# Newton's Laws Mini Lesson

Physics Essentials

# Newton's First Law

Also known as the Law of Inertia

"An object at rest will stay at rest until acted on by an outside force. An object in motion will stay in motion until acted on by an outside force"

Examples:

- When you stop suddenly in a car you keep moving forward
- A book stays on a table until a student moves in

# Inertia?

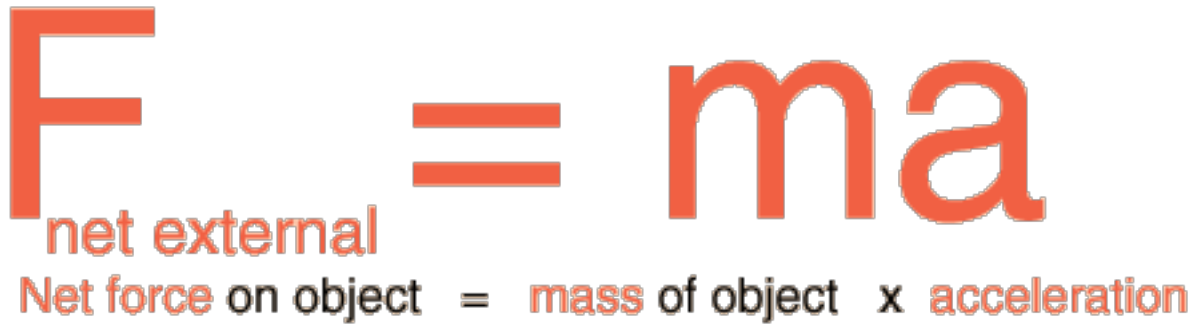
Inertia- The resistance of an object to change its state of motion

Bigger mass = bigger resistance = bigger inertia

Example: A car is harder to move than a book on a table.

# Newton's Second Law

It's just the equation below… (we will work on using it later this week!)




Question: If I increase the mass of an object, what will happen to the force?

# Newton's Third Law

"For every action there is an equal and opposite reaction"

We often refer to this as action-reaction pairs.

Example:

- A bird flaps its wings down (action) so it flies upwards (reaction)
- Car tires move forward (action) and push the road down (reaction)

# Answer on your own

Which one of Newton's Laws best explains each of the situations below?

1) A smaller cannon ball leaves a cannon much faster than a larger, heavier cannon ball fired from the same cannon.
2) When you are standing in a subway train, and the train suddenly stops, your body continues to go forward.
3) An object at rest/motion will stay at rest/ motion unless acted on by an outside, unbalanced force.
4) It is much easier to carry your backpack when it is empty rather than when it's full of textbooks