

## Chemical Reactions and Conservation of Mass

Name - \_\_\_\_\_ KEY \_\_\_\_\_

1.) What is the main difference between a physical change and a chemical change?

A physical change is simply a change in state (solid, liquid or gas) or shape, where as a chemical change is a change of the arrangement of the atoms. This new arrangement of the atoms causes brand new products (chemicals) to be formed.

2.) Use words to describe the following chemical equations.

a.)  $S + O_2 \rightarrow SO_2$  Sulphur plus oxygen gas yields sulphur dioxide gas.

b.)  $2 SO_2 + O_2 \rightarrow 2 SO_3$  Two sulphur dioxide plus oxygen gas yields two sulphur trioxide gas.

c.)  $N_2 + 3 H_2 \rightarrow 2 NH_3$  Nitrogen gas plus three hydrogen gas yields two ammonia.

3.) Identify which chemicals are the reactants and which are the products below:

a.) magnesium + oxygen  $\rightarrow$  magnesium oxide

reactant + reactant  $\rightarrow$  product

b.) water  $\rightarrow$  hydrogen + oxygen

reactant  $\rightarrow$  product + product

c.) methanol + oxygen  $\rightarrow$  carbon dioxide + water

reactant + reactant  $\rightarrow$  product + product

d.) aluminum + copper (II) chloride  $\rightarrow$  aluminum chloride + copper

reactant + reactant  $\rightarrow$  product + product

4.) State the law of conservation of mass in your own words.

The mass of the reactants must equal the mass of the products.

5.) Use the law of conservation of mass to write in the missing amounts.

a.) calcium + chlorine → calcium chloride

40.1 g    71.0 g    111.1 g

b.) ammonia → nitrogen + hydrogen

34 g    28 g    6 g

c.) ethanol + oxygen → carbon dioxide + water

46 g    96 g    88 g    54 g

d.) magnesium + copper(II) chloride → aluminum chloride + copper

24.3 g    134.5 g    95.3 g    63.5 g