

Labelling & Color Coding the Periodic Table

This worksheet will help you understand how the periodic table is arranged. Your teacher will give you a blank copy of the periodic table to fill in and color. (The coloring part comes later) Follow the directions below:



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.

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.

Transition metals : The elements in the middle of the table are called transition metals which have properties similar to metals but whose properties do not fit in with those of any other family.

Metalloids Look for the ZigZag (or staircase line) on the Periodic Table (PT). It is a (light now) red line in the right side of the table on the wall in the room. **Use a black pen, pencil or marker and make this line thick on your table.** A small group whose members touch the zigzag line are called **metalloids** because they have both metallic and nonmetallic properties. These elements include boron, silicon, germanium, arsenic, antimony, tellurium, polonium, and astatine.

Groups and Periods The table is also arranged in **vertical columns** called “groups” or “families” and **horizontal rows** called “periods.” Each arrangement is significant.

VALENCE ELECTRONS - The number of Valence electrons (electrons in the outer shell) determines the properties of atoms.

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

Hydrogen: Write the symbol for Hydrogen **with its Valence electron, \dot{H}** , in the appropriate Box. 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.

Group 1: Alkali Metals – Write the symbol for each Alkali Metal **with their Valence electron, \dot{Li}** , in the appropriate Box. **Write IA** (Roman numeral one) at the top of the column. A groups are taller. This is Group 1A. 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.

Group 2: Alkaline-earth Metals – Write the symbol each Alkali-earth Metal **with their Valence electrons, \ddot{Be}** , in the appropriate Box. **Write IIA** at the top of the column. This is Group 2A. These metals are slightly less reactive than alkali metals. They are silver colored and denser than alkali metals.

Groups 3 – 12: Transition Metals – Write in the Symbols for the following: *Chromium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Silver, Platinum, Gold and Mercury*. These are the B Groups. B Groups are shorter stacks. 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)

Lanthanides and Actinides: Write in the Symbol for *Uranium* in the appropriate box. 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.

Group 13: Boron Group – Write the symbol Boron , \ddot{B} , & Aluminum **with their Valence electrons** in the appropriate Box. **Write IIIA** at the top of the column. This 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 shell electrons)

Group 14: Carbon Group – Write the symbol for Carbon, Silicon and Lead **with their Valence electrons** $\cdot\dot{\text{C}}\cdot$ in the appropriate Box. **Write IVA** (Roman Numeral 4) at the top of the column. This group contains one nonmetal, two metalloids, and two metals. Varied reactivity. (4 outer shell electrons)

Group 15: Nitrogen Group – Write the symbol for Nitrogen and Phosphorus **with their Valence electrons** $\cdot\dot{\text{N}}\cdot$ in the appropriate Box. **Write VA** at the top of the column. Contains two nonmetals, two metalloids, and one metal. Varied reactivity. (5 outer shell electrons)

Group 16: Oxygen Group – Write the symbol for Oxygen and Sulfur **with their Valence electrons** $\cdot\ddot{\text{O}}\cdot$ in the appropriate Box. **Write VIA** at the top of the column. This group contains three nonmetals, one metalloid, and one metal. Reactive group. (6 outer shell electrons)

Groups 17: Halogens – Write the symbol for Fluorine, Chlorine, Bromine and Iodine **with their Valence electrons** $\cdot\ddot{\text{F}}\cdot$ in the appropriate Box. **Write VIIA** at the top of the column. All nonmetals. Very reactive. Poor conductors of heat and electricity. Halogens tend to form salts with metals. Ex. NaCl: sodium chloride also known as “table salt”. (7 outer shell electrons)

Groups 18: Noble Gases – Write the symbol for Helium (careful with the Valence e) , Neon, Argon, Krypton **with their Valence electrons** $:\ddot{\text{Ne}}:$ in the appropriate Box. **Write VIIIA** at the top of the column Unreactive nonmetals. All are colorless, odorless gases at room temperature. All found in earth’s atmosphere in small amounts. (8 outer shell electrons)

Color Coding the Periodic Table

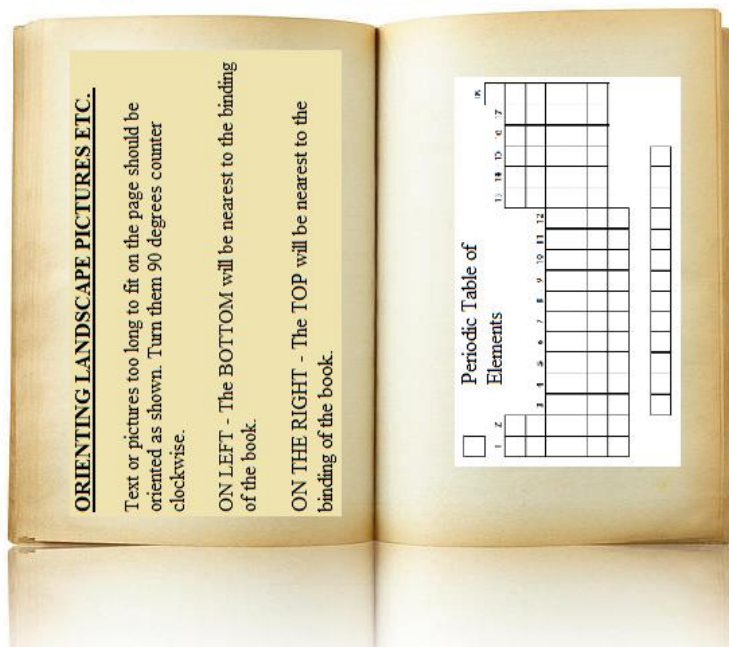
Student Worksheet

Using color pencils, color each group on the table as follows:

Create a key in the space above the table to identify your colors/groups

1. Draw a large circle in the box for the elements that are metalloids. These elements touch the zig zag line. Use your book or information given above to identify these elements.
2. Color the Alkali Metals light **red**.
3. Color the Alkaline Earth Metals **orange**.
4. Color the transition metals yellow.
5. Color the Halogens light **green**.
6. Color the Noble Gases **purple**.
7. Color the nonmetals with **orange stripes**.
8. Draw small brown circles in each box of the halogens.
9. Draw # in all the boxes of the noble gases.
10. Color all the lanthanides light gray .
11. Color all the actinides dark gray (light black).

How should I paste landscape Diagrams and Charts into my Lab Journal?



PLEASE DO NOT DISCARD THIS PAPER. PLEASE ALLOW THE NEXT CLASS TO REUSE IT.

When complete cut this out and paste in your journal correctly. Images which are too long to paste in your journal should always be turned clockwise 90 degrees. See the diagram below.

Last Name _____ First Name _____

_____ Date _____ Period _____

Period	group	Metals	Metalloids	Nonmetals	gasses
Outer shell electrons	Mercury	Alkali earth metals	Alkali metals	Halogens	Noble Gasses
Transition metals	Lanthanides	Actinides			

Student Worksheet

Follow the instructions below to label the major groups and divisions of the periodic table. Fill in the blanks with vocab words.

1. The vertical columns on the periodic table are called _____ and elements in the columns have similar _____.
2. The horizontal rows on the periodic table are called _____ and elements in these rows have the same number of _____.
3. Most of the elements in the periodic table are classified as _____ which are usually solids, conduct electricity well. There is one that is a liquid at room temperature. It is _____.
4. The elements that touch the zigzag line are classified as _____.
5. The elements in the far upper right corner (above and to the right of the zig-zag line) are classified as _____.
6. Elements in the first group have one outer shell electron and are extremely reactive. They are called _____.
7. Elements in the second group have 2 outer shell electrons and are also very reactive. They are called _____.
8. Elements in groups 3 through 12 have many useful properties and are called _____.
9. Elements in group 17 are known as “salt formers”. They are called _____.
10. Elements in group 18 are very unreactive. They are said to be “inert”. We call these the _____.
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 the _____.
12. The second period at the bottom of the table is called the _____.

