Lesson 6: Solutions of a Linear Equation

Classwork

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.

Lesson Summary

The distributive property is used to expand expressions. For example, the expression $2(3x - 10)$ is rewritten as $6x - 20$ after the distributive property is applied.

The distributive property is used to simplify expressions. For example, the expression $7x + 11x$ is rewritten as $(7 + 11)x$ and $18x$ after the distributive property is applied.

The distributive property is applied only to terms within a group:

$$4(3x + 5) - 2 = 12x + 20 - 2$$

Notice that the term -2 is not part of the group and, therefore, not multiplied by 4.

When an equation is transformed into an untrue sentence, such as $5 \neq 11$, we say the equation has <u>no solution</u>.

Problem Set

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

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

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

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

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

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

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

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