Memorize the Kinematic Equations (and other pieces)

Memorize the Four Kinematic Equations and what each symbol means:

Name	Equation
Definition of Acceleration	$v_f = v_i + a \cdot \Delta t$
The King of Kinematic Equations	$\Delta x = v_i \cdot \Delta t + \dfrac{1}{2} a (\Delta t)^2$
The Average Velocity Formula	$\Delta x = \left(\dfrac{v_i + v_f}{2} \right) \Delta t$
No-Time Equation	$v_f^2 = v_i^2 + 2a \cdot \Delta x$

Symbol	Quantity	SI Unit
v_f	Final velocity	m/s (meters per second)
v_i	Initial Velocity	m/s (meters per second)
a	Acceleration	m/s² (meters per second squared)
Δt	Change in time	s (seconds)
Δx	Displacement	m (meters)

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Also, you need to memorize:

1.
The original form of the definition of acceleration

$$a = \frac{\Delta v}{\Delta t} = \frac{v_f - v_i}{\Delta t}$$

Notice that this is the same formula as the first kinematic equation.

2.
The *kinematic equations* are allowed whenever *acceleration is constant.*
If acceleration is not constant, then you need to use *calculus* instead.

3.
If *velocity is constant* the only equation is

$$v = \frac{\Delta x}{\Delta t}$$

or

$$\Delta x = v \cdot \Delta t$$