HLC Apm

SIMPLE HARMONIC MOTION.
KINEMATICS

SIMPLE HARMONIC MOTION (SHM)	ACCELERATED LINEAR MOTION. (ALM)
DESCRIPTIONS - Repeated bounded periodic motion of a particle about a mean position.	**DESCRIPTIONS** - Particle moving in one direction never returning to the same point in space.
- A particle performing SHM moves so that its acceleration is proportional to its displacement from a fixed point O and is directed towards O.	- Particle moving so that its acceleration is constant.
$a = -\omega^2 x$, x is DISPLACEMENT from a mean position , ω a constant.	a = CONSTANT.
- A particle is performing SHM if its displacement, x, satisfies $\frac{d^2x}{dt^2} = -\omega^2 x$	- A particle is performing ALM whose displacement, x, from origin satisfies $\frac{d^2x}{dt^2} = a$, constant.
Solving [See Appendix ①] leads to $x = A\sin\omega t$ [Bounded periodic] [OR $x = A\cos\omega t$]	Solving [see Appendix ②] leads to $x = ut + \frac{1}{2}at^2$ [Not Bounded]
$v^2 = \omega^2(A^2 - x^2)$	$v^2 = u^2 + 2ax$
$T = \frac{2\pi}{\omega}$	No equivalent.
ω, A Constants	u, a constants

EXAMPLES: Elephant, Springs, Vibraslap ruler, pen and paper.