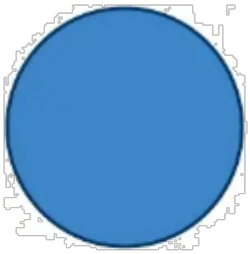
Preliminary Chemistry

Week 1	Name:
Summary Notes	Class:
	Tutor:

1. Investigate the basic structure of stable and unstable isotopes by examining:

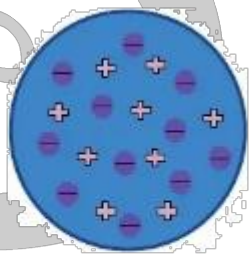
- The distribution of electrons, protons and neutrons in the atom

– John Dalton (1800)



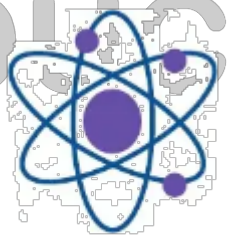
Dalton
'Billiard Ball' Model

– J.J Thomson (1903)



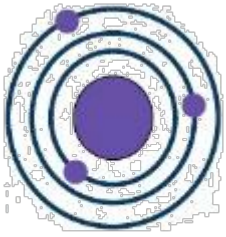
Thomson
'Plum Pudding' Model

– Ernest Rutherford (1911) **Planetary**

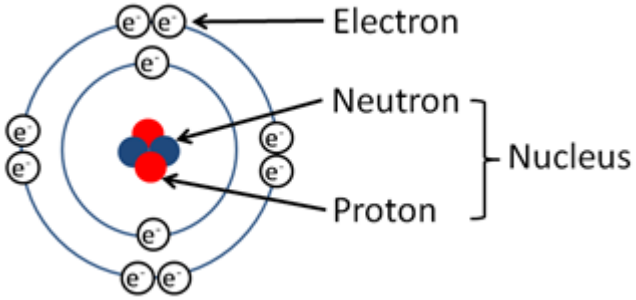


Rutherford Model

– Niels Bohr (1913) **Quantised shell model**



Bohr Model



– All matter is composed of atoms. They are the smallest **Building Block**

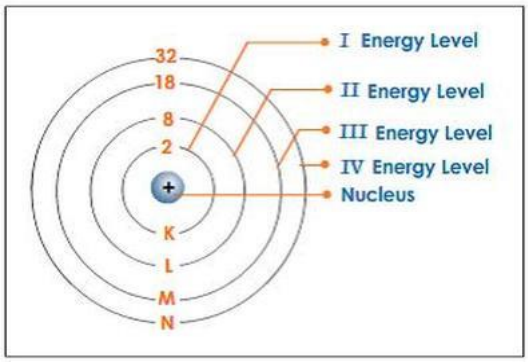
– There are three subatomic particles that make up atoms: **protons, neutrons and electrons**

– Nucleus is **10 000-100 000 times** smaller than the size of the atom but contributes $\mathbf{99.97}\%$ of the atom's mass

Particle	Symbol	Charge	Mass(kg)
Proton	p	+1	$1.673 \times 10^{-27} kg$
Neutron	n	0	$1.675 \times 10^{-27} kg$
Electron	e	-1	$9.109 \times 10^{-31} kg$

– According to Bohr model, they reside in shells around the nucleus. The energies of the shells **increase** with **increasing** distance from the nucleus

– Each shell holds a maximum number of electrons ($\boldsymbol{2n^2}$)



- Representation of the symbol, atomic number and mass number (nucleon number)

– Mass number A is the number of ……

– The type of atom that makes up that element is determined by the number of …… only

– Atoms are electrically neutral, so the number of electrons and protons are ……...