**IDENTIFYING AND OBSERVING CHEMICAL CHANGES**

(MSHS VERSION of C2C)

**NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**BACKGROUND:**

Chemical changes can be used to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the properties of materials. A chemical \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ has occurred when one of these observations are made:

1. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is produced (**effervescenc**e occurs forming bubbles)
2. Change in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (heated or cooled)
3. Colour \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. A solid **precipitate** forms when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mix.
5. Light or sound is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Reactants** are the materials that are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ together in a chemical change and **products** are the materials that are \_\_\_\_\_\_\_\_\_\_\_\_\_.

**RISK ASSESSMENT:** Personal Safety:

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| Safety Goggles | Closed shoes |
| Hair tied back | Report spills & breakages |
| **DO NOT SIT DOWN AT BENCHES** | Dispose of chemicals safely |
| **DO NOT LOOK DIRECTLY AT BRIGHT LIGHT** |  |

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| **EXPERIMENT # 1: SODIUM CARBONATE & HYDROCHLORIC ACID** | | | | |
| **AIM** | To use observations to determine if a chemical change has occurred | | |
| **MATERIALS:** | * SPATULA * SMALL BEAKER * MEASURING CYLINDER | * SODIUM CARBONATE * HYDROCHLORIC ACID * UNIVERSAL INDICATOR | |
| **METHOD:** | WEAR SAFETY GLASSES  DO NOT SIT DOWN AT BENCHES   1. Use a measuring cylinder to measure 5mL of hydrochloric acid and pour the acid into the small beaker 2. Add 2-3 drops of universal indicator to the acid in the beaker 3. Record observation 4. Place up to 3 spatula of sodium carbonate into the beaker 5. Record observations 6. Discard beaker contents into sink with running water 7. Rinse the beaker with water and return equipment | | |
| **OBSERVATIONS :** |  | | |
| **DISCUSSION:** | How did you know a chemical change occurred  What were the reactants?  Complete the Table:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Name of Compound** | **Formula of compound** | **Elements present** | **Number of particles of each element** | **Total number of particles in the compound** | | **Sodium Carbonate** | Na2CO3 |  |  |  | | **Hydrochloric acid** | HCl |  |  |  | | | |
| **AIM** | To use observations to determine if a chemical change has occurred | |
| **EXPERIMENT # 2: CALCIUM OXIDE and CARBON DIOXIDE** | | |
| **MATERIALS**: | * STRAW * SMALL BEAKER * LIME WATER (WILL BE GIVEN WHEN YOU ARE READY | |
| **METHOD:** | WEAR SAFETY GLASSES  DO NOT SIT DOWN AT BENCHES  1. Fill the beaker to the 30 mL line with lime water  2. Place the straw into the beaker (**DO NOT DRAW UP THE LIME WATER**) and gently blow through the straw into the solution.   1. Record observations 2. Discard solution into the sink with running water 3. Rinse out the beaker and return all equipment | |
| **OBSERVATIONS** : | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **DISCUSSION:** | How did you know a chemical change occurred?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What were the reactants?  Complete the Table:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Name of Compound** | **Formula of compound** | **Elements present** | **Number of particles of each element** | **Total number of particles in the compound** | | **Calcium oxide** | CaO |  |  |  | | **Hydrochloric acid** | CO2 |  |  |  | | |

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| **AIM** | To use observations to determine if a chemical change has occurred |
| **EXPERIMENT #3: Burning magnesium** | | |
| **MATERIALS**: | * TONGS * BUNSEN BURNER * HEAT MAT * MATCHES * MAGNESIUM STRIP |
| **METHOD:** | WEAR SAFETY GLASSES  DO NOT SIT DOWN AT BENCHES   1. 1. Set up Bunsen on the heat proof mat 2. Light the Bunsen 3. Use the tongs to hold the strip of magnesium 4. Turn the collar on the Bunsen to give a blue heating flame   **DO NOT LOOK DIRECTLY AT THE METAL FLAME -TO AVOID DAMAGE TO YOUR EYES**   1. Record observations 2. Turn Bunsen to cool flame then turn gas off 3. Pack away the equipment |
| **OBSERVATIONS** : | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **DISCUSSION:** | How did you know a chemical change occurred?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What were the reactants?  Complete the Table:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Name of Compound** | **Formula of compound** | **Elements present** | **Number of particles of each element** | **Total number of particles in the compound** | | **Magnesium** | Mg |  |  |  | | **Oxygen** | O2 |  |  |  | |

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| **AIM** | To use observations to determine if a chemical change has occurred |
| **EXPERIMENT # 4: MAGNESIUM and HYDROCHLORIC ACID** | | |
| **MATERIALS**: | * LARGE TEST TUBE * TEST TUBE RACK * HYDROCHLORIC ACID * MAGNESIUM STRIP * THERMOMETER |
| **METHOD:** | WEAR SAFETY GLASSES  DO NOT SIT DOWN AT BENCHES   1. Place the test tube into the test tube rack 2. Use the measuring cylinder to measure 10 mL of hydrochloric acid and pour the acid into the test tube 3. Place the thermometer into the test tube with hydrochloric acid 4. Record the temperature 5. Leave the thermometer in the test tube 6. Drop a small strip of magnesium into the acid in the test tube 7. Record observations 8. Pour the acid down the sink with running water 9. Pack away equipment |
| **OBSERVATIONS** : | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **DISCUSSION:** | How did you know a chemical change occurred?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  What were the reactants?  Complete the Table:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Name of Compound** | **Formula of compound** | **Elements present** | **Number of particles of each element** | **Total number of particles in the compound’s formula** | | **Magnesium** | Mg |  |  |  | | **Hydrochloric Acid** | HCl |  |  |  | |