

GENERAL CHEMISTRY

STANDARD 2.8

2.8: Identify the charge, mass, and location of the three subatomic particles

PROTONS, NEUTRONS, ELECTRONS

- Protons – Positively-charged subatomic particles in the nucleus
 - Mass = 1 atomic mass unit (amu) or approximately 1.67×10^{-27} kg
- Neutrons – Neutrally-charged subatomic particles in the nucleus
 - Mass = 1 atomic mass unit (amu) or approximately 1.67×10^{-27} kg
- Electrons – Negatively-charged subatomic particles outside of nucleus
 - Mass = 1/1840 atomic mass unit (amu) or approximately 9.11×10^{-31} kg

ATOMIC MASS VS. ATOMIC NUMBER

- Atomic Mass – Sum of protons and neutrons in the atom
 - Units = AMU (atomic mass unit)
 - On the Periodic Table, it is a decimal → average atomic mass of all isotopes
- Atomic Number – Number of protons in atom
 - Also number of electrons in neutral atom (not ion)
 - Periodic Table is arranged by atomic number
 - Pure number – no units

ATOMIC SYMBOL

Atomic Mass

A

Z

X

Atomic Number

Atomic Symbol

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ATOMIC SYMBOL EXAMPLE

Atomic Mass

35

17

Cl

Atomic Number

Atomic Symbol

35 is the Atomic Mass, 17 is the Atomic Number for Chlorine
17 protons in one atom of this isotope of Chlorine, 18 neutrons, 17
electrons

ATOMIC SYMBOL EXAMPLE

Atomic Mass

235

92

U

Atomic Number

Atomic Symbol

235 is the Atomic Mass, 92 is the Atomic Number for Uranium
92 protons in one atom of this isotope of Uranium, 142 neutrons, 92 electrons