

Detective Name: _____

Period: _____

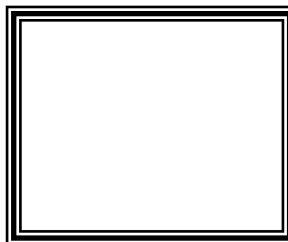
Seat#: _____



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. My *symbol* is _____
- 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. My *symbol* is _____
- 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



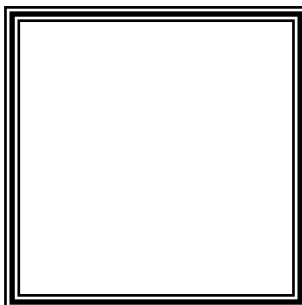
- 6) The number of negative particles in the second energy level of my "mug shot," divided by two and multiplied by 10 is equal to my *atomic number* _____
- 7) The previous answer's group number (using 1-18 format) represents my *mass* _____
- 8) The previous answer's group and period six is where I reside. My *symbol* is _____
- 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 in my group.
 - b. Write the electron configurations of each of these family members under the box with the Bohr diagram

Member #1



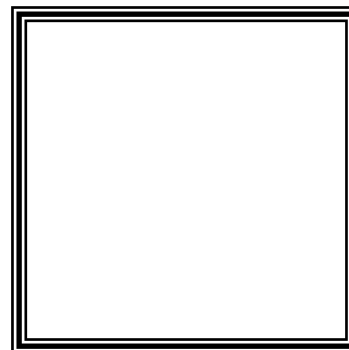
Name: _____
 # of e-: _____
 Noble Gas e- Config: _____

Member #2



Name: _____
 # of e-: _____
 Noble Gas e- Config: _____

Member #3



Name: _____
 # of e-: _____
 Noble Gas e- Config: _____



10) The total sum of the number of valence electrons for all the three members drawn in question 9 represents my mass (remember – 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!* (meaning, you will need to adjust the number of electrons in the element based on the charge they make, and record this new number of electrons in the table. 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 Remember - adjust the # e- based on charge!

Sum all the protons + neutrons + electrons in the table = _____



11) Add the atomic number of phosphorus to the sum of all the protons, neutrons, and electrons from the table above, divide by four, *reverse the two digits* and this number will represent my *atomic number*

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! If your answer was correct ask the teacher how many *valence electrons* I have _____

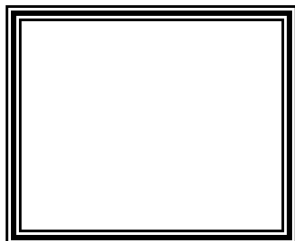


13) The number of valence electrons in #12 is my true *atomic number* _____



WHO AM I???

Draw my mug shot and fill out the required information.



True Name:

Atomic Number:

Mass Number:

Number of Electrons:

Electron Configuration:

Class of Element:



Not doing this assignment in class where you can check your answers with the teacher? Use this Google Form to check your answers! At each "check point" you can submit your answers and it will tell you if you are correct or not before you move onto the next section. When you are finished you can check your final answer too. It won't check every aspect of your work (like the Bohr diagrams), but it will at least tell you if you are finding the correct elements as you go!



<https://tinyurl.com/54bkyw6r>