**Unit 2**

**Equations**

Equations with Combining Like Terms on Same Side

Equations- Statement Problems - 1

Equations with Parentheses

Multi-Step Equations

One-Step Equations - 1

One-Step Equations -2

One-Step Equations with Fractions

Open-Ended Questions – Solving Equations - 1

Open-Ended Questions – Solving Equations - 2

Open-Ended Questions – Solving Equations -3

Open-Ended Question – Solving Equations – 4

Open-Ended Questions – Solving Equations – 5

Three-Step Equations

Two-Step Equations

Variables on Both Sides

**Assessment Anchor: A1.1.2 Linear Equations**

**Anchor Descriptor/ Eligible Content**

**A1.1.2.1** Write, solve, and/or graph linear equations using various methods.

**A1.1.2.1.1** Write, solve, and/or apply a linear equation (including problem situations)

**A1.1.2.1.2** Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only

**A1.1.2.1.3** Interpret solutions to problems in the context of the problem situation

Keystone Practice Set

Algebraic Expression

1. What is the solution for the equations?

-3x +7x +16 = 0

1. x = - 4
2. x = 4
3. x = $\frac{- 8}{5}$
4. x = $\frac{8}{5}$
5. What is the solution for the equation?

6 = 5 -2b + b

1. b = $\frac{- 1}{ 3}$
2. b = -1
3. b = 1
4. b = $\frac{1}{3}$
5. What is the solution for the equation?

9 – 2 –m = 7

1. m = -2
2. m = -1
3. m = 0
4. m = 1

4. What is the solution for the equations?

 - 5x +7x +2 = - 14

1. x = - 8
2. x = - 6
3. x = 8
4. x = 6

5. Which is the solution for the equation?

p + p +8 = - 6

A. p = -7

B. p = -1

C. p = 1

D. p = 7

6. What is the solution for the equation?

 -7 – k –k = - 1

 A. k = - 4

 B. k = - 3

 C. k = 3

 D. k = 4

7. Jenny has a job that pays her $8 per hour plus tips(t). Jenny worked for 4 hours on Monday and made $65 in all. Which equation could be used to find t, the amount Jenny made in tips?

1. 65 = 4t +8
2. 65 = 8t ÷ 4
3. 65 = 8t + 4
4. 65 = 8(4) + t

8. The length of a rectangle is five less than twice the width. Which equation expresses the perimeter of the rectangle where the perimeter is 24 centimeters?

 A. 24 = 2(2x – 5) + 2(x)

 B. 24 = (2x – 5) + (x)

 C. 24 = (5 – 2x) + (x)

 D. 24 = 2(5 – 2x) + 2(x)

9. Connors earned $7 for every lawn he mows. Last weekend, he mowed several lawns and then spent $10 of the money he earned at the movies. If he had $25 at the end of the weekend, which equation shows how many lawns he mowed?

 A. 7x +10 = 25

 B. 10x + 7 = 25

 C. 7x – 10 = 25

 D. 10x -7 = 25

10. Ellen has $200 in savings account. She plans to deposit $25 each week. Write an equation that can be used to determine the total amount of money, t, in the account after w weeks.

 A. 200 = 25w

 B. 200 – 25w = t

 C. 200t – 25 = w

 D. 200 + 25w = t

11. The Arbor Club have a goal of planting 140 trees. They have already planted 54 trees, and plan to plant the same number of trees each day for the next 14 days. Which equations could be used to determine the number of trees the club needs to plant each day?

 A. 140 = 54 -14x

 B. 140x - 54 = 14

 C. 140 = 14x +54

 D. 140 = 14x

12. George purchased a car for $12,000 by placing a deposit of $3,00 and agreeing to pay $350 per month. Which equation will determine the number of months that George will make payment for the car?

1. 3000 + 350x = 12000
2. 3000 = 12000 - 350x
3. 3000 = 12000 + 350x
4. 12000 + 3000 = 350x

13. What is the solution for the equation?

 2(4x + 3) – 9 = - 11

 A. x = - 1

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

 C. x = $\frac{1}{2}$

 D. x = 1

14. What is the solution for the equation?

 24 = -2(3x – 4) + 2x

 A. x = 4

 B. x = 2

 C. x = - 2

 D. x = - 4

15. What is the solution for the equation?

 -3(4x + 8) = 5(-3x – 4)

 A. x = - $\frac{4}{27}$

 B. x = $\frac{4}{3}$

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

 D. x = - $\frac{4}{3}$

16. What is the solution for the equation?

 -9x + 2(4x + 6) = 3 + 2x

 A. x = 9

 B. x = -9

 C. x = -3

 D. x = 3

17. What is the solution for the equation?

 12 = 3(3x + 4) - 9x

 A. x = 0

 B. x = $\frac{4}{3}$

 C. All real numbers

 D. No Solution

18. What is the solution for the equation?

 6(2x + 4) – 2x = 2(5x -4)

 A. x = 4

 B. x = - 4

 C. All real numbers

 D. No solution

19. What is the solution for the equation?

 2x + 5 = 11

 A. x = - 3

 B. x = 3

 C. x = 8

 D. x = - 8

20. What is the solution for the equation?

 2(a -1) – 5 = 11

 A. a = 9

 B. a = - 9

 C. a = 2

 D. a = - 2

21. What is the solution for the equation?

 5x + 21 = -3x -3

 A. x = 12

 B. x = -12

 C. x = 3

 D. x = - 3

22. What is the solution for the equation?

 x + 12 = - 15

 A. x = - 3

 B. x = 27

 C. x = - 27

 D. x = - 3

23. What is the solution for the equation?

 16 – x = 14

 A. x = - 2

 B. x = 2

 C. x = 20

 D. x = - 20

24. What is the solution for the equation?

 - 4 = x - 12

 A. x = - 16

 B. x = - 8

 C. x = 8

 D. x = 15

25. What is the solution for the equation?

 - 15 = 9 - x

 A. x = 6

 B. x = - 6

 C. x = 24

 D. x = -24

26. What is the solution for the equation?

 12 = x + 20

 A. x = - 8

 B. x = 8

 C. x = 32

 D. x = -32

27. What is the solution for the equation?

 -5n = 75

 A. x = - 15

 B. x = 15

 C. x = 80

 D. x = - 15

28. What is the solution for the equations?

 8x = - 56

 A. x = - 9

 B. x = - 7

 C. x = 7

 D. x = 9

29. What is the solution for the equation?

 -4x = - 32

 A. x = - 6

 B. x = - 28

 C. x = 6

 D. x = 8

30. What is the solution for the equation?

 $\frac{6}{7}$ x = 42

1. x = 36
2. x = 42
3. x = 49
4. x = 56

31. What is the solution for the equation?

 $\frac{x}{7}$ = - 4

1. x = - 28
2. x = - 11
3. x = 3
4. x = 28

32. What is the solution for the equation?

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

1. x = $\frac{-1}{10}$
2. x = $\frac{- 1}{2}$
3. x = $\frac{1}{10}$
4. x = $\frac{1}{2}$

33. What is the solution for the equation?

x + $\frac{7}{9}$ = - $\frac{5}{6}$

1. x = $\frac{-29}{18}$
2. x = $\frac{29}{18}$
3. x = $\frac{1}{18}$
4. x = $\frac{- 1}{18}$

34. What is the solution for the equation?

x - $\frac{2}{3}$ = - $\frac{5}{6}$

1. x = $\frac{-1}{6}$
2. x = $\frac{1}{6}$
3. x = $\frac{3}{2}$
4. x = $\frac{- 3}{2}$

35. What is the solution for the equation?

x - $\frac{7}{8}$ = $\frac{1}{6}$

1. x = $\frac{25}{24}$
2. x = $\frac{-25 }{24}$
3. x = $\frac{-17}{24}$
4. x = $\frac{17}{24}$

36. What is the solution for the equation?

x + $\frac{8}{9}$ = $\frac{2}{3}$

1. x = $\frac{2}{9}$
2. x = $\frac{-2}{9}$
3. x = $\frac{- 4 }{3}$
4. x = $\frac{4}{3}$

37. What is the solution for the equation?

x - $\frac{2}{3}$ = - $\frac{5}{6}$

1. x = $\frac{1}{6}$
2. x = $\frac{-1}{6}$
3. x = $\frac{-3}{2}$
4. x = $\frac{3}{2}$

38. Mary wants to hire a painter to paint the outside of her house. Erie Painting charges $243 plus $15 per hour. Tidioute Painting charges $180 plus $24 per hour.

1. Write an equation to determine the number of hours for which the two cost would be the same.
2. Solve the equation to determine the number of hours for which the two costs would be the same.
3. What is the number of hours for which the two costs would be the same?

39. At the beginning of her mathematics class, Mrs. Reno gives a warm-up problem. She says, “I am thinking of a numbers such that 6 less than the product of 7 and this numbers is 85.” What number is of which she is thinking?

1. Write an equation to illustrate the number of which she is thinking.
2. Solve the equation to determine the number of which she is thinking.
3. What is the number of which she is thinking?

40. Parking charges at Superior Parking Garage are $5.00 for the first hour and $1.50 for each additional 30 minutes. If Margo has $12.50 what is the maximum amount of time she will be able to park her car at the garage?

1. Write an equation to illustrate the maximum amount of time she will be able to park her car at the garage.
2. Solve the equation that illustrates the maximum amount of time she will be able to park her car at the garage.
3. What is the maximum amount of time she will be able to park her car at the garage?

41. The sides of a triangular garden are three consecutive numbers. If the perimeter of the garden is 225 feet, what are the lengths of each side?

1. Write an equation to illustrate the perimeter of the garden.
2. Solve the equation that illustrates the length of each side of the garden.
3. What is the length of each side of the triangle?

42. The three Smith children’s ages are consecutive odd numbers. If the sum of their ages is 33, how old are the Smith children?

1. Write an equation to illustrate the sum of the sister’s ages.
2. Solve the equation that illustrates the sum of the sister’s ages.
3. What are the sister’s ages?

43. What is the solution for the equation?

What is the solution for the equation?

 $\frac{3x+ 7}{-2}$ = 4

1. x = - 5
2. x = 5
3. x = 3
4. x = - 3

44. What is the solution for the equation?

 $\frac{8x+ 7}{5}$ = - 1

1. x = $\frac{1}{4}$
2. x = - $\frac{1}{4}$
3. x = $\frac{3}{2}$
4. x = $\frac{- 3}{2}$

45. What is the solution for the equation?

 $\frac{- 2z-8}{-5}$ = - 2

1. x = 9
2. x = 1
3. x = - 1
4. x = - 9

46. What is the solution for the equation?

6 = $\frac{4x-6 }{-7}$

1. x = - 9
2. x = 9
3. x = - 12
4. x = 12

47. What is the solution for the equation?

- 3 = $\frac{9x-6}{-4}$

1. x = $\frac{-2}{3}$
2. x = $\frac{2}{3}$
3. x = - 2
4. x = 2

48. What is the solution for the equation?

$\frac{7x+ 8}{3}$ = - 2

1. x = 2
2. x = - 2
3. x = $\frac{- 2}{7}$
4. x = $\frac{2}{7}$

49. What is the solution for the equation?

 2x + 10 = 18

1. x = 4
2. x = 14
3. x = -4
4. x = 14

50. What is the solution for the equation?

 -6x + 25 = - 11

1. x = - 5
2. x = 5
3. x = - 6
4. x = 6

51. What is the solution for the equation?

 4 – 3x = 13

1. x = - 4
2. x = - 3
3. x = 3
4. x = 4

52. What is the solution for the equation?

 6 = - 4x – 2

1. x = -2
2. x = -1
3. x = 1
4. x = 2

53. What is the solution for the equation?

 -4 = - 8 – 2x

A. x = 2

B. x = -2

C. x = 6

D. x = -6

54. What is the solution for the equation?

 11x + 8 = -2 + 9x

1. x = -5
2. x = 5
3. x = -3
4. x = 3

55. What is the solution for the equation?

 4 + 6x = 7x – 5

1. x = -9
2. x = -1
3. x = 1
4. x = 9

56. What is the solution for the equation?

 7 – n = 11 + 3n

1. n = -2
2. n = - 1
3. n = 1
4. n = 2

57. What is the solution for the equation?

 -4 + 5n = 18 + 3n

A. n = - 11

B. n = - 7

C. n = 7

D. n = 11

58. What is the solution for the equation?

 -14 + 3n = n + 14

A. n = - 5

B. n = 5

C. n = - 14

D. n = 14

59. What is the solution for the equation?

 -9 + 8x = x – 30

A. x = -3

B. x = 3

C. x = $\frac{7}{3}$

D. x = - $\frac{7}{3}$