



That's Strange

Sometimes when solving equations the solution doesn't work out as expected. Let's look at two examples that are different from the other equations you have solved. In a later unit you will look at these situations in more detail from a graphing approach.

1. Solve this equation for x : $3(x - 4) - 5x = -2(x + 3)$

2. List what you came up with: _____
3. Does this answer solve for x ? _____
4. Do you think this equation has a solution? _____
5. Substitute a number of your choice into the equation for x , show your work above.

What did you come up with? _____

6. What thoughts do you have about the solution to this equation?



7. Solve this equation for x : $-6x + 7 + 2(x - 3) = -2(2x + 5) + 11$

8. List what you came up with: _____
9. Does this answer solve for x ? _____
10. Do you think this equation has a solution? _____
11. Substitute a number of your choice into the equation for x , show your work above.

What did you come up with? _____

12. What thoughts do you have about the solution to this equation?



Notes:

**Problem 3 Solving an Equation With Grouping Symbols**

What is the solution of $2(5x - 1) = 3(x + 11)$?

$$2(5x - 1) = 3(x + 11)$$

$$10x - 2 = 3x + 33 \quad \text{Distributive Property}$$

$$10x - 2 - 3x = 3x + 33 - 3x \quad \text{Subtract } 3x \text{ from each side.}$$

$$7x - 2 = 33 \quad \text{Simplify.}$$

$$7x - 2 + 2 = 33 + 2 \quad \text{Add 2 to each side.}$$

$$7x = 35 \quad \text{Simplify.}$$

$$\frac{7x}{7} = \frac{35}{7} \quad \text{Divide each side by 7.}$$

$$x = 5 \quad \text{Simplify.}$$



Got It? 3. What is the solution of each equation?

a. $4(2y + 1) = 2(y - 13)$

b. $7(4 - a) = 3(a - 4)$

NO SOLUTION.



Problem 4 Identities and Equations With No Solution

What is the solution of each equation?

A $10x + 12 = 2(5x + 6)$

$$10x + 12 = 2(5x + 6)$$

$$10x + 12 = 10x + 12 \quad \text{Distributive Property}$$

Because $10x + 12 = 10x + 12$ is always true, there are infinitely many solutions of the equation. The original equation is an identity.

B $9m - 4 = -3m + 5 + 12m$

$$9m - 4 = -3m + 5 + 12m$$

$$9m - 4 = 9m + 5 \quad \text{Combine like terms.}$$

$$9m - 4 - 9m = 9m + 5 - 9m \quad \text{Subtract } 9m \text{ from each side.}$$

$$-4 = 5 \quad \text{Simplify.}$$

Because $-4 \neq 5$, the original equation has no solution.



Got It? 4. What is the solution of each equation?

a. $3(4b - 2) = -6 + 12b$

b. $2x + 7 = -1(3 - 2x)$

HW: 2-4.A, B

2-4: Practice Solving Equations With Variables on Both Sides

SOLVE each equation **CHECK** your answer. Show all work or no credit!

1. $7(h + 3) = 6(h - 3)$ Check:	2. $-(5a + 6) = 2(3a + 8)$ Check:
3. $-2(2f - 4) = -4(-f + 2)$ Check:	4. $3w - 6 + 2w = -2 + w$ Check:
5. $-8x - (3x + 6) = 4 - x$ Check:	6. $14 + 3n = 8n - 3(n - 4)$ Check:

Determine whether each equation is *identity* or whether it has *no solution*. Show all work.

<p>7. $4(3m + 4) = 2(6m + 8)$</p> <p>Answer:</p>	<p>8. $5x + 2x - 3 = -3x + 10x$</p> <p>Answer:</p>
<p>9. $-(3z + 4) = 6z - 3(3z + 2)$</p> <p>Answer:</p>	<p>10. $-2(j - 3) = -2j + 6$</p> <p>Answer:</p>

Scrambled answers for 1-6: -1,-2,1,1,2,-19

