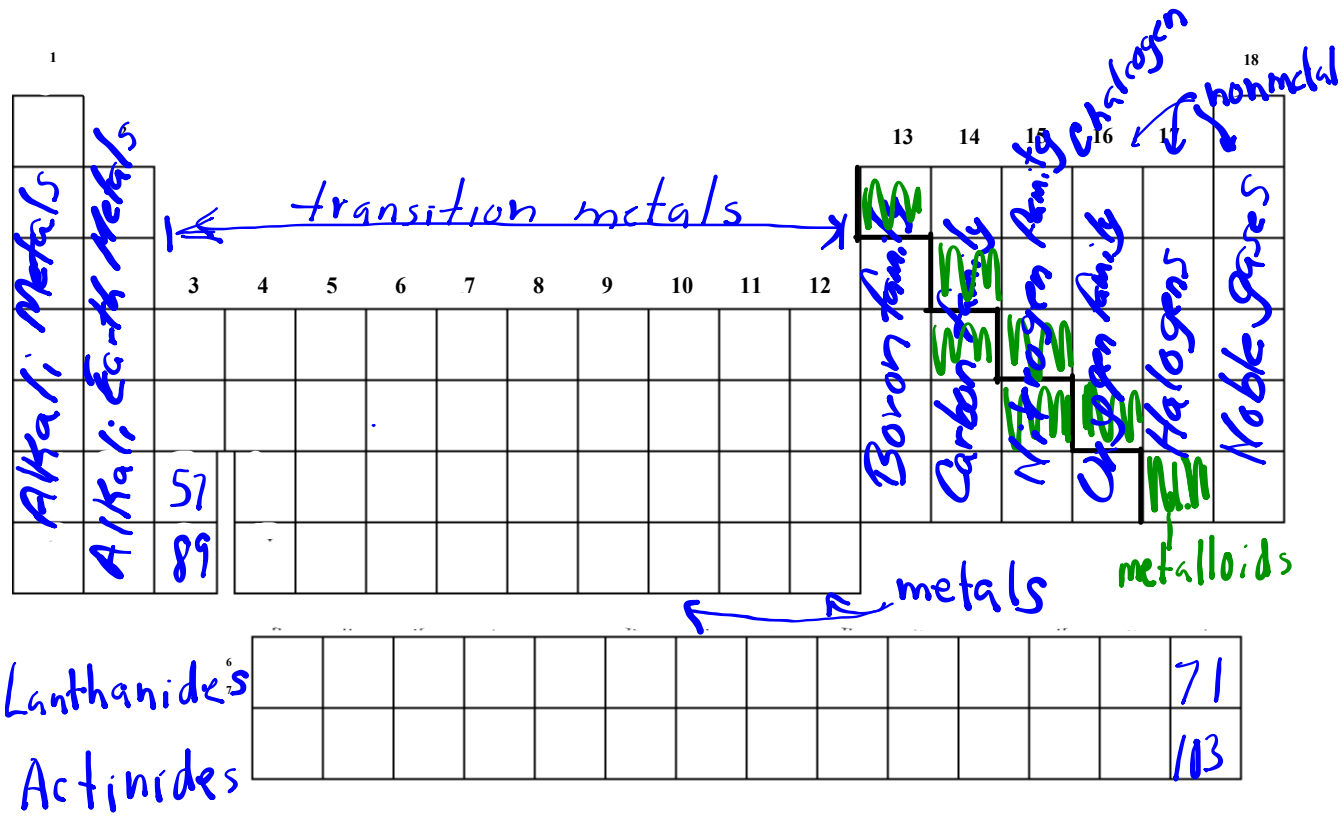
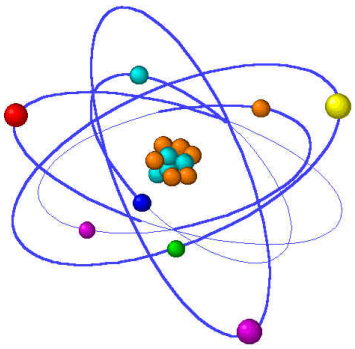
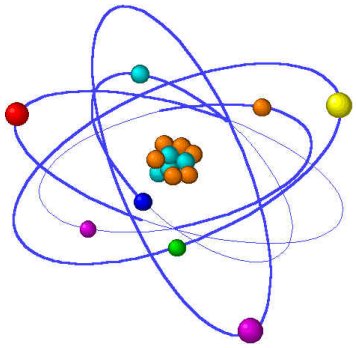

1
18
13
14
15
16
17
Alkali Metals
Alkali Earth Metals
transition metals
3
4
5
6
7
8
9
10
11
12
Boron family
Carbon family
Nitrogen family
Oxygen family
Halogens
Noble gases
Chalcogen
Nonmetal
57
89
metals
metalloids
Lanthanides
Actinides
71
103



What is an Atom?

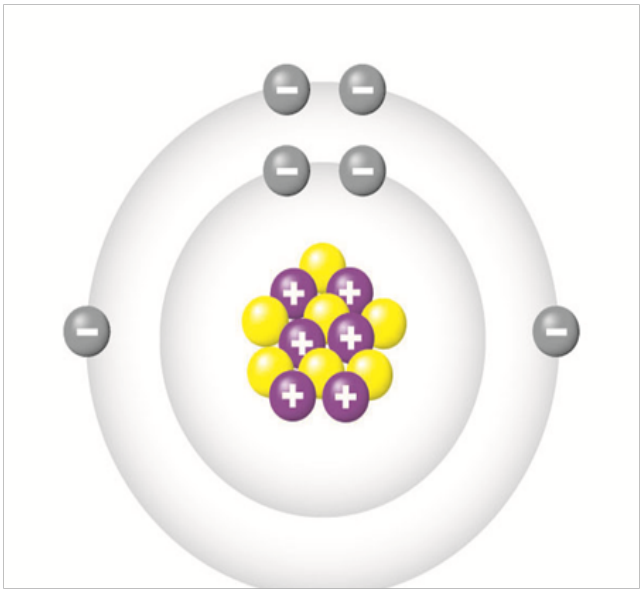
- The smallest particle of an element
- Cannot be broken down during normal physical or chemical changes
- Building blocks of all matter

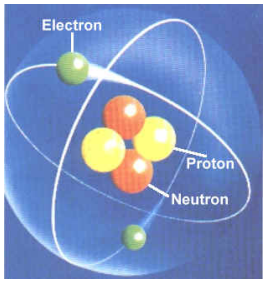


Most of an atom is empty space, filled with quickly moving electrons. The positive nucleus is so small that it takes up only a tiny fraction of size of the atom. Yet almost all of the atom's mass is concentrated in this nucleus, which contains protons.

Parts of an Atom

Subatomic Particles = **the particles which an atom is composed of.**





Parts of an Atom

There are 3 subatomic particles in an atom

Protons: positively charged particles with a relative mass of 1, located in the nucleus g/mol

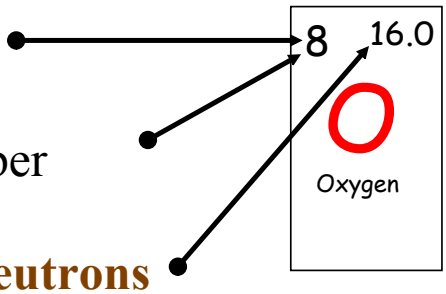
(important because they tell what atom it is)

Neutrons: neutral particles with a relative mass of 1 .g/mol, located in the nucleus

Electrons: negatively charged particles with a relative mass of approximately 1/2000 of the mass of a proton and neutron, found in the orbit around the nucleus

Counting subatomic particles – Important points page 87-88

- The number of **Protons** = atomic number
- The number of **Electron** = Atomic Number
- **Mass number** = # of **Protons** + # of **Neutrons**

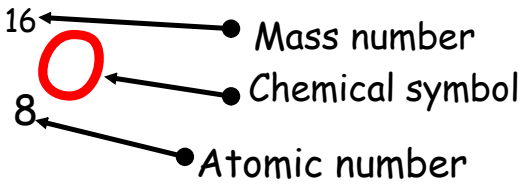


- Number of **Neutrons** = Mass number – atomic number

= 16 - 8

= 8

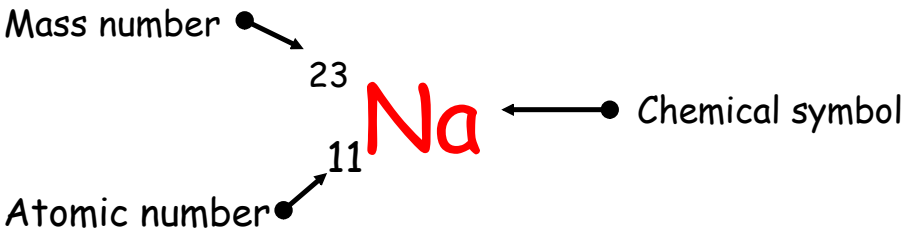
Standard Atomic Notation



We can represent the number of subatomic particles by using Standard Atomic Notation, an internationally recognized system that allows anyone to communicate information about any atom.

Standard Atomic Notation

This notation tells us:



# of Protons = Atomic #
# of Protons = 11

# of Neutrons = Atomic Mass - # of Protons
= 23 - 11
= 12

Charge Particles

neutral atom - When an atom has the same number of protons and electrons.

Ion - if an atom has a different number of electrons than protons (either extra electrons or missing electrons).

Ions

An **ion** is an atom that has become charged by gaining or losing one or more electrons. (This can occur when energy is applied).

- the number of electrons change but the number of protons stay the same.

Example:
Salt water contains sodium ions, which has 11 protons but only 10 electron (loss one). Since elections are negative, that means sodium became more positive, so it will have a charge of +1 now.

Na^{+1}

Na^{+1} Mass 23
protons 11
neutrons 12
electrons 10

Using your periodic table and your notes

Homework

Subatomic Particle Worksheet

&

Page 89 Question 4