**Scrambling Equations**

Usually, the concept of equivalent equations is used to make things simpler. But in this activity, you’re going to make things more complicated. For example, look at the sequence of equations shown below.



All of these equations are equivalent, because they all have the same solution. You should be able to see what was done to each equation to get the one below it.

In this activity, you will begin by writing down a *very simple* equation (like *x* = 1). Then you’ll write down an equivalent equation that’s more complicated, and then something equivalent to that, and so on.

This activity has some very precise rules. You will be changing your equation exactly three times. At each stage, you can do any one of these four things.

* You can add the same integer to both sides of the equation.
* You can subtract the same integer from both sides of the equation.
* You can multiply both sides of the equation by the same nonzero integer.
* You can divide both sides of the equation by the same nonzero integer.

Remember that you are to do *exactly three* of these steps (in any order). For instance, the example shown above uses multiplication, then subtraction, and then division. At any time in the process, you’re also allowed to do arithmetic steps to simplify the right side of the equation.

When you are done with this process, copy your final, complicated equation onto one side of a sheet of paper and put your original equation on the reverse side. This sheet will be exchanged with another group, and you will have the opportunity to “uncomplicate” someone else’s scrambled equation.