Chemical Equations and Chemical Reactions

Lavoisier's law of Conservation of Mass

• During a chemical reaction, the total mass of the reacting substances, the <u>reactants</u>, is always equal to the total mass of the resulting substances, the <u>products</u>.

Dalton's Atomic Theory

- All matter is made up of small particles called atoms.
- Atoms cannot be created, destroyed, or divided into smaller particles.
- All atoms of the same element are identical in mass and size, but they are different from the atoms of other elements.
- Compounds are formed when atoms of different elements combine in fixed proportions.







• Summarizes chemical equation in symbolic form.

$$H_2 + O_2 \longrightarrow H_2O$$



States of Reactants and Products Sometimes you need to know the state of the reactants or products: 		
Solid	(s)	Fe(s) NaCl(s)
Liquid	(ℓ)	H ₂ O(<i>l</i>)
Gas	(g)	He(g) N ₂ (g)
Aqueous Solution	(aq)	Salt solution: NaCl(aq)
$2H_2(g) + O_2(g) \longrightarrow 2H_2O(\ell)$		

