

Basic Forces in Nature

by
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P3.1 Basic Forces in Nature

Objects can interact with each other by “direct contact” (pushes or pulls, friction) or at a distance (gravity, electromagnetism, nuclear). Forces have magnitude and direction.

P3.1A Identify the force(s) acting between objects in “direct contact” or at a distance.

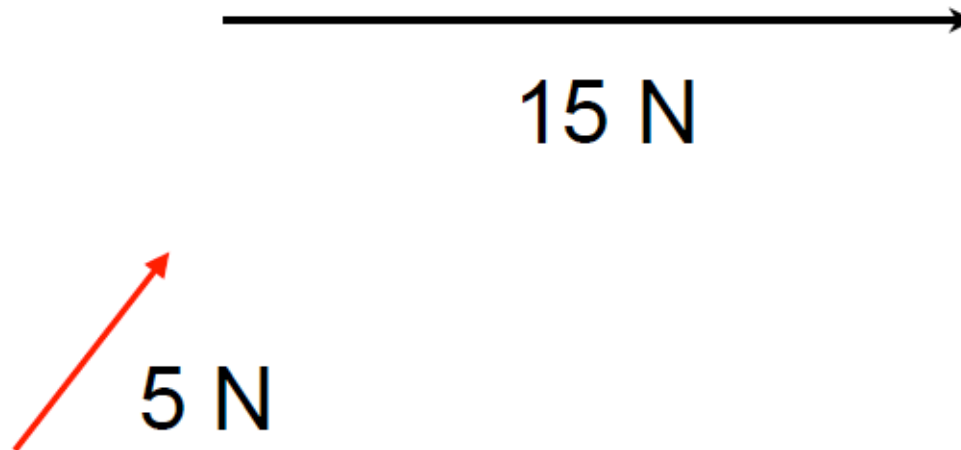
P3.1b Explain why scientists can ignore the gravitational force when measuring the net force between two electrons.

A **Force** is a push or pull.

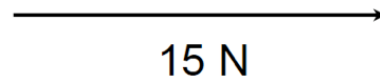
Contact forces arise from physical contact

Action-at-a-distance forces do not require contact and include gravity and electrical forces.

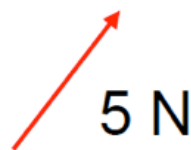
Force is a vector quantity (e.g. like velocity and acceleration). Arrows are used to represent forces. The length of the arrow is proportional to the magnitude of the force. Below are examples of two forces.



One force has a magnitude of 15 Newton and going toward the east direction (black arrow).



The other one has a magnitude of 5 Newton and going toward the north east direction (red arrow).



Note that the black arrow force (15 N) is 3 times longer than the red arrow force (5N).

Some of the forces that affect the motion of an object are:

1- Gravitational Forces or Weight

2- Normal Forces

3- Spring Forces

4- Tension Forces

5- Thrust Forces

6- Kinetic Friction Forces

7- Static Friction Forces

For each of the forces, find the symbol, definition, equation, direction, and give an example (can be a picture).

You can use the table below as a sample on how to complete this project, or you can make a keynote page for each of the forces and include the symbol, definition, equation, direction and an example with a picture.

Force	Symbol	Definition	Equation	Direction	Example
Gravitational					
Normal					
Spring					
Tension					
Thrust					
Kinetic Friction					
Static Friction					