**“Are you reactive?” Laboratory Data**

**Directions:** Use the charts below to record data for your experiments and for the experiments done by other classmates. Use all this data to answer the prompts at the end.

**Identities of Possible Reactants**

**Solution #1: Hydrochloric acid, HCl**

**Solution #2: Distilled water, H2O**

**Solution #3: Sodium hydroxide, NaOH**

**Solution #4: Barium chloride, BaCl2**

**Solution #5: Sulfuric acid, H2SO4**

**Data for Experiment #1 (the experiment with magnesium metal)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unknown Solution # | Reacting w/Magnesium | Starting Temp. | Ending Temp. | Other Obs.(be clear) | Reaction?(yes, exo., endo., NR) |
|  | Mg |  |  |  |  |
|  | Mg |  |  |  |  |
|  | Mg |  |  |  |  |
|  | Mg |  |  |  |  |

**Data for Experiment #2 (the experiment with ammonium chloride powder)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Unknown Solution # | Reacting w/ammonium chloride | Starting Temp. | Ending Temp. | Other Obs.(be clear) | Reaction?(yes, exo., endo., NR) |
|  | NH4Cl |  |  |  |  |
|  | NH4Cl |  |  |  |  |
|  | NH4Cl |  |  |  |  |
|  | NH4Cl |  |  |  |  |

**Data for Experiment #3 (the experiment adding solutions to each other)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1st Unknown Solution # | 2nd Unknown Solution # | Starting Temp. | Ending Temp. | Other Obs.(be clear) | Reaction?(yes, exo., endo., NR) |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

**Answer the following prompts with complete sentences.**

1. In experiment number 1, magnesium (a group 2 metal) reacted with which solutions? How do you know a reaction occurred?

1. For the trials that you decided were reactive, write out the reactions using the correct chemical formulas. Predict the products using the criss - cross method if necessary. Describe what type (synthesis, combustion, single replacement, double replacement, decomposition) of reaction this is.
2. Make a hypothesis about how magnesium would react with hydrobromic acid, HBr? Propose a chemical equation for that reaction. What type of reaction would that be?

# EXPERIMENT 2 QUESTIONS

1. In experiment number 2, ammonium chloride was added to all of the solutions. Describe how ammonium chloride reacted with each solution. Based on energy exchanged, what type of reaction (endothermic or exothermic) occurred?
2. For the trials that you decided were reactive, write out the reactions using the correct chemical formulas. Predict the products using the criss-cross method if necessary. Describe what type (synthesis, combustion, single replacement, double replacement, decomposition) of reaction took place for each.
3. How would you describe the reactivity of the compound ammonium chloride? Why do you think that it behaves this way?

**EXPERIMENT 3 QUESTIONS**

1. In experiment number 3, different solutions (compounds) were mixed together. Describe how you knew a reaction occurred for each set of solutions.
2. For the trials that you decided were reactive, write out the reactions using the correct chemical formulas. Predict the products using the criss-cross method if necessary. Describe what type (synthesis, combustion, single replacement, double replacement, decomposition) of reaction took place for each.
3. Which of the five compounds do you think is the most reactive? Why (use evidence from the lab and your prior knowledge about valence electrons to justify your answer)?