Forces Condensed

Newton’s 3 Laws

1. “Law of Inertia” Any object in motion will stay in motion as long as there is no acting force on it. A stationary object will stay stationary until an outside force acts on it.
2. F = ma
   1. To accelerate a mass an object requires force.
3. For every action there is an equal and opposite reaction.

F = m a

F= Force (N)

M= mass (kg)

A = acceleration (m/s2)

Ex1: What force is required to accelerate a mass of 3.5kg to 4.3m/s2?

M= 3.5 kg

A = 4.3 m/s2

F = ?

F=ma

F= (3.5)(4.3) = 15.05N= ~15N

Free Body Diagrams

Free Body Diagrams are arrows that represent forces. They are a visual representation of forces BECAUSE forces are vectors (ie: have direction).

Ex 1:

You standing on earth will look like this

Ex 2: Draw a Free Body Diagram (FBD) of a piece of paper falling to the floor.

Ex 3: Tim is very strong. One might say jacked and he is in a tug of war with a puny, baby, super man. Tim is indeed stronger. Show the FBD of this tremendous struggle between mankind and an alien refugee.