

Numbers suitable for use on 1" back of envelopes and in Ph 103c.

$c = 3 \times 10^{10}$ cm/sec $e = 4.8 \times 10^{-10}$ esu = 1.6×10^{-19} coul $m_e = 10^{-27}$ gm
 $\hbar = 10^{-27}$ erg-sec $k = 1.4 \times 10^{-16}$ erg/deg $G = 7 \times 10^{-8}$ erg-cm/gm²
 $N_0 = 6 \times 10^{23}$ /mole $R = 2$ cal/mole-deg n_0 at N.I.P. = 3×10^{19} /cm³

1 newton = 10^5 dynes $\mu_0 = 4\pi \times 10^{-7}$ newt/amp² 1 ohm⁻¹ = 9×10^{11} cm/sec
 1 ft = 30 cm 1 pound = 4.4 newt. $\epsilon_0 = 8.8 \times 10^{-12}$ coul²/newt-cm² $\sqrt{\mu_0/\epsilon_0} = 377$ ohms

classical electron radius $r_0 = e^2/m_e c^2 \approx 3 \times 10^{-13}$ cm / $\alpha = e^2/\hbar c = 1/137$
 Compton wavelength $\lambda_c = \hbar/m_e c \approx 4 \times 10^{-11}$ cm
 Bohr radius $a_0 = \hbar^2/m_e e^2 \approx 5 \times 10^{-9}$ cm Bohr magneton
 Rydberg w'length $\lambda_R = \hbar^3 c/m_e e^4 \approx 7 \times 10^{-7}$ cm / $e\hbar/2mc = 10^{-20}$ erg/gauss

1 cal = 4 watt-sec = 4×10^7 erg 1 ev = 1.6×10^{-12} erg black body radiates
 $m_e c^2 = .5$ Mev $e^2/a_0 = 26$ ev vis. photon ≈ 2 ev 6×10^{-12} watts/deg⁴/cm²
 $kT_{room} = .025$ ev band gap: Si: 1.1 ev Ge: 0.7 ev 680 lumens = 1 watt (5530 Å)

$m_{nucleon} \approx 2000 m_e$ $m_{kaon} \approx 1000 m_e$ $m_{pion} \approx 270 m_e$ $m_{muon} \approx 200 m_e$ $R_{nucleus} = A^{1/3} \times 10^{-13}$ cm spin precession { e: 3 MHz/gauss p: 4 kHz/gauss	$g = 10^3$ cm/sec ² $P_{at} = 10^6$ dyne/cm ² ≈ 15 psi air density = 10^{-3} gm/cm ³ scale height = 8 km air at 300°K: $v_{sound} \approx v_{molec} \approx 4 \times 10^4$ cm/sec mean free path (air, NTP) $\approx 7 \times 10^{-6}$ cm	pc (ev) = 300 Br (gauss-cm) 1 parsec = 3×10^{18} cm min. ioniz. loss: 2 Mev/gm/cm ² 1 mag = -4 db rad. length in air: 36 gm/cm ² $m_{abs} = m_{app}$ at 10 pc 1 curie = 4×10^{10} disint./sec $m_0 = 5$
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resistivity, usual temperature:
 Cu: 2×10^{-6} ; pure H₂O: 2×10^7 ; sea water: 25 ohm-cm
 specific heat (solid or liquid) ≈ 0.5 cal/cm³/deg
 linear expansion (") $\approx 2 \times 10^{-5}$ /deg
 heat conduction (insulator) $\approx 10^{-2}$ cal/sec-cm-deg
 heat cond. (metal) ≈ 1.0 (ρ_{Cu}/ρ_{metal}) cal/sec-cm-deg
 heat of combustion (food or fuel) $\approx 10^4$ cal/gm
 heat of vaporization $\approx 10^4$ cal/mole
 elastic moduli (solids) $\approx 10^{11}$ - 10^{12} dyne/cm²
 tensile strength (solids) $\approx 10^8$ - 10^{10} dyne/cm²
 surface tension H₂O ≈ 50 dyne/cm
 diffusion: H₂O 10^{-5} , air 0.2 cm²/s
 viscosity: H₂O 10^{-2} , air 2×10^{-4} dyne-s/cm²

earth field at pole $\approx .5$ gauss
 $M_e = 6 \times 10^{27}$ gm $R_e = 6 \times 10^8$ cm
 $M_\odot = 2 \times 10^{33}$ gm $R_\odot = 8 \times 10^{10}$ cm
 $L_\odot = 4 \times 10^{33}$ erg/sec = 1 kw/m² at earth
 starlight energy density: 10^{-12} erg/cm³
 primary cosmic rays: 1 /cm²/sec
 distance to moon: 4×10^{10} cm
 distance to sun: 1.5×10^{13} cm
 to center of Galaxy: 3×10^{22} cm
 mass of Galaxy: 2×10^{44} gm
 dist. between galaxies: 10^{25} cm
 $R_{universe} \approx 3000$ Mpc $\approx 10^{28}$ cm