CONSTANTS

Description	Value
Standard atmospheric pressure	1 atm = 760 mm Hg = 760 torr = 101.325 kPa
Speed of light in a vacuum (c)	3.00×10^8 m/s
1 calorie (cal)	4.184 J
1 watt (W)	1 J/s
Acceleration of gravity on Earth (g)	9.80 m/s^2
Coulomb's constant (k_e)	8.99×10^9 N•m^2/C^2
Gravitational constant (G)	6.67×10^{-11} N•m^2/kg^2
Avogadro's number (N_A)	6.02×10^{23} particles/mole
Density of water (ρ_w)	1.00×10^3 kg/m^3

FORMULAS

Description	Formula
Coulombs (C)	C = amperes × seconds
Speed of light	$c = \lambda\nu$
Hertz (Hz)	$\text{Hz} = \frac{1}{\text{s}}$
Density	$D = \frac{m}{v}$

FORMULAS (continued)

Force and Motion

Description	Formula
Constant acceleration formula with respect to time	$v_f = v_i + at$
Constant acceleration formula with respect to distance	$v_f^2 - v_i^2 = 2a(x_f - x_i)$
Newton's 2nd law	$\sum \mathbf{F} = m\mathbf{a}$
Law of universal gravitation	$F = \frac{Gm_1m_2}{r^2}$

Energy, Momentum, and Heat Transfer

Description	Formula
Work	$W = Fd$
Power	$P = \frac{\Delta W}{\Delta t}$
Kinetic energy	$KE = \frac{1}{2}mv^2$
Potential energy	$PE = mgh$
Momentum	$\mathbf{p} = m\mathbf{v}$

Electricity and Magnetism

Description	Formula
Resistance in series	$R_S = R_1 + R_2$
Resistance parallel	$\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2}$
Ohm's law	$V = IR$
Electrical power	$P = IV$

FORMULAS (continued)

Waves, Sound, and Light

Description	Formula
Period of a pendulum	$T = 2\pi\sqrt{\frac{L}{g}}$
Speed of a wave	$v = f\lambda$
Speed of a wave on a string	$v = \sqrt{\frac{T}{\mu}}$

Mathematics

(a, b) denotes a vector with an x-component of a and a y-component of b.

NOTES FOR MIDDLE SCHOOL SCIENCE TEST

Not all constants and formulas necessary are listed, nor are all constants and formulas listed used on this test.

While attention has been paid to significant figures, no answer should be considered incorrect solely because of the number of significant figures.

In questions on electricity and magnetism, the term *current* refers to "conventional current" and the use of the right-hand rule is assumed.