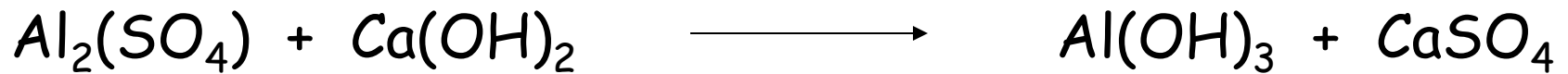
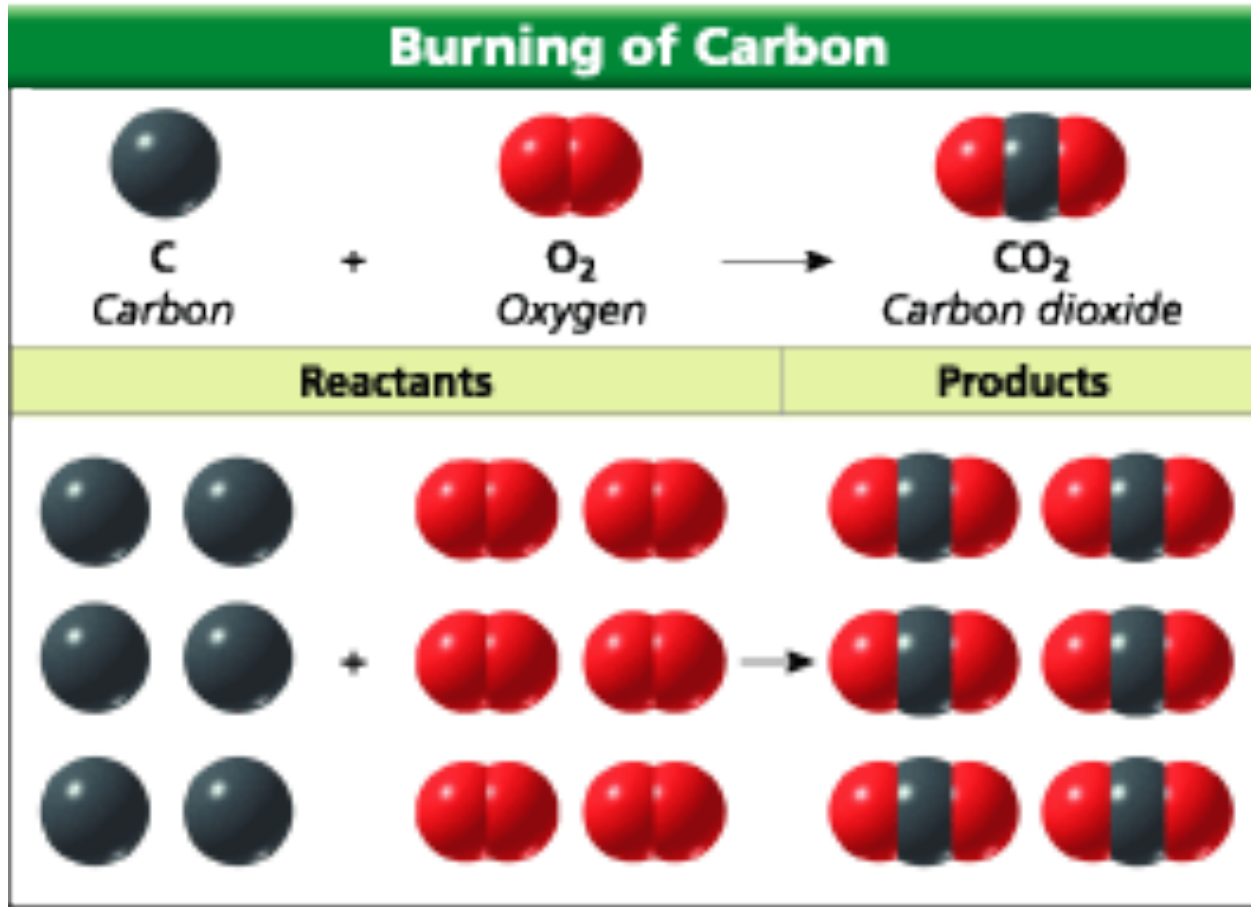


Do Now:

Balance this reaction:



Types of Chemical Reactions



Goals:

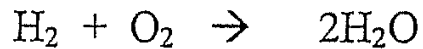
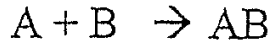
- To discover how to classify chemical reactions.
- To learn what factors can change reactions.

Classifying Reactions

Types of Chemical Reactions

- **Synthesis Reaction** – two reactants combine to make one product in the end

- *Hint: look for one product.*

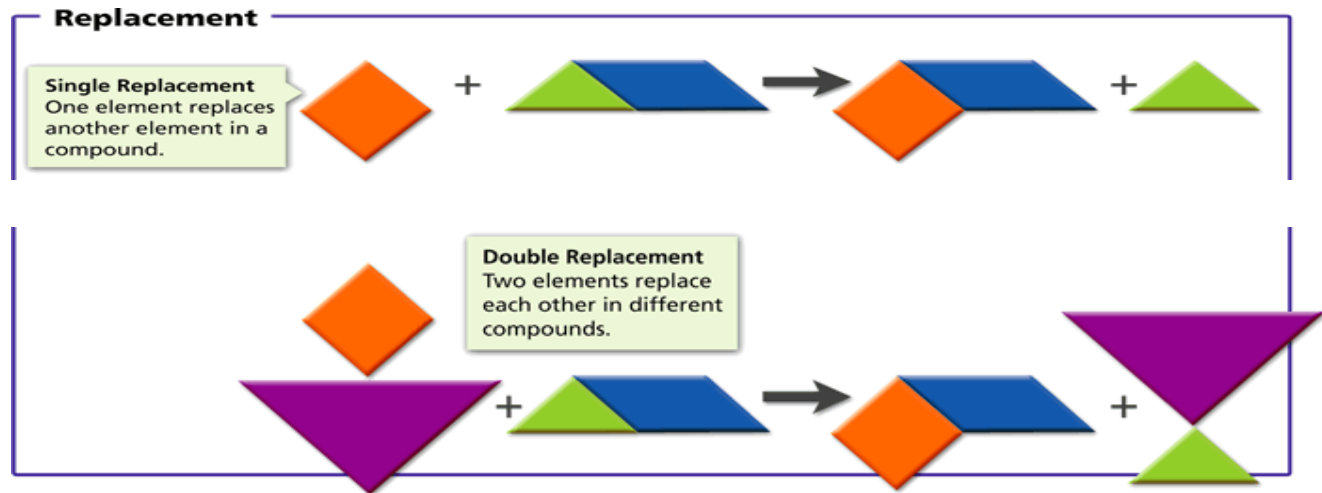
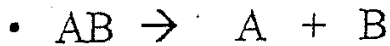


Many chemical reactions can be classified in one of three categories: synthesis, decomposition, or replacement.

Decomposition Reaction

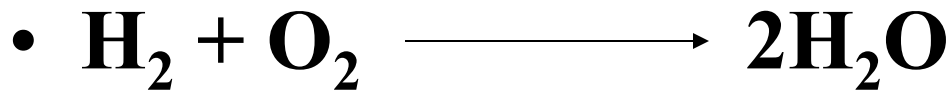
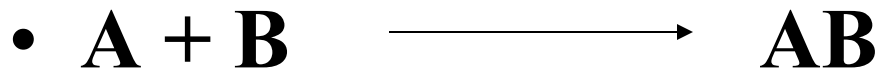
- **One reactant** breaks down into more than one product (example: oreo cookie – taking apart)

Hint: Look for one reactant.



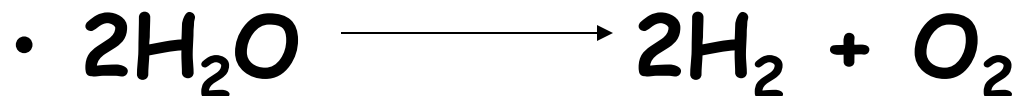
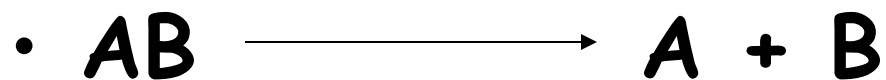
Classifying Reactions - Synthesis

- 2 reactants combine to make 1 product
- **HINT** - look for **one product**



Decomposition

- 1 reactant breaks down into more than 1 product
- **HINT** - Look for only **one reactant**



Single Replacement

- A single element replaces one element in a compound
- **HINT** – Look for **1 element** and **1 compound** on each side
- **AB + C** \longrightarrow **AC + B**
- **2HCl + 2Na** \longrightarrow **2NaCl + H₂**

Double Replacement

- Two compounds switch elements
- **HINT** – Look for **2 compounds** on each side
- **AB + CD** \longrightarrow **AC + BD**
- **MgCO₃ + 2HCl** \longrightarrow **MgCl₂ + H₂CO₃**

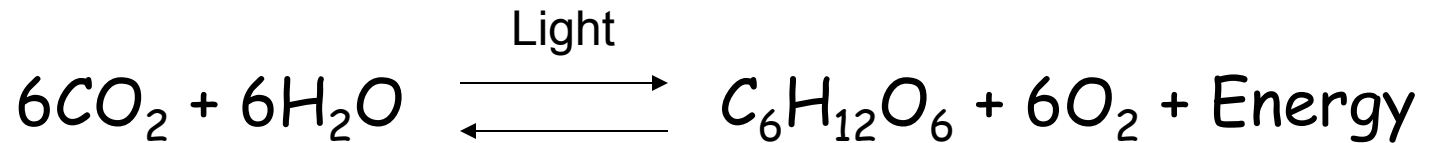
Exothermic and Endothermic Reactions

Exothermic Reaction: energy is stored in the reactants and released as part of the products as heat or light (fireworks). The energy term appears on the right side of the equation

Endothermic Reactions: energy is used in the reaction and absorbed in the products. The energy term appears on the left side of the equation.

Practice

Is the photosynthesis reaction exo- or endothermic?



WHY?

Rates of Reactions

The reaction rate is the rate at which reactants turn into products. They are affected by:

Temperature: Generally, increasing the temperature will speed up a reaction.

Surface area: increasing the area of the reactants will increase a reaction.

Reaction Rates

Stirring: stirring increases the collisions among particles and speeds up a reaction.

Concentration: increasing the number of particles of the reactants will increase the speed of the reaction.

Catalysts: substances that speed up a reaction but are not used in the reaction. In photosynthesis. Light is a catalyst. Catalysts are written above the arrows in a reaction.