

# Periodic Table

Elements are organized by

1. \_\_\_\_\_ number
2. how many \_\_\_\_\_ are in the outer shell
3. by which \_\_\_\_\_ is their \_\_\_\_\_, \_\_\_\_\_,  
(or the \_\_\_\_\_ that electrons are added to).

Columns tell us how many \_\_\_\_\_ are in the outer shell.

Rows tell us how many \_\_\_\_\_ there are.

The atomic number tells us how many \_\_\_\_\_ an atom has.

		Group																		
		I	II											III	IV	V	VI	VII	VIII	
1		1 H																		2 He
2		3 Li	4 Be										5 B	6 C	7 N	8 O	9 F	10 Ne		
3		11 Na	12 Mg										13 Al	14 Si	15 P	16 S	17 Cl	18 Ar		
4		19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr	
5		37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe	
6		55 Cs	56 Ba	*	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn	
7		87 Fr	88 Ra	**	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Uut	114 Fl	115 Uup	116 Lv	117 Uus	118 Uuo	
8		119 Uun																		
	* Lanthanides	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu				
	** Actinides	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr				

Alkali metals	Alkaline earth metals	Lanthanides	Actinides	Transition metals
Poor metals	Metalloids	Nonmetals	Halogens	Noble gases

**State at standard temperature and pressure**

Atomic number in red: gas

Atomic number in blue: liquid

Atomic number in black: solid

solid border: at least one isotope is older than the Earth (Primordial elements)
dashed border: at least one isotope naturally arise from decay of other chemical elements and no isotopes are older than the earth
dotted border: only artificially made isotopes (synthetic elements)
no border: undiscovered

# Periodic Table

Elements are organized by

1. **atomic** number
2. how many **electrons** are in the outer shell
3. by which **shell** is their **valence shell** (or the **shell** that electrons are added to).

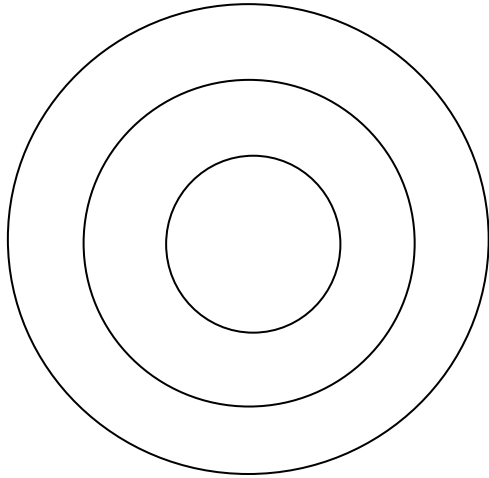
Columns tell us how many **atoms** are in the outer shell.

Rows tell us how many **shells** there are.

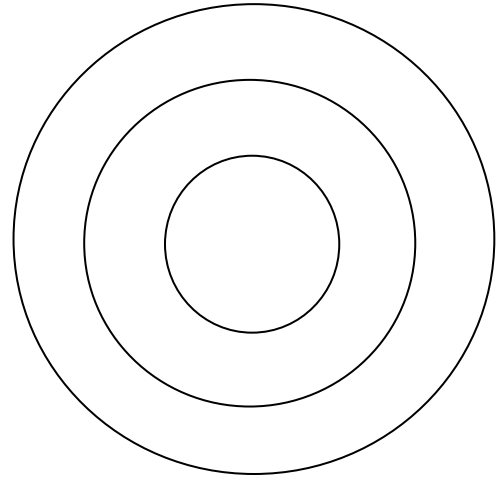
The atomic number tells us how many **electrons** an atom has.

# Bohr Diagram

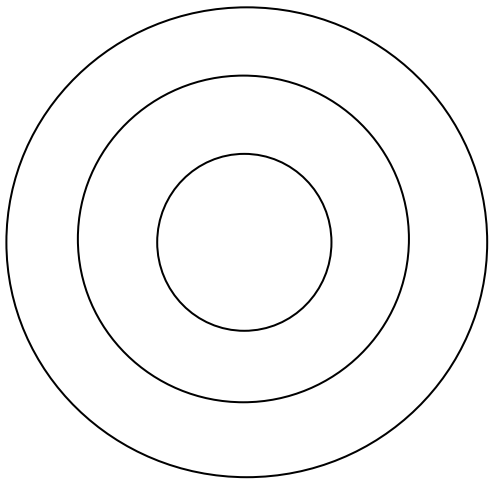
1. Find your element on the periodic table. Write the element's symbol in the nucleus.
2. Find which row your element is in. This is how many shells your element will have.
3. Look at the atomic number of your element on the periodic table. This is how many electrons you will draw.
4. Remember, there are two electrons in the first shell, up to eight electrons in the second shell.



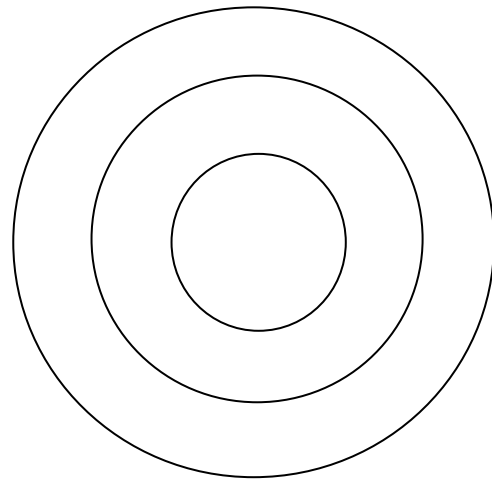
**Hydrogen**



**Helium**

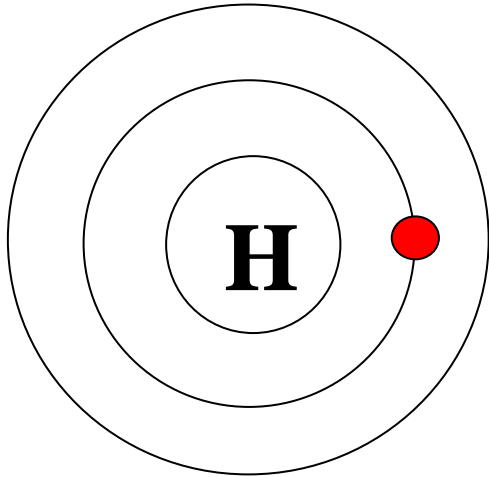


**Beryllium**

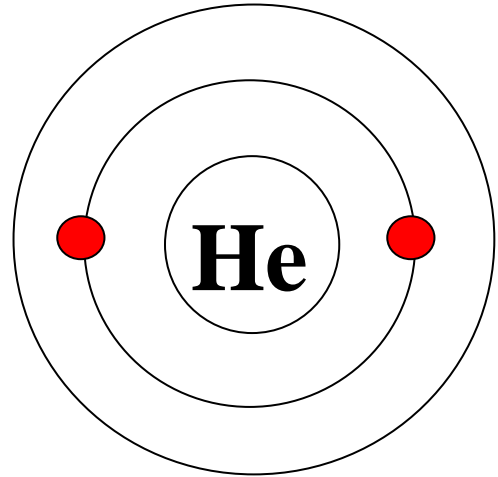


**Carbon**

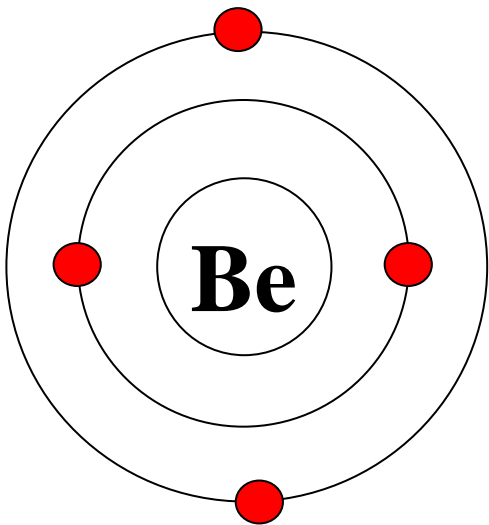
# Bohr Diagram



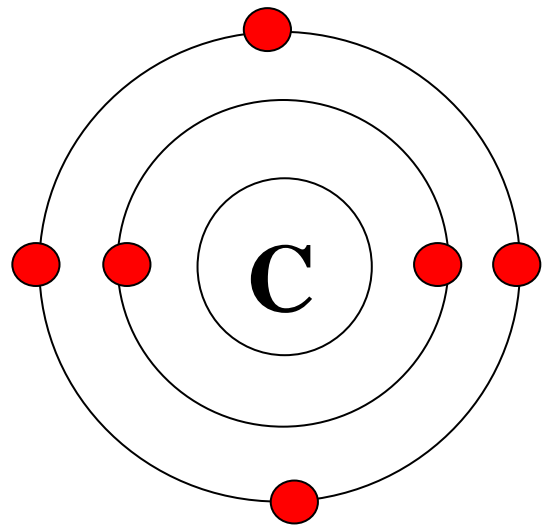
**Hydrogen**



**Helium**



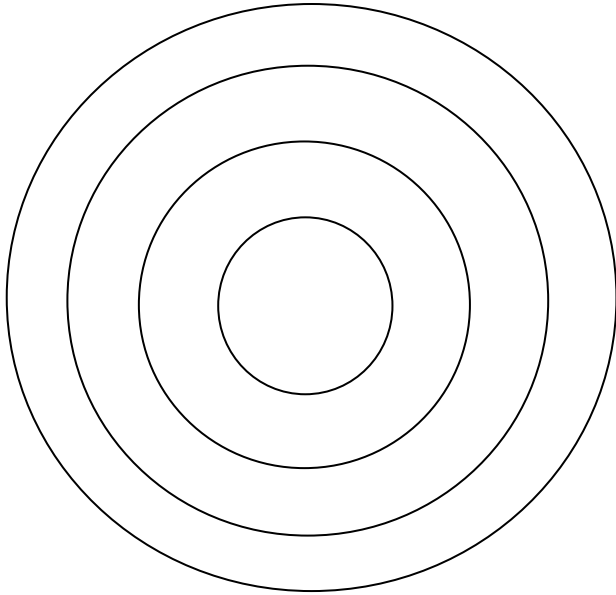
**Beryllium**



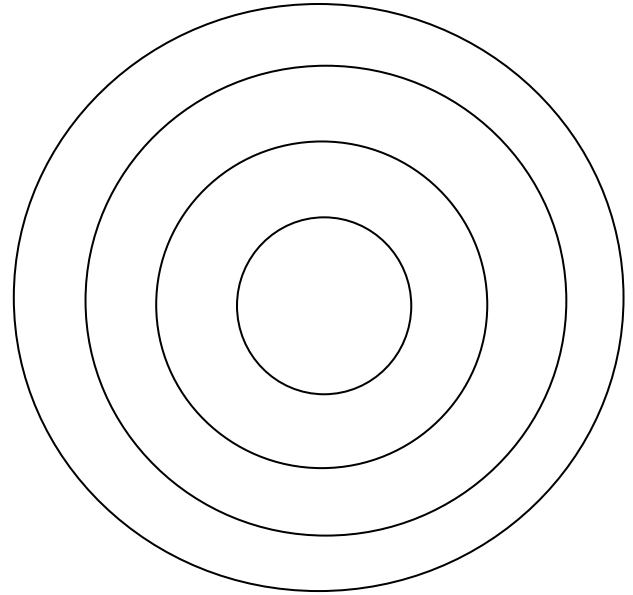
**Carbon**

# Bohr Diagram

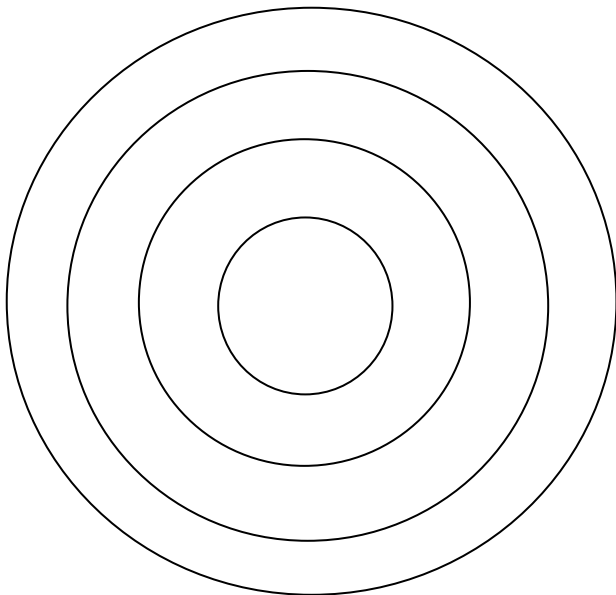
1. Find your element on the periodic table. Write the element's symbol in the nucleus.
2. Find which row your element is in. This is how many shells your element will have.
3. Look at the atomic number of your element on the periodic table. This is how many electrons you will draw.
- 4 Remember, there are 2 electrons in the first shell, 8 electrons in the second shell, up to 8 electrons in the 3rd shell.



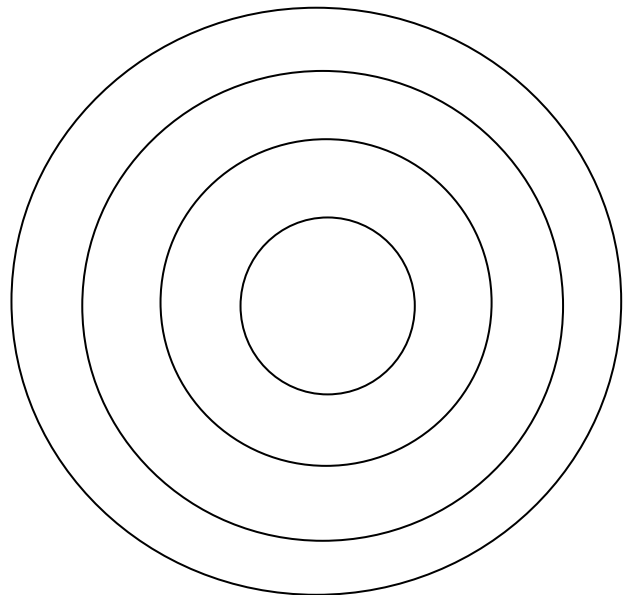
**Oxygen**



**Sodium**

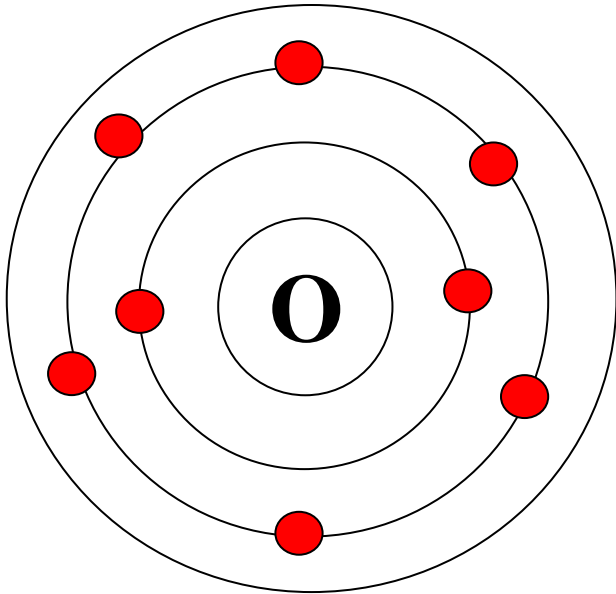


**Sulfur**

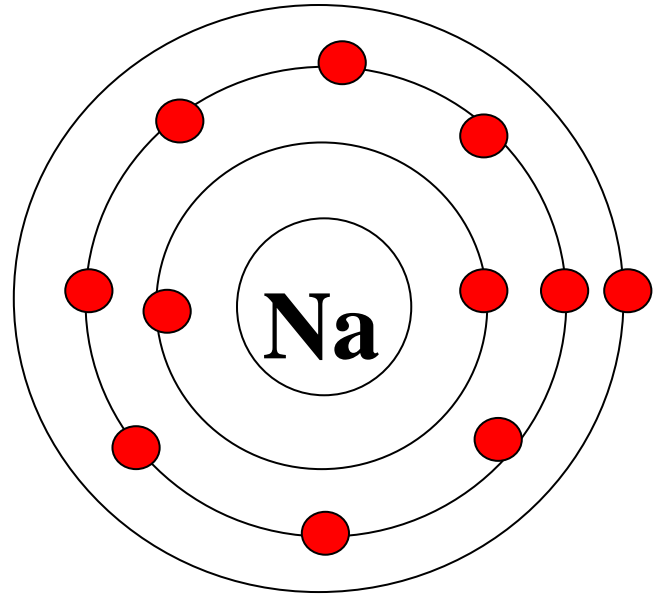


**Chlorine**

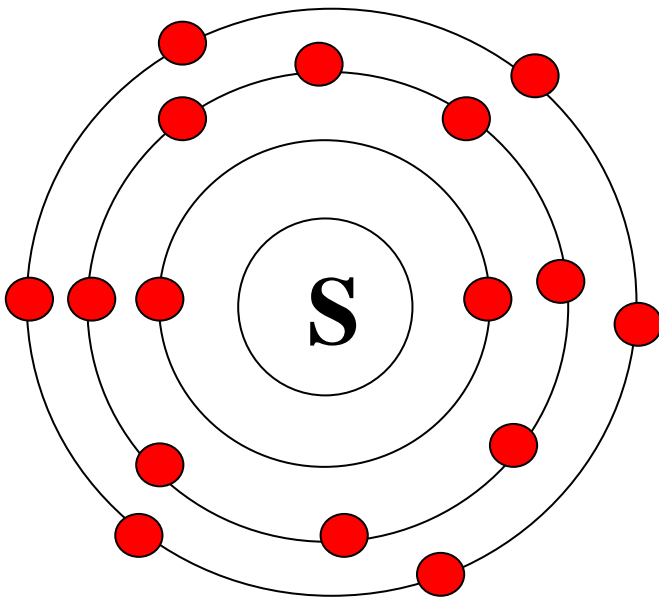
# Bohr Diagram



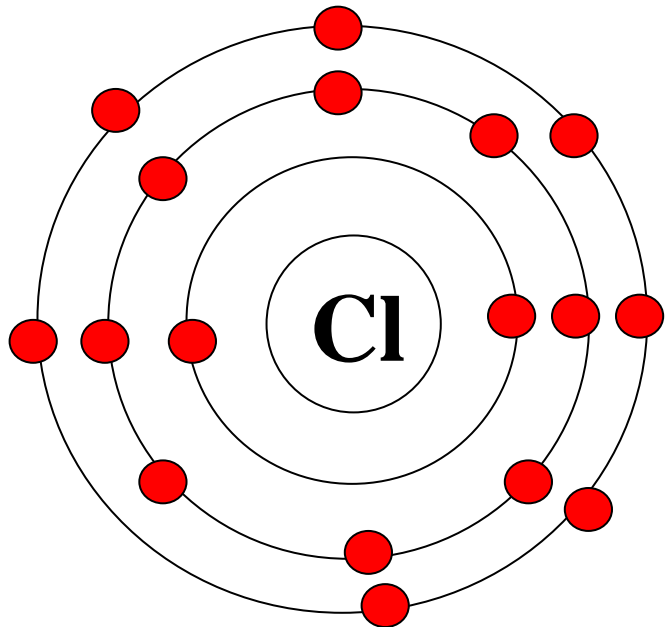
**Oxygen**



**Sodium**



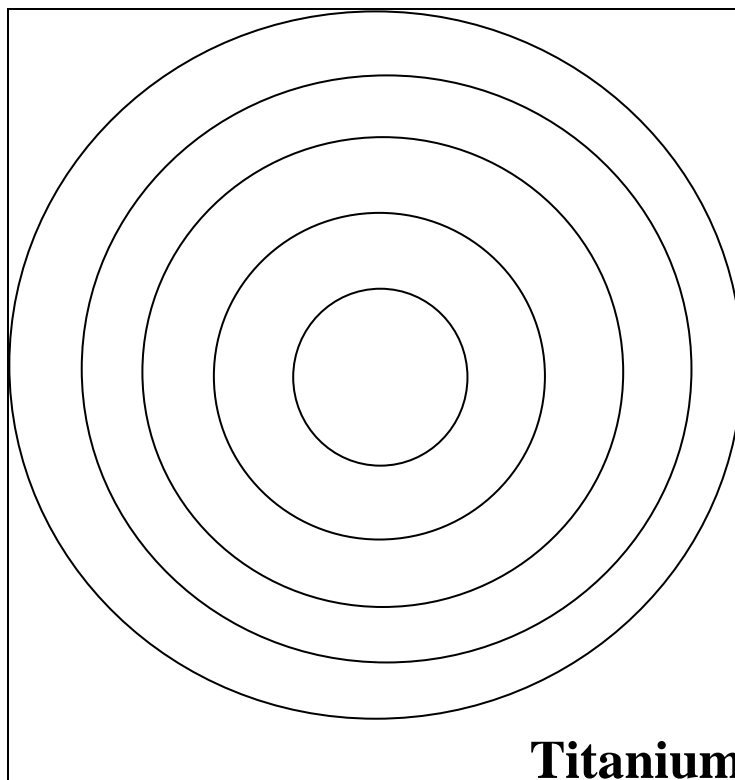
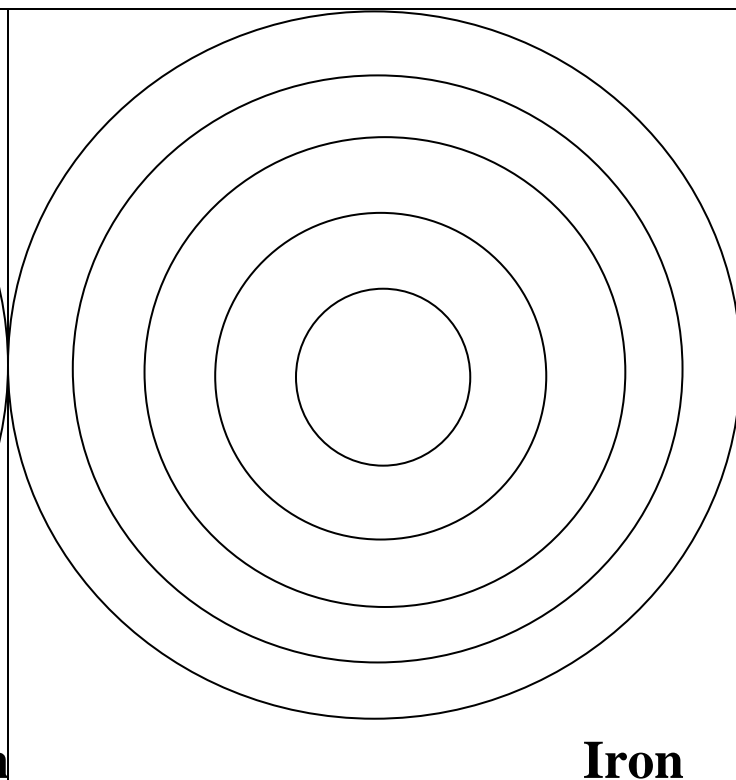
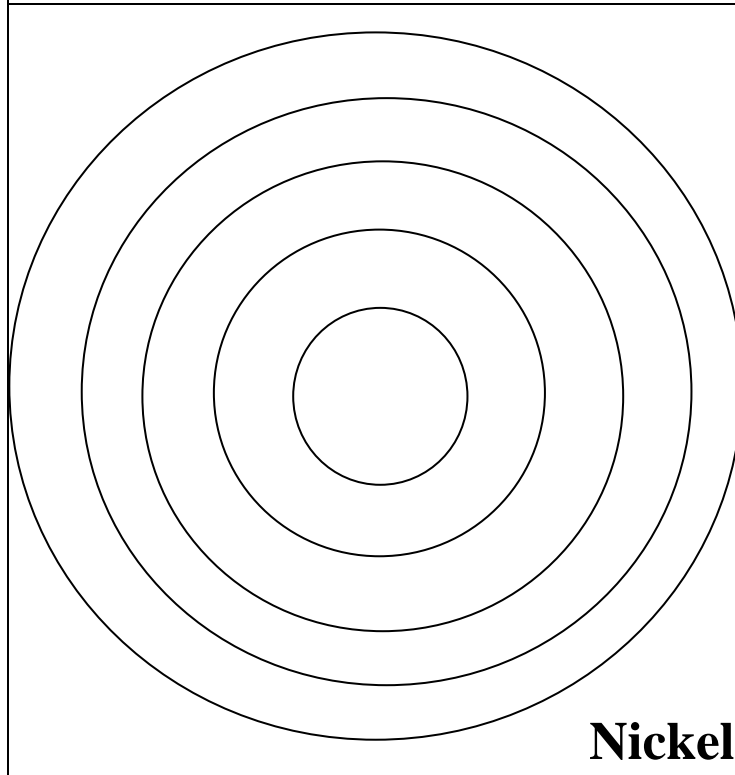
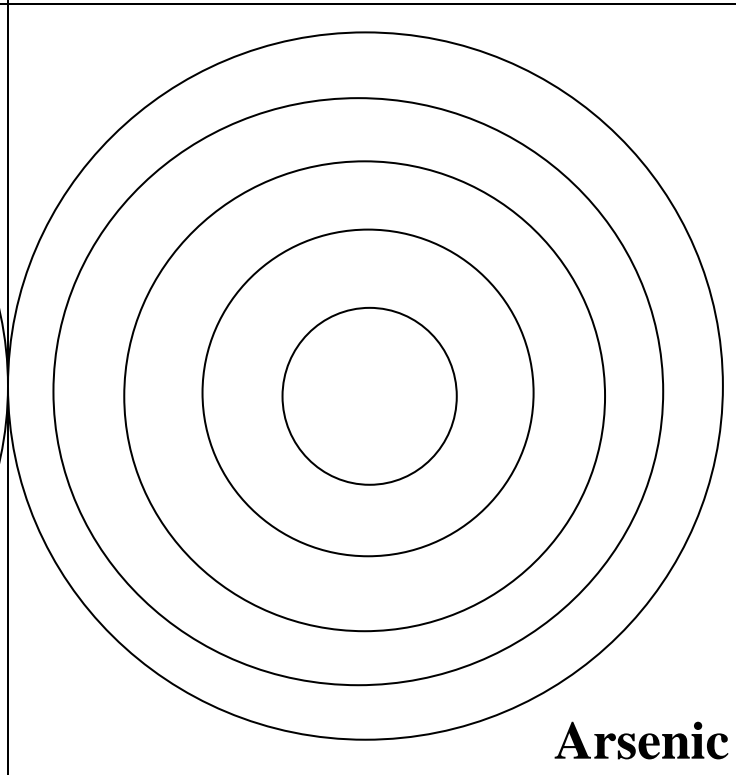
**Sulfur**



**Chlorine**

# Bohr Diagram - Transition Metals

1. Find which row your element your element is in. This is how many shells your element will have.
2. Look at the atomic number of your element on the periodic table. This is how many electrons you will draw.
3. The column will tell you how many electrons are in your outmost shell. Electrons in the Transition Metal Group get added to the 2nd to last shell.

 <p><b>Titanium</b></p>	 <p><b>Iron</b></p>
 <p><b>Nickel</b></p>	 <p><b>Arsenic</b></p>

# Bohr Diagram - Transition Metals

