

Lettergram.Net – Linear Motion

*Quick Review Guide

Standard Units for Physics:

Quantity	Units	Symbol
Length	Meter	m
Mass	Kilogram	kg
Time	Seconds	s
Temperature	Kelvin	K
Amount of Substance	Mole	mol
Luminous Intensity	Candela	cd
Electric Current	Ampere	A

Displacement (SI – Meters) – The change in position over a time interval.

$$\Delta X = X_f - X_i$$

Average Velocity (SI – Meters/Second) – The change in displacement over a change in time.

$$V_{\text{avg}} = \Delta X / \Delta t$$

Average Acceleration (SI – Meters/Second*Second) – The change in velocity over a change in time.

$$a_{\text{avg}} = \Delta V / \Delta t$$

Instantaneous Velocity – The change in position (the displacement) over a change in time, as the change in time approaches zero.

$$V = \lim_{\Delta t \rightarrow 0} \Delta X / \Delta t = dX/dt$$

Instantaneous Acceleration – The change in velocity over the change in time as the change in time approaches zero.

$$a = \lim_{\Delta t \rightarrow 0} \Delta V / \Delta t = dV/dt$$

Kinematic Equations:

From which we derive several key equations which are used throughout the rest of physics, all of which require an object to be under constant acceleration (such as an object falling, being thrown, sliding down a ramp, anything to do with gravity).

The equations are as follows:

$$V_f = V_i + at$$

$$V_{\text{avg}} = (V_i + V_f)/2$$

$$X_f = X_i + 1/2 (V_i + V_f)t$$

$$X_f = X_i + V_i t + (1/2)at^2$$

$$(V_f)^2 = (V_i)^2 + 2a(X_f - X_i)$$

Recommendations:

Because I do not know the specific knowledge each individual has using this guide, I would recommend that if there is something I mention that you do not fully understand you either use [YouTube](#) to find a video; Tweet me via [Twitter](#) *(though I may be a while getting back); Comment on the related post on [Lettergram.net](#) or simply ask your teacher.