

Below is a table of properties of the representative elements in the first five periods. By graphing this data we will discover how they change as you go across a period and down a group. There are analysis questions on the back of this page that should be answered after the graphs are drawn.

#	Symbol	Ionization Energy (eV)	Atomic Radius	Period	Group	Name
1	H	13.60	79	1	1A	Hydrogen
2	He	24.59	49	1	8A	Helium
3	Li	5.39	205	2	1A	Lithium
4	Be	9.32	140	2	2A	Beryllium
5	B	8.30	117	2	3A	Boron
6	C	11.26	91	2	4A	Carbon
7	N	14.53	75	2	5A	Nitrogen
8	O	13.62	65	2	6A	Oxygen
9	F	17.42	57	2	7A	Fluorine
10	Ne	21.56	51	2	8A	Neon
11	Na	5.14	223	3	1A	Sodium
12	Mg	7.65	172	3	2A	Magnesium
13	Al	5.99	162	3	3A	Aluminum
14	Si	8.15	146	3	4A	Silicon
15	P	10.49	123	3	5A	Phosphorus
16	S	10.36	109	3	6A	Sulfur
17	Cl	12.97	97	3	7A	Chlorine
18	Ar	15.76	88	3	8A	Argon
19	K	4.34	277	4	1A	Potassium
20	Ca	6.11	223	4	2A	Calcium
31	Ga	6.00	181	4	3A	Gallium
32	Ge	7.90	152	4	4A	Germanium
33	As	9.81	133	4	5A	Arsenic
34	Se	9.75	122	4	6A	Selenium
35	Br	11.81	112	4	7A	Bromine
36	Kr	14.00	103	4	8A	Krypton

Questions and Analysis:

1. In general, as you go across a period, what happens to the

A. Atomic radius?

B. Ionization energy?

2. Where are there exceptions to these general trends?

3. The elements in the same group are graphed up and down in each of the graphs. For example elements 4, 12, 20, and 38 are all in group 2A. In general as you go down a group, what happens to the

A. Atomic radius?

B. Ionization energy?

4. Where are there exceptions to these general trends?

5. Radium is in the seventh period.

A. Would you expect it to be larger or smaller than barium? Why?

B. Would you expect it to be larger or smaller than francium? Why?

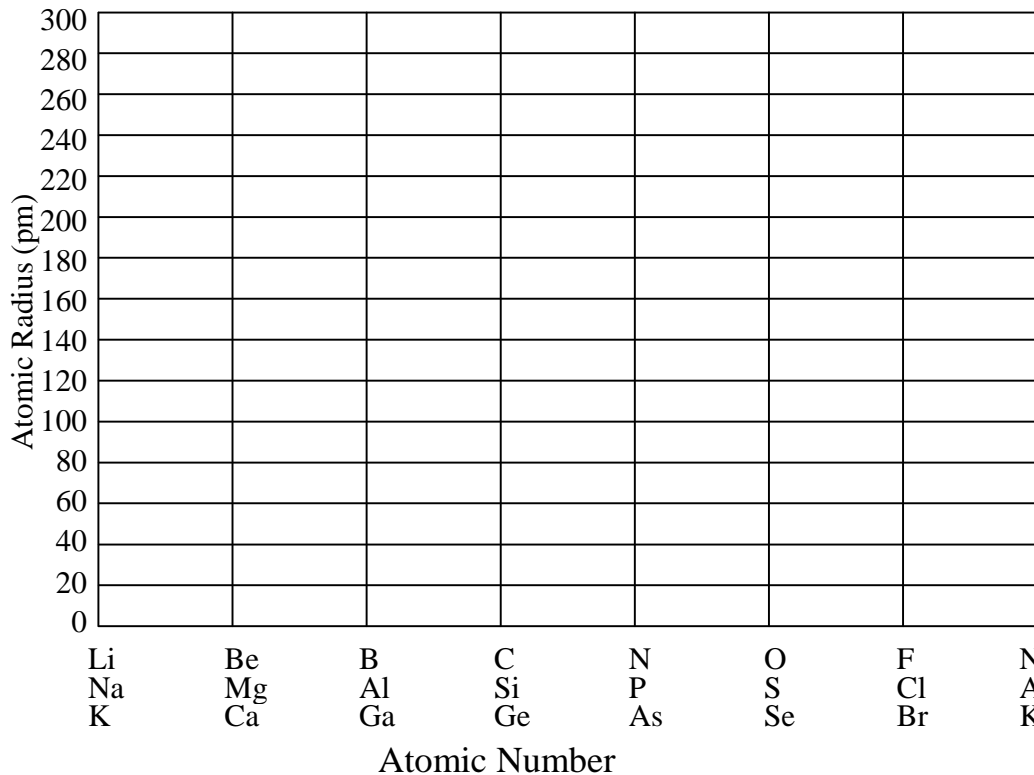
C. Would you expect its ionization energy to be larger than barium's? Why?

D. Would you expect its ionization energy to be larger than francium's? Why?

Name _____

Graph the Atomic Radius for each element in Period 2 in one color

On the same graph, graph the atomic radius for each element in Period 3 in a second color, Period 3 in a third color and period 4 in a fourth color. Make sure to label the key for which color is which period.



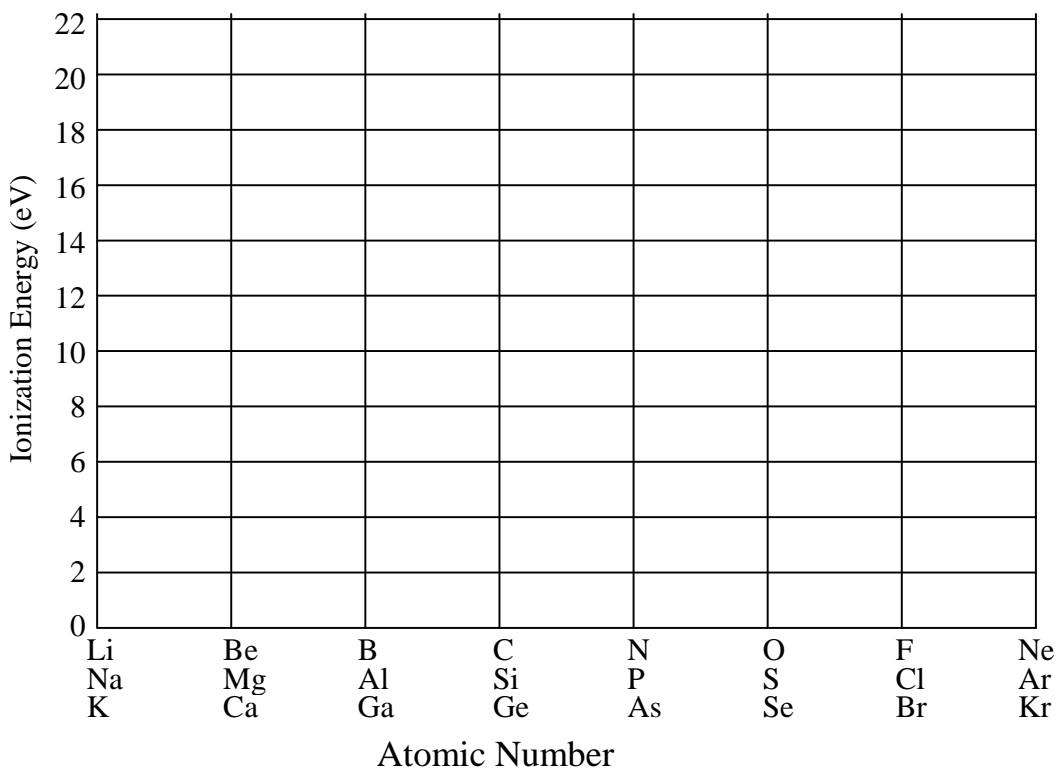
Key:

Period 2

Period 3

Period 4

Repeat the process above for the Ionization Energy for each element in Period 2, 3, 4 and 5. Make sure to label the key for which color is which period.



Key:

Period 2

Period 3

Period 4

Repeat the process above for the electronegativity for each element in Period 2, 3, 4 and 5. Make sure to label the key for which color is which period.

