

Homework #6
(Electron Configuration & Atomic Radii)
CHEM 11 (S 2016, LAC)
(Due Wednesday, March 16)

Complete the table below by answering the following.

- Write the electron configuration of the following elements in reduced (or shorthand) form. Then write the number of valence electrons each of these elements has and finally write the Lewis Dot Form for each element. Boron is given as an example in the table below.

Element	Electron Configuration	# of Valence Electrons	Lewis Dot Form
B (boron)	$[He] 2s^2 2p^1$	3	\cdot B \cdot

Bi (bismuth)

Au (gold)

Pr (protactinium)

With the data given in the following table, answer the questions below.

- Can you guess at what rationale helps us to describe “why” Cr has only one electron in the 4s orbital and five in 3d orbitals?
- What if anything happens to the number of valence electrons as one moves from V to Cr to Mn?

Element	Protons	Electron Configuration
Scandium (Sc)	21	$[Ar] 3d^1 4s^2$
Titanium (Ti)	22	$[Ar] 3d^2 4s^2$
Vanadium (V)	23	$[Ar] 3d^3 4s^2$
Chromium (Cr)	24	$[Ar] 3d^5 4s^1$
Manganese (Mn)	25	$[Ar] 3d^5 4s^2$
Iron (Fe)	26	$[Ar] 3d^6 4s^2$
Cobalt (Co)	27	$[Ar] 3d^7 4s^2$
Nickel (Ni)	28	$[Ar] 3d^8 4s^2$
Copper (Cu)	29	$[Ar] 3d^{10} 4s^1$
Zinc (Zn)	30	$[Ar] 3d^{10} 4s^2$

- Place the following two lists in order of largest atom to the smallest.
 - F, Ca, Li, K
 - Sn, U, Ar, Rb