

## 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, like  $5 \neq 11$ , we say the equation has no solution.

**Problem Set**

Transform the equation if necessary, 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.  $3(2x - 14) + x = 15 - (-9x - 5)$

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