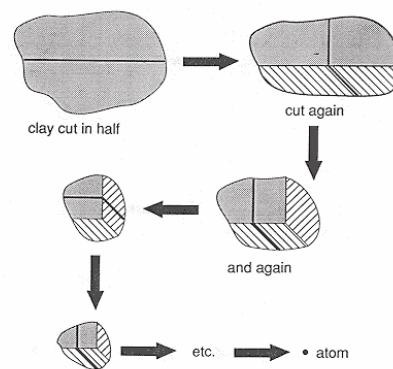


Lesson 6: Evolution of the Atomic Theory

Democritus- The Indivisible Particle

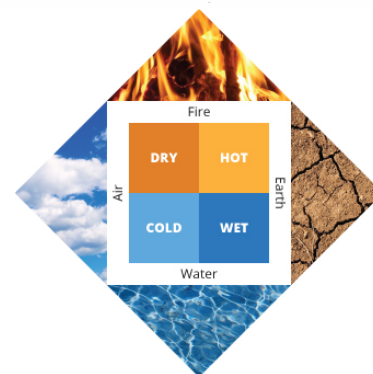
- _____ BCE
- All matter can be divided into smaller pieces until the _____ (the atom) is reached
- Predicted elements of particle theory (i.e. constant motion, empty spaces)



Democritus' concept of the atom

Aristotle- Earth, Water, Air and Fire

- _____ BCE
- Rejected idea of atom
- Thought matter was made up of _____



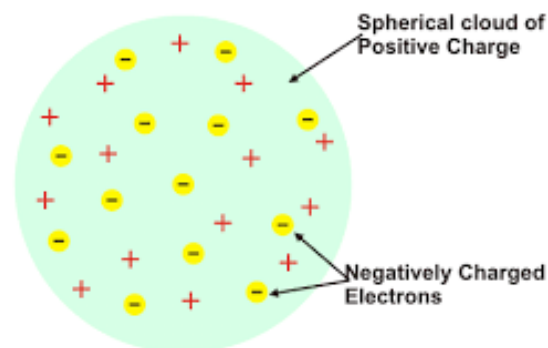
John Dalton- The Billiard Ball Model

- 18 _____
- Revived Democritus Theory
- Four Main Points
 - All matter is made of tiny, indivisible particles called _____
 - All atoms of element are _____
 - Atoms of different elements are different
 - Atoms are rearranged to form new substances in chemical reactions, but are not _____ or _____
- Atoms look like a billiard ball, small indestructible sphere



J.J. Thomson- Plum Pudding

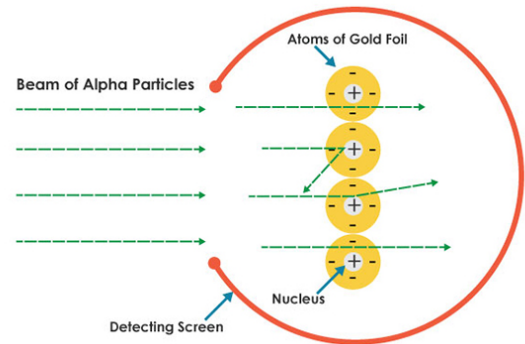
- 18 _____
- Used a _____ ray to see electrons attract to a positively charged circuit
- Atoms contain _____ that are negatively charged
- Since atoms are neutral, the rest of the atom is a positively charged sphere
- Electrons are distributed throughout the atom like raisins in a _____
- Discovered _____ (first subatomic particle)



Thomson's Plum-Pudding Model

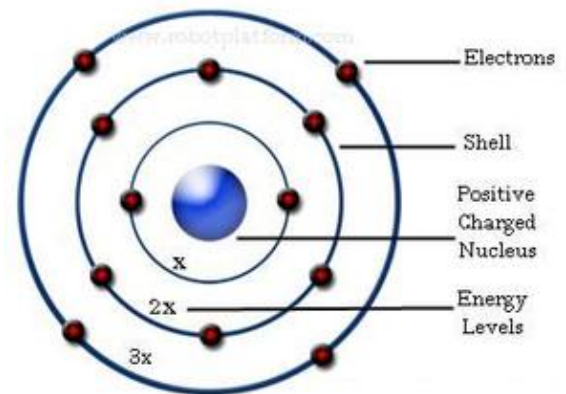
Ernest Rutherford- The Gold Foil Experiment

- Prediction: If a shoot positively charged particles through gold foil then most of them will pass right through the gold foil
- Result: When I shot positively charged particles through gold foil some of them passed right through, but others were deflected at a large angle, and others bounced back
- Conclusions
 - Center of the atom is a _____ and it has a _____ charge and contains most of the atoms mass
 - Nucleus is surrounded by a cloud of _____ charged electrons
 - Most of the atom is _____ space
- Discovered _____ **now known as the atomic number and is used to organize the periodic table**
- Mass of protons alone could not make up the total mass of the nucleus so must be a third particle that is neutral



Neils Bohr- Electron Orbits

- 19 _____
- Specific electron clouds that electrons travel in, as opposed to spiralling towards the positive center
- Like rungs on a ladder
- Electrons are located in specific orbits (energy levels, shells).
- Each electron in an orbit has a specific amount of energy. The farther the electron is from the nucleus, the higher its energy.
- Electrons can jump from orbit to orbit. They release energy as light when they jump from higher to lower orbits
- Each orbit can hold a certain maximum number of electrons: _____ in the first orbit, _____ in the second, and _____ in the third.
- **This is the model we will use in Grade 9**
- Electrons orbit the _____ like planets around the sun



Chadwick- The Neutron

- 1932
- Showed that _____ make up the rest of the mass of the particles in the nucleus
- Now the number of _____ + number of _____ = mass number (mass of atom)

