

# Periodic Table's *Most Wanted*



## Remember Bohr Diagrams!

Nucleus in the middle  
1<sup>st</sup> Ring = 2 e- max  
2<sup>nd</sup> Ring = 8 e- max  
3<sup>rd</sup> Ring = 18e- max  
4<sup>th</sup> Ring = 32e- max

Detective Name:

Period:

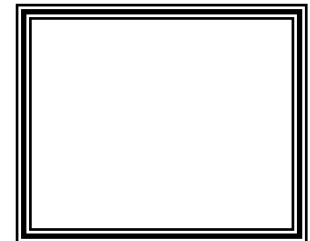
Seat #:

**TURN INTO BASKET BEFORE  
YOU GLUE INTO NOTEBOOK!**

There is an element on the periodic table that does not want to be located! This element is "hiding out." In an effort to elude you, the element has provided many false identities and it is your job to follow this trail of false identities to locate the element's true name. This element is not as smart as it thinks; we know that all of these false identities are connected to each other. Therefore, providing the identity for each clue will ultimately help lead you to the correct element (this means you should use each answer as a reference to get the next one). So, if you make **just one** mistake it will affect all the clues and identities that follow...thus allowing this perpetrator to get away.

**BE SAFE, BE SMART, BE VIGILANT!!!**

- 1) Period two, group one is where I sit \_\_\_\_\_
- 2) The number of valence electrons in the previous answer plus 23 is my atomic number \_\_\_\_\_
- 3) Five groups to the right of the previous answer, in period five, is my location \_\_\_\_\_
- 4) The number of neutral particles in the previous answer is my atomic number \_\_\_\_\_
- 5) If you reverse the atomic number in the previous answer, you will know my mass \_\_\_\_\_
  - a. Draw a "mug shot" of me (Bohr diagram)
  - b. Write my electron configuration:



- 6) The number of negative particles in the 2<sup>ND</sup> energy level of my "mug shot," divided by two and multiplied by 10 is equal to my atomic # \_\_\_\_\_
- 7) The previous answer's group # represents my atomic mass \_\_\_\_\_
- 8) The previous answer's group and period six is where I reside \_\_\_\_\_
- 9) The first # of the previous answer's mass represents my atomic # \_\_\_\_\_
- Draw the "mug shots" (Bohr diagrams) of my three family members that come directly below me
  - Write the electron configurations of each of these family members

**Member #1**

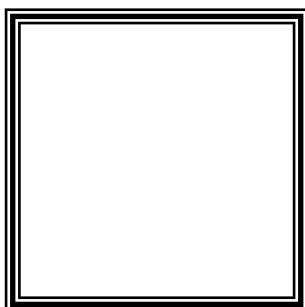
**Member #2**

**Member #3**



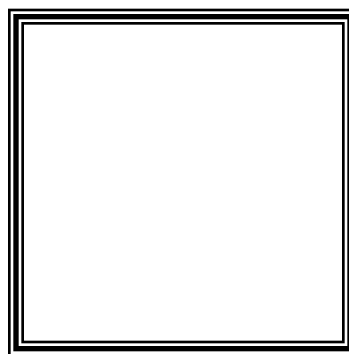
Name:

e- Config:



Name:

e- Config:



Name:

e- Config:

- 10) The total sum of the number of valence electrons for all the three members drawn represents my mass (use your periodic table to find the number of valence e- for each of these members, the Group #'s labeled A match the number of valence electrons – 1A group has 1 valence, 2A has 2, etc) \_\_\_\_\_
- Calculate the # of protons, neutrons and electrons for the members of the previous answer's group *that reside in periods 4, 5, and 6 if they were all ions with a -3 charge* (meaning, they each have 3 extra electrons than normal. No, they don't all make a -3 charge in real life). Use the table to help you do this.

**Period Numbering** The periods are numbered straight from top to bottom 1-7, it is not the same as how we number our energy levels for electron configurations! You don't drop down when you get to the d/f blocks. Example: Sc is in period 4

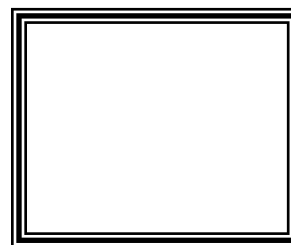
Ion (Symbol with charge)	Protons	Neutrons	Electrons (Don't forget the extra three electrons!)

**Sum** all numbers in the table (protons + neutrons + Electrons) = \_\_\_\_\_

- 11) The sum of all the protons, neutrons, and electrons from the table above, divided by four represents my atomic # once you reverse the two digits \_\_\_\_\_  
Based on my atomic number, my name is \_\_\_\_\_
- 12) Go to the teacher to check your answer to #11. If it is correct you are one step away from finding the true identity of the element and you can ask your teacher for the answer to the next question, #13!
- 13) Based on what your teacher told you, this is how many valence electrons I have. \_\_\_\_\_
- 14) The number of valence electrons in #13 is my true atomic number.

**WHO AM I???**

Draw my mug shot and fill out the required information



**True Name:**

**Atomic Number:**

**Electron Configuration:**