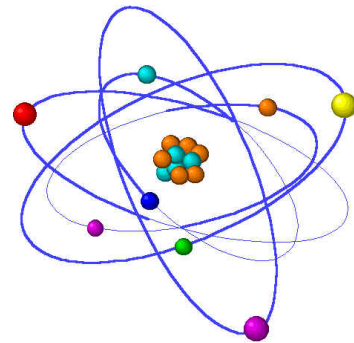


What is an Atom?

the smallest particle of an element

cannot be broken down during normal physical or chemical changes

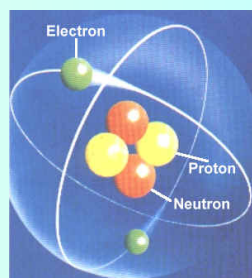
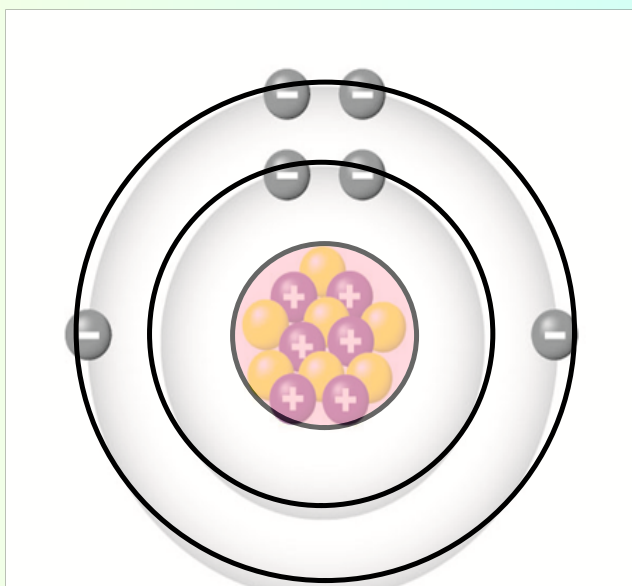
building blocks of all matter



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

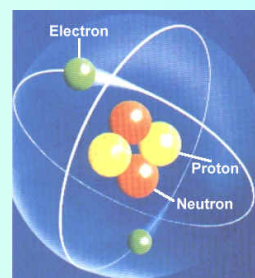
Subatomic Particles = the particles which an atom is made of.



Parts of an Atom

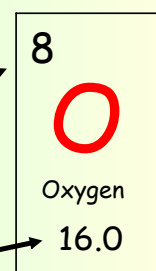
There are 3 subatomic particles in an atom

- 1) **Protons**: positively charged particles with a relative mass of 1, located in the nucleus (important because they tell what atom it is)
- 2) **Neutrons**: neutral particles with a relative mass of 1, located in the nucleus
- 3) **Electrons**: negatively charged particles with a relative mass of approximately 0, found in the orbit around the nucleus

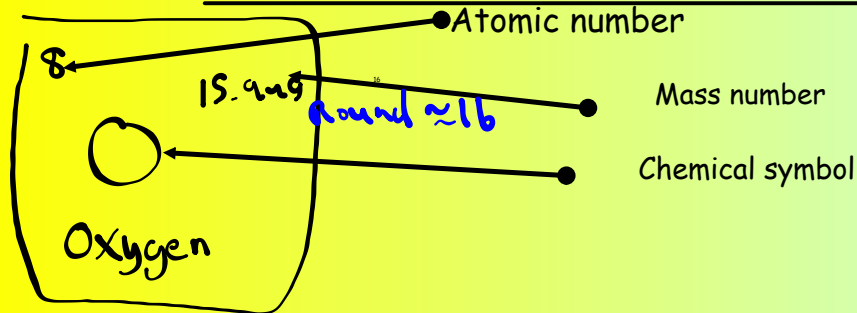


Counting subatomic particles – Important points page 87-88

- 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



Standard Atomic Notation



- 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

electrons = 8

Protons = 8

Neutrons = $16 - 8 = 8$
Mass - Atomic #

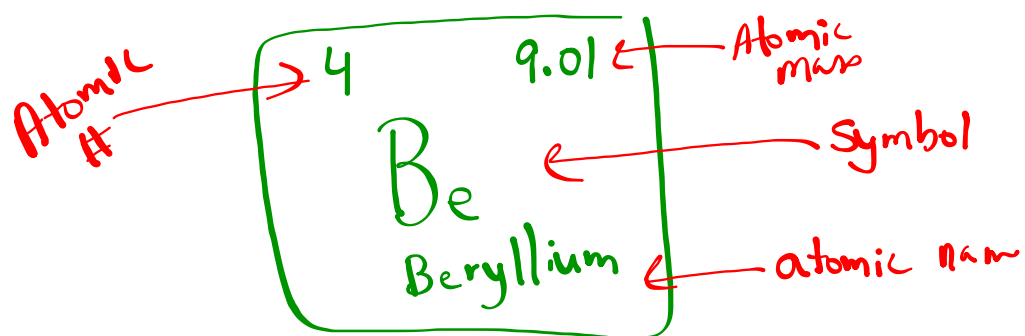


Al

electrons = 13

Protons = 13

Neutrons = $27 - 13 = 14$



$$\# \text{ of Protons} = 4$$

$$\# \text{ of electron} = 4$$

$$\# \text{ of neutrons} = \text{Mass} - \text{Atomic \#}$$
$$= 9 - 4$$
$$= 5$$

11	22.99
Na	
Sodium	

$$\# \text{ of protons} = 11$$

$$\# \text{ of electrons} = 11$$

$$\begin{aligned} \# \text{ of neutrons} &= 23 - 11 \\ &= \boxed{12} \end{aligned}$$

Solutions for the Protons, Neutrons, and Electrons Practice Worksheet:

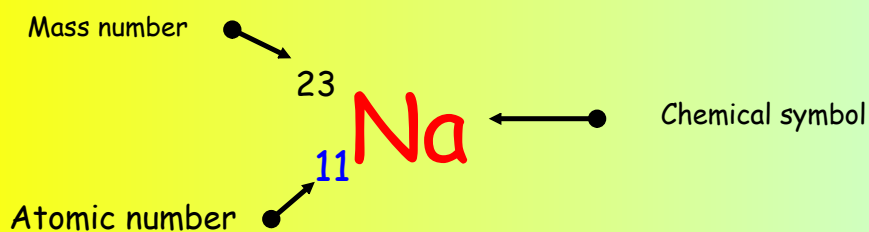
Atomic symbol	Atomic number	Protons	Neutrons	Electrons	Atomic mass
B	5	5	6	5	11
Na	11	11	13	11	24
Ga	31	31	37	31	68
Y	39	39	50	39	89
Cu	29	29	35	29	64
Tc	43	43	57	43	100
Pb	82	82	125	82	207
Yb	70	70	102	70	172
Ac	89	89	136	89	225
Mo	42	42	53	42	95
Tl	81	81	125	81	206
Fm	100	100	159	100	259
No	102	102	159	102	261
Yb	70	70	101	70	172
Sg	106	106	159	106	265

Standard Atomic Notation ||

23

Na
Sodium

This notation tells us:



electrons =

Protons =

Neutrons =

of Protons = Atomic #
of Protons =

of Neutrons = Atomic Mass - # of Protons

of Neutrons =

of Neutrons =

Quiz question

mass #

24

Atomic #

12

Mg

$$\# \text{ protons} = 12$$

$$\# \text{ electrons} = 12$$

$$\# \text{ Neutron} = 24 - 12 = 12$$

Write the standard atomic notation for

³⁹₁₉K

i) potassium

$$\# \text{ protons} = 19$$

$$\# \text{ electrons} = 19$$

$$\# \text{ Neutrons} = 39 - 19 = 20$$

ii) chlorine

$$\# \text{ protons} = 17$$

$$\# e^- = 17$$

$$\# \text{ neutrons} = 35 - 17 = 18$$

³⁵₁₇Cl

Subatomic Particles Worksheet

Use your periodic table to fill in the missing information

Element Name	Element Symbol	Atomic Number	Mass Number	Number of Protons	Number of electrons	Number of Neutrons
Helium		2				
Hydrogen		1				
	Li	3				
Magnesium			24		12	
	Ne					
		7				
Phosphorus	O	15				
	K					20
Silicon			28			
	S					
		11				12