

Balancing Chemical Equations

Name: _____ Date: _____

LEARNING OBJECTIVE

The student will balance simple chemical equations by using models to conserve the number of atoms on each side.

MATERIALS NEEDED

- Toothpicks and mini marshmallows/gumdrops from Week 4 (or paper cutouts of atoms)
- Notebook paper
- Pencil
- Ruler

HANDS-ON ACTIVITY

1. Draw a large 'T' on your notebook paper to represent two sides of a chemical equation, labeled 'Reactants' and 'Products.'
2. Use your marshmallow/toothpick atoms to physically build the unbalanced equation $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$ on the correct sides of your T-chart.
3. Count the atoms of each element on both sides; add extra molecule copies (not extra atoms within a molecule) on either side until the counts match on both sides.
4. Write the balanced equation in symbols below your model ($2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$) and double check the atom counts.
5. Repeat the process to balance one more equation: $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$, building and adjusting molecules until both sides match.

QUESTIONS

1. What is the balanced form of $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$?

2. What is the balanced form of $\text{N}_2 + \text{H}_2 \rightarrow \text{NH}_3$?

3. Why is it against the rules to change the small subscript numbers inside a molecule's formula (like changing H_2O to H_3O) to balance an equation?

4. What law does balancing chemical equations demonstrate?
