Unit 4 – Lesson 6   Name: _____

Solutions of a Linear Equation   Date: _____ Period: _____
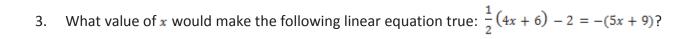
Focus Standard: 8.EE.C.7   Solve linear equations in one variable.

        a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ result (where a and b are different numbers).

        b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Student Outcomes

- Students transform equations into simpler forms using the distributive property.
- Students learn that not every linear equation has a solution.

1. What value of x would make the linear equation $4x + 3(4x + 7) = 4(7x + 3) - 3$ true?

2. What value of x would make the following linear equation true: $20 - (3x - 9) - 2 = -(-11x + 1)$?

3. What value of x would make the following linear equation true: $\frac{1}{2}(4x + 6) - 2 = -(5x + 9)$?

4. Consider the following equation: $2(x + 1) = 2x - 3$. What value of x makes the equation true?

Exercises

Find the value of x that makes the equation true.

1. $17 - 5(2x - 9) = -(-6x + 10) + 4$

2. $-(x - 7) + \frac{5}{3} = 2(x + 9)$

3. $\frac{4}{9} + 4(x - 1) = \frac{28}{9} - (x - 7x) + 1$

4. $5(3x + 4) - 2x = 7x - 3(-2x + 11)$

5. $7x - (3x + 5) - 8 = \frac{1}{2}(8x + 20) - 7x + 5$

6. Write at least three equations that have no solution.

7. $8(2x + 9) = 56$

Problem Set

Transform the equation if necessary, and then solve it to find the value of x that makes the equation true.

1. $x - (9x - 10) + 11 = 12x + 3\left(-2x + \frac{1}{3}\right)$

2. $7x + 8\left(x + \frac{1}{4}\right) = 3(6x - 9) - 8$

3. $-4x - 2(8x + 1) = -(-2x - 10)$

4. $11(x + 10) = 132$

5. $37x + \frac{1}{2} - \left(x + \frac{1}{4}\right) = 9(4x - 7) + 5$

6. $3(2x - 14) + x = 15 - (-9x - 5)$