

Lesson 3: Linear Equations in x

Classwork

Exercises

1. Is the equation a true statement when $x = -3$? In other words, is -3 a solution to the equation $6x + 5 = 5x + 8 + 2x$? Explain.

Left side
 $6x + 5$
 $6(-3) + 5$
 $-18 + 5$
 -13

Right side
 $5x + 8 + 2x$
 $5(-3) + 8 + 2(-3)$
 $-15 + 8 + -6$
 $-7 + (-6)$
 -13

When we substitute -3 for x we find that $-13 = -13$. Therefore $x = -3$ is a solution to $6x + 5 = 5x + 8 + 2x$.

2. Does $x = 12$ satisfy the equation $16 - \frac{1}{2}x = \frac{3}{4}x + 1$? Explain.

$$16 - \frac{1}{2}x = \frac{3}{4}x + 1$$

$$16 - \frac{1}{2}(12) \quad \frac{3}{4}(12) + 1$$

$$16 - 6 \quad 9 + 1$$

$$10 \quad 10$$

After substituting 12 in for x , we see that $10 = 10$. Therefore $x = 12$ is a solution to $16 - \frac{1}{2}x = \frac{3}{4}x + 1$.

3. Chad solved the equation $24x + 4 + 2x = 3(10x - 1)$ and is claiming that $x = 2$ makes the equation true. Is Chad correct? Explain.

$$24x + 4 + 2x = 3(10x - 1)$$

$$24(2) + 4 + 2(2) \quad 3(10(2) - 1)$$

$$48 + 4 + 4 \quad 3(20 - 1)$$

$$52 + 4 \quad 3(19)$$

$$56 \quad 57$$

After substituting 2 in for x we get $56 \neq 57$. Therefore $x = 2$ is NOT a solution to $24x + 4 + 2x = 3(10x - 1)$.

