Balancing Act
Exploration

Problem:
What does it mean to say that an equation is "balanced"?

Materials:
molecular models materials

Procedure:
A chemical equation is a statement that represents microscale events which are not directly observable due to the extremely small size of atoms and molecules. Chemical equations use symbols to represent the atoms and/or molecules that react and the atoms and/or molecules that are formed in a chemical change.

Two major components within an equation are the **reactants** and the **products**. The reactants are those chemicals that react and the products are those chemicals that are produced. Symbolically, the reactants and products are separated by an arrow. The arrow is used to mean "produced" or "yields" and points in the direction of the change that occurs (from reactants to products).

Reactants --------> Products

When writing symbols representing reactants and products, the equation for the reaction must be balanced to show that mass is conserved. Since the mass is conserved, the same number of atoms must be present both before and after the reaction. In other words, a balanced chemical equation must show equal numbers of each kind of atom present in the reactants and products.

At each lab station, you will find various numbers of models representing the molecules and/or atoms in a given chemical reaction. Your job is to balance these written equations given at each station by using the models provided. Remember--you must have the same number of each type of atom present before and after the reaction. Keep accurate notes as you go from one station to the next. You should read through the "Summing Up" questions before beginning so you know what information you need to keep track of.

Summing Up:
1. For each of the balanced equations constructed, sketch all of the molecules and/or atoms used.

2. From the sketches made, write balanced equations with symbols. Indicate the numbers of molecules and atoms needed by placing whole numbers in front of the symbols.

3. Study your balanced equation. Are both the number of **atoms** and the number of **molecules** conserved in each of the equations? Explain your answer.