**Periodic Trends Virtual Lab Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Learning Objectives

1. Explore the reactivity of elements as you go down Groups 1 alkali metals
2. Explore the reactivity of elements as you go down Groups 17 halogens
3. Explore the reactivity of Mg, Al and three transition metals
4. Generalize trends of reactivity on the periodic table
5. Relate trends of reactivity to trends of atomic radius, ionization energy and electronegativity.

Pre-Lab Questions:

1. Trends
   1. Definition of **trend**:   
        
      1. Examples
         1. Global warming
         2. Economy
         3. Grades
   2. Example of a *fashion trend:*

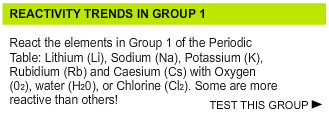
* 1. What are the three periodic tables you know and their definitions:

1. Which elements are **most** reactive and why?

1. Definition of reactivity:

1. What are three ways that we can identify when a chemical reaction is occurring?

Activity

1. Directions:  Go to<http://www.syngentaperiodictable.co.uk/reaction-zone.php>
2. Use the app to explore the reactivity of the elements in the chart
3. Select “TEST THIS GROUP” under Reactivity Trends in Group 1
4. Click the water drops
5. Drag Lithium into the flask and click “Test”
6. Fill out the chart with your observations
7. Repeat with the other substances listed in the chart.

**Part One: The Alkali Metals (Group 1)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Li** | **Na** | **K** | **Rb** | **Cs** |
| H2O |  |  |  | xxxx | xxxx |
| O2 |  |  |  |  |  |
| Cl2 |  |  |  |  | xxxx |

1. Would you characterize the alkali metal group as a reactive group?
2. Describe the trend in reactivity as you go from TOP to BOTTOM in the group:

**Part 2: Mg, Al and Transition Metals**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Mg** | **Al** | **Transition Metals** | | |
| **Zn** | **Fe** | **Cu** |
| H2O |  |  |  |  |  |
| Acid |  |  |  |  |  |
| Cl2 |  |  |  |  |  |

1. Summarize the reactivity of magnesium:
2. Summarize the reactivity of aluminum:
3. Summarize the reactivity of the transition metals:

**Part 3: The Halogen Family (Group 17)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | F | Cl | Br | I |
| H2O |  |  |  |  |

1. Summarize the reactivity of the halogen family of elements:
2. Describe the trend in their reactivity as you go down the group:

Post-Lab Questions:

1. Draw the Bohr Models of Lithium and Sodium. Use these to help you answer the following questions.
2. What happens to atomic radius as you move down a group? WHY does that happen?

1. What happens to the ionization energy as you move down a group? WHY does that happens?
2. What happens to electronegativity as you move down a group? WHY does that happens?
3. Draw the Bohr Models of Beryllium and Oxygen. Use these to help you answer the following questions.
4. What happens to atomic radius as you move from left to right in a period? WHY does that happen?

1. What happens to the ionization energy as you move from left to right in a period? WHY does that   
    happen?
2. What happens to electronegativity as you move from left to right in a period? WHY does that happen?
3. Using what you know about the periodic table trends, explain why the reactivity of elements changes as  
    you move from top to bottom in a group and from left to right in a period.