

Subatomic Particles

name	symbol	charge	mass	location
proton	p ⁺	1+	1 u*	nucleus
neutron	n	neutral	1 u	nucleus
electron	e ⁻	1-	0.00055 u	orbits nucleus

u* - atomic mass unit (very small)

Atoms are built from these fundamental particles. The nucleus in particular is made from a combination of protons and neutrons and does not change (there are exceptions). The number of protons in the nucleus determines the type of element and hence the position on the periodic table.

Atomic Number: the number of protons in a nucleus, decided the type of element (atomic number = 13 for aluminum). Atomic number is immutable (does not change*). The number of electrons is equal to the atomic number for a neutral atom. Electrons are frequently lost or gained by an atom creating positive or negative ions - chemistry is all about the electrons.

Mass Number: the total number of protons PLUS neutrons in the nucleus. Roughly equivalent to the mass of the atom. Elements can have different numbers of neutrons and hence can have different mass numbers.

Atomic Symbols: a format used to describe the number of protons and neutrons through mass number and atomic number

A
E
Z

A is short for mass number
Z is short of atomic number
E means element symbol

185 W 74	# of p ⁺ = # of n = # of e ⁻ =
51 Ti 22	# of p ⁺ = # of n = # of e ⁻ =
	# of p ⁺ = 78 # of n = 115 # of e ⁻ = 78
	# of p ⁺ = 90 # of n = 144 # of e ⁻ = 90