Models Available for this test:

Constant Velocity Model:

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

$\Delta x = v\Delta t$ *or* $x_f = v\Delta t + x_i$

Force Models:

Constant Velocity $\Leftrightarrow \sum Fx = 0$

Constant Velocity $\Leftrightarrow \sum Fy = 0$

$\Sigma F = F_{net}$

$F_{net} = ma$

Force of Gravity Equation

$F_g = (9.8 \frac{N}{Kg})m$

Force of Friction Equations

$F_{fs} \leq \mu_s F_N$ $\qquad F_{fk} = \mu_k F_N$

Force on a Spring Equation

$F_s = k\Delta x$ (k=spring constant)

Constant Acceleration Models:

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

$\Delta x = \frac{1}{2} a(\Delta t)^2 + v_i\Delta t$ *or* $x_f = \frac{1}{2} a(\Delta t)^2 + v_i\Delta t + x_i$

$\Delta v = a\Delta t$ *or* $v_f = a\Delta t + v_i$

$v_f^2 = v_i^2 + 2a\Delta x$

Acceleration Due to Gravity Near the Surface of the Earth:

$a = 9.8 \frac{m}{s^2}$

Trigonometry Equations

$\sin\theta = \frac{o}{h}$

$\cos\theta = \frac{a}{h}$

$\tan\theta = \frac{o}{a}$

Energy Models

Energy Stored Gravitationally

$\Delta E_g = mg\Delta h$ $\qquad (g=9.8 \frac{N}{Kg})$

Energy Stored Elastically

$\Delta E_{el} = \frac{1}{2} k(x_f^2 - x_i^2)$ (k=spring constant)

Energy Stored Kinetically

$\Delta E_k = \frac{1}{2} m(v_f^2 - v_i^2)$

Work

$W = F\Delta x$

Power

$P = \frac{\Delta E}{\Delta t}$