

SUMMARY DYNAMICS MODULE N5

SUBJECT	EQUATION	DISCUSSION
Impulse and Momentum	$m\bar{v}_1 + \sum \int \bar{F} dt = m\bar{v}_2$	The final momentum of a particle is equal to its initial momentum plus the impulses of the forces acting during the time interval.
Direct Central Impact	$M_A v_A + M_B v_B =$ $M_A v_A' + M_B v_B'$	
Coefficient of Restitution	$e = \frac{\int R dt}{\int P dt}$ $= \frac{V_B' - V_A'}{V_A - V_B}$	P - deformative force R - restitutive force
Oblique Impact		Only the normal velocity is affected.

WORDS TO KNOW MAJOR MODULE 5

1. Impulsive Force - a large force that may act during a very short time interval (dt). This impulsive force produces a change in momentum.
2. Direct Central Impact - occurs when the mass centers of two colliding bodies are located on the common normal to the surfaces in contact.
3. Coefficient of Restitution - symbol (e); this is the percent of energy that is recovered after a collision (impact).
4. Perfectly Elastic Collision - ($e=1$). Note: in a perfectly elastic collision, the total momentum and total energy are both conserved.
5. Pile Driver - a machine that uses a weight, which hangs from a vertical position, to drive (pound) an object into the ground. The weight is dropped from a height above the object that is to be embedded into the ground.
6. Winch - an apparatus for hoisting or hauling by means of a rope which is wound around a cylinder.