***Trends on the Periodic Table – Google Sheets***

In this activity you will use Google Sheets to discover trends that occur within families and periods on the periodic table. Use the following data table for the procedure section.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Atomic Number | Atomic Radius | Atomic Number | Ionization Energy |
| Hydrogen | 1 | 0.037 | 1 | 1312 |
| Helium | 2 | 0.05 | 2 | 2372 |
| Lithium | 3 | 0.152 | 3 | 519 |
| Beryllium | 4 | 0.111 | 4 | 900 |
| Boron | 5 | 0.088 | 5 | 733 |
| Carbon | 6 | 0.077 | 6 | 1088 |
| Nitrogen | 7 | 0.07 | 7 | 1406 |
| Oxygen | 8 | 0.066 | 8 | 1314 |
| Fluorine | 9 | 0.064 | 9 | 1682 |
| Neon | 10 | 0.07 | 10 | 2080 |
| Sodium | 11 | 0.186 | 11 | 498 |
| Magnesium | 12 | 0.16 | 12 | 736 |
| Aluminum | 13 | 0.143 | 13 | 577 |
| Silicon | 14 | 0.117 | 14 | 787 |
| Phosphorus | 15 | 0.11 | 15 | 1063 |
| Sulfur | 16 | 0.104 | 16 | 1000 |
| Chlorine | 17 | 0.099 | 17 | 1255 |
| Argon | 18 | 0.094 | 18 | 1519 |
| Potassium | 19 | 0.231 | 19 | 418 |
| Calcium | 20 | 0.197 | 20 | 590 |

1. Use Google Sheets to make a data table as shown above
   1. In cell A1, type “Element”; in cell B1, type “Atomic Number”, etc
   2. Complete all the information and b\values in the appropriate columns
2. Make graph and plot “Atomic Number vs. Atomic Radius
   1. Highlight all filled cells in columns B and C
   2. Use “Insert”, “Chart”, and choose the Line graph.
   3. Then click “Insert”.
   4. Move your graph to the right of column E.
3. Make another graph of “Atomic Number vs. Ionization Energy”
   1. Highlight all filled cells in columns D and E
   2. Use “Insert”, “Chart”, and choose the Line graph.
   3. Then click “Insert”.
   4. Move your graph to the right of column E, below your first graph.

\*\*\*Share your document with Mrs. Hemmert. ([melanie.hemmert@clarencevilleschools.org](mailto:melanie.hemmert@clarencevilleschools.org))

Questions

1. Describe the graph: “Atomic Number vs. Atomic Radius” (What trends occur with atomic radii as atomic number increases?)

2. Describe the graph: “Atomic Number vs. Ionization Energy” (What trends occur with ionization energy as atomic number increases?)

3. How does this graphing activity relate to the periodic law?

4. Why does calcium have a larger radius than magnesium?

5. Why does oxygen have a smaller radius than carbon?

6. Why does sodium have a relatively low ionization energy?

7. Why does argon have a relatively high ionization energy?