

Assignment #10

Name: KEY Per: _____

<u>Writing Electron Configurations</u>		
Element	Electron Configuration Notation (Do this column 1 st !)	Noble-Gas Notation
1. Li	$1s^2 2s^1$	$[\text{He}] 2s^1$
2. F	$1s^2 2s^2 2p^5$	$[\text{He}] 2s^2 2p^5$
3. Ne	$1s^2 2s^2 2p^6$	$[\text{He}] 2s^2 2p^6$
4. Si	$1s^2 2s^2 2p^6 3s^2 3p^2$	$[\text{Ne}] 3s^2 3p^2$
5. Ti	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$	$[\text{Ar}] 4s^2 3d^2$
6. Br	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^5$	$[\text{Ar}] 4s^2 3d^{10} 4p^5$
7. Pb	Do Noble gas notation only (too long)	$[\text{Xe}] 6s^2 5d^{10} 6p^2$
8. U	Do Noble gas notation only (too long)	$[\text{Rn}] 7s^2 5f^4$

Challenge problems *

Directions: Fill in the following table based on each noble gas configuration ^{highest row number} ^{only the outer "s" + "p" electrons}

Noble Gas Configuration	Period (Row)	Block (s,p,d,f)	Group Number	# of Valence electrons	Identify the Element	count no "d"
9. $[\text{He}] 2s^2 2p^1$ <i>↑ block</i>	2	p	13	3	Boron (B)	
10. $[\text{Ne}] 3s^2 3p^5$ <i>↑ block</i>	3	p	17	7	Chlorine (Cl)	
11. $[\text{Ar}] 4s^2 3d^6$ <i>↑ block</i>	4	d	8	2	Iron (Fe)	
12. $[\text{Kr}] 5s^1$ <i>↑ block</i>	5	s	1	1	Rubidium (Rb)	
13. $[\text{Xe}] 6s^2 4f^{14} 5d^2$ <i>↑ block</i>	6	d	12	2	Mercury (Hg)	

14. Why is the $4s^2$ filled with electrons before the $3d^6$ as shown in this noble gas configuration $([\text{Ar}] 4s^2 3d^6)$? $4s$ is a lower energy level than $3d$

15. a. What are valence electrons? Why are valence electrons so important to chemists?
 outermost "s" and "p" electrons on highest energy level (period)
 outermost electrons give a clue to bonding (forming compounds)

b. How can one use the periodic table to determine the number of valence electrons for an atom?
 By its position (1) what period (highest numbered one)
 (2) how many s + p electrons on the highest level