MASTER COACHING CENTER

Quantity	Description	S.I unit
DENSITY $\rho = mV$	ρ = density m = mass V = volume	Kg/m^3 Kg m^3
SPEED $V = \frac{s}{t}$ **EQUATION OF MOTION** $V_f = v_i + at$ $S = v_i t + \frac{1}{2} at^2$ $2gh = v_f^2 - v_i^2$ **MOTION UNDER GRAVITY** $V_f = v_i + gt$ $h = v_i t + \frac{1}{2} gt^2$ $2gh = v_f^2 - v_i^2$ **FORCE** F = ma **MOMENTUM** P = mv **WEIGHT** W = mg	V = velocity S = distance t = time Vf = final velocity Vi = initial velocity a = acceleration h = height F = force m= mass P = momentum W = weight g = gravity (acceleration due to gravity)	m/sec m sec m/sec m/sec m/sec^2 m N Kg N.Sec N m/sec^2
LAW OF CONSERVATION OF MOMENTUM $m_1u_1 + m_2u_2 = m_1v_1 + m_2v_2$	m_1 = mass of first object m_2 = mass of second object V_1 = Velocity of first object V_2 = Velocity of second object	Kg Kg m/sec m/sec
CENTRIPETAL ACCELERATION $a_c = \frac{v^2}{r}$ **CENTRIPETAL FORCE** $F_c = \frac{mv^2}{r}$	ac = centripetal acceleration v = velocity r = radius Fc = centripetal force M = mass	m/sec^2 m/sec m N Kg
TORQUE $\tau = F\, d$	τ = torque F = force d = distance	N.m N M
RECTANGULAR COMPONENT $F_x = F \cos\theta$ $F_y = F \sin\theta$ **LIKE PARALLEL FORCES** $F = F_1 + F_2$ **UNLIKE PARALLEL FORCES** $F = F_1 - F_2$ **RESULTANT FORCE** $F = \sqrt{Fx^2 + Fy^2}$	Fx = Horizontal component Fy = Vertical component F = force/ resultant force θ = theta (angle)	N N N

HOOKS LAW	P = pressure	N/m^2
$F = Kx$	F = force	N
PRESSURE	A = area	m^2
$P = \frac{F}{A}$	ρ = density	kg/m^3
$P = \rho dg$	d = depth	m
	g = gravity	m/sec^2
	K = spring constant	N/m
	x = extension	m
HYDRAULIC MACHINE	F_1 = force on smaller area	N
$\frac{F_1}{A_1} = \frac{F_2}{A_2}$	A_1 = smaller area	m^2
	F_2 = force on larger area	N
	A_2 = larger area	m^2
GRAVITATIONAL FORCE	F= force	N
$F = \frac{Gm_1m_2}{r^2}$	G = gravitational constant	Nm^2/kg^2
	m_1 = mass of first object	Kg
	m_2 = mass of second object	Kg
	r = radius	m
BOLYES LAW	P_1 = initial pressure	N/m^2,pascal
$P_1V_1 = P_2V_2$	V_1 = initial volume	m/sec
	P_2 = final pressure	N/m^2,pascal
	V_2 = final volume	m/sec
KINETIC ENERGY	K.E = kinetic energy	Joules
$K.E = ½ mv^2$	M = mass	Kg
	V = velocity	m/sec
POTENTIAL ENERGY	P.E = potential energy	Joules
$P.E = mgh$	g = gravity	m/sec^2
	h = height	m
WORK	W= work	Joules
$W = F\,d\cos\theta$	F= force	N
	d = distance	m
HEAT CAPACITY	ΔQ = heat	Joules
$\Delta Q = c\Delta T$	C = heat capacity	j/k
	ΔT = temperature	K
SPECIFIC HEAT	C = heat capacity	j/kg.K
$\Delta Q = mc\Delta T$	M= mass	Kg
POWER	P = power	Watt
$P = \frac{w}{t}$	W= work	Joules
EFFICIENCY	T = time	Sec
$E = \frac{output}{input} \times 100$	E = efficiency	%
LINEAR EXPANSION	ΔL = change in length	m
$\Delta L = \alpha L\Delta T$	L = initial length	m
VOLUMETRIC EXPANSION	ΔT change in temperature	K
$\Delta V = \beta V\Delta T$	α = linear thermal constant	k^{-1}
	ΔV = change in volume	m^3
	V = initial voulme	m^3
	β = volumetric thermal constant	k^{-1}