

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 (STP)	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

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	$v = v_i + at$ $x = x_i + v_i t + \frac{1}{2}at^2$

FORMULAS (continued)

Description	Formula
Mechanics	$F = ma$ $p = mv$ $J = F\Delta t$
Circular motion	$a = \frac{v^2}{r}$
Spring	$F = -kx$ $PE = \frac{1}{2}kx^2$
Pendulum	$T = 2\pi\sqrt{\frac{L}{g}}$
Wave relationship	$v = f\lambda$
Speed of waves in a string	$v = \sqrt{\frac{T}{\mu}}$
Energy	$\Delta Q = mc\Delta T$ $KE = \frac{1}{2}mv^2$ $PE = mgh$
Ohm's law	$V = IR$

NOTES FOR 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.

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