

Periodic Table WebQuest

Periodic Table of the Elements

* Lanthanide Series
 + Actinide Series

Instructions: In each of the websites listed, find the information asked for.

Part I: **“Major Players”** Go to

<http://allperiodictables.com/ClientPages/AAEpages/aaeHistory.html>

For this site, write the contributions of each person toward the development of the Periodic Table of Elements.

Scientist	Contribution to the development of the periodic table
Greek thinkers	
Lavoisier	
John Dalton	
Doberiner	
Dechancourtois	
Cannizaro	
Newlands	
Meyer	
Mendeleyev	
Moseley	
Seaborg	

Part II: **“Get Organized Periodically”** Go to <http://www.chem4kids.com/files/elementable.html>

1. Why are the elements placed in specific places on the Periodic Table?
2. Periods are _____ that run from left to right.
3. Elements in the same period have the same _____.
4. Every element in the first period has _____ shell for its _____. Every element in the second period has _____ for its _____. See the pattern?
5. Groups are _____ that run from top to bottom.
6. The elements of a group have the same number of _____ in their _____ shell.
7. Every element in group one has _____ electron in its outer shell. Every element in group two has _____ electrons in its outer shell.
8. Hydrogen is special because it can act like two groups, _____ and _____.
9. Hydrogen sometimes is _____ an electron and sometimes it has an _____ electron.
10. Although helium has only _____ electrons in its outer shell, it is grouped with elements that have _____.
11. The green elements on this table are called _____ elements. They each have two electrons in their outer shell.

Part III: **“Family Fun”** Go to <http://chemicalelements.com/>

12. **Click on Alkali Metals** (left bar) and answer the following questions.
 - a. What is the group number? _____
 - b. Are these metals reactive? _____
 - c. Do these metals occur freely in nature? _____
 - d. How many electrons are in their outer shell? _____

e. What are the three characteristics of ALL metals? _____

f. Are these metals soft or hard? _____

g. Name the two most reactive elements in this group? _____ and _____

h. What happens when they are exposed to water? _____

13. **Click on Alkaline Earth Metals** (left bar) and answer these questions.

a. What is the group number? _____

b. Are these metals reactive? _____

c. Do these metals occur freely in nature? _____

d. How many electrons are in their outer shell? _____ (Hint: It's the same as their oxidation number or group number.)

14. **Click on Transition Metals** (left bar) and answer these questions.

a. How many elements are in this group? _____

b. What are the group numbers? _____ through _____

c. What are valence electrons? _____

d. Because the valence electrons are present in more than one _____ transition metals often exhibit several common _____.

e. Name the three elements in this family that produce a magnetic field. _____, _____, and _____.

15. **Click on Other Metals** (left bar) and answer these questions.

a. How many elements are in this group? _____

b. What are the group numbers? _____ through _____

c. How are these other metals similar to the transition metals? _____

d. How are these metals different than the transition metals? _____

e. List three physical properties of these other metals.

f. What are the oxidation numbers for this group? _____

16. **Click on Metalloids** to answer these questions.

a. On your periodic table, draw the black stair-step line that distinguishes metals from nonmetals.

b. Metalloids have properties of both _____ and _____.

c. Define semiconductor _____.

d. Name two metalloids that are semi-conductors. _____ and _____.

e. This property makes metalloids useful in _____ and _____.

17. **Click in Nonmetals** to answer these questions.

a. What are the group numbers? _____ through _____

b. List four characteristics of ALL nonmetals. _____

c. What two states of matter do nonmetals exist in at room temperature?

d. The nonmetals have no _____ and do not _____.

e. What are the oxidation numbers of the nonmetals? _____

18. **Click on the Halogens** (left bar) to answer these questions.

a. What is the halogen group number? _____

b. Are halogens metals or nonmetals? _____

c. The term "halogen" means _____ and compounds containing halogens are called _____.

d. How many electrons are in their outer shell? _____

e. What is their oxidation number? _____

f. What states of matter do halogens exist in at room temperature?

19. Click on Noble Gases (left bar) and answer these questions.

a. What is the group number? _____

b. Why were these gases considered to be inert or stable?

c. What is their oxidation number? _____

20. Click on Rare Earth Elements (Inner Transition) (left bar) and answer these questions.

a. On your periodic table, label the Lanthanide and Actinide series with your pencil.

b. How many Rare Earth elements are there? _____

c. Define trans-uranium. _____

d. The Rare Earth metals are found in group _____ and periods _____ and _____.

Part IV: **“Periodic Trends”**

The periodic table is called such because many properties are periodic functions of their elements. In this section you will define each of the periodic properties and describe how the properties vary across a row and down a column of the periodic table.

Go to: <http://chemistry.about.com/od/periodictableelements/a/periodictrends.htm>

- Atomic radii
- Ionic radii
- Cation
- Anion
- Ionization energy
- Electron affinity
- Electronegativity
- Metallic character

Part V: **“Representations of the Periodic Table”**

As you search the sites below, be aware of the different portrayals of the periodic table. What are the different tables illustrating? Which do you like best?

<http://dwb.unl.edu/teacher/nsf/C04/C04Links/chemlab.pc.maricopa.edu/periodic/stowetable.html>

<http://www.wou.edu/las/phyci/ch412/altable.htm>

Congratulations! You have finished your first chemistry WebQuest. Turn in your answers.