UNIT 6

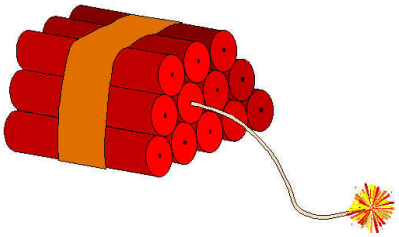
NEWTON'S LAWS OF MOTION

6.1 Force and Motion

LEARNING TARGETS

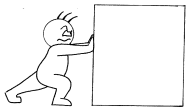
6.1 I can define, explain, and apply Newton's first and second laws to solve problems.

Force?



What is Force?

A **force** is a push or a pull exerted on an object.



Symbolic Representation

The symbol $\vec{F}$ is a vector and represents the size and direction of a force, while F represents only the magnitude.

F

Forces

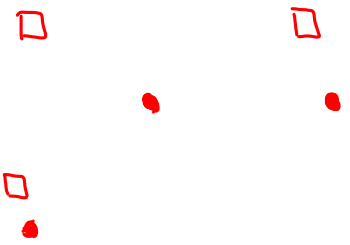
What are some examples of different kinds of forces?

Forces

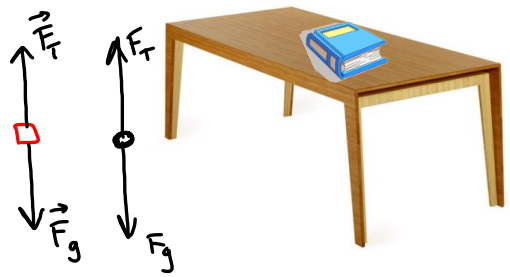
Contact	Fields
Normal	Gravity
Air Resistance	E ; M
Friction	
Tension	
Springs	

Free-Body Diagrams

A physical model which represents the forces acting on a system is called a **free-body diagram**.



Free-Body Diagrams

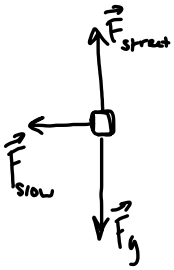


Examples

An egg falling from Daylis Stadium (neglect air resistance)

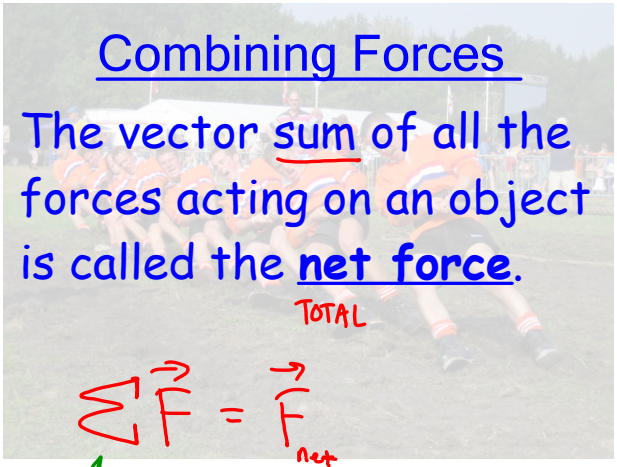
Examples

A car coasting to a stop on a street



Force and Acceleration

How does an object move when one or more forces are exerted on it?



Combining Forces

The vector sum of all the forces acting on an object is called the **net force**.

TOTAL

$$\Sigma \vec{F} = \vec{F}_{net}$$

Sigma = Sum

Newton's First Law

If the net force of an object is zero, then the object is in **equilibrium**.

An object is in equilibrium if it is @ rest or constant $\vec{v}$.

PRACTICE

F.B.D. Worksheet