Describing Chemical Reactions

Data and Evaluation

Record your observations and balance the equations in the section below.

A. Combination reactions:

1a. Observations:

1a. _____ Mg + ____O_2 → _____ MgO

Write in words:

1b. Observations:

1b._____ MgO + __ H_2O → ___ $Mg(OH)_2$ (aq)

Write in words:

2. Observations:

2. _____ Cu + _____ O_2 --> _____CuO

Write in words:

B. Decomposition reactions

1. Observations:

1. _____ $NaHCO_3$ → ____ Na_2CO_3 + _____ H_2O + ___ CO_2 (g)

Write in words:

C. Single replacement reactions

1. Observations:

1. _____ $AgNO_3$ (aq) + __ Cu → ____ Ag + ____ $Cu(NO_3)_2$ (aq)

Write in words:

2. Observations

2. _____ Zn + ____ $HCl_{(aq)}$ → _____$ZnCl_{2(aq)}$ + _____$H_{2(g)}$
Write in words:

D. Double replacement reactions

1. Observations

1. _____$AgNO_{3(aq)}$ + ____ $CaCl_{2(aq)}$ → _____ $AgCl_{(s)}$ + _____ $Ca(NO_3)_{2(aq)}$
Write in words:

2. Observations

2. _____ Na_2CO_3 + _____ $HCl_{(aq)}$ → _____$NaCl_{(aq)}$ + _____ H_2O + ___$CO_{2(g)}$
Write in words:

E. Combustion reactions

1. Observations

1. _____$C_3H_7OH_{(l)}$ + ____ $O_{2(g)}$ → ___ $CO_{2(g)}$ + __$H_2O_{(g)}$
Write in words:

Conclusions

1. What are some of the observable changes that are evidence that a chemical reaction has taken place?

2. How did the flaming splint behave when it was inserted into the tube with $CO_{2\ (g)}$? In what way was this different from the reaction of the $H_{2(g)}$ to the flaming splint?

3. In the reaction of magnesium with oxygen gas, a considerable amount of energy was released. This is an example of an *exothermic* reaction. From this evidence what can you conclude about the energy stored in the reactants compared to the energy stored in the product? What other examples of exothermic reactions did you observe? Re-write the balanced equation for the reaction of Mg and O_2, this time with the term "+ energy" on the appropriate side of the equation.

4. You had to heat the $NaHCO_3$ strongly in order for it to decompose. This is an example of an *endothermic* reaction. What does this tell you about the energy stored in the reactants compared to the energy stored in the product? Write the balanced equation for the decomposition of $NaHCO_3$, this time with the term "+ energy" on the appropriate side of the equation.