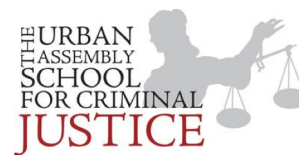


Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Chemistry** ~ Ms. Hart

**Class:** Anions or Cations



#### **4.7 Atomic Radius - Guided Notes and Independent Practice**

##### Periodic Trends in Atomic Radius

The radius of an atom tells us about the atoms size. It depends on how far away the electrons are.

- As we go down a group, the atomic radius \_\_\_\_\_.
- As we go across a period, the atomic radius of atoms \_\_\_\_\_.

##### **WHY?**

- Recall unlike charges \_\_\_\_\_ and like charge \_\_\_\_\_.
- Down a Group: atomic radii \_\_\_\_\_ because you are adding electrons to a \_\_\_\_\_, farther from the nucleus.
- Across a Period: atomic radii \_\_\_\_\_ because you are adding a \_\_\_\_\_ and an electron each time you go to the right, (**but** the electrons are in the **same** \_\_\_\_\_), and more \_\_\_\_\_ means a stronger pull on the electrons in that energy level, pulling them in tighter and making the atom smaller.

Example:

In order of largest to smallest:

1) Li, C, F

All are in the **same** \_\_\_\_\_ and thus have the **same** \_\_\_\_\_.

- **Therefore, the important factor is the number** \_\_\_\_\_.
  - Li – largest (smallest number of \_\_\_\_\_ that pull the electrons toward the nucleus \_\_\_\_\_ than the others)
  - F – smallest (largest number of \_\_\_\_\_ that pull the electrons toward the nucleus \_\_\_\_\_ than the others)

2) Li, Na, K

All are in the **same** \_\_\_\_\_.

- Therefore, the important factor is the number of \_\_\_\_\_
  - Li – smallest (uses the smallest number of electron \_\_\_\_\_).
  - K – largest (uses the largest number of electron \_\_\_\_\_).

Atomic radius can also be found in your reference table, Table S.

**How to remember:**

## Step 1: Across a Period-

## Step 2: Down a Group-

### 4.7 Independent Practice:

1. Which atom is larger, K or Br? Why?
2. Which atom is larger, Na or Cl? Why?
3. Which atom is smaller, Be or Ba? Why?
4. Put in order of largest to smallest F, Ar, Sr, Cs. How did you get this answer?
5. Atomic size generally
  - a) increases as you move from left to right across the Periodic Table ,
  - b) decreases as you move from left to right across a period
  - c) remains constant within a period
  - d) generally decreases as you move from top to bottom down the table
6. Consider the following elements: sodium, magnesium, argon, aluminum, sulfur, phosphorus, silicon, chlorine. Arrange these elements in order of increasing atomic radius.
7. Which element's atoms have a larger atomic radius than atoms of silicon?
  - a) sodium
  - b) carbon
  - c) sulfur
  - d) chlorine
8. Which of the following atoms has the largest atomic radius?
  - a) Na
  - b) K
  - c) Mg
  - d) Ca
9. Which element in Period 3 has the largest atomic radius?
  - a) Cl
  - b) Al
  - c) Na
  - d) P