Algebra NTI - Day 1

2.12 Solving Linear Equations One Variable 1

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

Solve the equation.

1) $\frac{y}{10} = (-9)^2 - |23| + (-3)^2$ 1) _____

A) 670 B) 1130 C) -490 D) -670

2) $3^3 = x + 5^5$ 2) _____

A) -3152 B) 3152 C) -3098 D) 3098

3) $\frac{x}{-11} = 4^6 - 6^6$ 3) _____

A) 468,160 B) -468,160 C) 74,272 D) -74,272

4) $|-12| + 9^2 = 50y - |-38| - 49y$ 4) _____

A) -55 B) 55 C) 131 D) -131

Write the phrase as a variable expression. Use x to represent "a number."

5) the difference of Four and a number 5) _____

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

6) The quotient of 31 and the product of a number and -8 6) _____

A) -248x B) $\frac{31}{-8x}$ C) $\frac{-8x}{31}$ D) $\frac{31}{x} - 8$

7) Twice a number, decreased by 34 7) _____

A) x - 68 B) 2(x - 34) C) 2 + x - 34 D) 2x - 34

8) The quotient of 4 and a number, added to -23 8) _____

A) $-23 + \frac{4}{x}$ B) 4 + x + (-23) C) $-23 + \frac{x}{4}$ D) $\frac{4}{x + (-23)}$

Solve the equation.

9) 2(5x - 2) = 8x 9) _____

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

10) -17 = 2x - 3 10) _____

A) -12 B) -7 C) 5 D) -16

11) 3(6x - 4) = 22x 11) _____

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

12) -54 - 8x = -2x 12) _____

A) 9 B) -9 C) -324 D) 324

Algebra -NTI Day 2

2.12 Solving Linear Equations One Variable 1

13) $5 + 30 = x + 10$ 13) _____

A) 25 B) -45 C) -25 D) 45

14) $\frac{n}{-6} = 4 - (-2)$ 14) _____

A) 12 B) -12 C) 36 D) -36

15) $x - 13 = -5 - 26$ 15) _____

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

16) $8x - 15x = -44 - 12$ 16) _____

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

17) $3(5x + 4) - 20 = 13x - 4$ 17) _____

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

18) $2(y + 5) = 3(y - 8)$ 18) _____

A) -34 B) -14 C) 34 D) 14

19) $7x - 5 = 8(x + 3)$ 19) _____

A) 29 B) -29 C) -19 D) 19

20) $3(x + 1) = 12$ 20) _____

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

21) $-8 + 22 = 13x - 5 - 12x$ 21) _____

A) 9 B) 25 C) -9 D) 19

22) $-8x + 10 = -6x + 6$ 22) _____

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

23) $\frac{x}{8} + 25 = 0$ 23) _____

A) 200 B) $\frac{25}{8}$ C) $-\frac{25}{8}$ D) -200

24) $7y - 28 = 8y - 14$ 24) _____

A) -15 B) -6 C) -14 D) -13

Write the sentence as an equation.

25) The difference of -40 and 7 is -47. 25) _____

A) $40 - 7 = 47$ B) $-40 - 7 = 47$ C) $40 + 7 = 47$ D) $-40 - 7 = -47$

26) The sum of -32 and 39 is equal to 7. 26) _____

A) $-32 - 39 = 7$ B) $32 + 39 = 7$ C) $-32 + 39 = 7$ D) $32 + 39 = -7$

Algebra NTI - Day 3

2.12 Solving Linear Equations One Variable 1

27) The quotient of -88 and 8 equals -11. 27) _____

A) -88 + 8 = -11 B) -88(8) = -11 C) -88 - 8 = -11 D) $\frac{-88}{8} = -11$

28) The product of -20 and -31 yields 620. 28) _____

A) -20 - 31 = 620 B) -20(-31) = 620 C) $\frac{-20}{-31} = 620$ D) 20(31) = 620

Solve.

29) Ben sold his used snow plow and accessories for $352. If he received seven times as much money for the snow plow as he did for the accessories, find how much money he received for the snow plow. 29) _____

A) $54 B) $308 C) $2464 D) $44

30) The product of 9 and a number yields 45. Find the number. 30) _____

A) 6 B) 36 C) 5 D) 405

31) The sum of 2, 6, and a number amounts to 15. Find the number. 31) _____

A) 7 B) 23 C) 19 D) 11

32) The product of a number and -8 gives eight times the sum of that number and 36. Find the number. 32) _____

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

Write the sentence as an equation. Use x to represent "a number."

33) Seven subtracted from twice a number gives 17. 33) _____

A) 2x - 7 = 17 B) 2(x - 7) = 17 C) 7 - 2x = 17 D) 7(2 - x) = 17

34) A number added to -19 is equal to -21. 34) _____

A) x - 21 = -19 B) -19 + x = -21 C) x = -19 + 21 D) -19 - 21 = x

35) Ten subtracted from a number yields 15. 35) _____

A) 10 + x = 15 B) 10 - x = 15 C) x - 10 = 15 D) 15 - 10 = x

36) The quotient of 24 and a number is 4. 36) _____

A) $\frac{x}{24} = 4$ B) 24 - x = 4 C) 24x = 4 D) $\frac{24}{x} = 4$

Problem Solving and Critical Thinking

1. Write an algebraic rule for the total number of tiles, T, in terms of the figure, n.

Figure 1

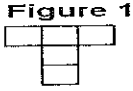


Figure 2

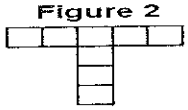
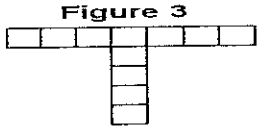


Figure 3



Algebra NTI Day 4

A. $n^2 + 4$
B. $2n + 2$
C. $2(n + 1)$
D. $3n + 2$

2. Write an algebraic rule for the total number of tiles, T, in terms of the figure, n.

Figure 1

Figure

Figure 3

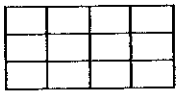
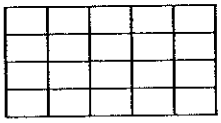


Figure 4



A. $n + 1$
B. $n(n + 1)$
C. $3n$
D. $n^2 + 1$

3. Which equation best describes the relationship between the values of x and y shown in the table?

x	y
-1	-7
0	-5
2	-1
4	3

A. $y = x - 5$
B. $y = 2x - 5$
C. $y = 3x - 7$
D. $y = 4x - 7$

Algebraic expressions

4. Two enterprising college students decide to start a business. They will make up and deliver helium balloon bouquets for special occasions. It will cost them \$39.99 to buy a machine to fill the balloons with helium. They estimate that it will cost them \$2.00 to buy the balloons, helium and ribbons needed to make each balloon bouquet. Which of the following expressions could be used to model the total cost for producing b balloon bouquets?

A. $\$2.00b + \$39.99$
B. $\$37.99b$
C. $\$39.99b + \$2.00$
D. $\$41.99b$

5. A plumber charges \$13.50 per hour for a plumbing job that requires more than 3 hours to complete. For any job requiring 3 hours or less, there is a flat charge of \$40.50. If h represents the number of hours the job requires, which of the following expressions gives the charge, in dollars, for a job requiring more than 3 hours to complete?

A. $13.5h + 40.5$
B. $13.5h$
C. $13.5h - 40.5$
D. 40.5

6. You help in the school cafeteria by emptying the trash barrels. You are paid $4 for each day you work. Let d be the number of days you work in a month. Which of the following expressions represent your pay for that month, in dollars?

A. d^4

B. $\frac{d}{4}$

C. $4 + d$

D. $4d$

Algebra NTI - Day 4

7. What is the value of the expression $(x - y)^2$ when $x = 5$ and $y = -1$?

A. 4

B. 16

C. 24

D. 36

8. If $a = -\frac{1}{2}$, $b = 4$, and $d = -3$, what is the value of $\frac{3ab^2 - d^3}{a}$?

A. $-25\frac{1}{2}$

B. -6

C. 75

D. 102

9. What is the value of $|3 - x|$ if $x = 6$?

A. -3

B. 3

C. 6

D. 9

10. For all x, $5 - 3(x - 4) = ?$

A. $-3x + 17$

B. $-3x - 7$

C. $-3x + 1$

D. $-3x - 4$

11. $(6x - 4) - (2x + 8)$ is equivalent to:

A. $4(x + 4)$

B. $4(x - 1)$

C. $4(x - 3)$

D. $4(x - 12)$

12. The expression $(3x^2 + 5x - 12) - 2(x^2 + 4x + 9)$ is equivalent to which of the following:

A. $x^2 - 3x - 30$

B. $x^2 + 13x + 6$

C. $5x^2 + x - 18$

D. $x^2 + 3x - 21$

Algebraic Linear Equations

13. A Fahrenheit temperature F can be approximated by doubling the Celsius temperature C and adding 32. Which of the following expresses this approximation method?

A. $F = \frac{1}{2}C + 32$
B. $F = 2C + 32$
C. $F = 2(C + 32)$
D. $F = C^2 + 32$

Algebra NTI - Day 5

14. Roy is saving to buy a new bike, which costs $258. He has $16 towards this purchase. Express how much more Roy needs in the form of an equation.

A. $x + 258 = 16$
B. $x - 16 = 258$
C. $x = 258 + 16$
D. $x + 16 = 258$

15. Solve for r: $3r + 2 - r = -4$

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

16. Patricia pays $1.19 each to download songs to her MP3 player. If n is the number of downloaded songs, which equation represents the cost C in dollars?

A. $C = 1.19n$
B. $n = 1.19C$
C. $C = 1.19 \div n$
D. $C = n + 1.1$

17. Solve the equation $\frac{3}{5}a = \frac{1}{4}$.

A. $a = \frac{3}{20}$
B. $a = 2$
C. $a = \frac{5}{12}$
D. $a = -3$

18. An equation is shown below:

$$-2x + 9 = -17$$

What is the solution to the equation?

A. $x = -13$
B. $x = -4$
C. $x = 4$
D. $x = 13$

19. If $a + b = 6$, then $\frac{a+8+b}{2} = ?$

A. 3
B. 7
C. 10
D. 14

Algebra NTI Day 5

20. Solve for y: $3x - 4y = 12$

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

21. The sum of one fifth of a number and three is equal to half of the number. What is the number?

A. 5
B. 10
C. 15
D. 20

22. Given $y + 36 = 102$, $y + 14 = ?$ (Hint: solve for y first, then find $y + 14$)

A. 66
B. 76
C. 80
D. 124

23. When n basketball uniforms are purchased, the cost, C, of each uniform is given by the equation $C = \frac{40n + 260}{n}$. If the cost of each uniform was \$60, how many uniforms were purchased?

A. 5
B. 6
C. 8
D. 13
E. 26

Functions

24. What is the value of $f(2)$ if $f(x) = \left(\frac{10}{x}\right)^3$?

A. $\frac{5}{4}$
B. 15
C. 125
D. 500

Algebra NTI - Day 5

25. What are the domain and range for the relation $y = \frac{x+5}{x-5}$.

A. Domain = {all real numbers}
Range = {all real numbers}
B. Domain = {all real numbers $\neq 5$}
Range = {all real numbers}
C. Domain = {all real numbers $\neq -5$}
Range = {all real numbers}
D. Domain = {all real numbers}
Range = {all real numbers $\neq 5$}

26. If $f(x) = 3x - 2$, find $f(8) - f(-5)$

A. 7
B. 9
C. 37
D. 39

27. If $f(x) = 2x - 4$ find $f(q + 1)$:

A. $2q + 4$
B. $2q + 2$
C. $2q - 6$
D. $2q - 2$

28. If $f(x) = -4x^2 + 15$, then $f(-3) = ?$

A. -21
B. -9
C. 39
D. 51

29. Find the range of the function given the domain: $f(x) = 5 - 4x$; domain = {-1, 0, 1}

A. {1, 5, 3}
B. {9, 5, 1}
C. {9, 5, 3}
D. {1, 5, 5}

30. A function $g(x) = -\frac{1}{x} - 2$. For which value of x will $g(x) = 0$?

A. $x = -\frac{1}{2}$
B. $x = -1$
C. $x = \frac{1}{2}$
D. $x = 0$