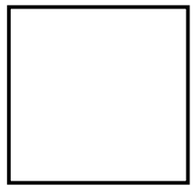
Name: _____ **Rows and Columns of the Periodic Table** Period: _____

- ☐ Alkali Metals
- ☐ Alkaline Earth Metals
- ☐ Transition Metals
- ☐ Boron
- ☐ Carbon
- ☐ Nitrogen
- ☐ Oxygen



- ☐ Halogens
- ☐ Noble Gases
- ☐ Rare Earth Elements

M - Metals
N - Nonmetals
L - Metalloids

- ☐ Groups -
- ☐ Periods -

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 H Hydrogen | | | | | | | | | | | | | | | | | 2 He Helium |
| 3 Li Lithium | 4 Be Beryllium | | | | | | | | | | | 5 B Boron | 6 C Carbon | 7 N Nitrogen | 8 O Oxygen | 9 F Fluorine | 10 Ne Neon |
| 11 Na Sodium | 12 Mg Magnesium | | | | | | | | | | | 13 Al Aluminum | 14 Si Silicon | 15 P Phosphorus | 16 S Sulfur | 17 Cl Chlorine | 18 Ar Argon |
| 19 K Potassium | 20 Ca Calcium | 21 Sc Scandium | 22 Ti Titanium | 23 V Vanadium | 24 Cr Chromium | 25 Mn Manganese | 26 Fe Iron | 27 Co Cobalt | 28 Ni Nickel | 29 Cu Copper | 30 Zn Zinc | 31 Ga Gallium | 32 Ge Germanium | 33 As Arsenic | 34 Se Selenium | 35 Br Bromine | 36 Kr Krypton |
| 37 Rb Rubidium | 38 Sr Strontium | 39 Y Yttrium | 40 Zr Zirconium | 41 Nb Niobium | 42 Mo Molybdenum | 43 Tc Technetium | 44 Ru Ruthenium | 45 Rh Rhodium | 46 Pd Palladium | 47 Ag Silver | 48 Cd Cadmium | 49 In Indium | 50 Sn Tin | 51 Sb Antimony | 52 Te Tellurium | 53 I Iodine | 54 Xe Xenon |
| 55 Cs Cesium | 56 Ba Barium | 57 - 71 La Lanthanides | 72 Hf Hafnium | 73 Ta Tantalum | 74 W Tungsten | 75 Re Rhenium | 76 Os Osmium | 77 Ir Iridium | 78 Pt Platinum | 79 Au Gold | 80 Hg Mercury | 81 Tl Thallium | 82 Pb Lead | 83 Bi Bismuth | 84 Po Polonium | 85 At Astatine | 86 Rn Radon |
| 87 Fr Francium | 88 Ra Radium | 89 - 103 Ac Actinides | 104 Rf Rutherfordium | 105 Db Dubnium | 106 Sg Seaborgium | 107 Bh Bohrium | 108 Hs Hassium | 109 Mt Meitnerium | 110 Ds Darmstadtium | 111 Rg Roentgenium | 112 Cn Copernicium | 113 Uut Ununtrium | 114 Fl Flerovium | 115 Uup Ununpentium | 116 Lv Livermorium | 117 Uus Ununseptium | 118 Uuo Ununoctium |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 57 La Lanthanum | 58 Ce Cerium | 59 Pr Praseodymium | 60 Nd Neodymium | 61 Pm Promethium | 62 Sm Samarium | 63 Eu Europium | 64 Gd Gadolinium | 65 Tb Terbium | 66 Dy Dysprosium | 67 Ho Holmium | 68 Er Erbium | 69 Tm Thulium | 70 Yb Ytterbium | 71 Lu Lutetium |
| 89 Ac Actinium | 90 Th Thorium | 91 Pa Protactinium | 92 U Uranium | 93 Np Neptunium | 94 Pu Plutonium | 95 Am Americium | 96 Cm Curium | 97 Bk Berkelium | 98 Cf Californium | 99 Es Einsteinium | 100 Fm Fermium | 101 Md Mendelevium | 102 No Nobelium | 103 Lr Lawrencium |

# Periodic Table

## Conclusions:

1. Which elements make up a family?

2. How are the elements of a group or family alike?

3. What do the periods of the periodic table consist of?

4. List two ways that elements in a period differ from each other.

5. How do the families and periods differ other than their direction in the periodic table?

6. Why are the Lanthanoid and Actinoid series separated out from the main periodic table?

7. Identify the four pieces of information that can be obtained from the element square.

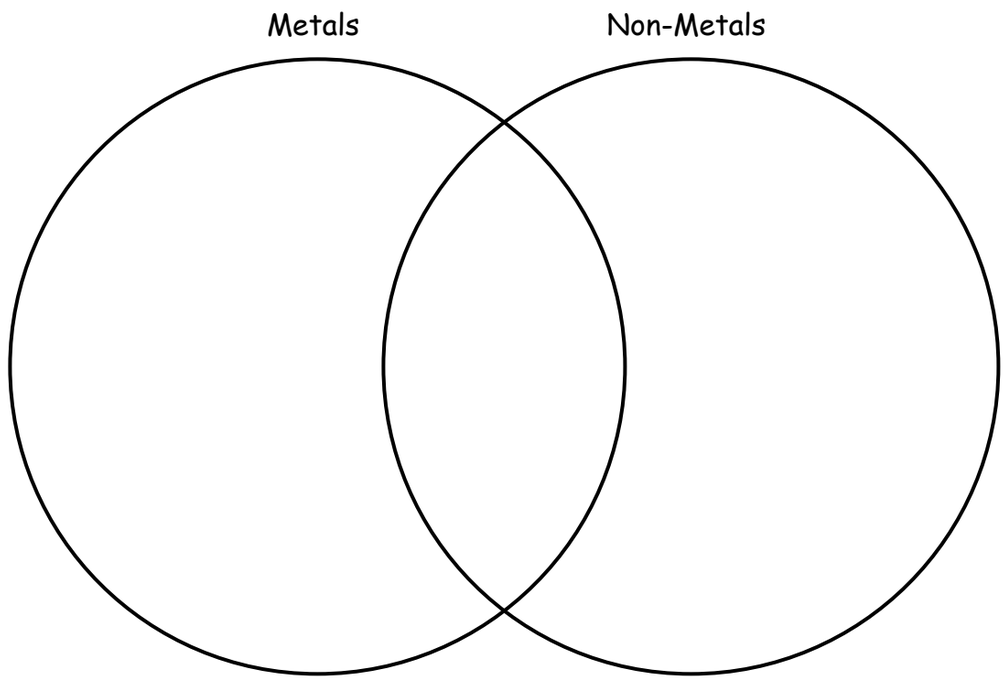
8. What are the horizontal rows on the periodic table called?

9. How are the elements arranged in the periodic table?

10. How do the number of valence electrons an element has change from column to column?

11. What does the bolded stair-step line mean on a periodic table?

12. Create a Venn diagram comparing and contrasting characteristics of metals from non-metals.



# Activity: The Rows and Columns of the Periodic Table

The periodic table can tell one many things about the different elements. The elements fall into groups of families that are alike in some ways. Most elements in a family behave or react in the same way and have the same properties. But like the members of a human family, the elements are not exactly alike.

The elements in the periodic table are organized into rows and columns.

**I. Columns:** The **groups** or families of elements are shown in vertical (up and down) columns on the periodic table and are labeled with Roman Numerals. There are eighteen columns in the periodic table.

A. The elements in each column have similar physical and chemical properties.

B. The number of valence electrons of the elements in each column is equal. All the elements can gain, lose or share the equal number of electrons when they form a chemical bond.

**II. Rows:** Each horizontal row of elements is called a **period**. Unlike the elements in a family (or column), the elements in a period are not alike in properties. In fact the properties of the elements change greatly across any given row.

A. Moving across the row, the first element in the row is an extremely active solid. The last element in each row is always a particularly inactive gas.

B. There are seven periods of elements. One row has been separated out of periods 6 and 7. Even though they are displayed below the periodic table, they are still part of the table. They have been separated out to make the table shorter and easier to read.

**Purpose:** to identify the properties of the rows and columns of the periodic table.

**Materials:** periodic table textbook map colors markers

**Procedure:**

1. Number each of the vertical columns, or **GROUPS**, on the periodic table using a blue marker across the top of the periodic table.
2. Number each row, or **PERIOD,** of the periodic table using a red marker on the left side of the periodic table rows.
3. Using a black marker, draw in the stair step that separates the metals from nonmetals.
4. Label the metals, nonmetals, and metalloids by placing the following letters in the upper right corner of **each** element square on the periodic table.

   M – metals, N – nonmetals, L – metalloids
5. Color the first box of each family in the periodic table using the following key. Use map pencils for this step.

| | |
|---|---|
| Alkali Metals – dark green | Nitrogen – pale green |
| Alkaline Earth Metals – medium blue | Oxygen – pink |
| Transition Metals – dark pink | Halogens – pale blue |
| Boron – light brown | Noble Gases – yellow |
| Carbon – purple | Rare Earth Elements – gray |

6. Create a color key for the families near the sample element square at the top of your periodic table.
7. To your key, add a legend for the red and blue marker, indicating group or period and what those tell you about the elements.
8. Complete the element square above the table.
9. Answer the Conclusion questions on the back or your Periodic Table.