> 4.5 (More election	ron configurations!)	Name:	
1. Write the comple	te electron configuration for N	i and Sn.	
Ni			
Sn			
2a. Explain why the	electrons in the $n = 4$ level ge	nerally have more energy than	those in the $n = 3$ level.
b. Though $n = 4$ ger they occupy the 3d of	nerally has higher energy than a rbitals. Why would electrons	n = 3, there is an exception: E have lower potential energy b	lectrons fill the 4s orbital "before" y filling 4s before they fill 3d?
3. Write the electron	n configurations for the follow	ing elements, using the noble a	gas abbreviation.
Ni		Al	
		**	
Sn		U	
Bi		Pb	
D.,		Eu	
Br			
Xe		Rb	

4. <u>Valence electrons</u> are the electrons in the outermost shell (n-level) of the atom.

They are generally the electrons involved bonding: In covalent bonds, elements share valence electrons.

In ionic bonding, elements gain or lose electrons in the valence shell.

Mn

For each element in #3, <u>underline</u> the valence electrons, and then <u>write the number</u> of valence electrons it has.

Cf

V		As							
I		Pt							
Pu		В							
Po		Am							
6. For each element	in #5, <u>underline</u> the valence elec	etrons, and then write the	number of valenc	e electrons it has.					
7. Fill this out! Don's Atom symbol	t use the noble gas abbreviation Electron Configuration of th		Electron Confi	guration of the ion:					
Na	1s ² 2s ² 2p ⁶ 3s ¹	Na ⁺¹							
S	1s ² 2s ² 2p ⁶ 3s ² 3p ⁴	S^{-2}							
F	1s ² 2s ² 2p ⁵	F ⁻¹							
Al	1s ² 2s ² 2p ⁶ 3s ² 3p ¹	Al ⁺³							
P	$1s^22s^22p^63s^23p^3$	P ⁻³	<u> </u>						
Mg	1s ² 2s ² 2p ⁶ 3s ²	Mg^{+2}							
Ti	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ² 3d ²	Ti ⁺⁴							
 8a. All of the ions in number 7 should have the same number of valence electrons. How many do they have? 8b. Many elements gain/lose/share electrons to acquire this number (in a) of valence electrons. This is called the rule. (circle the correct answer below.) 									
duet	trio quartet	quintet sextet	heptet	octet					
9. The Heisenberg Uncertainty Principle (stated as an equation) is $\Delta p \cdot \Delta x \geq \frac{h}{4\pi}$ a. What do the variables represent in the equation? b. Explain what the Heisenberg Uncertainty Principle says:									
b. Explain what the	riersement ougenanns rungib	ic says.							

5. Write the electron configurations for the following elements. OK to use the noble gas abbreviation.

c. Explain how the uncertainty principle relates to the modern quantum mechanical model and the concept of orbitals.

15 17 18 18 19 14 18 18 19 14 18 18 19 14 18 18 19 14 18 18 19 14 18 18 18 18 18 18 18						11,2								
25 30 3d 45 45 49 4d 45 45 56 5d								Cesium S S	Rubidium	Potassium	Sodium	Lithium		Hydrogen
15 25 26 36 37 38 48 48 49 49 44 48 45 45 56 56 56 56 56 56 56 56 56 56 56 56 56	172	01	ü				Radium	S6	Strontium	Calclum	Magnesium	Beryllium	ĦΑ	
15 25 3p 3d 45 4p 4d 4f 45 4p 4d 4f 55 5p 5d 5f 5d 5f 5d 5f 7d 7d 7f 7d 7d 7d 7f 7d 7d 7d 7d 7f 7d 7				1	K		Lawrencium 103	力 Lutetium	Yttrium	Scandium				
15 35 39 36 45 45 47 48 48 49 40 41 41 45 55 59 50 60 60 60 60 60 60 60 60 60 60 60 60 60				Actinium 89	Lanthanum 57		Rutherfordium	Hafnlum 72	Zirconium	Thanlum				
3d 4d 4f 5d 5f 6d 6f 7d 7f				Thorium	Cerlum			Tantalum	Nioblum	Vanadium	t	65	55 ts	1 ₅ 2 ₅
d 4 f f d 1				Protectinium	Praseodymlum		Seaborglum	Tungsten	Molybdenum	Chromlun	to to	60 6	ער ד מיד מיד	m 6-4 M M
Book Cafes Respon Coper Floring Allerson Cafes Respon Coper Floring Floring Cafes Respon Coper Floring Allerson Cafes Respon Coper Floring Floring Cafes Respon Coper		8 4		Uranium			Bohrlum	Rhenium	Technetlum	Manganese	7	36	45 44	
Boton Carbon Nillogen Oxgen Rustre Aluminum Silloon Phosphorus Sulfur Chlorine Aluminum Silloon Phosphorus Sulfur Chlorine Aluminum Silloon Phosphorus Sulfur Chlorine Aluminum Indium Indium In Animony Indiunum Bomine Coper Zinc Gallium Indium In Animony Indiunum Bomine Coper Cadmium Indium Indium In Animony Indiunum Rodine Coper Cadmium Indium				Neptunium	Promethium	Darms Roen	Haselum	Osmium	Ruthenium	lron				
Boton Carbon Nillogen Oxgen Rustre Aluminum Silloon Phosphorus Sulfur Chlorine Aluminum Silloon Phosphorus Sulfur Chlorine Aluminum Silloon Phosphorus Sulfur Chlorine Aluminum Indium Indium In Animony Indiunum Bomine Coper Zinc Gallium Indium In Animony Indiunum Bomine Coper Cadmium Indium Indium In Animony Indiunum Rodine Coper Cadmium Indium				Piutonium	Samarlum	tgenium	Meltnerium	Iridium	Rhodium	Cobalt				
Boron Carbon Milrogen Oxygen Fluctre Aluminum Silicon Phosphorus Sulfur Chlorhe Aluminum Indium Tin Animony Tellurium Iodine Cadmium Indium Carmanium Ananic Selentium Bromine Copernicium (Cn) Terbium Dyeposium Holmium Fermium Andimony Thullum Thullum Thullum Thullum Thullum III III III III III III III III III I			ã	Americum	Europlum	(PS)	Unuşfullum	Platinum	Palladlum	Nickel				
Boron Carbon Nilrogen Organ Flucthe Auminum Silicon Phosphorus Sulfur Chierhe Auminum Germanium Arsenic Selenium Steinium Iodine Indium Tin Antimony Tellurium Iodine Thailium I I I I I I I I I I I I I I I I I I I				Curlum	Gadolinium	1	Ununyalum	Gold	Silver	Copper				
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Nilrogen Oxygen Fluorine Phosphorus Sulfur Chiorine Antimony Tellurium Iodine Bismuth Potentium Vitarbium Nobelium 102				Californium	Dyeprosium	nicium	113	Theillum	Indium	Gelilum	Aluminum	8000	A	
Oxygen Fluorine Sulfur Chlorine Selenium Bromine Potentium Iodine Potentium Vitarbium Nobelium Nobelium 102	155			Eineteinlum	Holmlum	(Cn)	ž	Lead	뒴	Germanlum	Silicon	Cardin		
Fluorine Chlorine Bromine Iodine Nobelium 70				Fermium	Erblum		115	Bismuth	Antimony	Arsenic	Phosphorus	Mugan	10	
							116	Polonium		36 Septiment	Sulfur	CAJGen		
Helium Krypton Krypton Argon				Nobelium 102	Ytterblum 70	. 7	117	Astatine	DAIL A	Date of the second	Chlorine		VII A	- 7 . 4
	8				7		118	Redon	A STORY	Хароп	Argon		Neon	YIII A