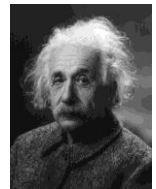




# Forces And motion



Forces and motion are a part of your everyday life for example pushing a trolley, a horse pulling a rope, speed and acceleration. Force and motion causes objects to move but also to stay still. Motion is simply a movement but needs a force to move. There are 2 types of forces, contact forces and act at a distance force.

## Forces

Every day you are using forces. Force is basically push and pull. When you push and pull you are applying a force to an object. If you are Applying force to an object you are changing the objects motion. For an example when a ball is coming your way and then you push it away. The motion of the ball is changed because you applied a force.

## Different Types of Forces

There are more forces than push or pull. Scientists group all these forces into two groups. The first group is contact forces, contact forces are forces when 2 objects are physically interacting with each other by touching. The second group is act at a distance force, act at a distance force is when 2 objects that are interacting with each other but not physically touching.

## Contact Forces

There are different types of contact forces like normal force, spring force, applied force and tension force.

Normal force is when nothing is happening like a book lying on a table because gravity is pulling it down.

Another contact force is spring force, spring force is created by a compressed or stretched spring that could push or pull.

Applied force is when someone is applying a force to an object, for example a horse pulling a rope or a boy throwing a snow ball.

Tension force is a force that is applied to a cable or a wire. Tension force causes a force to pull equally in each direction.

## Friction

Friction is another contact force. It can be helpful and it allows you to let you walk without sliding. The heavier an object is the more friction it has. Friction can be destructive for example if you rub out the mistakes you made, the rubber become smaller and smaller.

There are 4 types of friction sliding friction, static friction, rolling friction and fluid friction.

Sliding friction is produced when the bumps on the surface stick together, sliding friction can also slow down objects. Sliding friction occurs when two objects slide past each other.

Static friction is the friction that acts upon unmoving objects. If a force is greater than static friction, static friction is no longer applied.

Rolling friction is a frictional force between a rolling object and the surface. Rolling friction is much less than sliding friction, but it depends on the surface, for example cars wheels and shopping trolley wheels.

Fluid friction is a friction that resists motion when fluid is involved, like water going through a hose.

Air resistance is friction, it can slow things down or speed things up for example wind blowing a leaf.

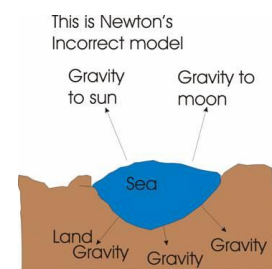
## Inertia

Inertia is not a force it is a property of all things due to their weight and their mass. Inertia makes objects move easier or harder, it depends on their mass. The more mass the object has the more inertia it has.

## Non-Contact Forces

Magnetism is a Non- contact force, magnetism is invisible to the human eye and it can be made with useful tools and machines. In the 1700s scientists discovered that magnetism has similar features as electricity. Magnetism is not attracted to silver, gold, platinum and aluminium.

Gravity is another non-contact force. Gravity is the force that pulls you down and allows you to stay on earth



instead of floating off. Gravity means what comes up must come down. Gravity is keeping us in orbit, because the sun's gravitational pull keeps our planet in orbit. The moon is affected by the sun's gravity and the earth's gravity. The moon's gravity is the reason why our tides go up and down. Weight affects gravity for example if you drop an acorn it will fall slower than a piano because the piano is heavier than the acorn. Sir Isaac Newton was the person that discovered gravity but he didn't know how to explain it. Then Albert Einstein came along and explained how gravity works.

## Motion

Motion makes objects speed up or slow down. Motion makes things move or go round.

Velocity is the speed of an object in one direction, if the direction changes speed and velocity changes.

Acceleration is how quickly objects speed up.

## Important people

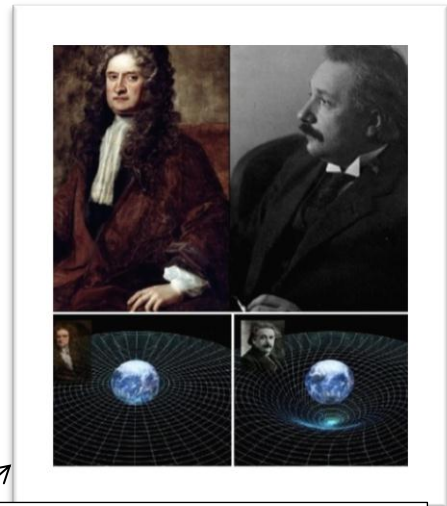
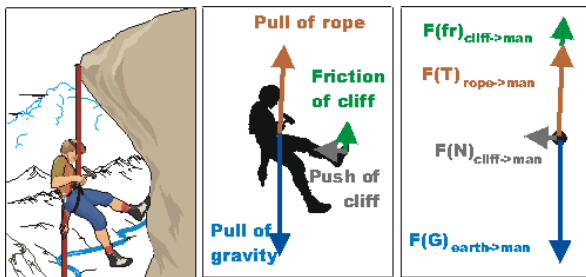
Sir Isaac Newton is the greatest English mathematician. He made the 3 laws of motion, his first law was if something is moving and it keeps on moving or at rest it will stay still (INERTIA). His second law is if a force is acting on an object, it will change its speed and his third law was for every force or action there is an equal or opposite reaction. Albert Einstein was a scientist, he is also the most famous person of all time. Albert Einstein



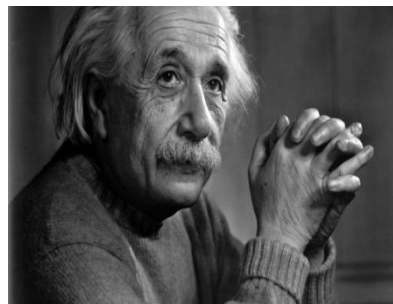
*refined some of newtons theories through his own theories of relativity.*

*If you push or pull you are changing the objects motion. A force must be Applying on an object to set it in motion. Forces and motion are always going to be part of your life no matter what!!*

*Written and published by: Manu*



This is Albert Einstein and Sir Isaac Newton. Below them are there Theories.



*Albert Einstein  
is the person  
who defined  
gravity.*