**History of the Atom**

* An atom is any substance that cannot be broken down into any other substance.
* An element is the smallest particle of an element.
  + An atom consists of a nucleus surrounded by one or more electrons.
  + The nucleus is the core of the atom composed of protons and neutrons.
* The atomic number of an element represents the number of protons in the nucleus.
* The atomic mass unit (amu) is about the combined mass of a proton and neutron.
* The space around the nucleus is like a spherical cloud of negatively charged energy.
  + Most of an atom’s mass comes from the nucleus.
  + Most of the atom’s volume comes from the space in which the electrons move.
* Democritus was the first person to suggest the idea of the atom.
  + He hypothesized that atoms were small, hard particles that were made out of the same material.
* John Dalton stated an atomic theory of matter.
  + All elements are composed of atoms.
  + Atoms cannot be created or destroyed.
  + Atoms of the same element are exactly alike (and atoms of different elements are different).
  + The atoms of two or more elements can join together to form a compound.
* J.J. Thomson suggested that atoms contain smaller particles.
  + Thomson passed an electrical current through a glass tube of gas and found that the gas gave off rays of negatively charged particles.
    - “Plum Pudding”
* Ernest Rutherford discovered that atoms are mostly empty space but had a small positively charged core.
  + This core is called the nucleus.
* Neils Bohr proposed that electrons in an atom are found in energy levels.
  + Electrons in different energy levels move around the nucleus in different orbits or layers or rings or rungs. All 4 are the same
* James Chadwick discovered the neutron.
  + This discovery explained why the mass of an atom is heavier than the combined mass of its protons and electrons.
* Electron Cloud
  + Also known as the Wave Model
  + The current model of the atom shows the electrons as forming a negatively charged cloud around the nucleus.