

Unit 4 - Newton's Laws
Section 4.1: Newton's First Law

A force is defined as a push or pull.

The units of force are Newton's.

There are four fundamental forces in nature. Every push or pull comes from one of these:

- Gravity
 - Electromagnetic force
 - Strong nuclear force
 - Weak nuclear force
- } everything you've ever felt
- holds an atom's nucleus together
- involved in radioactive decay.

Newton's First Law Says...

An object in motion stays in motion, and an object at rest stays at rest... unless acted on by a net, resultant of unbalanced force.

This is also called the Law of inertia.

Inertia is the tendency of matter to keep doing what it's doing. (to not change its motion) In other words, things are Jazy.

The "units" of inertia are kilogram.

Example: Imagine you are racing around a track on a go-cart. List three times when you notice your inertia:

Starting/stopping

Turning

Speeding up/slowing down

} all examples of acceleration

Here's another way to phrase Newton's First Law:

No

net unbalanced resultant

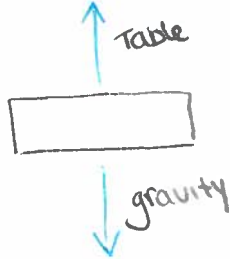
force



works both ways

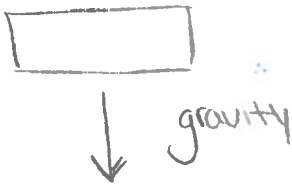
constant velocity

Example: Imagine a book sitting on a table. Draw the book and the forces acting on it. Does it have constant velocity?



yes, constant velocity

Example: The book now falls off the table. As it falls, draw the book and the forces acting on it. Does it have constant velocity?



Forces are not balanced, so velocity is not constant

Example: A skateboard rolls along the ground with constant velocity. Draw the forces acting on it.

