CONSTANTS AND FORMULAS

Force and Motion

$g = 9.8\ \text{m/s}^2$

$PE = mgh$

$KE = \frac{1}{2}mv^2$

Electric Circuits

$V = IR$

$P = IV$

$R_{series} = R_1 + R_2 + R_3 + \ldots$

$R_{parallel} = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots}$

Gas Law

$PV = nRT;\ R = 8.314\ \text{J/(mol • K)}$

Pressure

$P = \frac{\text{force}}{\text{area}}$

Waves

$f = \frac{1}{T}$

$v = f\lambda$

Geometry

$\pi = 3.1416$

area of a circle: $A = \pi r^2$

area of a triangle: $A = \frac{1}{2}$ base • height

area of a rectangle: A = length • width

volume of a cube:
V = length • width • height

volume of a cylinder: $V = \pi r^2 h$

volume of a sphere: $V = \frac{4}{3}\pi r^3$

circumference of a circle: $C = 2\pi r$

Pythagorean Theorem: $a^2 + b^2 = c^2$

Work and Power

mechanical work: $W = Fd$

mechanical power: $P = \frac{W}{t}$

ideal mechanical advantage (IMA): $\frac{D_e}{D_r} = \frac{\text{distance}_{\text{effort}}}{\text{distance}_{\text{resistance}}}$

actual mechanical advantage (AMA): $\frac{F_r}{F_e} = \frac{\text{force}_{\text{resistance}}}{\text{force}_{\text{effort}}}$