

Color Coding the Periodic Table

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.” The elements in each vertical column or group have similar properties.

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)

Group 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)

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

Groups 3 – 12: 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)

Lanthanides and Actinides: 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 – 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)

Group 14: Carbon Group – Contains one nonmetal, two metalloids, and two metals. Varied reactivity. (4 outer level electrons)

Group 15: 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)

Groups 17: 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)

Groups 18: 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)

Instructions:

1. Label the group/family numbers on your periodic table
2. Label t
3. Outline the boxes of all the metals in **dark blue**
4. Lightly color all the boxes of the alkali metal squares in **light purple**.
5. Lightly color all the boxes of the alkaline earth metals in **orange**.
6. Lightly color all the transition metals in **light blue**.
7. Outline the boxes of all the metalloids in **dark green**
8. Outline the boxes of all the nonmetals in **dark purple**
9. Lightly color the boron group in **light green**.
10. Lightly color the carbon group in **light gray**.
11. Lightly color the nitrogen group in **light brown**.
12. Leave the oxygen group white
13. Lightly color all the halogen in **light purple**.
14. Lightly color all the noble gases in **yellow**.
15. Using a **black** color, trace the zigzag line that separates the metals from the nonmetals.
16. Lightly color all the lanthanides **red**.
17. Lightly color all the actinides **pink**
18. Make a key at the bottom of your periodic table so you know what each color means.

Answer these questions:

1. The vertical columns on the periodic table are called _____.
2. The horizontal rows on the periodic table are called _____.
3. Most of the elements in the periodic table are classified as _____.
4. The elements that touch the zigzag line are classified as _____.
5. The elements in the far upper right corner 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 _____.