

INTRODUCTION TO CHEMICAL EQUATIONS

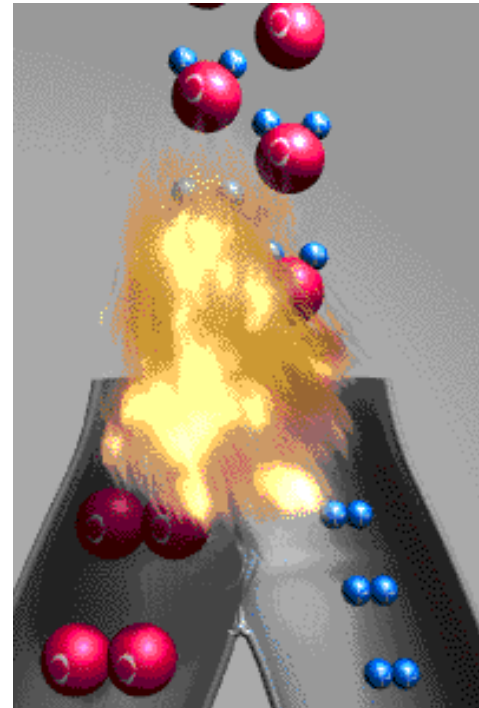
Unit 5

RERUN PARAGRAPH PLEASE (10 POINTS)...

- ⦿ Recall: Summarize what you did in the Lab.
- ⦿ Explain: Explain the purpose of the Lab.
- ⦿ Results: Describe the results of the Lab and what they mean.
- ⦿ Uncertainties: Describe what you are still unsure about.
- ⦿ New: Write at least two new things that you learned from this Lab.

CHEMICAL REACTIONS

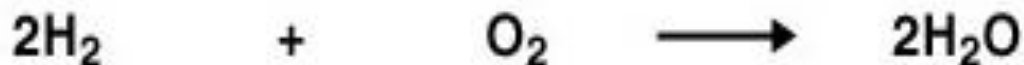
- A ***chemical reaction*** is a change in which one or more substances are **converted** into new substances
- ***Review:*** a substance is an **element** or a **compound**



WHY DO
CHEMICALS
REACT?



CHEMICAL REACTIONS



The *reactants* are the substances that exist before the reaction

The *products* are the substances that exist after the reaction

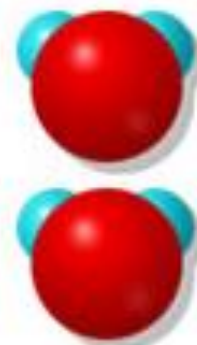
MOLECULAR



+



→



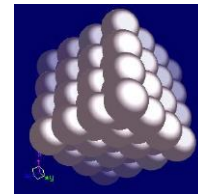
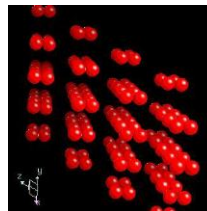
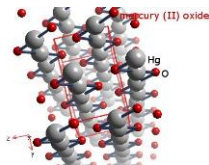
CONSERVATION OF MASS

Law of Conservation of Mass: The total mass of the products must always *equal* the mass of the reactants

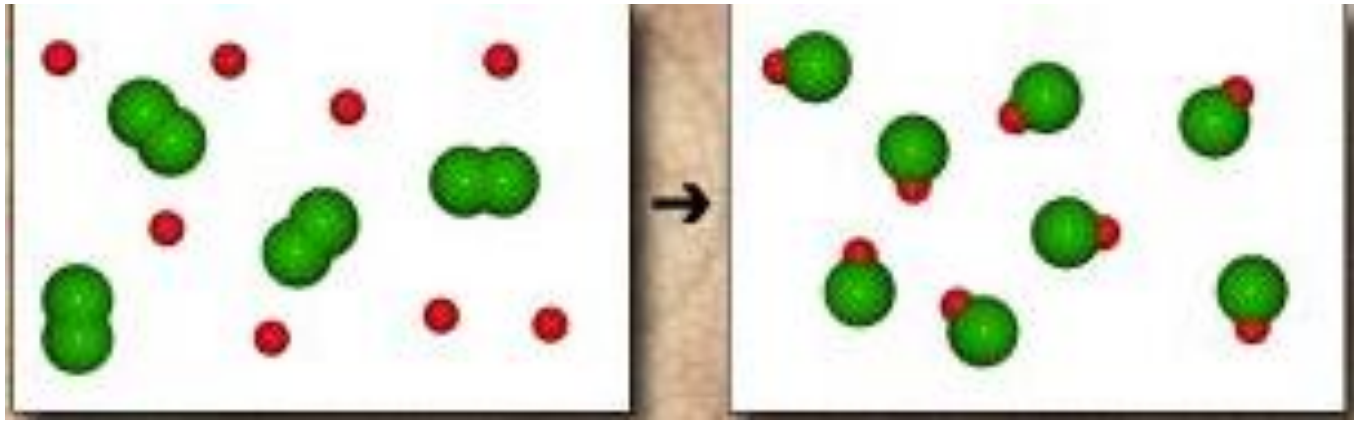


Mercury (II) oxide = oxygen + mercury

10.0g = 0.7g + 9.3g



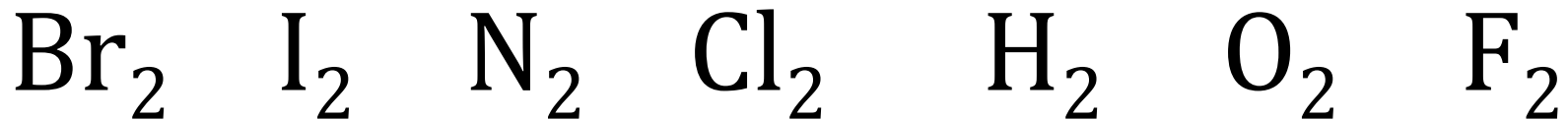
CHEMICAL REACTIONS



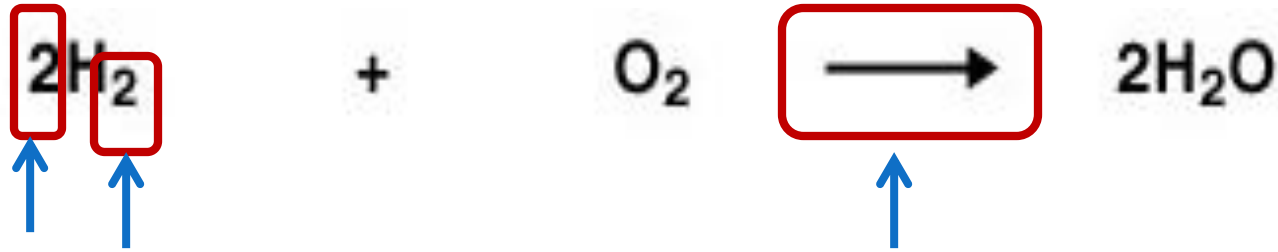
A *chemical equation* describes the chemical reaction using formulas and symbols (and usually coefficients)

DIATOMIC ELEMENTS!

- Seven elements are always written as **two atoms** bonded together!
- When writing chemical equations, you will always write these elements with a **subscript** of a '2'



CHEMICAL REACTION SYMBOLS



Coefficient
Subscript

Yields

CHEMICAL EQUATION SYMBOLS



Symbols for State

Solids: *(s)*

Liquids: *(l)*

Dissolved in water: *(aq)*

Gases: *(g)*

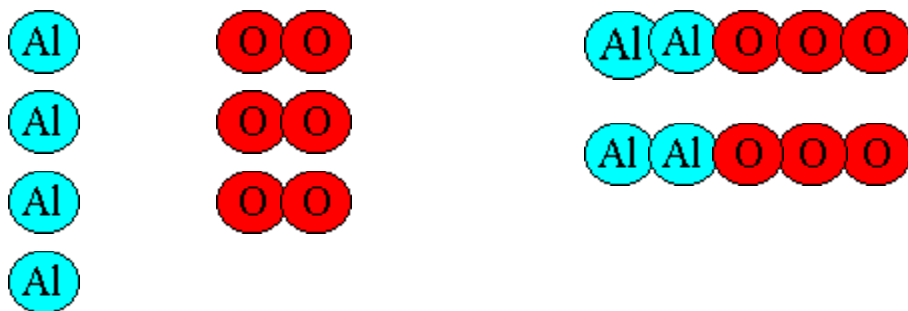
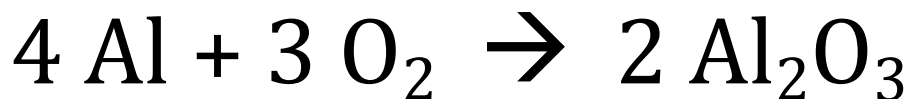
CHEMICAL EQUATIONS

Coefficients represent the number of units of each substance that take part in the reaction



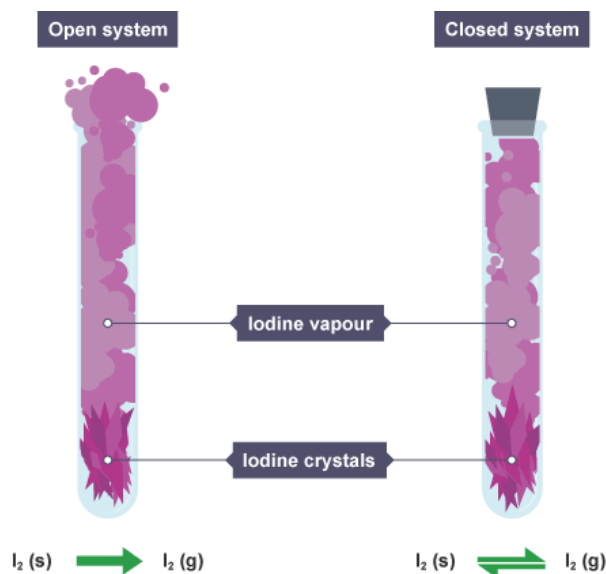
CHEMICAL EQUATIONS

- Because mass must be conserved, coefficients are used to balance an equation
- The same number of atoms of each element must be on both sides of the equation



OPEN REACTIONS VS CLOSED REACTIONS

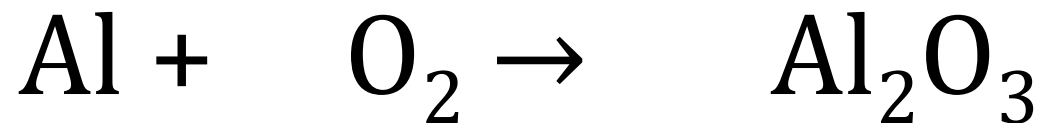
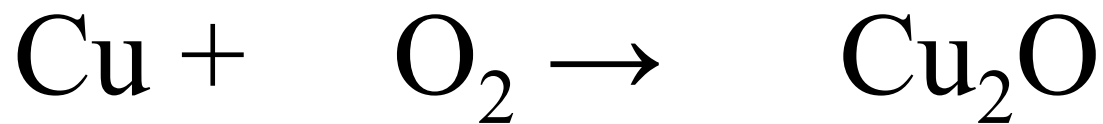
- Open Reactions- energy and matter can be exchanged with the surroundings.



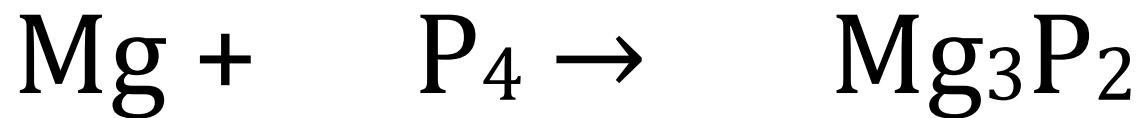
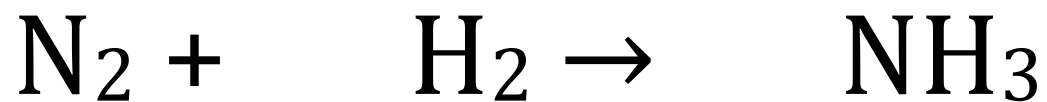
- Closed reactions: only energy is exchanged but all matter (mass) is contained.

BALANCING CHEMICAL EQUATIONS

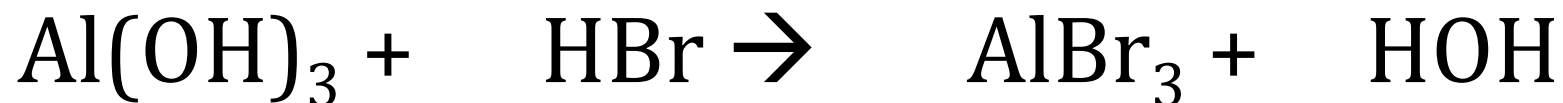
Trial and Error Method!



BALANCING CHEMICAL EQUATIONS



BALANCING CHEMICAL EQUATIONS



BALANCING CHEMICAL EQUATIONS

