Lesson 9B Describing Chemical Reactions (Nelson p.214-215)

> **Learning Goals:**
>   A.   Write word equations and balanced chemical equations for simple chemical reactions (C3.4)

A **chemical reaction** is a process in which one or more substances are
_____ to form _____ chemical substance(s) with _____
physical and chemical properties.

Reactants: the _____ for the chemical reaction
Products: the _____ produced in a chemical
reaction

    e.g. hydrogen   +   oxygen   →   water

reactants: _____   *products*: _____

Word Equations
   ➤ are used because they show the reactants and products right away
   ➤ chemical reactions can be written as **words**
   ➤ reactant(s) go on the **left** side, product(s) go on the **right** side

        reactant(s)   ⎯⎯⎯⎯⎯⎯⎯→   product(s)

   ➤ **plus sign (+)** means **"and"** or **"reacts with"** or **"added to"**
   ➤ **arrow (→)** means **"produces"** or **"gives"**

Example 1: hydrogen gas   +   oxygen gas   →   water
              (reactant)   *(reactant)*   *(product)*

You read this as "hydrogen gas **reacts with** oxygen gas **to produce** water".

Example 2: Potassium iodide reacts with barium nitrate to produce barium iodide and potassium nitrate.

   a) What are the **reactants** in this chemical reaction?

   b) What are the **products** in this chemical reaction?

   c) Write the **word equation** for this chemical reaction?

Sample questions:
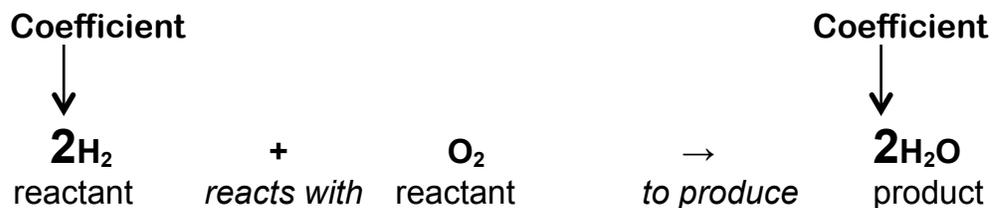## Write the word equations for the following:

1. **Bromine gas** reacts with **magnesium chloride** to produce **magnesium bromide** and **chlorine gas**.

2. **Calcium phosphide** reacts with **sodium fluoride** to produce **calcium fluoride** and **sodium phosphide**.

Skeleton Equations:
▶ A skeleton equation is a word equation written out in **chemical formula.**

    e.g. sodium reacts with chlorine gas to produce sodium chloride

    Show word equation:

    Show **skeleton equation:**

NOTE:
You need to find out the correct **chemical formula** for **EACH** chemical in the word equation
BEFORE writing out the skeleton equation.
MAKE SURE YOU USE THE CRISSCROSS RULE!!!!!

Balanced Chemical Equations

Coefficient   **Coefficient**

$$2H_2 \quad + \quad O_2 \quad \rightarrow \quad 2H_2O$$

reactant   *reacts with* reactant   *to produce* product

√   Obeys the **Law of conservation of mass**
√   **Coefficient:** A number **in front** of a chemical formula - to **balance** an unbalanced equation.