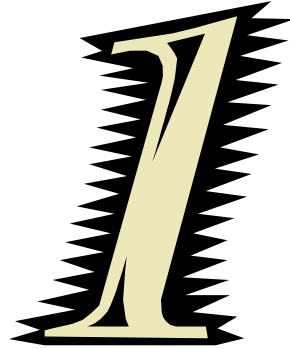


NEWTON'S

FIRST LAW OF MOTION

Newton's First Law (law of inertia)



An object at rest tends to stay at rest and an object in motion tends to stay in motion unless acted upon by an unbalanced force.

Forces may be **balanced** or **unbalanced**

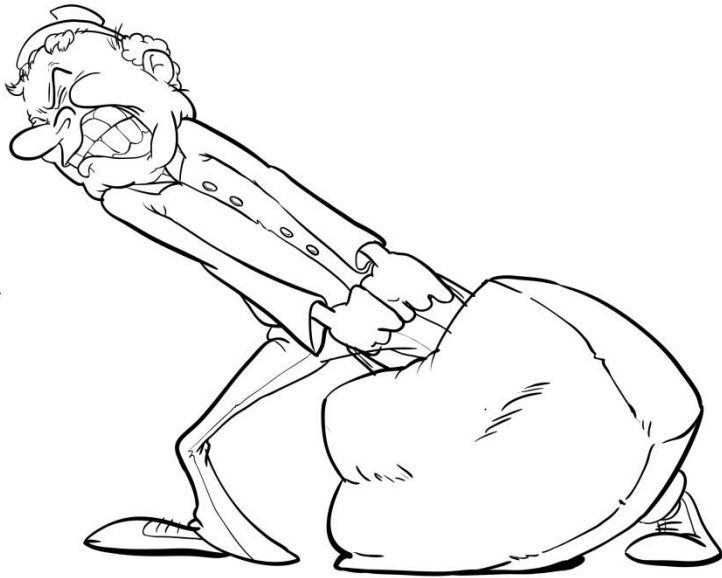
- **Balanced forces** – all forces acting on an object are equal
 - There is **NO ACCELERATION**
- **Unbalanced forces** – one or more forces acting on an object are stronger than others
 - There is **MOTION**
 - **A NET FORCE**

Objects at Rest



- Objects at rest tend to stay at rest unless acted upon by a force. [push or pull]
- Newton described this tendency as inertia.
- **Inertia** can be described as the tendency of an object to keep doing whatever's it's doing.

Mass & Inertia



- **Mass** is the amount of matter in an object.
- The more **MASS** an object has, the more **INERTIA** the object has.
- Bigger objects are harder to start & stop

What about objects that are already in motion?

- Newton stated that objects in motion tend to stay in motion until acted upon by a force (or hits it.)



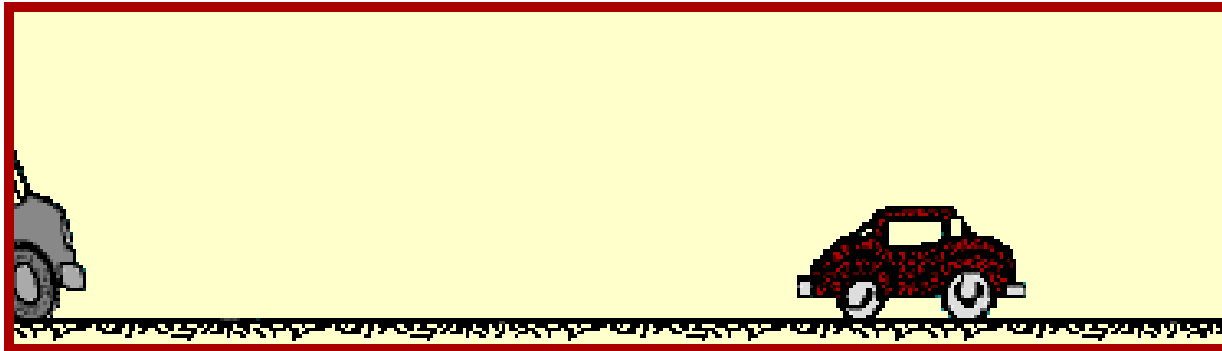
If objects in motion tend to stay in motion, why don't moving objects keep moving forever?

Things don't keep moving forever because there's almost always an unbalanced force acting upon them.

A book sliding across a table slows down and stops because of the force of *friction*.



If you throw a ball upwards it will eventually slow down and fall because of the force of *gravity*.



The truck is *in motion*. What is the **force** that causes it to stop?

The **push** of the stopped car.

The car is *at rest*. What is the **force** that causes it to move?

The **push** of the truck.