Electron Configurations Worksheet

For atoms, the number of electrons = number of protons because atoms are neutral.

Remember you are filling in ALL the electrons, not just valence, but ALL.

The order of filling in electrons in the subshells is 1s 2s 2p 3s 3p 4s

s subshells have only 1 orbital, 2 electrons per orbital = 2 electrons max

p subshells have 3 orbitals, 2 electrons per orbital = 6 electrons max

You fill the electrons into the subshells until you reach the correct number of electrons.

Write electron configurations for:

He _____

Li_____

Be_____

O_____

Cl_____

K_____

For ions you must add or subtract the number of electrons from the atom which account for the charge. For positive ions, they have LOST electrons, so there are LESS electrons than the atom. For negative ions, they have GAINED electrons, so there are MORE electrons than the atoms.

Same rules apply.

Write electron configurations for the following. What noble gas are they isoelectronic with?

Li^+_____

N^{3-}_____

Be^{2+}_____

S^{2-}_____

Al^{3+}_____

K^+_____

Answers:

Element	# of Electrons in Element	Electron Configuration
He	2	$1s^2$
Li	3	$1s^2 2s^1$
Be	4	$1s^2 2s^2$
O	8	$1s^2 2s^2 2p^4$
Cl	17	$1s^2 2s^2 2p^6 3s^2 3p^5$
K	19	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

Element	Charge	TOTAL # of Electrons in Ion	Isoelec-tronic with	Electron Configuration
Li^+	One less e$^-$ so 3-1= 2	2	He	$1s^2$
N^{3-}	3 more e$^-$ so 7+3=10	10	Ne	$1s^2 2s^2 2p^6$
Be^{+2}	2 less e$^-$ so 4-2= 2	2	He	$1s^2$
S^{-2}	2 more e$^-$ so 16 + 2 = 18	18	Ar	$1s^2 2s^2 2p^6 3s^2 3p^6$
Al^{3+}	3 less e$^-$ so 13-3=10	10	Ne	$1s^2 2s^2 2p^6$
K+	One less e- so 19-1=18	18	Ar	$1s^2 2s^2 2p^6 3s^2 3p^6$