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)	$v = v_o + at$	v_o, v, a, t	Δx
2)	$v^2 = v_o^{\,2} + 2a\Delta x$	$\Delta x, v, v_o, a$	t
3)	$\Delta x = v_o t + \frac{1}{2}at^2$	$\Delta x, v_o, a, t$	v
4)	$\Delta x = \frac{1}{2}(v + v_o)t$	$\Delta x, v, v_o, t$	a
5)	$\Delta x = vt - \frac{1}{2}at^2$	$\Delta x, v, a, t$	v_o

** $\Delta x = (x - x_o)$

**** These equations work for motion in ANY <u>one</u> direction (*x, y, or z*)**

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