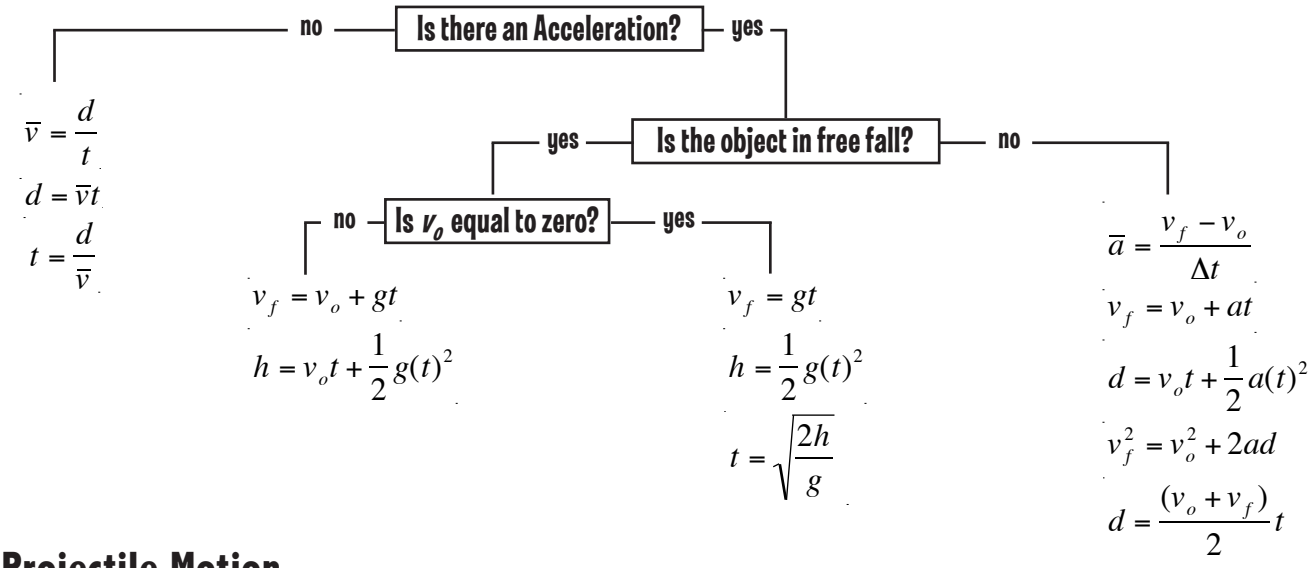
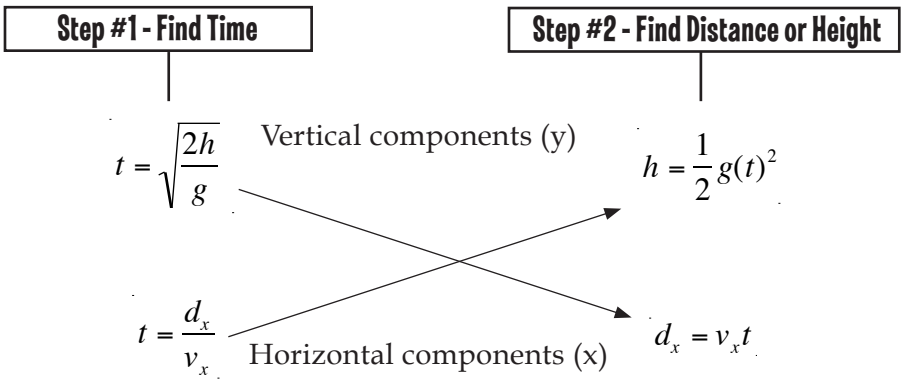
Name _____ Class _____ Period _____

Physics Formula Sheet 2013-2014

Linear Motion



Projectile Motion



Vectors

Pythagorean theorem $c^2 = a^2 + b^2$

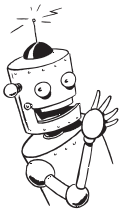
Newton's Laws

Weight (N) $W = mg$

Mass (kg) $m = \frac{W}{g}$

Newton's Second Law $F_{net} = ma$ $a = \frac{F_{net}}{m}$

Newton's Third Law $F_{AB} = -F_{AB}$



Name _____ Class _____ Period _____

Physics Formula Sheet **2013-2014**

Impulse and Momentum

Momentum (kg m/s)	$p = mv$	
Change in Momentum (kg m/s)	$\Delta p = m\Delta v$	$\Delta p = m\left(v_f - v_o\right)$
Impulse (N s)	$J = Ft$	
Impulse - Momentum	$J = \Delta p$	$Ft = m\Delta v$ $\quad Ft = m\left(v_f - v_o\right)$

Conservation of Momentum

$$p_i = p_f$$

Conservation of Momentum

Break Apart	Stick Together	Bounce or Pass Through
$(m_1 + m_2)v_i = m_1v_{1f} + m_2v_{2f}$	$m_1v_{1i} + m_2v_{2i} = (m_1 + m_2)v_f$	$m_1v_{1i} + m_2v_{2i} = m_1v_{1f} + m_2v_{2f}$

Work Energy (J)

Work Energy Theorems

Changes in height	Force through distance	Changes in velocity
$W = \Delta PE = mg\Delta h$	$W = Fd$	$W = \Delta KE = \frac{m\Delta v^2}{2}$

Types of Energy (J)

Potential - Kinetic

Energy of Position	Energy of Motion
$PE = mgh$	$KE = \frac{mv^2}{2}$

Conservation of Energy (J)

Is energy lost to friction (heat - Sound)?

no		yes
$PE_i + KE_i = PE_f + KE_f$	$E_i = E_f$	$PE_i + KE_i = PE_f + KE_f + W$

Power (watt)

The rate at which work is done

Changes in height		Changes in velocity
$P = \frac{\Delta PE}{t} = \frac{mg\Delta h}{t}$	$P = \frac{W}{t}$	$P = \frac{\Delta KE}{t}$