PHYSICS EQUATIONS – 1st SEMESTER

VELOCITY	velocity = final <u>distance –initial distance</u> time	$v = \Delta \underline{d} $ t
ACCELERATION	acceleration = <u>final velocity – initial velocity</u> time	$a = \frac{V_f - V_i}{t}$
GRAVITATIONAL ACCELERATION	velocity = acceleration \cdot time	$v_y = at$
	distance = $\frac{1}{2}$ acceleration \cdot time ²	$d_y = \frac{1}{2}at^2$
PYTHAGOREAN THEOREM	The square on the hypotenuse is equal to the sum of the squares on the other two sides.	$c^2 = a^2 + b^2$
NET FORCE	Net Force $=$ mass \cdot acceleration	$F_{Net} = ma$
WEIGHT	Weight = mass \cdot acceleration due to gravity	W = mg
SLIDING FRICTION	friction force = coefficient of friction \cdot normal force	$F_{\rm f}=\mu F_n$
MOMENTUM	momentum = mass \cdot velocity	$\mathbf{p} = \mathbf{m}\mathbf{v}$
IMPULSE	Impulse = force \cdot time = change in momentum	$J = Ft = m\Delta v = \Delta p$
	Sum momentum before = Sum momentum after	$\Sigma p_{before} = \Sigma p_{after}$
CONSERVATION OF MOMENTUM	$m_1v_1 + m_2v_2 = m_1v'_1 + m_2v'_2$	Elastic collisions
	$m_1v_1 + m_2v_2 = (m_1 + m_2)v'$	Inelastic collisions
WORK	Work = force \cdot distance	$W = F \cdot d$
POWER	power = <u>work</u> time	$P = \frac{W}{t}$
POTENTIAL ENERGY	potential energy = mass \cdot gravity \cdot height	P.E. = mgh
KINETIC ENERGY	kinetic energy = $\frac{1}{2}$ mass · velocity ²	K.E. = $\frac{1}{2}$ mv ²
CONSERVATION OF MECHANICAL ENERGY	Energy _{before} = Energy _{after}	$\Sigma E_b = \Sigma E_a$
	Kinetic Energy ₁ + Potential Energy ₁ + Work = Kinetic Energy ₂ + Potential Energy ₂	$KE_1 + PE_1 + W = KE_2 + PE_2$