CONSTANTS

Description	Value
Avogadro's number	6.02×10^{23}
Molar gas volume at STP	22.4 L
Ideal gas constant (R)	8.31 J/K = 0.0821 L•atm/(mol•K)
Heat of fusion of water (ΔH_f)	334 J/g = 80 calories/g
Heat of vaporization of water (ΔH_v)	2260 J/g = 540 calories/g
Specific heat of water (liquid)	4.18 J/(g•°C) = 1.0 calorie/(g•°C)
Specific heat of water (solid or vapor)	2.09 J/(g•°C) = 0.50 calorie/(g•°C)
Standard atmospheric pressure	1 atm = 760 torr = 101.325 kPa (kilopascals) = 760 mm Hg
Acceleration of gravity on Earth (g)	9.8 m/s^2
Speed of light in a vacuum (c)	3.00×10^8 m/s
Planck's constant (h)	6.63×10^{-34} J•s = 4.14×10^{-15} eV•s
Charge of electron	-1.60×10^{-19} C
Coulomb's constant (k_e)	9.0×10^9 N•m^2/C^2
Gravitational constant (G)	6.67×10^{-11} N•m^2/kg^2

1 calorie (cal)	4.184 J
Kelvin/Celsius conversion	$T_K = T_C + 273$

FORMULAS

Description	Formula
Ideal gas law	$PV = nRT$
Boyle's law	$\frac{V}{V'} = \frac{p'}{p}$
Charles' law	$\frac{V}{V'} = \frac{T}{T'}$
Constant acceleration	$v = v_i + at$
	$x = x_i + v_i t + \frac{1}{2} at^2$
	$v^2 = v_i^2 + 2a(\Delta x)$

FORMULAS (continued)

Description	Formula
Mechanics	$F = ma$
	$p = mv$
	$J = F\Delta t$
	$F_f = \mu F_N$
Universal law of gravitation	$F = \frac{Gm_1m_2}{r^2}$
Spring	$F = -kx$
	$PE = \frac{1}{2}kx^2$
Pendulum	$T = 2\pi\sqrt{\frac{L}{g}}$
Wave relationship	$v = f\lambda$
Frequency of a wave	$f = 1/T$
Heat	$\Delta Q = mc\Delta T$
	$\Delta Q = m\Delta H$
Energy	$KE = \frac{1}{2}mv^2$
	$PE = mgh$
Ohm's law	$V = IR$

Power	$P = \frac{E}{t} = IV$
Series resistance	$R_{Series} = R_1 + R_2 + R_3 + \ldots$
Parallel resistance	$\frac{1}{R_{Parallel}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots$
Magnetic field of a solenoid	$B = \frac{\mu N I}{L}$

NOTES FOR THE GENERAL SCIENCE TEST

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

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