

## Periodic Table Basics

### History

- In 1869, Russian chemist Dmitri Mendeleev published a list of the elements at the time in a row or column in order of increasing atomic mass
  - Left gaps between elements → “maybe similar elements have not been discovered yet, but would go there based on the properties of the elements close to them in the list
  - Today, the elements are listed in order of increasing atomic number
- Periodic Table = a chart in which elements can be organized by similar physical and chemical properties
  - Useful in predicting the properties of different substances
  - Each element on the Periodic Table is divided into squares
    - These squares gives us particular information about the element

### Individual Squares

- Number at the top = atomic number (# protons)
- Chemical name is represented by a symbol and the actual full name
- Number at the bottom = average atomic mass (protons + neutrons)

### Groups

- Groups = elements in a column
  - 18 groups (1-18 left to right)
  - Also known as family
  - Shows similarities in their physical and chemical properties

### Periods

- Period = elements in a row
  - Progress from metals (from the far left) to non-metals (on the right)

### **An element's position on the Periodic Table can give information about the element**

- Atoms of elements on the left side of the table form positive ions easily
  - Group 1 = atoms can lose an electron easily to form a +1 ion
  - Group 2 = atoms can lose 2 electrons easily to form a +2 ion
- Atoms of elements on the right side of the table form negative ions easily
  - Group 17 = atoms can gain an electron easily to form a -1 ion
  - Group 16 = atoms can gain 2 electrons easily to form a -2 ion
- Group 18 normally do not form ions at all

### **General Rule:**

**The Elements of the Periodic Table are generally arranged in order by increasing atomic number**