

ATOMIC STRUCTURE

Name

KEY

An atom is made up of protons and neutrons (both found in the nucleus) and electrons (in the surrounding electron cloud). The atomic number is equal to the number of protons. The mass number is equal to the number of protons plus neutrons. In a neutral atom, the number of protons equals the number of electrons. The charge on an ion indicates an imbalance between protons and electrons. Too many electrons produces a negative charge, too few, a positive charge.

This structure can be written as part of a chemical symbol.

Example:

$$\begin{array}{c}
 \text{mass} \\
 \text{number} \\
 \downarrow \\
 {}^{15}\text{N}^{+3} \\
 \uparrow \\
 \text{atomic} \\
 \text{number}
 \end{array}$$

charge

7 protons
8 neutrons (15 - 7)
4 electrons

Complete the following chart.

Element/ Ion	Atomic Number	Atomic Mass	Mass Number	Protons	Neutrons	Electrons
H	1	1.0079	1	1	0	1
H ⁺	1	1.0079	1	1	0	0
${}^{12}_6\text{C}$	6	12.011	12	6	6	6
${}^7_3\text{Li}^+$	3	6.941	7	3	4	2
${}^{35}_{17}\text{Cl}^-$	17	35.453	35	17	18	18
${}^{39}_{19}\text{K}$	19	39.0983	39	19	20	19
${}^{24}_{12}\text{Mg}^{2+}$	12	24.305	24	12	12	10
As ³⁻	33	74.9216	75	33	42	36
Ag	47	107.868	108	47	61	47
Ag ⁺¹	47	107.868	108	47	61	46
S ⁻²	16	32.06	32	16	16	18
U	92	238.029	238	92	146	97