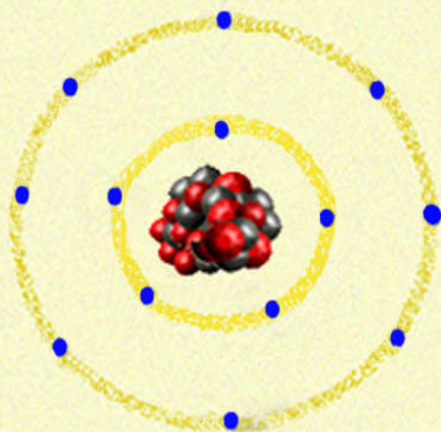


# Cause #1: The Mass of the Atoms

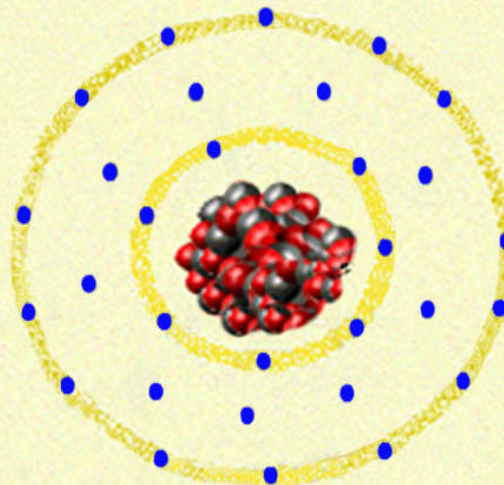
Different types of atoms have different masses because they have different **numbers** of protons and neutrons.

Aluminum has 13 protons and 14 neutrons.  
(Mass Number = 27)



Neutrons 14      Protons 13      Electrons 13

Copper has 29 protons and 35 neutrons.  
(Mass Number = 64)



Neutrons 35      Protons 29      Electrons 29

\*Protons and neutrons have the same mass      It would take 1836 electrons to weigh as much as a proton or neutron. (That's why we don't bother to think about the electrons when we calculate atomic mass.)

\*The places where you see space between the nucleus and the electrons do NOT have air in it. (It wouldn't fit there!)