

Detective Name: _____

Period: _____

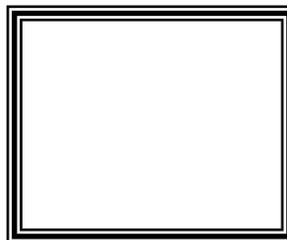
Seat#: _____



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:



Remember Bohr Diagrams!

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

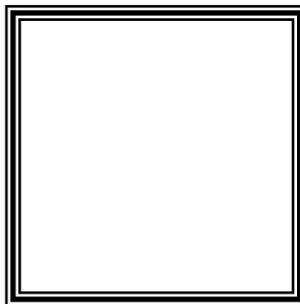
- 6) The number of negative particles in the second energy level of my "mug shot," divided by two and multiplied by 10 is equal to my atomic number _____
- 7) The previous answer's group number represents my atomic mass _____
- 8) The previous answer's group and period six is where I reside _____
- 9) The first number of the previous answer's mass represents my atomic number _____
 - a. Draw the "mug shots" (Bohr diagrams) of my three family members that come directly below me
 - b. Write the electron configurations of each of these family members under the box with the bohr diagram

Member #1



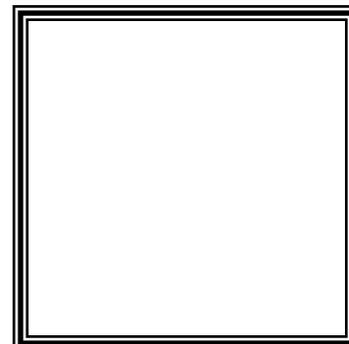
Name:
e- Config:

Member #2



Name:
e- Config:

Member #3



Name:
e- Config:

Dougherty Valley HS Chemistry

Periodic Table's Most Wanted

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) _____

- a. 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 number once you reverse the two digits _____

Based on my atomic number, my name is _____

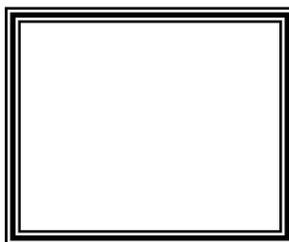
12) Go to the teacher to check your answer to #11. If it is correct you are one step away from finding the true identity of the element!

13) If your answer was correct ask the teacher 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: