

# SCIENTIFIC FORMULA REFERENCE

Standard Reference Data | ver 2.1

## CLASSICAL MECHANICS

Quantity	Formula
Newton's Second Law	$F = m \vec{a}$
Kinetic Energy	$E_k = \frac{1}{2}mv^2$
Potential Energy	$U = mgh$
Work Done	$W = Fd \cos(\theta)$
Universal Gravitation	$F = G(m_1 m_2 / r^2)$

## THERMODYNAMICS & WAVES

Quantity	Formula
Ideal Gas Law	$PV = nRT$
Specific Heat	$Q = mc\Delta T$
Wave Velocity	$v = f\lambda$
Refractive Index	$n = c/v$
Snell's Law	$n_1 \sin \theta_1 = n_2 \sin \theta_2$

## ELECTRICITY & MAGNETISM

Quantity	Formula
Ohm's Law	$V = IR$
Electric Power	$P = VI = I^2R$
Coulomb's Law	$F = k(q_1 q_2 / r^2)$
Capacitance	$C = Q/V$

## PHYSICAL CONSTANTS

Constant	Value (Approx.)
Speed of Light	$c \hat{\approx} 3.00 \tilde{A} \text{—} 10^8 \text{ m/s}$
Gravitational Accel.	$g \hat{\approx} 9.81 \text{ m/s}^2$
Planck Constant	$h \hat{\approx} 6.626 \tilde{A} \text{—} 10^{\hat{3}} \hat{A}^3 \hat{A} \text{ ' } J\hat{A}\cdot\text{s}$
Avogadro's Number	$N\hat{a}, \hat{\approx} 6.022 \tilde{A} \text{—} 10^{\hat{2}} \hat{A}^3 \text{ mol}\hat{a} \text{—} \hat{A}^1$

For educational reference only. Data verified against standard SI unit conventions.