Force Diagrams

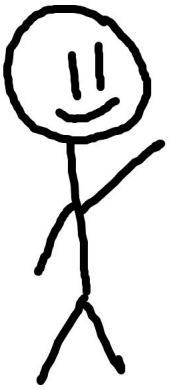
Force	Magnitude	Direction
Gravity (weight)	mobject*g (9.8 m/s2)	Downward (Always Draw!)
Balanced Forces	Equal and Opposite Forces	perpendicular to surface
Unbalanced Forces	Unequal and Opposite Forces	perpendicular to surface
Natural Force	Always present - opposite of gravity	Direction opposing relative gravity motion.

Steps for Drawing Force Diagrams

1. Identify the object you will draw a diagram for.
2. Identify **all the forces** acting directly on the object and the object exerting them.
3. Draw a the object (usually a box) to represent the object of interest.
4. Draw a vector to represent each force. Draw it in the direction the force is being exerted, and label it. Draw the size of the arrow based on the force exerted.

Example:

A mountain climber is practicing for the World Records. He climbs a cliff, stops to take a rest, show a force diagram that represents this rest stop example.



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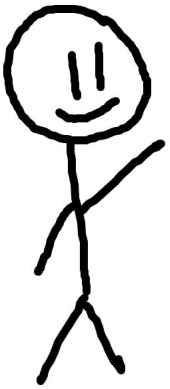

Newton's Second Law:

- the acceleration of an object is equal to the net force acting on it divided by the object's mass
- Situation involves _____ forces

force = (mass) X (acceleration) OR F = ma (a = F/m)

F = force, measured in Newton (N) kg · m/s2

m = mass (kg)

a = acceleration (m/s2)