

Pre-lab Queries  
Interactive Periodic Trends: A Graphical Experience

Complete the following before you come to class to do the *Interactive Periodic Trends: A Graphical Experience* activity.

1. Write out the complete electron configuration (1s 2s 2p...) and circle the valence electrons for the following elements:

The elements in Group 1A:      Li                      Na                      K

The elements in Group 7A:      F                      Cl                      Br

Which element do you think is larger in size?      Li or K                      F or Br

For the Group 1A and 7A elements, what do you notice about the valence electrons and the shell number?

2. Write out the complete electron configuration (1s 2s 2p...) for the following ions and identify which noble gas they are isoelectronic with.

The cations in Group 1A:      Li<sup>+</sup>                      Na<sup>+</sup>                      K<sup>+</sup>

The anions in Group 7A:      F<sup>-</sup>                      Cl<sup>-</sup>                      Br<sup>-</sup>

How do you think the size compares for the atom and ion pairs listed below?  
Which is larger?

Na or Na<sup>+</sup>

Br or Br<sup>-</sup>

3. Write out the complete electron configuration (1s 2s 2p...) and circle the valence electrons for the following elements:

The elements of Period 3:

Na

Mg

Al

Si

P

S

Cl

Ar

For the Period 3 elements, what do you notice about the valence electrons and the shell number?

4. Write out the complete electron configuration (1s 2s 2p...) for the following ions across the third period and identify which noble gas they are isoelectronic with.

Cations

Na<sup>+</sup>

Anions

P<sup>-3</sup>

Mg<sup>+2</sup>

S<sup>-2</sup>

Al<sup>+3</sup>

Cl<sup>-</sup>

Si<sup>+4</sup>

P<sup>+5</sup>

What do you notice about the series of cations listed above and the associated isoelectronic noble gas? How about the series of anions?