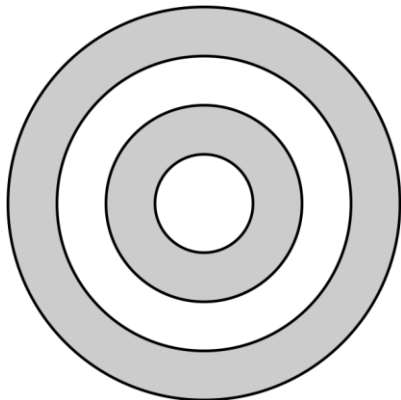


Name: \_\_\_\_\_

# Electron Configuration Webquest

Part 1: <http://www.learner.org/interactives/periodic/elementary2.html>

1. Label the image below using the diagram:



2. How many energy levels do hydrogen and helium fill up? \_\_\_\_\_
3. How many energy levels do the elements in the 2<sup>nd</sup> row fill up? \_\_\_\_\_
4. Describe the Aufbau Principle: \_\_\_\_\_

Click "Orbitals"

5. What is an orbital? \_\_\_\_\_
6. What shape is the s-orbital? \_\_\_\_\_
7. What shape is the p-orbital? \_\_\_\_\_
8. How many p-orbitals are there? \_\_\_\_\_
9. Describe Hund's Rule: \_\_\_\_\_
10. What are the other two kinds of orbitals? \_\_\_\_\_

Click "Notation Styles"

11. What is the electron configuration for boron? \_\_\_\_\_
12. Describe what each of the letters and numbers mean: \_\_\_\_\_

13. Draw the orbital notation for boron.

14. Why are the arrows drawn facing up and down?

15. What should the number of arrows always equal?

Part 2: <https://www.sophia.org/tutorials/chemistry-electron-configuration>

16. Label the sub-shells on the periodic table below. You are welcome to use color, if you would find it helpful:

hydrogen 1 H 1.0079																	helium 2 He 4.0026			
lithium 3 Li 6.941	beryllium 4 Be 9.0122											boron 5 B 10.811	carbon 6 C 12.011	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	neon 10 Ne 20.180			
sodium 11 Na 22.990	magnesium 12 Mg 24.305											aluminum 13 Al 26.982	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065	chlorine 17 Cl 35.453	argon 18 Ar 39.948			
potassium 19 K 39.098	calcium 20 Ca 40.078	scandium 21 Sc 44.956	titanium 22 Ti 47.867	vanadium 23 V 50.942	chromium 24 Cr 51.996	manganese 25 Mn 54.938	iron 26 Fe 55.845	cobalt 27 Co 58.933	nickel 28 Ni 58.693	copper 29 Cu 63.546	zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selecnium 34 Se 78.96	bromine 35 Br 79.904	krypton 36 Kr 83.80			
rubidium 37 Rb 85.468	strontium 38 Sr 87.62	yttrium 39 Y 88.906	zirconium 40 Zr 91.224	niobium 41 Nb 92.906	molybdenum 42 Mo 95.94	technetium 43 Tc [98]	ruthenium 44 Ru 101.07	rhodium 45 Rh 102.91	palladium 46 Pd 106.42	silver 47 Ag 107.87	cadmium 48 Cd 112.41	indium 49 In 114.82	tin 50 Sn 118.71	antimony 51 Sb 121.76	tellurium 52 Te 127.60	iodine 53 I 126.90	xenon 54 Xe 131.29			
cesium 55 Cs 132.91	barium 56 Ba 137.33	* 57-70	lanthanum 57 La 138.91	cerium 58 Ce 140.12	praseodymium 59 Pr 140.91	neodymium 60 Nd 144.24	promethium 61 Pm [145]	samarium 62 Sm 150.36	europium 63 Eu 151.96	gadolinium 64 Gd 157.25	terbium 65 Tb 158.93	dysprosium 66 Dy 162.50	holmium 67 Ho 164.93	erbium 68 Er 167.26	thulium 69 Tm 168.93	ytterbium 70 Yb 173.04	radon 86 Rn [222]			
francium 87 Fr [223]	radium 88 Ra [226]	* 89-102	actinium 89 Ac [227]	thorium 90 Th 232.04	protactinium 91 Pa 231.04	uranium 92 U 238.03	neptunium 93 Np [237]	plutonium 94 Pu [244]	americium 95 Am [243]	curium 96 Cm [247]	berkelium 97 Bk [247]	californium 98 Cf [251]	einsteinium 99 Es [252]	fermium 100 Fm [257]	mendelevium 101 Md [258]	nobelium 102 No [259]	unbinilium 110 Uub [277]	unununium 111 Uuu [277]	ununbium 112 Uub [277]	ununquadium 114 Uuq [288]

17. Fill-in the table below:

Sub-Shells	Number of Orbitals	Number of Electrons
s		
p		
d		
f		

18. Describe the Pauli Exclusion Principle:

19. Describe the Address Book Analogy of Electron Configuration:

20. In the spaces provided below, draw each of the different orbital shapes. Be sure to label the x, y, and z axis.

<b>s</b>	<b>p<sub>x</sub></b>	<b>p<sub>y</sub></b>	<b>p<sub>z</sub></b>
<b>d<sub>x<sup>2</sup>-y<sup>2</sup></sub></b>	<b>d<sub>xy</sub></b>	<b>d<sub>yz</sub></b>	<b>d<sub>zx</sub></b>
<b>d<sub>z<sup>2</sup></sub></b>	<b>f<sub>xyz</sub></b>	<b>f<sub>x(z<sup>2</sup>-y<sup>2</sup>)</sub></b>	<b>f<sub>y(z<sup>2</sup>-x<sup>2</sup>)</sub></b>
<b>f<sub>z(y<sup>2</sup>-x<sup>2</sup>)</sub></b>	<b>f<sub>x<sup>3</sup></sub></b>	<b>f<sub>y<sup>3</sup></sub></b>	<b>f<sub>z<sup>3</sup></sub></b>

Park 4: [http://employees.oneonta.edu/viningwj/sims/atomic\\_electron\\_configurations\\_s1.html](http://employees.oneonta.edu/viningwj/sims/atomic_electron_configurations_s1.html)

Click "Description" to get background information and instructions on this activity

Click on the requested element and fill-in the table below.

Element Name	Element Symbol	Electron Configuration	Orbital Notation
Helium			
Boron			
Argon			
Potassium			
Iron			
Bromine			
Silver			
Iodine			
Xenon			
Barium			
Fluorine			
Copper			
Magnesium			
Phosphorus			
Hydrogen			