The Periodic Table

The periodic table of…..

- Elements!
- An element is a substance made of only **one type of atom** this means it **cannot** be broken down into more substances (think prime number in math)

Mendeleev

- Dimitri Mindeleev was one of the first scientists to notice that some elements seemed to share similar properties
- In 1869 Mendeleev created the first periodic table with the 63 elements we had discovered at the time
- Mendeleev said properties of unknown elements could be predicted based on the properties of elements we did know in the periodic table

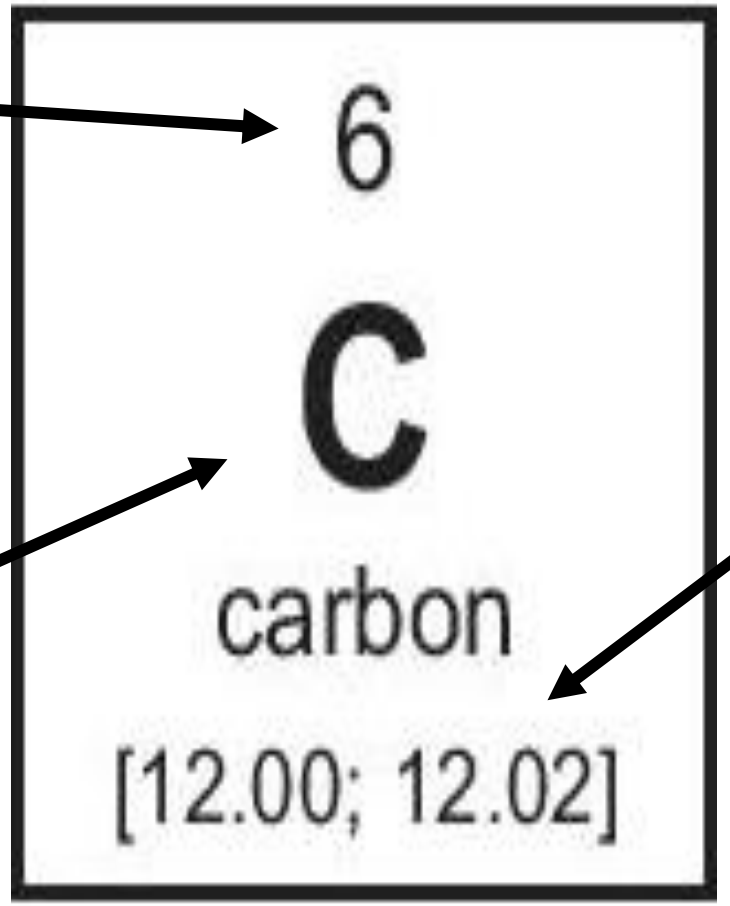
Our Modern Periodic Table

- The periodic table is an organized chart that arranges all the elements we have created or discovered by atomic number and atomic mass
- Each element has it's own one or two letter symbol based on it's English or Latin name (the first letter is always capitalized)
- The table is designed to show patterns in the properties of elements

Looking at individual elements

Atomic Number
# of protons in ONE atom of an element, same as # of electrons **if atom is neutral**

Symbol
Represents the element



Atomic Mass
The mass of ONE atom of the element.

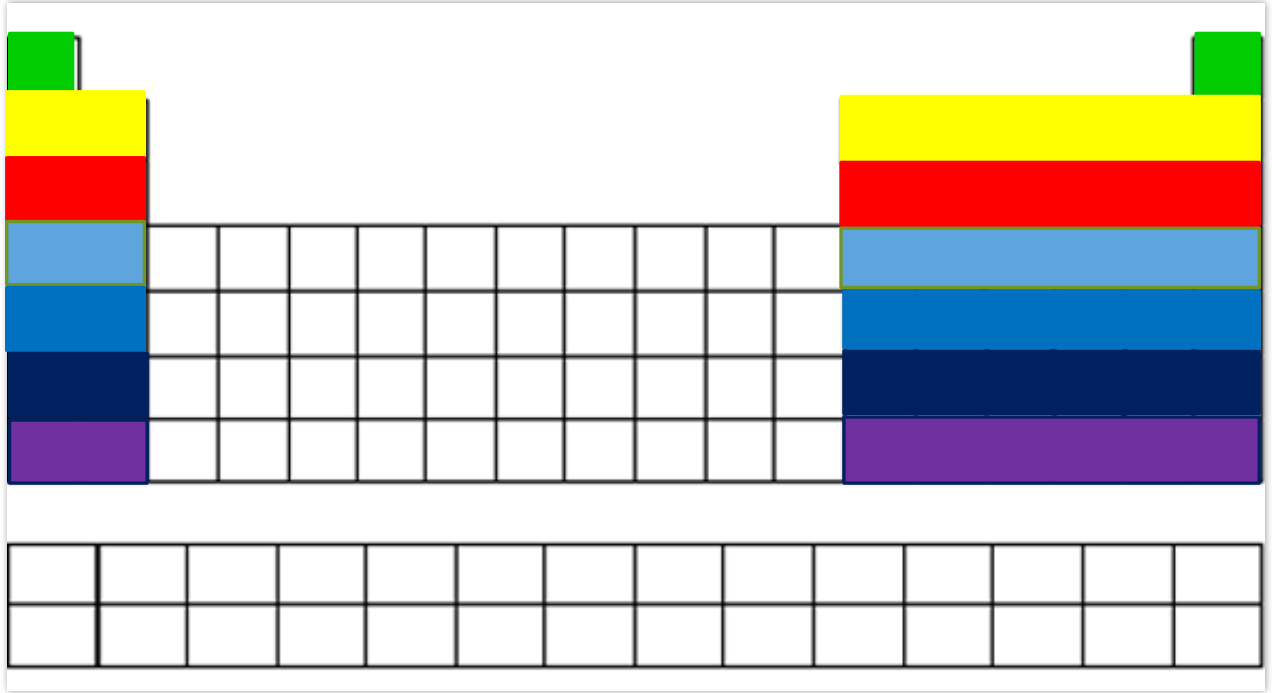
Atomic Mass and Number

- **Atomic Number-** the number of protons (+), will also equal the number of electrons (-) **in a neutral atom**. This is true because in a neutral atom the charge is **zero** and protons and electrons will cancel out

- **Atomic mass-** the mass of one atom of an element. Can be used to find the number of neutrons (0). **Atomic mass- atomic number = # of neutrons**. ROUND TO THE NEAREST WHOLE NUMBER
  - this is true because the mass of an electron is almost nothing so the mass is entirely made up of the mass of protons(+) and neutrons (0)

Periods

- Each **horizontal row** of the periodic table is called a **period**.
- The atomic number, atomic mass, and the number of valence electrons all increase from left to right.
- The transition metals are an exception because the have a different number of valence electrons



Groups

- Each **column** of the periodic table is called a **group** or **family**
- Each one is given a name that shows that the elements in the column have the same characteristics and behave the same way
- Elements of the same group have the same number of valence electrons (except transition metals)