Name_____
Date_____Block_____

ISOTOPES: Atoms of the same element with different numbers of neutrons (and therefore different masses); most elements have at least two stable isotopes, there are very few with only one stable isotope (Al, F, P);
hydrogens isotopes are so important they have special names:
0 neutrons ☞ hydrogen (protium) 1 neutron ☞ deuterium 2 neutrons ☞ tritium

ATOMIC NUMBER (Z): the number of protons in the nucleus of an atom; whole numbers found on the periodic table; identifies an element

MASS NUMBER (A): the sum of the protons and neutrons in the nucleus of an atom; the total number of particles (nucleons) in the nucleus; actual mass is not an integral number! **mass defect**--causes this and is related to the energy binding the particles of the nucleus together

WAYS TO REPRESENT ISOTOPES:

Hyphen Notation

- The element name or symbol followed with a hyphen and the mass number.
- Examples
  - **Carbon-14** or **C-14** (meaning the isotope of carbon that has a mass number of 14)

Nuclear Symbol Notation

- Superscript = mass number, subscript = atomic number (may or may not be given) followed by the element symbol.

mass number → $^{A}_{Z}X$ ← element symbol
atomic number →

- Example
  - ^{14}C or $^{14}_{6}C$

(meaning the isotope of carbon that has a mass number of 14- if the atomic number is not given as a subscript, remember that you can always get that from the periodic table)

Name_____

Date_____Block_____

Particle	Mass	Charge
e^-	9.11×10^{-31} kg or 1/1836 amu	-1 or 1-
p^+	1.67×10^{-27}kg or 1 amu	+1 or 1+
n^0	1.67×10^{-27}kg or 1 amu	None, neutral, 0