

Unit 4 Lesson 4: More Balanced Moves

1 Different Equations? (Warm up)

Student Task Statement

Equation 1

$$x - 3 = 2 - 4x$$

Which of these have the same solution as Equation 1? Be prepared to explain your reasoning.

Equation A

$$2x - 6 = 4 - 8x$$

Equation B

$$x - 5 = -4x$$

Equation C

$$2(1 - 2x) = x - 3$$

Equation D

$$-3 = 2 - 5x$$

2 Step by Step by Step by Step

Student Task Statement

Here is an equation, and then all the steps Clare wrote to solve it:

$$\begin{aligned}14x - 2x + 3 &= 3(5x + 9) \\12x + 3 &= 3(5x + 9) \\3(4x + 1) &= 3(5x + 9) \\4x + 1 &= 5x + 9 \\1 &= x + 9 \\-8 &= x\end{aligned}$$

Here is the same equation, and the steps Lin wrote to solve it:

$$\begin{aligned}14x - 2x + 3 &= 3(5x + 9) \\12x + 3 &= 3(5x + 9) \\12x + 3 &= 15x + 27 \\12x &= 15x + 24 \\-3x &= 24 \\x &= -8\end{aligned}$$

1. Are both of their *solutions* correct? Explain your reasoning.
2. Describe some ways the steps they took are alike and different.

3. Mai and Noah also solved the equation, but some of their steps have errors. Find the incorrect step in each solution and explain why it is incorrect.

Mai:

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

$$12x + 3 = 3(5x + 9)$$

$$7x + 3 = 3(9)$$

$$7x + 3 = 27$$

$$7x = 24$$

$$x = \frac{24}{7}$$

Noah:

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

$$12x + 3 = 15x + 27$$

$$27x + 3 = 27$$

$$27x = 24$$

$$x = \frac{24}{27}$$

3 Make Your Own Steps

Student Task Statement

Solve these equations for x .

1. $\frac{12+6x}{3} = \frac{5-9}{2}$

2. $x - 4 = \frac{1}{3}(6x - 54)$

3. $-(3x - 12) = 9x - 4$