Kinematic Equations for Linear Motion

(*For constant acceleration ONLY*)

** **To select the appropriate equation to solve a particular problem**:

1) List what quantities are given - (*will be* 3)
2) List what is being asked for - (*will be* 1).
3) Find the equation in the table that contains all 4 involved quantities.

Equation	Involved Quantities	Unneeded Quantity
1) $v_f = v_i + at$	v_i, v_f, a, t	Δx
2) $v_f^2 = v_i^2 + 2a\Delta x$	$\Delta x, v_f, v_i, a$	t
3) $\Delta x = v_i t + \frac{1}{2}at^2$	$\Delta x, v_i, a, t$	v_f
4) $\Delta x = \frac{1}{2}(v_f + v_i)t$	$\Delta x, v_f, v_i, t$	a
5) $\Delta x = v_f t - \frac{1}{2}at^2$	$\Delta x, v_f, a, t$	v_i

** $\Delta x = (x_f - x_i)$

** **These equations work for motion in ANY <u>one</u> direction**

** **If Δx also represents the *total* distance in *only* 1 direction, you can replace Δx with** d (*for distance*) **and then think of v_f and v_i in terms of** *speed* **rather than** *velocity*