

Vehicle Safety

Threshold Concept

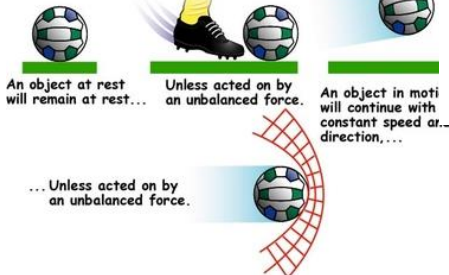
Cars have safety features to reduce impact forces

Safety Features in Cars



Newton's First Law

Newton's First Law of Motion



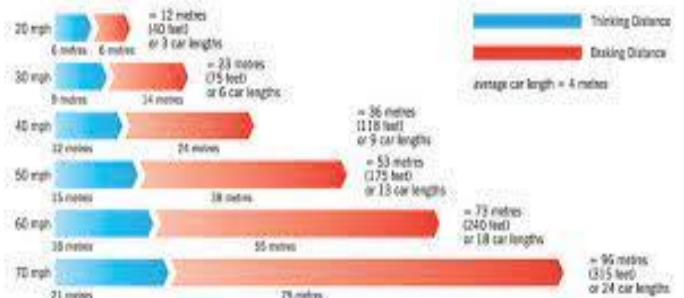
Keywords

Newtons Laws - Three guiding principles stating the movement and reactions of all things due to physics

Impact forces - The forces occurring when two objects collide

Momentum - A measure of how difficult it is to stop a moving objects

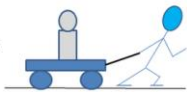
Stopping Distances



IT TAKES NEARLY TWICE AS FAR TO STOP at 70mph AS IT DOES TO STOP at 50mph

Newton's Second Law

To get the wagon to accelerate, you have to apply a PULL (Force).



If the MASS of the wagon increases, a greater PULL is necessary to accelerate it.



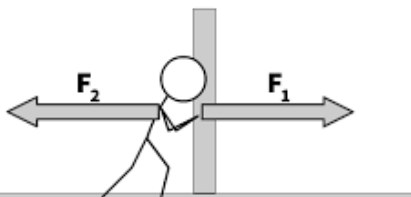
Momentum



Fig 1. The Conservation of Momentum Applies to a Closed System Not an Open System.

Newton's Third Law

Newton's Third Law



Forces always Come in Pairs:
You Push on a Wall
the Wall Pushes Back

Equations for this topic

Force = Mass x Acceleration

Momentum = Mass x Velocity