Name:

Color Coding the Periodic Table

Student Information Sheet

The Periodic Table is a list of all the known elements. It is organized by increasing atomic number. There are two main groups on the periodic table: metals and nonmetals. The left side of the table contains elements with the greatest metallic properties. As you move from the left to the right, the elements become less metallic with the far right side of the table consisting of nonmetals. The elements in the middle of the table are called "transition" elements because they are changed from metallic properties to nonmetallic properties. A small group whose members touch the zigzag line are called metalloids because they have both metallic and nonmetallic properties.

The table is also arranged in vertical columns called "groups" or "families" and horizontal rows called "periods." Each arrangement is significant. The elements in each vertical column or group have similar properties. Group 1 elements all have the electron in their outer shells. This gives them similar properties. Group 2 elements all have 2 electrons in their outer shells. This also gives them similar properties. Not all of the groups, however, hold true for this pattern. The elements in the first period or row all have one shell. The elements in period 2 all have 2 shells. The elements in period 3 have 3 shells and so on.

There are a number of major groups with similar properties. They are as follows:

Hydrogen: This element does not match the properties of any other group so it stands alone. It is placed above group 1 but it is not part of that group. It is a very reactive, colorless, odorless gas at room temperature. (1 outer level electron)

<u>Group</u> 1: Alkali Metals – These metals are extremely reactive and are never found in nature in their pure form. They are silver colored and shiny. Their density is extremely low so that they are soft enough to be cut with a knife. (1 outer level electron)

<u>Group 2:</u> Alkaline-earth Metals – Slightly less reactive than alkali metals. They are silver colored and more dense than alkali metals. (2 outer level electrons)

<u>Groups 3 – 12</u>: Transition Metals – These metals have a moderate range of reactivity and a wide range of properties. In general, they are shiny and good conductors of heat and electricity. They also have higher densities and melting points than groups 1 & 2. (1 or 2 outer level electrons)

<u>Lanthanides and Actinides</u>: These are also transition metals that were taken out and placed at the bottom of the table so the table wouldn't be so wide. The elements in each of these two periods share many properties. The lanthanides are shiny and reactive. The actinides are *all* radioactive and are therefore unstable. Elements 95 through 103 do not exist in nature but have been manufactured in the lab.

<u>Group 13:</u> Boron Group – Contains one metalloid and 4 metals. Reactive. Aluminum is in this group. It is also the most abundant metal in the earth's crust. (3 outer level electrons)

<u>Group 14</u>: Carbon Group – Contains on nonmetal, two metalloids, and two metals. Varied reactivity. (4 outer level electrons)

<u>Group 15</u>: Nitrogen Group – Contains two nonmetals, two metalloids, and one metal. Varied reactivity. (5 outer level electrons)

Group 16: Oxygen Group – Contains three nonmetals, one metalloid, and one metal. Reactive group. (6 outer level electrons)

<u>Groups 17</u>: Halogens – All nonmetals. Very reactive. Poor conductors of heat and electricity. Tend to form salts with metals. Ex. NaCl: sodium chloride also known as "table salt". (7 outer level electrons)

<u>Groups 18</u>: Noble Gases – Unreactive nonmetals. All are colorless, odorless gases at room temperature. All found in earth's atmosphere in small amounts. (8 outer level electrons)

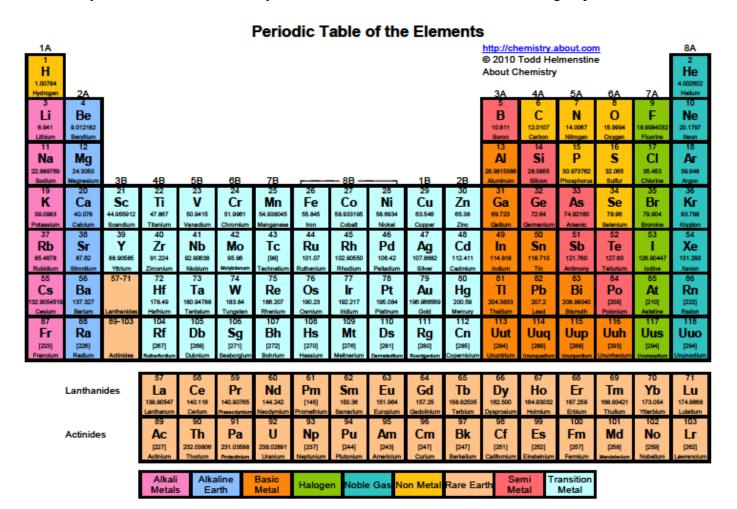
Color Coding the Periodic Table

Student Worksheet

This worksheet will help you understand how the periodic table is arranged. Using colored pencils, color the periodic table on the next page according the directions below., color each group on the table as follows:

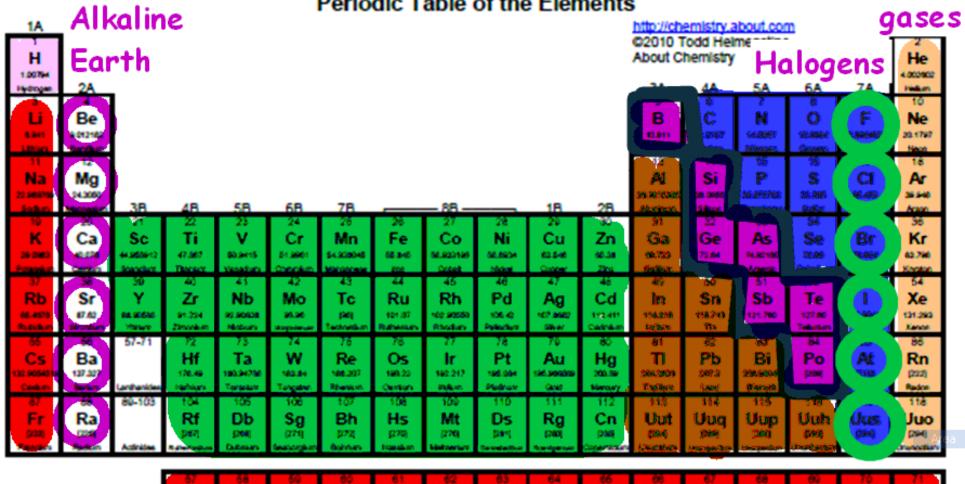
- 1. Color the square for Hydrogen pink.
- 2. Color the groups with very reactive metals red (alkali)
- 3. Color and label the noble gases orange.
- 4. Color the transition metals green.
- 5. Using black, mark the zigzag line that show the position of the metalloids.
- 6. Color the metalloids purple.
- 7. Use blue to color all of the nonmetals that are not noble gases.
- 8. Color the metals in Groups 13-16 brown.
- 9. Circle and label the lanthanides red.
- 10. Circle and label the alkaline-earth metals in purple.
- 11. Circle and label the halogens in green
- 12. Color all the actinides yellow.

When you are finished, make a key that indicates which color identifies which group.



Nobel

Periodic Table of the Elements



Lanthanides

Actinides

	67	58	59	65	61	62	63	64	66	- 66	67	68	69	75	71
L	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
1	138,90647	140,110	140.90768	144.242	[148]	150.36	151.964	167.35	150.90535	153,500	164.90002	167,269	150.90401	173.064	174.9000
L	ACCUPANT OF	Carbon	Taxable (minute)	No. of Concession, Name of Street, or other Persons, Name of Street, or ot	PHYSICAL	Samuelum	Europer	Godolinker	Teckin	Operation	HOPE, pp.	5164	Th.de	Therolon	Literature
	66	90	91	92	93	94	95	96	97	98	90	100	101	102	103
	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
ı	Ac pan	Th 222,03000	Pa 221.03500	U 238,03891	Np pan	Pu p44	Am peq	Cm pg	Bk pg	Cf (261)	Es paq	Fm (267)	Md psq	No psq	Lr pag

Family Ties

Student Worksheet

Follow the instructions below to label the major groups and divisions of the periodic table.

1.	The vertical columns on the periodic table are called _groups
2.	The horizontal rows on the periodic table are calledperiods
3.	Most of the elements in the periodic table are classified as _metals
4.	The elements that touch the zigzag line are classified as _metalloids
5.	The elements in the far upper right corner are classified as_noble gases
6.	Elements in the first group have one outer shell electron and are extremely reactive. They are calledalikalimetals
7.	Elements in the second group have 2 outer shell electrons and are also very reactive. They are calledalkalineearthmetals
8.	Elements in groups 3 through 12 have many useful properties and are calledtransitionmetals
9.	Elements in group 17 are known as "salt formers". They are calledhalgoens
10.	Elements in group 18 are very unreactive. They are said to be "inert". We call these thenoblegases
11.	The elements at the bottom of the table were pulled out to keep the table from becoming too long. The first period at the bottom called thelanthanides
12.	The second period at the bottom of the table is called theactinides