

CONCEPT: SUBATOMIC PARTICLES

- The 3 **subatomic particles** share key differences and similarities in their masses and charges.
 - **Amu**: Shorthand for *atomic mass unit* and is used to calculate the relative mass of an atom or subatomic particle.
 - 1 AMU = one-twelfth the mass of a carbon-12 atom.
 - 1 AMU = 1 _____ (Da) named after John Dalton, a “Father of Chemistry”.
 - 1 AMU = _____ kg.

Subatomic Particle	Actual Mass (kg)	Relative Mass (amu)	Relative Charge	Charge (Coulombs)
Neutron	1.67493×10^{-27}		0	
Proton	1.67262×10^{-27}		+1	
Electron	0.00091×10^{-27}		-1	

EXAMPLE: Osmium, one of the densest elements on earth, has an actual mass of 190.23 grams. According to the table above, what is its value in terms of atomic mass units?

- a) 1.15×10^{26} Da b) 3.16×10^{-28} Da c) 1.15×10^{-28} Da d) 3.16×10^{26} Da

PRACTICE: According to the table above, how many electrons are needed to have a combined mass of 1.0465×10^{-25} kg?

PRACTICE: How many atoms are contained in 0.230 g of sodium, Na? The mass of one sodium atom is 22.99 amu.