Periodic Table WebQuest Worksheet #2

Part 1-The Periodic Table

http://periodic.lanl.gov/default.htm

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

Click on "How to Use the Periodic Table"

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

Click the "Back" button: Scroll down to "Families and Elements"

4. What are the 8 families of elements?

Click the "Back" button: Scroll down to "Naming New Elements"; read and answer the following questions:

5. What international body of chemists has decided the names of 6 new elements?
6. What element was named by Lawrence Berkeley Laboratory?
7. What two elements did Seaborg's group produce and what are their symbols?
8. What are the elements and their symbols which were named by this group?

PART 2: NAVIGATING THE PERIODIC TABLE

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://library.thinkquest.org/3659/pertable/

http://environmentalchemistry.com/yogi/periodic/

1. How many periods are there in the Modern Periodic Table?
2. How many groups are there in the Modern Periodic Table?
3. What are the general properties of the elements in the first two groups on the left side of the Modern Periodic Table?
4. What are the general properties of the elements in the group to the right in the Modern Periodic Table?
5. Find the element "oxygen."
   a. What does the "8" on the top of the chemical symbol signify?
   b. What does the number 15.999 signify?
6. Find the element "calcium."
   a. What is the chemical symbol for calcium?
   b. What is the atomic number for calcium?
   c. What is the atomic mass (weight) of calcium?
7. Find the element "copper."
   a. What is the chemical symbol for copper?
   b. What is the atomic number for copper?
   c. What is the atomic mass (weight) for copper?
8. Find the element "nitrogen."
   a. What is the atomic number for nitrogen?
   b. How many electronic orbit its nucleus?
   c. How many protons does it have?

Part 3: THEMES AND TRENDS ON THE PERIODIC TABLE

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://environmentalchemistry.com/yogi/periodic/
http://www.chemicalelements.com/index.html

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 them of organization in the Periodic Table?
5. a. Why are the elements 57 though 70, and 89 through 102, found separately at the bottom of the table?
   b. As what can the vast majority of elements in the Periodic Table be classified?
6. Look at the bold line shaped like a staircase on the right side of the table. What does it divide?
7. a. What are the metalloids?
   b. Provide three examples of metalloids.
   c. What is a metalloid?
8. Describe two trends in the Periodic Table as you go from left to right along periods.
   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 _____.

Part4- Groups

9. GROUPS 1 (IA) and 2 (IIA).
http://www.chem4kids.com/files/elem_alkalaimetal.html

a. Elements in Group IA are called the _____ _____.
b. All the elements in this group form _____ ions with a positive _____ charge when they chemically react. _____ is the most reactive element in this group. These elements are very reactive with _____.
c. Elements in Group IIA are called the _____ _____ _____.
d. All the elements in this group form _____ ions with a positive _____ charge. _____ is the most reactive element in the group.
e. Both Groups IA and IIA have _____ ionization energies and _____ electron negativities, which is why these substances are very reactive. These atoms are so reactive that they are not found in nature in the elemental form, therefore in order to separate these elements from other elements from other elements electricity must be used.
f. Discuss some physical and/or chemical properties of magnesium and calcium.
g. Summarize the general properties of elements in these groups?

10. Between groups 2 and 3 TRANSITION ELEMENTS (Metals) Groups ____ through _____.

http://www.chem4kids.com/files/elem_transmetal.html
http://environmentalchemistry.com/yogi/periodic/

a. Transition elements are those elements in which electrons from the out 2 principle energy levels may be involved in a chemical reaction, this is why they may have so many positive _____ numbers. If you look at your Periodic Table the transition metals are found in what is called the d-block, which means they have an incomplete d-sublevel.
b. Most compounds containing transition elements are _____, for example, Copper Nitrate is _____, Nickel Nitrate is _____, and Iron Nitrate is _____, while Magnesium Nitrate and Calcium Nitrate are _____.

(Search the Internet.)

c. Which element is responsible for the yellow color of K2CrO4? Potassium Chromate.
d. Which element is responsible for the purple color in KMnO4? Potassium Permanganate.

Summary:

a. Describe the general properties of the transition metals.
b. List three examples of transition metals and their uses.

11. GROUP 14 (1VA) "The _____ Group"
    a. What is the element at the top of the group?
    b. Find three important physical and/or chemical properties of carbon.
    c. What is an allotrope?

http://antoine.frostburg.edu/chem/senses/101/matter/index.shtml

d. Name and describe the properties of three allotropes of carbon
   i. _____=
   ii. _____=
   iii. _____=

http://www.msu.edu/~hungerf9/bucky1.html

e. Describe some of the important properties and uses of Silicon.
f. List three other elements in this group and their uses.

12. GROUP 15(VA) "The _____ Group"

http://environmentalchemistry.com/yogi/periodic/N.html

http://en.wikipedia.org/wiki/Haber_process

http://www.daviddarling.info/encyclopedia/P/phosphorus.html

a. Find three important physical and/or chemical properties of nitrogen.
b. Find information about the Haber Process.
c. What are three allotropes of phosphorus, how are they different?

13. GROUP 16(V1A)

http://www.webelements.com/webelements/elements/text/O/key.html

a. What are the two allotropes of oxygen?
b. Describe what is happening to the Metallic characteristics of these elements as you go down the Group.

14. GROUP 17(V11A) or the _____ Group, which means _____ _____.

http://www.chem4kids.com/files/elem_halogen.html

a. What is the common oxidation number for all elements in this group?
b. They all have what kind of electronegativity values?
c. Which elements in this group are diatomic?

d. Describe the states of matter and physical properties of the first four elements in this group.

e. These elements readily combine with hydrogen to form hydrogen _____, and readily with metals in groups _____ and _____ to form _____ _____.

15. GROUP 18(O) or the _____ gases or _____ gases.
http://www.chem4kids.com/files/elem_inertgas.html
http://chemicalelements.com/index.html

a. How did this group of elements get their name?
b. Why has their name been changed from the noble gases to the inert gases?
c. Which two elements can the larger elements in this group (Kr, Xe, Rn) react with because of their very large electronegativity values and small size?
d. List two important properties of two of the noble gases.
e. List two important uses of two of the noble gases.

16. The Lanthanoid and Actinoid Series have incomplete sublevels, which is why they are found in the __-block on the Periodic Table. The "rare elements" are found in these sections of the Periodic Table.
http://www.chem4kids.com/files/elem_lanthanide.html