**Looking inside chemical reactions:**

**Task** – This is an exercise for you to help you visualise and describe what is happening to atoms in a chemical reaction AND to describe what bonds are being broken and what bonds are being formed in a chemical reaction.

Your teacher may go through the first reaction to give you an example to follow.

1. **DESCRIPTION:** Burning Carbon in air (Oxygen gas) to form Carbon Dioxide

**EQUATION: C + O2 → CO2**

**DIAGRAM:**

**C**

**O**

**O**

**O**

**O**

**C**

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **DESCRIPTION:** Combing Hydrogen with Sulphur to form Dihydrogen Sulphide

**EQUATION: H2 + S → H2S**

**S**

**H**

**DIAGRAM:**

**H**

**H**

**S**

**H**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **DESCRIPTION:** Burning Magnesium in air (Oxygen gas) to form Water

**EQUATION: 2 Mg + O2 → 2 MgO**

**DIAGRAM:**

**Mg**

**O**

**O**

**Mg**

**O**

**O**

**Mg**

**Mg**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **DESCRIPTION:** Heating Hydrogen and Nitrogen to form Ammonia

**EQUATION: 3 H2 + N2 → 2 NH3**

**H**

**H**

**H**

**H**

**H**

**H**

**N**

**N**

**DIAGRAM:**

**N**

**N**

**H**

**H**

**H**

**H**

**H**

**H**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **DESCRIPTION:** Reacting Carbon and Chlorine gas to make Carbon Tetrachloride

**EQUATION: C + 2 Cl2 → CCl4**

**Cl**

**DIAGRAM:**

**C**

**Cl**

**Cl**

**Cl**

**C**

**Cl**

**Cl**

**Cl**

**Cl**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **DESCRIPTION:** Dissolving Magnesium in Hydrochloric Acid to form Magnesium Chloride and Hydrogen gas

**EQUATION: Mg + 2 HCl → MgCl2 + H2**

**DIAGRAM:**

**H**

**H**

**Cl**

**Cl**

**Cl**

**Cl**

**H**

**H**

**Mg**

**Mg**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **DESCRIPTION:** Heating Copper Carbonate to form Copper Oxide & Carbon Dioxide

**EQUATION: CuCO3 → CuO + CO2**

**O**

**Cu**

**O**

**Cu**

**C**

**O**

**O**

**DIAGRAM:**

**C**

**O**

**HELP**

**What bonds are being broken in the reactants?**

**What bonds are being formed in the products?**

**HELP**

**Reactants – left of the arrow**

**Products – right of the arrow**

**O**

List the reactants in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List the products in the reaction: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Describe what you see happening to the bonds between atoms:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_