**Periodic Table Web Quest**

**Part 1**

Go to <http://periodic.lanl.gov/use.shtml>

Read though the text and graphics and answer the following questions.

1. What is the atomic number? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the atomic symbol? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the atomic weight? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part 2**

Go to <http://ippex.pppl.gov/interactive/matter/elements.html> and answer the following questions as you watch the tutorial.

1. Atoms with a given number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Scientists have discovered more than \_\_\_\_\_\_\_\_\_\_\_ different elements.
3. If we remove one proton from Lithium, it becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. If we change the number of neutrons found in an element, it is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ arranges elements according to the number of \_\_\_\_\_\_\_\_\_\_\_\_ and the properties of the elements.
6. Elements in each column are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The elements in each group have similar\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Continue using the interactive to answer the following questions about molecules.

1. When elements combine, they form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The lowest energy level can hold \_\_\_\_\_\_\_\_\_\_\_\_ electrons. The next level can hold \_\_\_\_\_\_\_\_\_ electrons and the third level can hold \_\_\_\_\_\_\_\_\_\_ electrons.

Now go to <http://education.jlab.org/elementmath/index.html> and play the Element Math Game. Your settings should be 10 questions, tested on protons, neutrons, and electrons, and do not round the mass.

My score on the Element Math Game was: \_\_\_\_\_\_\_\_\_\_\_\_\_%

**PART 3: GROUPS (Families) of the Periodic Table**

Go to <http://www.chemicalelements.com/index.html> and <http://www.chem4kids.com/files/elem_alkalimetal.html> to answer the following questions and to color the 8 groups on the attached periodic table.

1. GROUP 1 (IA).

a. Elements in Group 1 are called the \_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. These are very \_\_\_\_\_\_\_\_\_\_\_ metals that do/do not occur freely in nature.

c. These metals have \_\_\_\_\_\_ electron in their outer shell.

d. List 3 properties of these metals:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_+\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e. Pick a color and shade the appropriate area on your periodic table handout.

2. GROUP 2 (IIA)

a. Elements in Group 2 are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. These are also very \_\_\_\_\_\_\_\_\_\_\_\_\_\_ metals that do/do not occur freely in nature.

c. These metallic elements have \_\_\_\_\_\_ electrons in their outer shell.

d. Name at least 2 common uses for elements from this family: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e. Pick a color and shade the appropriate area on your periodic table handout.

3. GROUPS 3 -12

a. The \_\_\_\_\_\_\_elements in this group are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. List at least 3 properties of elements in this group:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. The transition metals have their valence electrons in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

d. Pick a color and shade the appropriate area on your periodic table handout.

4. GROUPS 13, 14, and 15

a. The \_\_\_\_\_ elements in this group are classified as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. All of these elements are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and have relatively high densities.

c. Name 2 properties that they have in common with the other metals.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. Pick a color and shade the appropriate area on your periodic table handout.

5. Draw the stair-step line on your periodic table to separate the metals from the non-metals. The elements found here are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. GROUPS 14, 15, and 16

a. These elements are called the \_\_\_\_\_\_\_\_\_\_\_- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. These elements do/do not conduct heat and electricity well.

c. Pick a color and shade the appropriate area on your periodic table handout.

7. GROUP 17

a. The elements in this group are referred to as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which means “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”.

b. There are \_\_\_\_\_\_\_\_\_ elements in this group and they have \_\_\_\_\_\_\_\_ electrons in their outer shell.

c. The elements in this group may exist as \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ at room temperature.

d. Pick a color and shade the appropriate area on your periodic table handout.

8. GROUP 18

a. The \_\_\_\_\_elements in this group are called the \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. They used to be called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ because they have \_\_\_\_\_ electrons in their outer shell.

c. Pick a color and shade the appropriate area on your periodic table handout.

9. The Lanthanoid and Actinoid Series

a. These elements all have incomplete sublevels, which is why they are found in the \_\_-block on the Periodic Table.

b. They are also called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

c. Pick a color and shade the appropriate area on your periodic table handout.

**BONUS – If you have time, you may complete this section for extra credit**

Directions: Using the web sites listed below and a copy of the Modern Periodic Table, answer the following questions:

<http://www.chem4kids.com/files/elem_families.html>

<http://klbproductions.com/yogi/periodic/>

1. How many groups (families) are there in the Periodic Table? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. How many elements are in your Periodic Table? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How many periods are there in your Periodic Table? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What is the basic theme of organization in the Periodic Table? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Why are the elements 57 through 70 and 89 through 102, found separately at the bottom of the table? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Look at the bold line shaped like a staircase on the right side of the table. What does it divide? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. What are the metalloids? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Provide three examples of metalloids:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. Periodic Table Trends:

a. As you move left to right in a period the reactivity of a metal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

b. As you move from top to bottom in a Group the reactivity of a metal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

c. As you move left to right in a period the reactivity of a nonmetal \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

d. As you move from top to bottom in a Group the reactivity of a nonmetal \_\_\_\_\_\_\_\_\_\_\_\_\_\_.