

## Physical Constants:

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Acceleration due to gravity  $g = 9.80665 \text{ m/s}^2$

Avagadro's number  $N_A = 6.022137 \times 10^{23}$

### Masses of Subatomic Particles:

electron  $m_e = 9.10939897 \times 10^{-31} \text{ kg} = 5.4857991 \times 10^{-4} \text{ u}$

proton  $m_p = 1.6726231 \times 10^{-27} \text{ kg} = 1.0072765 \text{ u}$

neutron  $m_n = 1.6749286 \times 10^{-27} \text{ kg} = 1.0086649 \text{ u}$

Speed of Light  $c = 2.997925 \times 10^8 \text{ m/s}$

Proton Charge  $e = 1.60219 \times 10^{-19} \text{ C}$

## Conversion Factors:

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Atomic Mass Unit (amu or u)  $1 \text{ u} = 1.660540 \times 10^{-27} \text{ kg}$

Foot (ft)  $1 \text{ ft} = 12 \text{ in} = 0.3048 \text{ m}$  (exactly)

Pound (lb)  $1 \text{ lb} = 16 \text{ oz} = 0.45359237 \text{ kg}$

## Formulas:

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gravitational potential energy  $U = m g h$

kinetic energy  $\text{K.E.} = (1/2) m v^2$

circumference of a circle/sphere  $\text{circ} = 2 \pi r$

cross-sectional area of a circle/sphere  $A = \pi r^2$

volume of a sphere  $V = (4/3) \pi r^3$

force on a charged particle in an electric field  $F = q E$

mass defect  $E = \Delta m c^2$