

- 1) Define Effective Nuclear Charge ( $Z_{\text{eff}}$ )
- 2) Define what shielding electrons are
- 3) Indicate how to determine the  $Z_{\text{eff}}$  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  $Z_{\text{eff}}$ :

	$Z$	$e^-$ config	shielding $e^-$ & #	$Z_{\text{eff}}$
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 table 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