



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai



DEPARTMENT OF AUTOMOBILE ENGINEERING

19AUT203 – Mechanics of Automobile Systems

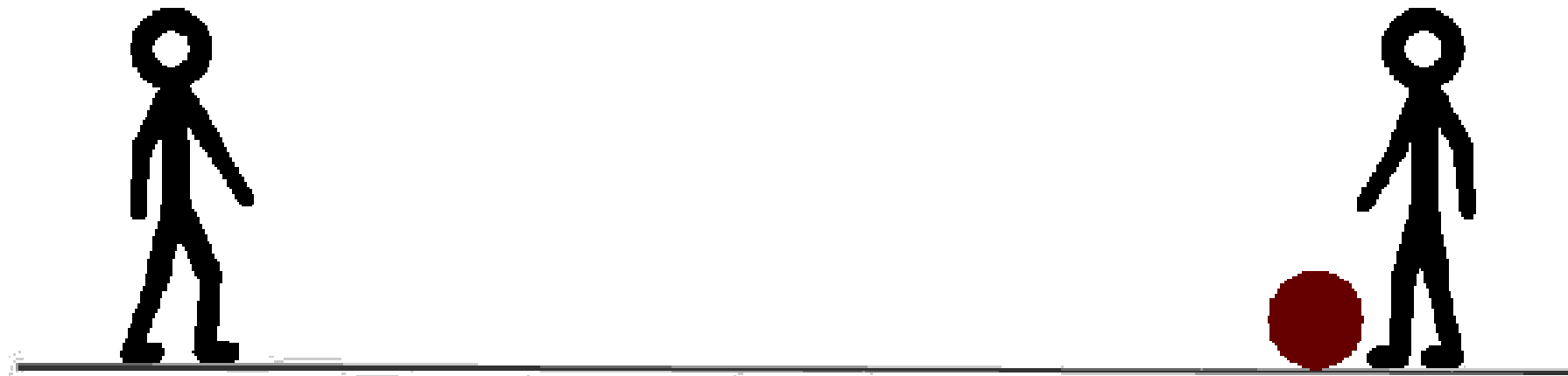
II YEAR / IV SEM

Unit - 2 - Force Analysis



Force - Definition

Strength or energy as an attribute of physical action or movement.

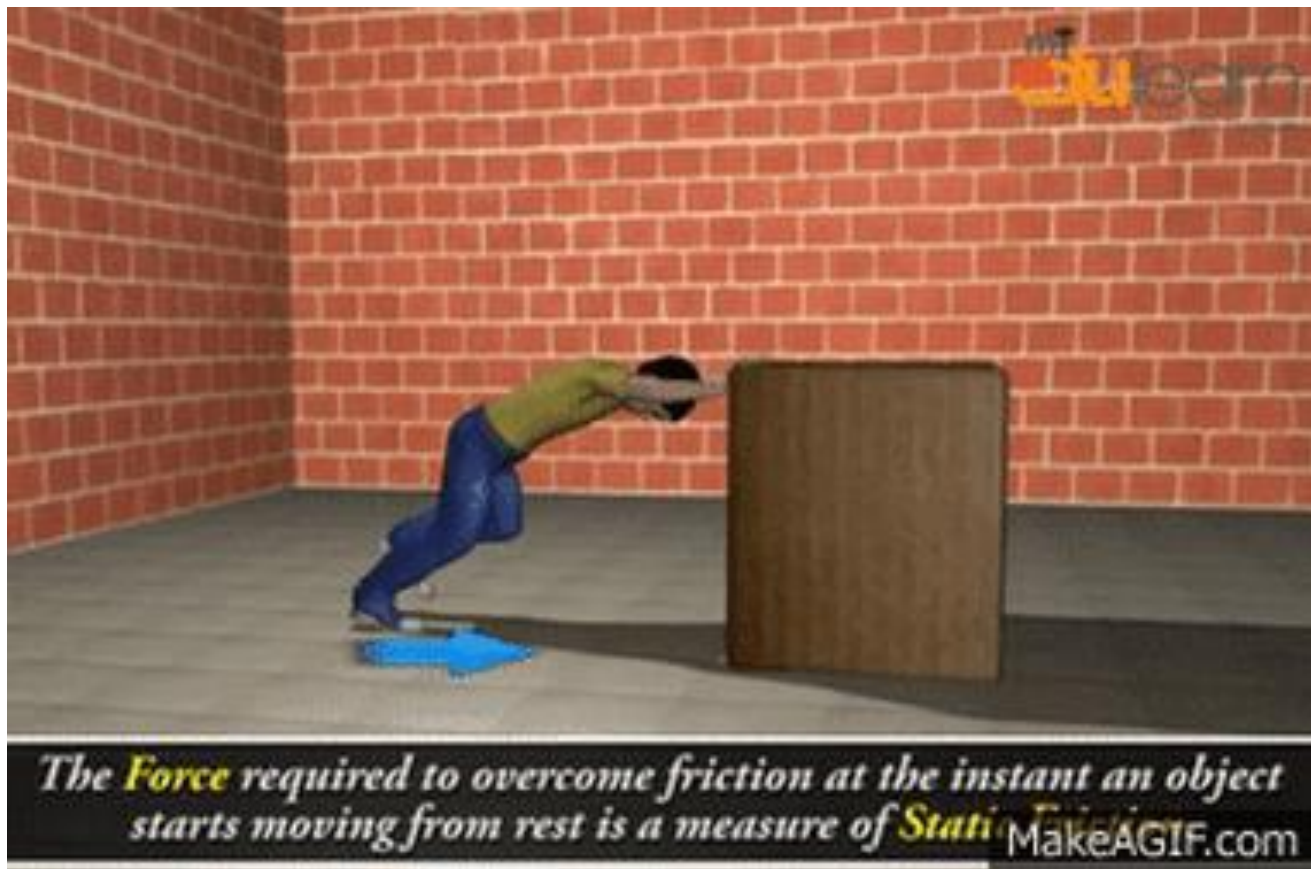




Static Force



Static forces are those forces acting on the members whose magnitude doesn't depend on acceleration and mass of the component.



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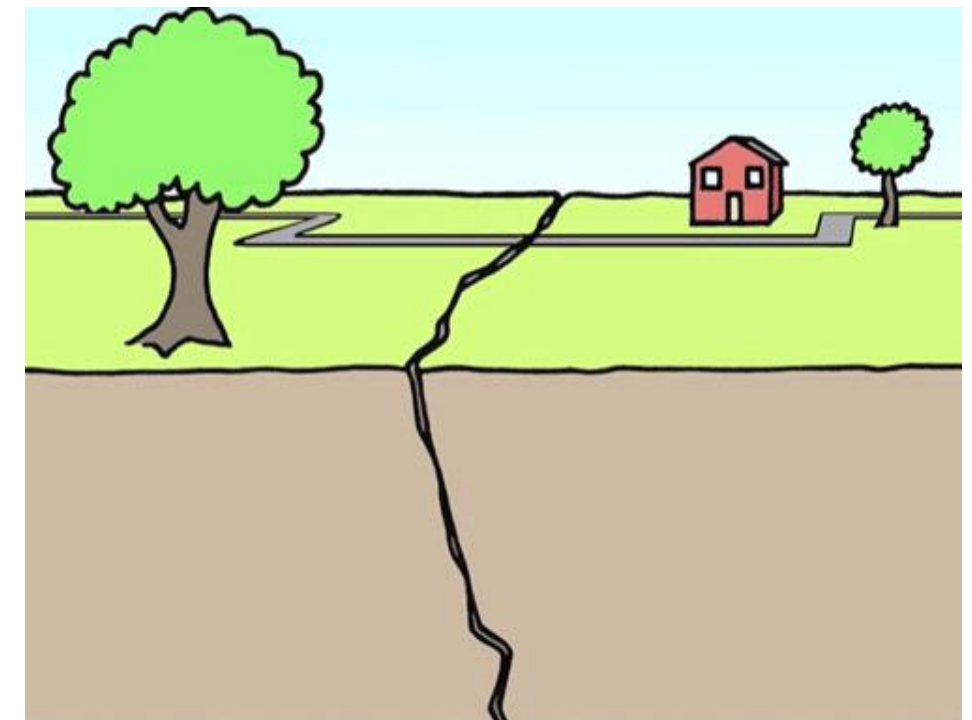
<https://studiousguy.com/static-force-examples/>



Dynamic Force



Dynamic forces are forces produced due to dynamic action of machine element or inertia.





Applied Force



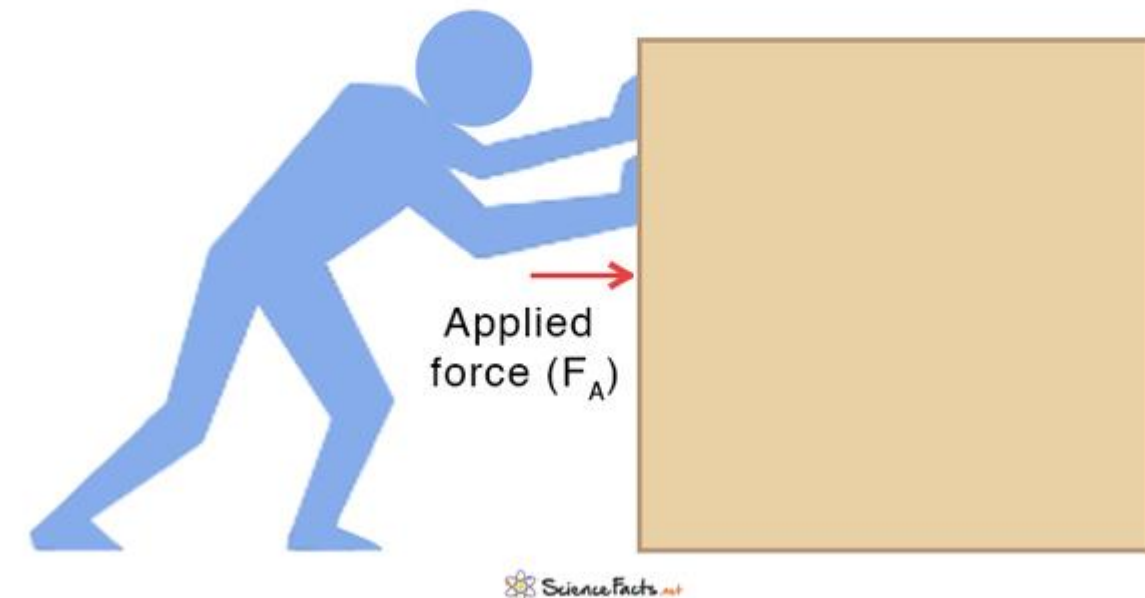
Force which is applied to an object by another object.

Example:

A person pushing a barrel is an example of applied force. When the person pushes the barrel then there is an applied force acting upon the barrel

Applied Force Example

Man Pushing a Box





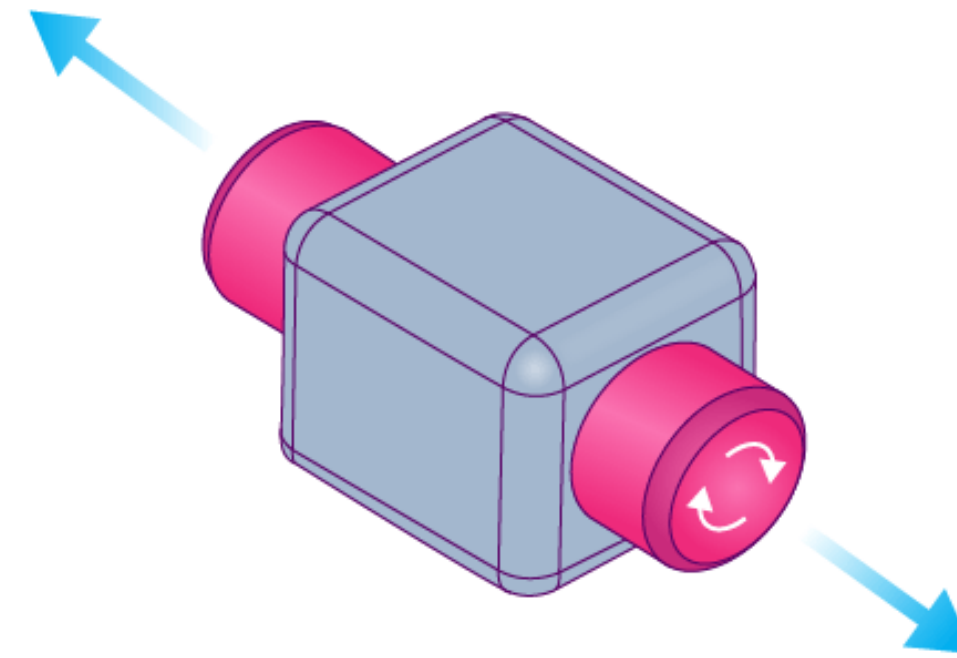
Constrained Force



The force exerted by the constraining object on a particular object to make it follow the constraints of the movement is known as the constrained force.

Example:

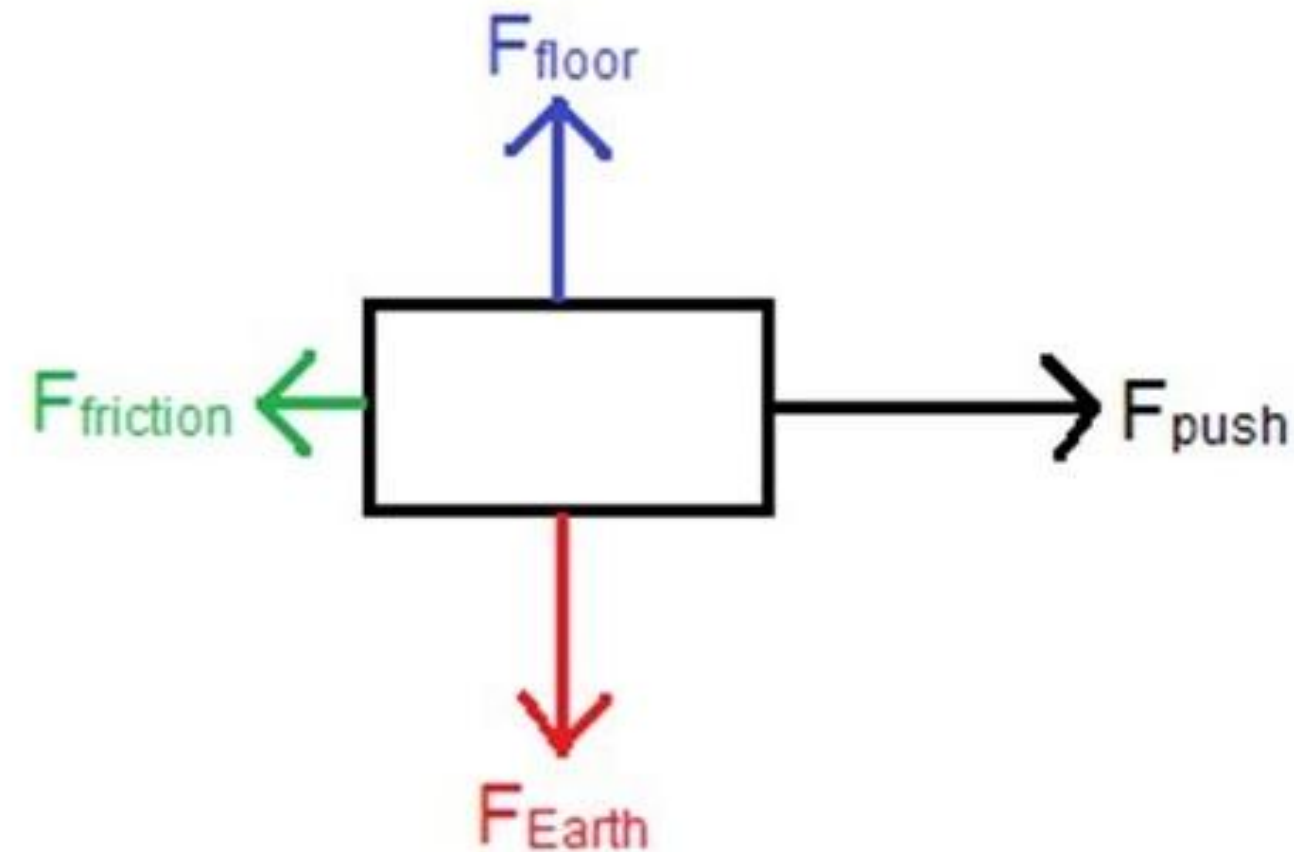
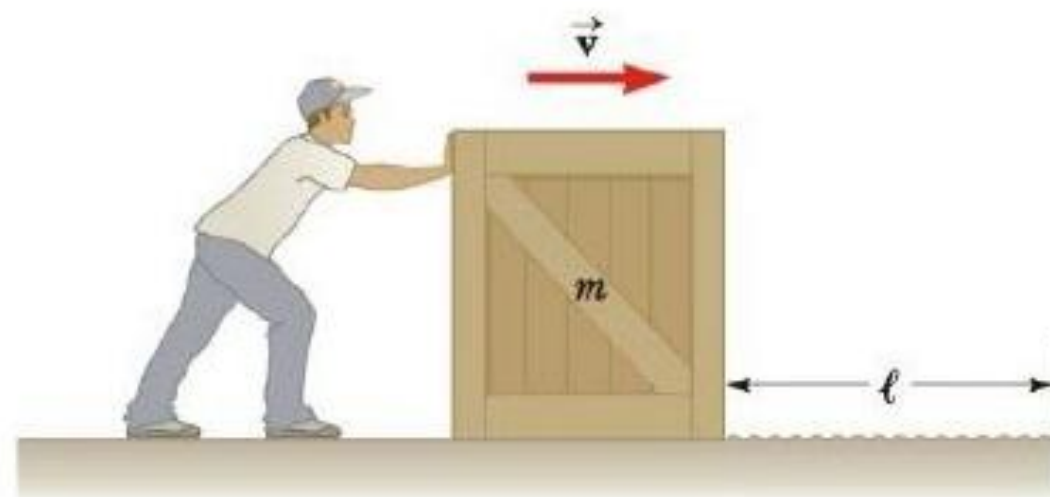
The motion of a body on a wedge, a particle sliding down a curve under gravity, a particle tied to one end of a string, the movement of a fan





Free Body Diagram

A free-body diagram is a sketch of an object of interest with all the surrounding objects stripped away and all of the forces acting on the body shown





Superposition

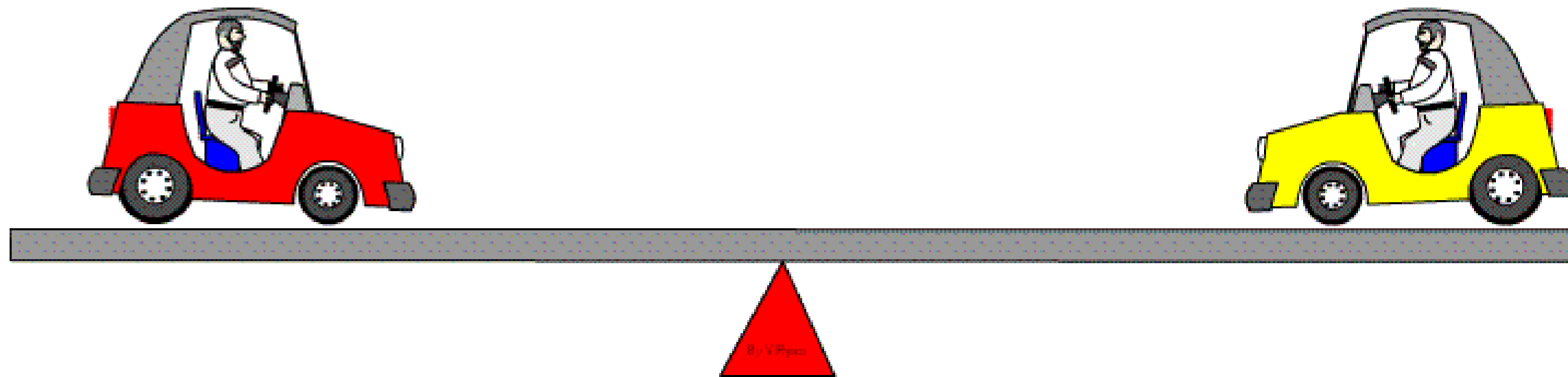


Superposition is the ability of a quantum system to be in multiple states at the same time until it is measured.



Static equilibrium

Static equilibrium refers to any system where the sum of the forces, and torque, on every particle of the system happens to be zero.





Thank You