SCH3U **Graphing Periodic Trends – Ionization Energy**
Assignment Name: _____

Using the first ionization energy values on your periodic table, graph atomic number vs. first ionization energy for the first 40 elements. Answer the questions that follow based on the graph and what you know about first ionization energy.

- You may choose to do a simple graph of first ionization energy vs. atomic number OR
- You may do a series type graph, similar to the one on page 54 of your textbook (extra challenge)

1) What is ionization energy?
2) What elements are found at the peaks (high points) of the graph? What is the name of the group or family of the periodic table that these elements fall in (1 mark)?
3) Suggest a reason why these elements have such a high first ionization energy based on what you know about **atomic structure** and **effective nuclear charge** (2 marks).
4) What elements are found in the troughs (low points) of the graph? What is the name of the group or family of the periodic table that these elements fall in (1 mark)?
5) What is the trend (pattern) in first ionization energy as one moves from the top of a family to the bottom? What is the trend as one moves across a period from left to right (2 marks)?
6) Suggest a reason for the pattern seen as one moves down a group (2 marks).
7) How is first ionization energy different than electron affinity? How is it the same (1 mark)?
8) Why do Noble gases have no first ionization energy value (1 mark)?

Communication	**Questions - Knowledge**
Graph - creative and relevant title	- complete explanations
- labeled axis with units	- to the point
- points plotted correctly	
- creative (patterns, labels, colour)	
- done on computer (or very neatly by hand)	
- in your own words	
- your own work (not copied)	(see marks allotted)
/10	**/10**

Please submit this sheet with your work.