

Physics 1 Equation Sheet

MECHANICS

$v_x = v_{x0} + a_x t$	a = acceleration
$x = x_0 + v_{x0} t + \frac{1}{2} a_x t^2$	A = amplitude
$v_x^2 = v_{x0}^2 + 2a_x(x - x_0)$	d = distance
$\vec{a} = \frac{\sum \vec{F}}{m} = \frac{\vec{F}_{net}}{m}$	E = energy
$ \vec{F}_f \leq \mu \vec{F}_n $	f = frequency
$a_c = \frac{v^2}{r}$	F = force
$\vec{p} = m\vec{v}$	I = rotational inertia
$\Delta\vec{p} = \vec{F} \Delta t$	K = kinetic energy
$K = \frac{1}{2} m v^2$	k = spring constant
$\Delta E = W = F_{\parallel} d = F d \cos \theta$	L = angular momentum
$P = \frac{\Delta E}{\Delta t}$	ℓ = length
$\theta = \theta_0 + \omega_0 t + \frac{1}{2} \alpha t^2$	m = mass
$\omega = \omega_0 + \alpha t$	P = power
	p = momentum
	r = radius or separation
	T = period
	t = time
	U = potential energy
	V = volume
	v = speed
	W = work done on a system
	x = position
	y = height
	α = angular acceleration
	μ = coefficient of friction
	θ = angle
	ρ = density
	τ = torque

GEOMETRY AND TRIGONOMETRY

Rectangle	A = area
$A = bh$	C = circumference
Triangle	V = volume
$A = \frac{1}{2} bh$	S = surface area
Circle	b = base
$A = \pi r^2$	h = height
$C = 2\pi r$	ℓ = length
Rectangular solid	w = width
$V = \ell wh$	r = radius
Cylinder	Right triangle
$V = \pi r^2 \ell$	$c^2 = a^2 + b^2$
$S = 2\pi r \ell + 2\pi r^2$	$\sin \theta = \frac{a}{c}$
Sphere	$\cos \theta = \frac{b}{c}$
$V = \frac{4}{3} \pi r^3$	$\tan \theta = \frac{a}{b}$
$S = 4\pi r^2$	