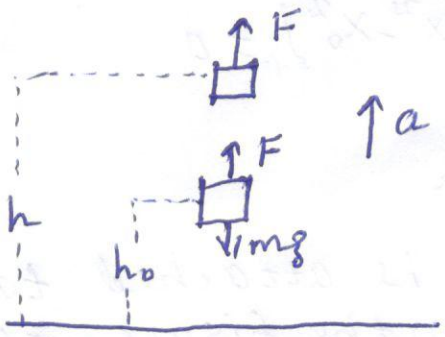
GRADE 11 PHYSICS

5.5 Mechanical energy and collision

ME :- Of the system is the sum of its potential energy and kinetic energy.

* While the object is at intial position 'h_0', let its intial velocity upward be 'V_0' at this instant a force 'F' act on abody other than 'F_g'.



$F - mg = ma = F_{net}$

$W_{net} = W_F + W_g \Rightarrow W_F - mg(h-h_0) = \Delta KE$, $W_{net} = \Delta KE$

$W_F = \Delta KE + mg(h-h_0) \Rightarrow W_F = \Delta KE + \Delta GPE$

Generally, $ME = \Delta KE + \Delta GPE$ or $\boxed{\Delta KE + \Delta PE = ME}$

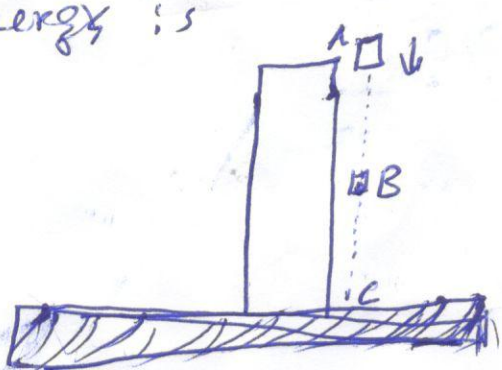
Conservation of energy

* States that in the absence of any external force the total mechanical energy is constant.
* In isolated system, the ME is conserved.

$ME = Constant$

$\Delta KE + \Delta PE = 0$

* If the force of gravity is the only force doing work with in a system, the principle of mechanical energy conservation is



$\Delta KE + \Delta GPE = 0$

$\frac{1}{2}m(V^2 - V_0^2) + mg(h-h_0) = 0$