

**GENERAL SCIENCE  
CONSTANTS AND FORMULAS**

Avogadro's number	$6.02 \times 10^{23}$
Acceleration of gravity on Earth ( $g$ )	$9.8 \text{ m/s}^2$
Universal law of gravitation	$F = \frac{Gm_1m_2}{r^2}$
Gravitational constant ( $G$ )	$6.67 \times 10^{-11} \text{ N}\cdot\text{m}^2/\text{kg}^2$
Potential energy	$PE = mgh$
Kinetic energy	$KE = \frac{1}{2}mv^2$
Ohm's law	$V = IR$
Electrical power	$P = IV$
Series resistance	$R_{\text{Series}} = R_1 + R_2 + R_3 + \dots$
Parallel resistance	$\frac{1}{R_{\text{Parallel}}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots$
Magnetic field of a solenoid	$B = \frac{\mu NI}{L}$
Ideal gas law	$PV = nRT$
Combined gas law	$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$
Universal gas constant	$R = 8.31 \text{ J/mol}\cdot\text{K} = 0.0821 \text{ L}\cdot\text{atm/mol}\cdot\text{K}$
Frequency of a wave	$f = 1/T$
Velocity of a wave	$v = f\lambda$
Specific heat ( $s$ ) of water (liquid)	$4.18 \text{ J/g}\cdot\text{K} = 4.18 \text{ J/g}\cdot^\circ\text{C} = 1.0 \text{ cal/g}\cdot^\circ\text{C}$
Standard atmospheric pressure	$1 \text{ atm} = 760 \text{ mm Hg} = 760 \text{ torr} = 101.325 \text{ kPa}$
Speed of light in a vacuum ( $c$ )	$3.00 \times 10^8 \text{ m/s}$

## CONSTANTS AND FORMULAS (continued)

1 calorie (cal)

4.184 J

1 watt (W)

1 J/s

1 ampere (A)

1 C/s

Kelvin/Celsius conversion

$$T_K = T_C + 273$$

Heat change

$$q = ms\Delta T$$