A GRAPHING EXPERIENCE!
Atomic Radius vs. Atomic Number

Purpose: To graphically represent the variation in atomic radius within the first 20 elements on the periodic table.

Two questions to consider:

1. How does radius (size of atoms) vary within a horizontal row on the periodic table?
2. How does radius (size of atoms) vary within a column on the periodic table?

Directions: READ THESE !!!!! USE CHROME!!!

Part A ---- Getting the DATA

1. Open a google sheet.
2. In a separate window in the browser, open howechem.net

3. Go to the homework section of the web site, and click on the 10/26 link for periodic table data. Click on the periodic table as necessary to obtain the atomic radius information.

4. In column A of the Google sheet, enter the atomic numbers of the first 20 elements on the periodic table.

5. In column B, enter the atomic radius data from the web link above

Part B ---- Making the GRAPH

1. Highlight all of the information on the spreadsheet.
2. Under the "insert" menu, choose "chart."

3. Click on the "CHART TYPES" tab at the top of the chart editor window.
4. Choose the first option under "Line."

5. Click the BOX for "use column A as labels."
6. Click on the "CUSTOMIZATION" tab.

7. Title the graph as follows: Δ ATOMIC RADIUS Vs. ATOMIC NUMBER
   (Δ is option or alt J depending on your keyboard.)
8. Scroll down to the AXIS Section and label the horizontal axis "Atomic Number."

9. Use the drop down menu and label the Y axis "Atomic Radius (pm)"
10. Scroll down to series and make the point size 10 px.

11. Select your favorite point shape
12. INSERT! and PRINT one per person.

Questions:

1. What is the biggest element on the graph? _____

2. What is the smallest element on the graph?

3. Which is larger: Li or O? _____

4. Which is larger: Na or S? _____

5. How does size change from Li to Ne? _____

6. How does size change from H to He? _____

7. How does size change from Na to Ar? _____

8. How does size change within any row on the periodic table? _____

9. Arrange the following from small to large: Li, K, Na, H _____

10. Arrange the following from small to large: Ar, He, Ne _____

11. Which is larger? O or S? _____

12. How does size change going down a column on the periodic table? _____

13. Which has more protons? S or Si? _____

14. Which is smaller? S or Si? _____

15. Which has more protons? Na or Ar? _____

16. Which is smaller? Na or Ar? _____

17. SO FAR, how does the number of protons affect size? _____

18. Which has more protons: Na or K? _____

19. Which is smaller: Na or K? _____

20. DOES YOUR ANSWER TO 17 still MAKE SENSE? _____

21. WHAT OTHER FACTOR (besides protons) might affect size? _____

22. What is the effect of inner shell electrons on the outer shell? _____

SUMMARY:
As long as atoms are in the same horizontal row, more protons will cause atoms to be _____.

When moving down a column, the addition of _____ _____ SHIELDS the outer shell from the _____, which causes the atom to be _____ even though there are more protons.

BOTTOM LINE:

Atoms get _____ when moving from left to right on the periodic table, and _____ when moving from top to bottom.