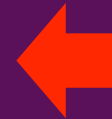# Solving Two-Step Equations

So far, we've only solved equations with one operation in them.

$$3x = 60$$

← This equation is multiplying!

How do you solve an equation that's doing more than one thing?

This equation is multiplying AND adding?!? →

$$3x + 2 = 60$$

To solve a **TWO-STEP EQUATION** :
1. Undo **ADDITION** or **SUBTRACTION**
2. Undo **MULTIPLICATION** or **DIVISION**

I know, I know...you're thinking, "BUT MRS. MURPHY, THAT'S THE OPPOSITE OF PEMDAS!!!!" And you're right. But remember, you're UNDOING, so you have to do it backwards!

Let's try an example:

$$3n - 6 = 15$$

Remember the steps:

1. Undo ADDITION and SUBTRACTION first

$$3n - 6 = 15$$
$$\underline{+6 \quad +6}$$
$$3n = 21$$

$$\frac{3n}{3} = \frac{21}{3}$$
$$\boxed{n = 7}$$

2. Undo MULTIPLICATION and DIVISION second

Let's try an example:

$$\frac{t}{4} - 10 = -6$$

Remember the steps:

1. Undo ADDITION and SUBTRACTION first

$$\frac{t}{4} - 10 = -6$$
$$+10 \quad +10$$
$$\frac{t}{4} = 4$$

2. Undo MULTIPLICATION and DIVISION second

$$\frac{t}{4} \cdot 4 = 4 \cdot 4$$
$$t = 16$$

HINT!

HINT!

What happens if you have a negative coefficient?

$$-a + 6 = 8$$

What would you do first?

$$-a + 6 = 8$$
$$\underline{\quad -6 \quad -6}$$
$$-a \qquad 2$$

Now what's left to do?

$$-a = 2$$
$$\frac{-1a}{-1} = \frac{2}{-1}$$
$$\boxed{a = -2}$$

Lynne wants to save $900 to go to Puerto Rico. She saves $45 each week and now has $180. To find how many more weeks w it will take to have $900, solve $180 + 45w = 900$.

Jacob bought four begonias in 6-in. pots and a $19 fern at a fundraiser. He spent a total of $63. Write an equation and solve it to find the price of each begonia.