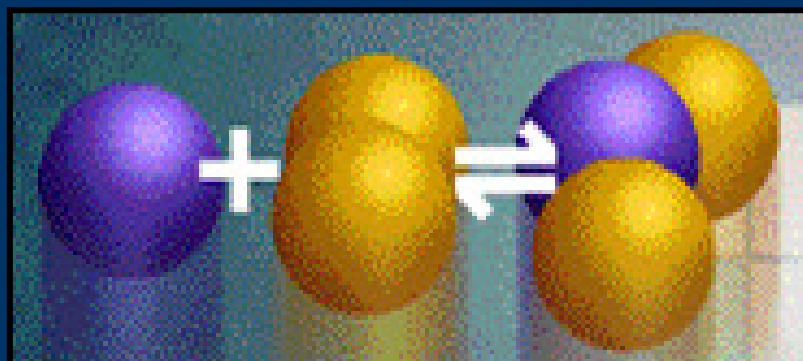


Chemical Reactions

Intro to Reactions



I

II

III

IV

V



A. Signs of a Chemical Reaction

- Evolution of heat and light
- Formation of a gas
- Formation of a precipitate
- Color change

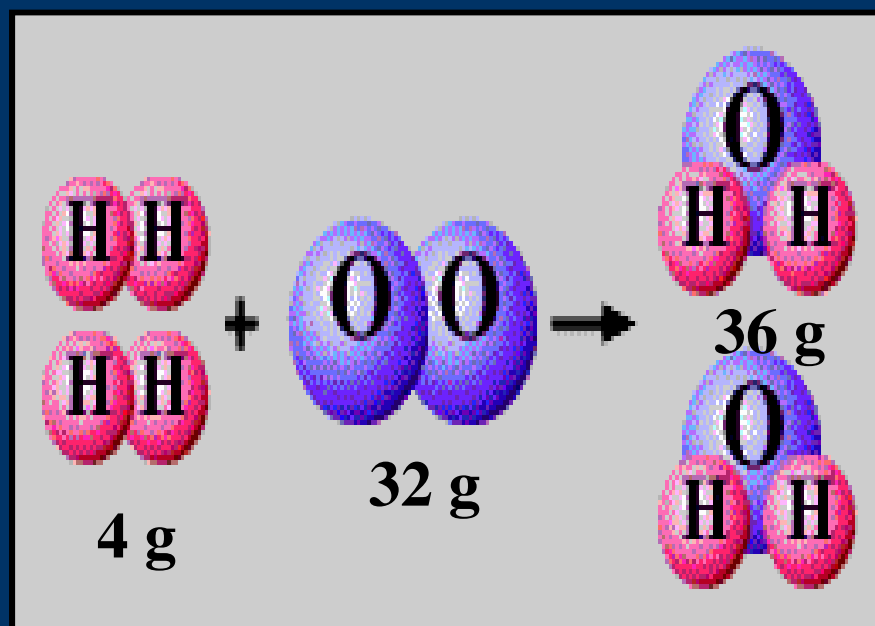
B. Law of Conservation of Mass

- mass is neither created nor destroyed in a chemical reaction
- total mass stays the same
- atoms can only rearrange

4 H

2 O

4 g



4 H

2 O

C. Chemical Equations



REACTANTS

PRODUCTS

C. Chemical Equations

SYMBOL	MEANING
\longrightarrow	produces, forms
+	plus, and
(s)	solid
(l)	liquid
(g)	gas
(aq)	aqueous (solid dissolved in water)
$\xrightarrow{\Delta}$	the reactants are heated

D. Writing Equations



- Identify the substances involved.
- Use symbols to show:

How many? - coefficient

Of what? - chemical formula

In what state? - physical state

- Remember the diatomic elements.



D. Writing Equations

Two atoms of aluminum react with three units of aqueous copper(II) chloride to produce three atoms of copper and two units of aqueous aluminum chloride.

- How many?
- Of what?
- In what state?



E. Describing Equations

- Describing Coefficients:
 - individual atom = “atom”
 - covalent substance = “molecule”
 - ionic substance = “unit”

$3\text{CO}_2 \Rightarrow$ 3 molecules of carbon dioxide

$2\text{Mg} \Rightarrow$ 2 atoms of magnesium

$4\text{MgO} \Rightarrow$ 4 units of magnesium oxide

E. Describing Equations



- How many?
- Of what?
- In what state?

One atom of solid zinc reacts with two molecules of aqueous hydrochloric acid to produce one unit of aqueous zinc chloride and one molecule of hydrogen gas.