ISOTOPES

If we added a neutron to the nucleus of an atom, we would change the *mass* of the atom, but **NOT** the charge, or the atomic number.

Define ISOTOPE in your notebook

The Complete Nuclear Symbol

To write a complete nuclear symbol, the mass number is placed at the upper left (superscript) of the chemical symbol and the atomic number is placed at the lower left (subscript) of the symbol. The complete nuclear symbol for helium–4 is drawn below.



	Notation	Complete Nuclear Symbol	Atomic diagram
Protium : one proton, no neutrons	Hydrogen-1		
Deuterium : one proton, one neutron		$^{2}_{1}\mathbf{H}$	
Tritium : one proton, three neutrons			

Watch this video: <u>https://www.youtube.com/watch?v=EboWeWmh5Pg</u>

? How come the periodic table lists chlorine with a mass of 35.5 amu?

- We can't have 0.5 of a proton or 0.5 of a neutron!
- The half amu is not from the mass of electrons (0.5 amu \approx 900 electrons!)

Calculating Average Mass

(% abundance)(atomic mass) + _(% abundance)(atomic mass) = Average atomic mass

Isotope	Abundance in Nature (%)	Atomic Mass
Chlorine-35	75.77	34.9689
Chlorine-37	24.23	36.9659

Calculation: (%Cl-35)(mass Cl-35) + (%Cl-37)(mass Cl-37)

average mass = (0.7577)(34.9689) + (0.2423)(36.6659) = 35.46 amu