x = 10$
 - C. $x = 15$
 - D. $x = 25$
109. Which equation is equivalent to $\frac{2}{3}(x-6) + 1 = x - 2$?
- A. $\frac{2}{3}x - 3 = x - 2$
 - B. $\frac{2}{3}x - 5 = x - 2$
 - C. $2x - 17 = x - 2$
 - D. $2x - 11 = 3x - 2$
110. Which equation is equivalent to $-5(4x + 2 + 3x) = 6$?
- A. $-45x = 6$
 - B. $-35x = -20$
 - C. $-35x = 16$
 - D. $-17x = 4$
111. Which of the following could be used to solve the equation $-5x = 1$ for x in one step?
- A. Add -5 to both sides
 - B. Divide both sides by -5
 - C. Multiply both sides by -5
 - D. Subtract -5 from both sides
112. Lisa wants to apply the distributive property to the following equation:
- $$\frac{4}{5}(x - 10) = 20$$
- Which equation shows her next step?
- A. $\frac{4}{5}x + 8 = 20$
 - B. $\frac{4}{5}x - 8 = 20$
 - C. $\frac{4}{5}x + 10 = 20$
 - D. $\frac{4}{5}x - 10 = 20$

113. What is the value of x in the equation below?

$$2x + 4 = x - 3$$

- A. 3
- B. 1
- C. -7

114. Which of the following equations would be solved for x by adding 8 to both sides and then multiplying both sides by 2?

- A. $5 = \frac{1}{2}x + 8$
- B. $5 = \frac{1}{2}(x + 8)$
- C. $5 = \frac{1}{2}x - 8$
- D. $5 = \frac{1}{2}(x - 8)$

115. Which of the following is the slope-intercept form of the equation $3y = 2(x - 6)$?

- A. $x = \frac{3}{2}y + 6$
- B. $y = \frac{2}{3}x - 4$
- C. $3y = 2x - 12$
- D. $2x - 3y = 12$

116. Solve the given equation for x .

$$3x - 18 = 30$$

- A. 4
- B. 16
- C. 28
- D. 45

117. What is the value of x in the equation $2x + 9 = 5x - 6$?

- A. -5
- B. 3
- C. 5

118. What is the value of x in the equation $2(4 + 3x) + 6 = 32$?

- A. 3
- B. 6
- C. 7
- D. 8

119. Which equation is equivalent to $3(2x - 5) = 7(x + 2)$?

- A. $6x - 5 = 7x + 2$
- B. $6x + 5 = 7x + 2$
- C. $6x - 15 = 7x + 14$
- D. $6x + 15 = 7x + 14$

120. What is the value of x in the equation below?

$$7 = 2x - 9$$

- A. -1
- B. 1
- C. 4
- D. 8

121. A student will solve for the value of x in the equation $\frac{3}{5}x + \frac{1}{2} = \frac{4}{7}$ in two steps. Which of the following describes the step that is the most appropriate for the student to use first?

- A. Add $\frac{4}{7}$ to both sides of the equation.
- B. Multiply each side of the equation by $\frac{3}{5}$.
- C. Subtract $\frac{1}{2}$ from both sides of the equation.
- D. Subtract $\frac{3}{5}$ from both sides of the equation.

122. A math contest has 25 multiple choice questions where right answers, wrong answers, and omitted answers are worth 6, 0, and 2.5 points, respectively. Therefore, a contestant's score, S , is given by the formula below, where a represents the number of answered questions and w represents the number of questions answered incorrectly.

$$S = 6(a - w) + 2.5(25 - a)$$

If a contestant answers 5 questions incorrectly, which is a correct formula for the contestant's score in terms of the number of questions answered?

- A. $S = 3.5a + 32.5$
- B. $S = 3.5a + 62.5$
- C. $S = 5a + 32.5$
- D. $S = 5a + 57.5$

123. Two times a number plus one equals four times the same number minus five. What is the number?

- A. -3
- B. -1
- C. 3

124. Which equation is equivalent to $3(2m + 7) = -5(6 + m)$?

- A. $6m + 7 = -30 + m$
- B. $6m + 7 = -30 - m$
- C. $6m + 21 = -30 + 5m$
- D. $6m + 21 = -30 - 5m$

125. Which equation has a solution equivalent to the solution to $4 + 3x + 1 = 23$?

- A. $3x + 5 = 23$
- B. $4 + 4x = 23$
- C. $7x + 1 = 23$
- D. $12x + 4 = 23$

126. What is the value of x in the equation $\frac{x-4}{6} = \frac{3}{7}$?

- A. $1\frac{3}{7}$
- B. $3\frac{1}{7}$
- C. $4\frac{1}{14}$
- D. $6\frac{4}{7}$

127. Solve for x .

$$\frac{1}{2}x - 2 = 2(-x + 1)$$

A. $-\frac{8}{3}$

B. $\frac{8}{5}$

C. $\frac{6}{5}$

D. 2

128. Which expression is equivalent to $\frac{2}{3}(x - 6) - \frac{1}{3}(x - 3)$?

A. $\frac{1}{3}x - 3$

B. $\frac{1}{3}x - 5$

C. $\frac{1}{3}x - 11$

D. $\frac{1}{3}x - 1$

129. What is the solution to the equation $3x + 5 = 5x - 15$?

A. -10

B. -5

C. 10

130. Jared went snorkeling in one lake that was 52 feet deep and in another lake that was 12 feet deeper. The deeper lake was twice as deep as Lake Masuki. In the equation below, d represents the depth in feet of Lake Masuki.

$$52 + 12 = 2d$$

How deep is Lake Masuki?

A. 32 feet

B. 64 feet

C. 128 feet

D. 256 feet

131. What value of x satisfies the equation $3(x + 7) = -18$?

- A. -1
- B. -4
- C. -8
- D. -13

132. Which property can be used to justify that $2x^2 + 5x(-4x + 8) = 2x^2 - 20x^2 + 40x$?

- A. associative property
- B. distributive property
- C. commutative property
- D. addition property of equality

133. Enrique was asked to solve the equation $3(x + 2) = 12$. His steps are shown.

Step 1: $3(x + 2) = 12$

Step 2: $3x + 6 = 12$

Step 3: $3x = 6$

Step 4: $x = 3$

Which statement about his solution is correct?

- A. The problem is worked correctly at each step.
- B. In Step 2 the problem should be $3x + 2 = 12$.
- C. In Step 3 the problem should be $3x = 18$.
- D. In Step 4 the problem should be $x = 2$.

134. If $44 \div 2 = n + 8$, what is the value of n ?

- A. 14
- B. 22
- C. 30
- D. 80

135. A telephone company charges a monthly fee of \$24 for 100 minutes of long distance service. The customer must then pay 7 cents per additional minute over 100. Todd's phone bill for October was \$26.38, not including taxes. How many total minutes of long distance did Todd use in October?

- A. 34
- B. 66
- C. 134
- D. 377

136. Which equation is equivalent to $3(5x - 4) = 2(7x)$?

- A. $5x - 4 = 14x$
- B. $5x - 12 = 14x$
- C. $15x - 4 = 14x$
- D. $15x - 12 = 14x$

137. Solve. $-5x - 3 + 4x + 1 = -4$

- A. $x = 6$
- B. $x = 2$
- C. $x = -6$
- D. $x = -2$

138. Which equation is equivalent to $2 + 3(2x + 4) = 13$?

- A. $6x + 6 = 13$
- B. $6x + 14 = 13$
- C. $10x + 4 = 13$
- D. $10x + 20 = 13$

139. What is the solution to the equation shown below?

$$\frac{x+5}{2} = 2(x+3)$$

- A. $-\frac{1}{3}$
- B. -1
- C. -2
- D. $-\frac{7}{3}$

140. Solve the given equation for x .

$$\frac{x}{9} + 3 = 11$$

- A. $\frac{8}{9}$
- B. $\frac{5}{3}$
- C. 72
- D. 96

141. What is the solution to the equation $\frac{3}{5} - \frac{3}{5}\left(\frac{x}{2} - 3\right) = \frac{3}{2}\left(\frac{x}{5} - 1\right) - 3$?

A. $\frac{8}{3}$

B. 8

C. $\frac{23}{2}$

D. 14

142. What is the solution to the equation $37x = 9x + 4$?

A. -7

B. $-\frac{1}{7}$

C. $\frac{1}{7}$

D. 7

143. What is the value of p in the equation $2(p - 5) = 2(10 + 2p)$?

A. 15

B. 5

C. -5

D. -15

144. What is the solution to the equation $8 - 7(4x - 2) = -28x + 6$?

A. 6

B. 12

C. no solution

D. all real numbers

145. Three times a number minus 8 is equal to 5 times the same number plus 10. What is the number?

- A. -9
- B. 1
- C. 9

146. What is the value of m in the equation below?

$$4(m + 2) = -4(m - 2)$$

- A. 0
- B. no solution
- C. infinitely many solutions

147. One of the tires on the truck Ian is rebuilding has a slow leak. The recommended inflation pressure of the tire is 35 pounds per square inch (psi). Due to the leak, the tire loses approximately 3 psi of pressure each day. The equation below can be used to determine I , the tire's inflation pressure when d days have passed since it was properly inflated.

$$I = 35 - 3d$$

How many days have passed if the tire's inflation is approximately 11 psi?

- A. 3
- B. 8
- C. 15
- D. 24

148. Which equation is equivalent to $-(4 - x) = 21$?

- A. $-4 + x = 21$
- B. $-4 + x = -21$
- C. $-4 - x = 21$
- D. $-4 - x = -21$

149. Which is the value of x in the equation below?

$$\frac{2x-3}{10} = \frac{1}{2}x + \frac{3}{5}$$

A. -3

B. $-\frac{6}{5}$

C. $\frac{6}{5}$

D. 3

150. What is the first step to solve for q in the equation $8q + 6 = 72$?

A. $8q + 6 + 6 = 72 + 6$

B. $8q + 6 - 6 = 72 - 6$

C. $\frac{8q+6}{8} = \frac{72}{6}$

D. $8 \times (8q + 6) = 72 \times 8$

151. Which equation below has infinitely many solutions?

A. $\frac{1}{3}(6r + 12) = 2r + 12$

B. $\frac{1}{4}(8r + 12) = 3 + 2r$

C. $\frac{1}{2}(16 + 12r) = 12r + 8$

D. $\frac{1}{5}(10r + 20) = 2r + 10$

152. What is the first step in solving for z in the equation $5z - 4 = 26$?

A. Add 4 to both sides of the equation.

B. Subtract 4 from both sides of the equation.

C. Multiply both sides of the equation times 5.

D. Divide both sides of the equation by 5.

153. Which of the following describes how the value of x in the equation $85 = \frac{x+2}{5}$ could be found in

two steps?

- A. Add 2 to both sides, then multiply both sides by 5.
- B. Divide both sides by 5, then subtract 2 from both sides.
- C. Subtract 2 from both sides, then multiply both sides by 5.
- D. Multiply both sides by 5, then subtract 2 from both sides.

154. Which equation is equivalent to $2x - 9 - 3x = 4$?

- A. $2x - 3x = 4 + 9$
- B. $2x - 9x = 4 + 3$
- C. $3x + 2x = 4 + 9$
- D. $9x - 2x = 4 - 3$

155. Which operation should be performed on both sides of this equation to solve for x ?

$$x + 4 = 6$$

- A. add 4
- B. add the opposite of 4
- C. multiply by the reciprocal of 4
- D. multiply by the opposite reciprocal of 4

156. Triangle GHI has the angle measures of $G = (2x + 5)^\circ$, $H = (6x - 10)^\circ$, and $I = (x + 5)^\circ$. What is the actual measurement of angle H ?

- A. 90°
- B. 105°
- C. 110°
- D. 125°

157. What is the value of n in the equation below?

$$2n + 6 = 2n + 10$$

- A. 1
- B. infinitely many solutions
- C. no solution

158. Which equation is equivalent to $-19 + 6x - 5 = 3x$?

- A. $-6x + 19 - 5 = 3x$
- B. $-6x - 19 - 5 = 3x$
- C. $6x + 19 + 5 = 3x$
- D. $6x - 19 - 5 = 3x$

159. A cheese pizza from Pizza Pie is cut into eight equal pieces. When slices are sold individually, each slice costs \$1.85. Let c represent the cost of the entire pizza.

$$\frac{c}{8} = \$1.85$$

How much does a whole cheese pizza cost?

- A. \$8.40
- B. \$9.85
- C. \$14.80
- D. \$16.65

160. Solve the given equation for x .

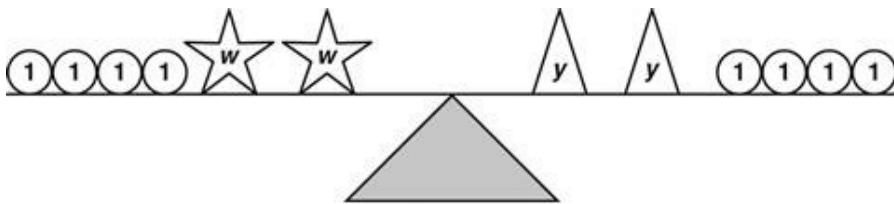
$$8 - \frac{6}{5}x = 10$$

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

161. What is the value of x in the equation $5(3x - 4) = 2x + 7 + 4x$?

- A. 1
- B. 3
- C. 6
- D. 13

162. The figure below models the equation $4 + 2w = 2y + 4$.



What is the value of w ?

- A. $w = 2y$
- B. $w = \frac{1}{4}y$
- C. $w = \frac{1}{2}y$
- D. $w = y$

163. If the equation $5(3x + 7) - 1 = 3(5x + k) + 4$ has infinitely many solutions, what is the value of k ?

- A. 7
- B. 10
- C. 27
- D. 30

164. Which equation is NOT equivalent to $-3(15x - 9) = 18$?

- A. $-45x = -9$
- B. $-5x = 1$
- C. $5x = 1$
- D. $45x = 9$

165. Which of the following equations is equivalent to $8(k + 11) - 6k = 19$?

- A. $2k + 11 = 19$
- B. $2k + 88 = 19$
- C. $14k + 11 = 19$
- D. $14k + 88 = 19$

166. Which operation will solve the equation below in one step?

$$c + 14 = -13$$

- A. add 14 to both sides
- B. add -13 to both sides
- C. subtract 14 from both sides
- D. subtract -13 from both sides

167. Which equation is equivalent to $(5 + 8x) + (-3x) = 7$?

- A. $5 + (8x - 3x) = 7$
- B. $5 + (8x + 3x) = 7$
- C. $5 - (8x - 3x) = 7$
- D. $5 - (8x + 3x) = 7$

168. Which expression is equivalent to $13x - 2(3x + 6)$?

- A. $-5x$
- B. $7x - 12$
- C. $7x + 12$
- D. $19x + 12$

169. The steps Thomas used to solve an equation are shown.

Given: $10 - 2(x - 1) = 8$

Step 1: $8(x - 1) = 8$

Step 2: $x - 1 = 1$

Step 3: $x = 2$

Which statement about the steps Thomas used is true?

- A. There is an error in Step 1.
- B. There is an error in Step 2.
- C. There is an error in Step 3.
- D. Thomas's steps are all correct.

170. Which equation is equivalent to $7 + 3(x + 4) = 10$?

- A. $3x + 11 = 10$
- B. $3x + 19 = 10$
- C. $10x + 4 = 10$
- D. $10x + 40 = 10$

171. Martina is solving the equation $4x - 11 = 2x + 391$. Here are the first steps of her solution.

$$4x - 11 = 2x + 391$$

$$4x = 2x + 402$$

$$2x = 402$$

What did Martina do to get $2x = 402$?

- A. divided both sides by 2
- B. divided the left side by $2x$
- C. subtracted $2x$ from both sides
- D. subtracted $2x$ from the left side and added $2x$ to the right side

172. What is the solution to the equation $2(3x + 1) + 2x = 8x + 1$?

- A. 1
- B. 2
- C. no solution
- D. all real numbers

173. What is the solution to the equation $2(2x - 5) = 6$?

- A. 3
- B. 4
- C. 8

174. Which equation is equivalent to $5 = \frac{4}{3}(6y + 9)$?

- A. $5 = 8y + 3$
- B. $5 = 8y + 9$
- C. $5 = 8y + 12$
- D. $5 = 8y + 36$

175. What is the value of x in the equation $13x - 2(6x - 4) = 72$?

- A. 64
- B. 68
- C. 76
- D. 80

176. A gym membership charges an initial fee of \$100 plus a \$25 fee every month. Another gym only charges \$45 every month. After how many months will the total cost for both gyms be the same?

- A. 2
- B. 3
- C. 4
- D. 5

177. The cost of production for boxes of markers is \$500.00 to set up equipment plus \$0.35 per box for materials. A box of markers sells for \$2.85. How many boxes of markers must be sold for the company's income to equal the cost of production?

- A. 150
- B. 175
- C. 200
- D. 250

178. Which operation will solve the number sentence below in one step?

$$\frac{n}{5} = 16$$

- A. add 5 to both sides
- B. subtract 5 from both sides
- C. divide by 5 on both sides
- D. multiply by 5 on both sides