

One Dimensional Motion

Since any vector is the sum of its components, any motion can be considered as a sum of three 1D motions.

The symbol $(r \text{ OR } v \text{ OR } a)_{x \text{ OR } y \text{ OR } z}$

stands for a "1D vector", i.e. a signed scalar for which the sign (+ or -) indicates DIRECTION ONLY.

POSITION $r_x(t)$ is usually written simply as $x(t)$.

DISPLACEMENT Δr_x is written simply as $\Delta x \equiv x_f - x_i$

VELOCITY $\bar{v}_x \equiv \frac{\Delta x}{\Delta t}$ $v_x(t) \equiv \lim_{\Delta t \rightarrow 0} \frac{\Delta x}{\Delta t}$

CHANGE IN VELOCITY $\Delta v_x \equiv v_{xf} - v_{xi}$

ACCELERATION $\bar{a}_x \equiv \frac{\Delta v_x}{\Delta t}$ $a_x(t) \equiv \lim_{\Delta t \rightarrow 0} \frac{\Delta v_x}{\Delta t}$