

An atom is made of.....

- protons
- neutrons
- electrons.

protons

- positive charge
- located in nucleus
- aka atomic number.
- mass 1.67×10^{-24} g

neutrons

- no charge.
- located in nuclells.
- determine # using mass# - atomic number.
- mass 1.67×10^{-24} g.

electrons

- negative charge.
- located around the nucleus.
- mass $9.11 \times 10^{-28} \text{ g}$.

Mass number

-total mass of the nucleus/number
of protons and neutrons in one

atom of an element. *(rounded value)*

Pg. 111
Conceptual problem 4.1

How many protons, neutrons and
electrons an atom of Nitrogen?

!

Isotopes

-atoms of an element that have the same number of protons but different numbers of neutrons.

Notation

mass # → 14
→ 6 C
atomic number.

carbon-14
↗
number.

Calculating Atomic mass

Element X has 2 natural isotopes. The isotope with a mass of 10.012 amu has a relative abundance of 19.91%

The isotope with a mass of 11.009 amu has an abundance of 80.09%.

Calculate the atomic mass of the element.

$$10.012 \text{ amu} \times 0.1991 = 1.9934 \text{ amu}$$

$$11.009 \text{ amu} \times 0.8009 = 8.8171 \text{ amu}$$

$$10.8105 \text{ amu}$$

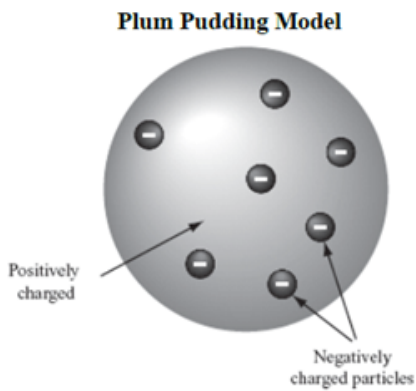
$$\hookrightarrow 10.811 \text{ amu.}$$

Solid Sphere Model



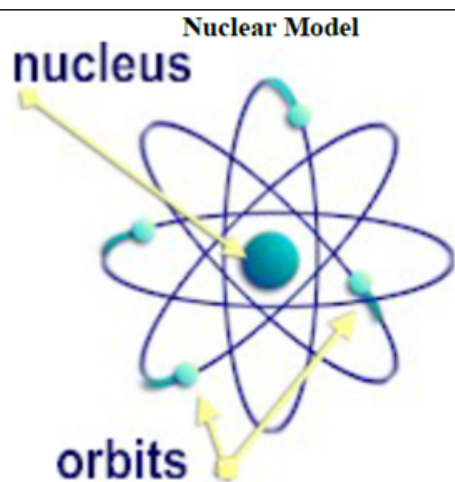
DALTON

- all elements are made of atoms that are indivisible.
- atoms combine to make compounds.
- atoms of an element are identical.
- atoms can recombine in chemical reactions.



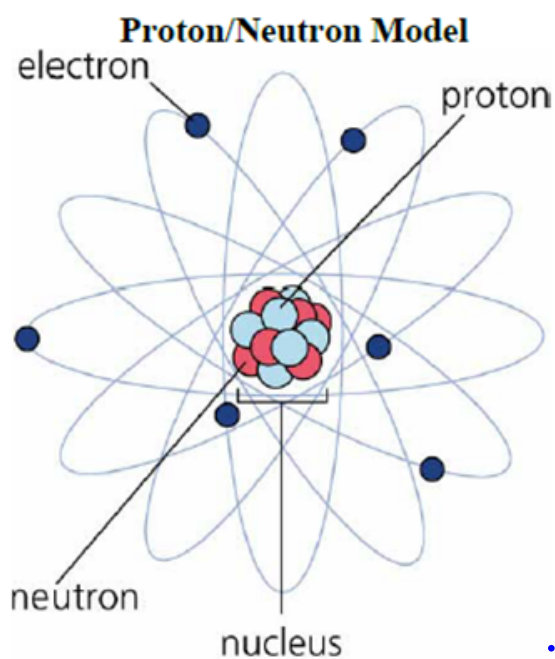
J.J. Thomson

- discovered electrons.
- electrons (-) are embedded in a +ve charge base.



Rutherford

- dense region in atom is nucleus.
- rest of area is empty space (occupied by electrons)



- Chadwick discovered neutrons.
- nucleus is made of protons; neutrons.
- electrons occupy space
- around nucleus.
- pre-Bohr.