

## The Atom

The smallest particle of an element that still retains all the characteristics of the element is a(n) atom.

Name the three subatomic particles of an atom, and indicate the charge on each.

Name                      Charge

proton    +

electron    -

neutron    0

The small central part of the atom that contains most of the mass of the atom is the nucleus. Both the protons and neutrons reside here. The nucleus is positively charged.

The extranuclear region of an atom contains the electrons. It is negatively charged.

Subatomic Particle	Mass, grams	Mass, amu
proton	$1.673 \times 10^{-24}$	1.0073
neutron	$1.675 \times 10^{-24}$	1.0087
electron	$9.1094 \times 10^{-28}$	$5.486 \times 10^{-4}$

Calculate the mass, in g, of a carbon nucleus that contains 6 protons and 7 neutrons. Calculate the mass in amu.

$$6 \times (1.673 \times 10^{-24} \text{ g}) + 7 \times (1.675 \times 10^{-24} \text{ g}) = \mathbf{2.176 \times 10^{-23} \text{ g}}$$

$$6 \times 1.0073 \text{ amu} + 7 \times 1.0087 \text{ amu} = \mathbf{13.105 \text{ amu}}$$