

- 1) Define Effective Nuclear Charge (Z_{eff})—what it represents, not how to calculate it
- 2) Define what shielding electrons are
- 3) Indicate how to determine the Z_{eff} for an element
- 4) For the following elements, indicate the nuclear charge (Z), write the electron configuration (Noble Gas notation), indicate which electrons are the shielding electrons, and calculate Z_{eff} :

	Z	e^- config	shielding e^- & #	Z_{eff}
a) O				
b) P				
c) K				
d) Ge				
e) Kr				
f) Sr				
g) Sb				
h) Bi				

- 5) What happens to the effective nuclear charge across a period (row)? Down a group (column)?

Answer the following questions by referring to the trend. Do not use the tables of actual radii.

- 6) Which element has a larger radius – P or Sb? _____
- 7) Which element has a larger radius – Cl or Na? _____
- 8) Which element has a larger radius – Ga or F? _____
- 9) Why is it not possible to determine whether Sb or Po has a larger radius, without more information?
- 10) Rank the following elements in order of *increasing* atomic radius: Cs, Al, S, Mg, Cl, Na
- 11) Which ion has a larger radius – F^- or Br^- ? _____
- 12) Which ion has a larger radius – I^- or In^{3+} ? _____
- 13) Which ion has a larger radius – Mg^{2+} or Ba^{2+} ? _____