Formulas for projectile motion: y-direction	$v_y = v_{yi} + a_y*t$ $y = v_{yi}*t + \_1/2a_y*t^2$ (where, near the earth's surface $a_y = +\ 9.81\ m/s^2$; y-axis down; $a_y = -\ 9.81\ m/s^2$; y-axis up)
Formulas for projectile motion x-direction $(a_x = 0)$	$v_x = v_{xi} + 0$ $x = v_{xi}*t + 0$
Force	a push or pull

Mass	a measure of the difficulty in accelerating an object. Equivalently, a measure of the quantity of matter in an object.
Newton's First law of motion	If the net force on an object is zero, its velocity is constant.
Inertial frame of reference	Frame of reference in which the first law holds. All inertial frames of reference move with constant velocity relative to one another.

Newton's Second law of motion	An object of mass m has an acceleration **a** given by the net force Σ **F** divided by m. That is $\mathbf{a} = \Sigma \mathbf{F}/m$ $a_x = \Sigma F_x/m$ $a_y = \Sigma F_y/m$
SI unit: Newton (N)	1 N = 1 kg*m/s^2
free-body diagram	A sketch showing all external forces acting on an object.

Newton's Third Law of Motion	For every force that acts on an object there is a reaction force acting on a different object that is equal in magnitude and opposite in direction.
Contact forces	Action-reaction pair of forces produced by the physical contact of two objects.
Forces in two dimensions	Forces are vectors. Newton's 2nd law can be applied to each component of force separately.

Weight	Gravitational force exerted by the Earth on an object.
Application of Newton's 2nd law to freefall	The weight of an object must equal its mass times the acceleration of gravity. (**W** = *m** **g**)
apparent weight	Force felt from contact with the floor or a scale in an accelerating system. For example, the sensation of feeling heavier or lighter in an accelerating elevator.

Normal Forces	Force exerted by a surface that is perpendicular to the surface. The normal force on an object may or may not be equal to the weight of the object depending on whether the object is accelerating up or down.