Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chemistry 11 Lab**: Chemical Reactions**

**Hypothesis:** If a gas is produced, a colour /odour has changed, a precipitate is formed, or a temperature has changed, then a chemical reaction has occurred.

**Purpose:**

* To observe evidence that indicates a chemical reaction has occurred.
* To identify the type of chemical reaction and predict the product
* To write a complete balanced chemical reaction
* To practice lab safety
  + wear safety goggles and apron at all times
  + keep all bags and belongings out of the aisles
  + HCl and NaOH are corrosive; if spilled on skin, flush thoroughly with water and notify your teacher
  + use **forceps** to pick up metals
  + when all reactions are complete, rinse all solutions in to the waste beaker provided
  + wash your hands and wipe off your lab bench when finished

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| **Materials & Procedure**   1. Mg(s) + HCl(aq) ⟶   Place a piece of magnesium ribbon in a spot plate well. Add 4 drops of 1 M HCl and observe.   1. Zn(s) + HCl(aq) ⟶   Place a piece of mossy zinc metal in a spot plate well. Add 4 drops of 1 M HCl and observe.   1. Zn(s) + CuSO4(aq) ⟶   Place a piece of mossy zinc metal in a spot plate well. Add 4 drops of 2 M copper (II) sulphate and observe.   1. CuSO4(aq) + Na2CO3(aq) ⟶   Put about 4 drops of copper (II) sulphate in a spot plate well. Add an equal amount of sodium carbonate and observe.   1. Ca(s) + H2O(l) ⟶   Put a piece of solid calcium in a spot plate well. Using a small beaker and eye dropper, add 4 drops of water and observe   1. HCl(aq) + NaOH(aq) ⟶   Put one drop of phenolphthalein in a spot plate well.  Phenolphthalein is an “indicator” that is colourless in an acid and pink in a base. Add 4 drops of 1 M HCl to the well. Slowly add the same amount of 1 M NaOH, one drop at a time, and observe.   1. KI(aq) + Pb(NO3)2(aq) ⟶   Put 4 drops of potassium iodide in a spot plate well. Slowly add 4 drops of lead (II) nitrate and observe. | **Observation:** image | **Observation:** Evidence of Reaction |

**Analysis**

1. For each reaction that you did, write a **balanced** chemical equation, including phases

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| --- | --- | --- | --- |
| **Reaction** | **Reactants** | **Products** | **Reaction Type** |
| **A** |  |  |  |
| **B** |  |  |  |
| **C** |  |  |  |
| **D** |  | |  |
| **E** |  | |  |
| **F** |  | |  |
| **G** |  | |  |

1. What is a precipitate? Give an example of a precipitate that was observed in this lab.
2. If you were to measure the mass of the reactants before the reaction and then the mass of the products after the reaction, what would you expect to find? Why? How is this related to balancing the equations?

**Discussion:** Write a paragraph discussing lab safety, sources of error (instrumental, environmental, procedural, and human), Ask at least two questions about how this lab could change to show something a little different.

**Conclusion:** Write a conclusion paragraph that describes 5 types of evidence that shows that a chemical change has taken place. In your paragraph, support each type of evidence with an example from either the lab or the demos done in class. Include also any sources of experimental error that may have affected results.