

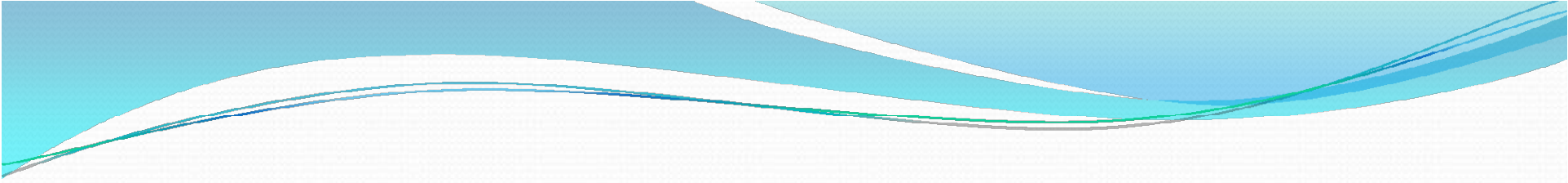


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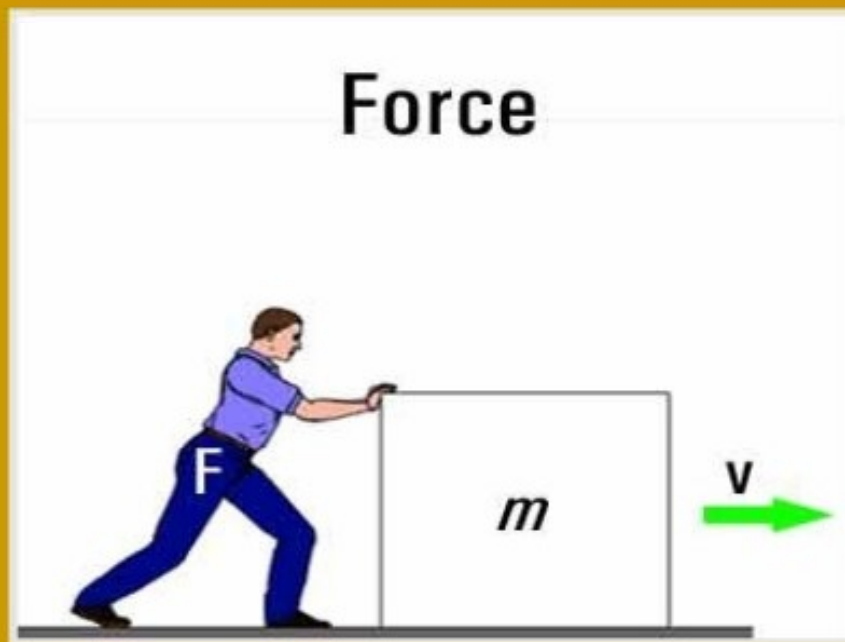
sub- physics

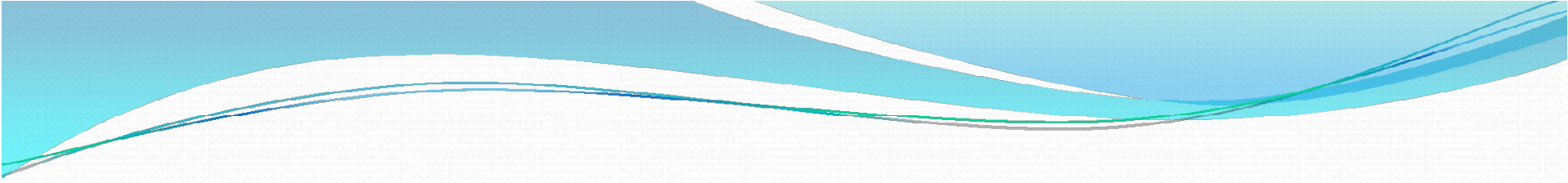
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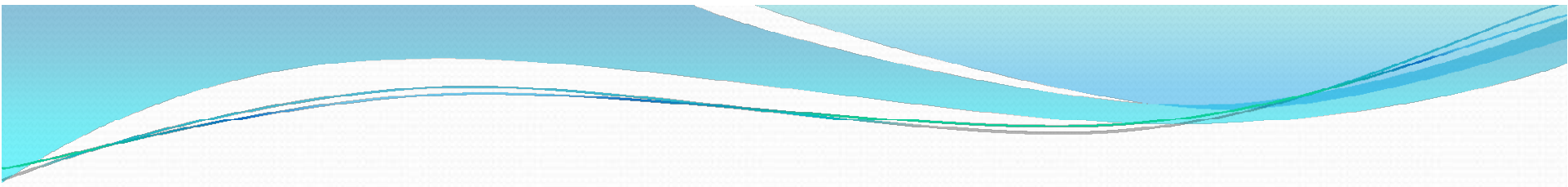
While Newton's laws of motion may seem obvious to us today, centuries ago they were considered revolutionary. The three laws of motion help us understand how objects behave when they are standing still, when moving and when forces act upon them. This article is a description of Sir Isaac Newton's Laws of motion and a summary of what they mean.

Newton's Laws of Motion





Topic- Law of motion
Newton's first law states that, if a body is at rest or moving at a constant speed in a straight line, it will remain at rest or keep moving in a straight line at constant speed unless it is acted upon by a force.

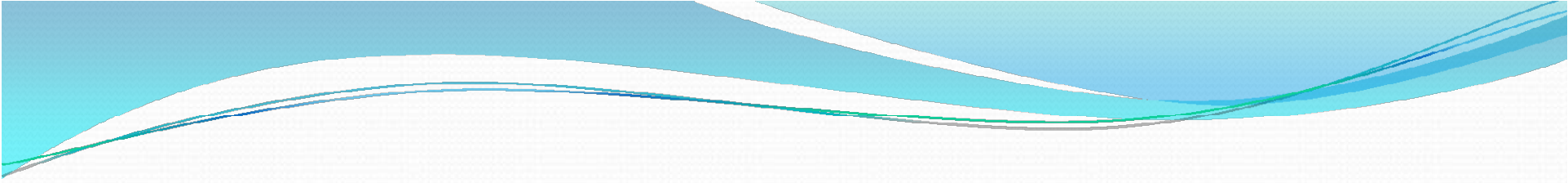


There are two conditions on which the 1st law of motion is dependent:

Objects at rest: When an object is at rest velocity ($v = 0$) and acceleration ($a = 0$) are zero.

Therefore, the object continues to be at rest.

Objects in motion: When an object is in motion, velocity is not equal to zero ($v \neq 0$) while acceleration ($a = 0$) is equal to zero. Therefore, the object will continue to be in motion with constant velocity and in the same



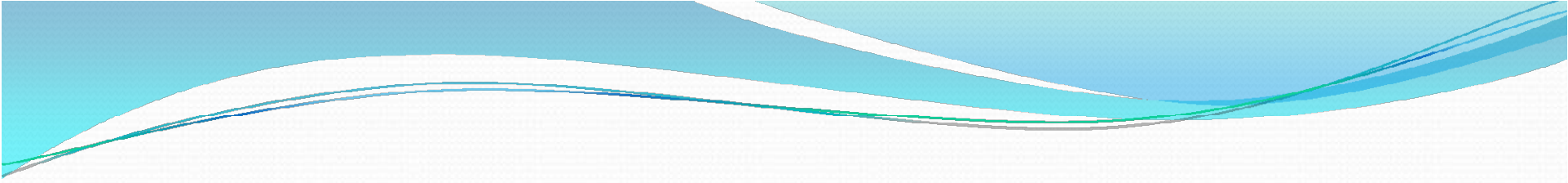
What is an External Force?
An external force is defined as the change in the mechanical energy that is either the kinetic energy or the potential energy in an object. These forces are caused by external agents. Examples of external forces are friction, normal force and air resistance.



Let us Understand First Law of Motion by an Example

Let us take a block on a smooth surface. By smooth, we mean that there is no friction acting on the surface. The block is at rest, that is, it is not moving.

Now, let us examine the forces acting on the block. The only forces acting on the block are the force of gravity and the normal reaction by the surface. There is no force acting on it in the horizontal direction. Since the forces in the vertical direction are equal to each other in magnitude, they cancel each other out, and hence there is no external force on the block. Since this block is at rest, we can say that it confirms Newton's first law of Motion.



Newton's second law - states that the acceleration of an object is directly related to the net force and inversely related to its mass. Acceleration of an object depends on two things, force and mass.