**Using Excel to Graph Periodic Trends**

**Learning Target: I can graphically analyze periodic trends using Excel graphs.**

1. I can create graphs using the Excel software.
2. I can analyze trends across the periods and down the groups by interpreting the graphs.

**Essential Question:** Are certain properties of elements periodic with respect to their atomic numbers?

**Procedures:** In this activity you will be creating 4 graphs using Excel. Each graph will use the data found on the abridged Periodic Table on the next page. Trendlines are **not** necessary for these graphs.

**Excel Graph 1: ATOMIC RADIUS**

1. Open an **Excel Workbook**

2. In Cell A1, type **Element Symbol**

a. *If the column is too narrow, put your cursor on the line between A and B the cursor will turn into a down arrow. Click once and the column will extend to width of your text.*

3. In cell B1 type **Atomic Number**

4. In cell C1, type **Atomic Radius (pm)** [*pm stands for picometers*]

5. Use the data on the attached periodic table…

a. Enter element symbols for elements 3-20 in column A

b. Enter atomic numbers 3 -20 in the column B

c. Enter the corresponding atomic radius in column C

6. To create a graph of your data:

a. Highlight the columns headed Atomic Number and Atomic Radius

b. Choose Insert / Charts /Scatter with Markers only

c. Voila! A graph will appear.

d. Click on your graph.

e. Click Design / Chart Layout / Choose Layout 1. This will enable you to include a title and axis labels. Click on the current title to type an appropriate title over it. And add/edit the axis labels with units.

f. Double click on the tab that says “Sheet 1” at the bottom of the page. Rename the page **Atomic Radius**.

**Excel Graph 2: ATOMIC RADIUS BY GROUP**

7. Open a new page. Click on Sheet 2.

8. In Cell A1, type **Element Symbol***.*

9. In cell B1 type **Atomic Number**

10. In cell C1, type **Atomic Radius Group 1 (pm)**

11. In cell D1 **,** type **Atomic Radius Group 2 (pm)**

12. Use the data on the abridged periodic table …

a. Enter element symbols for elements Groups 1 in column A followed by the element symbols for Group 2

b. Enter atomic numbers that correspond to the element symbols in column B

c. Enter the corresponding atomic radius for Group 1 in column C and for Group 2 in column D. *You will have blanks in both columns.*

d. Highlight columns B, C and D.

e. Create a graph in Excel, (as above) and rename the sheet **Atomic Radius by Group**.

**Excel Graph 3: IONIZATION ENERGY**

Using the same technique and data from the abridged periodic table create a new page and a graph for **Excel Graph 3: Ionization Energy**

**Excel Graph 4: IONIZATION ENERGY BY GROUP**

Using the same technique as Graph 2 and data from the abridged periodic table create a new page and a graph for **Excel Graph 4: Ionization Energy by Group.**

**Use your graphs and textbook to answer the following questions in your own words:**

*You may type these answers if you wish:*

1. **What happens to the atomic radius as the atomic number increases across a period? Down a group? Explain.**
2. **What happens to the energy needed to remove an electron [*ionization energy*] as the atomic number increases across a period? Down a group? Explain.**
3. **Are these properties of the elements periodic functions of their atomic number? Why or why not?**