

# Biophysics Flash Cards


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**Force Flash Cards**

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## Instructions

Print the flash cards from the templates on pages 2-3. Each page has 4 flash cards.  
The concept is on the left side of the template and the explanation is on the right side.

To create individual flash cards:

- 1) Trim the margins on the top, bottom, and sides of the page where you see the scissors icon 
- 2) Cut between the cards where you see the scissors icon to create individual cards.
- 3) Fold the cards in half at the dashed "Fold" line and align the front and back edges of each card.
- 4) Each template makes 4 flash cards of 2.5 x 3.75 inch (H x W). There are 8 cards in a set.

The colored border indicates that the cards are in the same set.

## Objectives & Grade Level

Teach students basic concepts about biophysics. Appropriate for middle school to high school students. Students can use the flash cards singly or in groups by studying the cards and testing themselves or others on concepts from the cards.

## Acknowledgements

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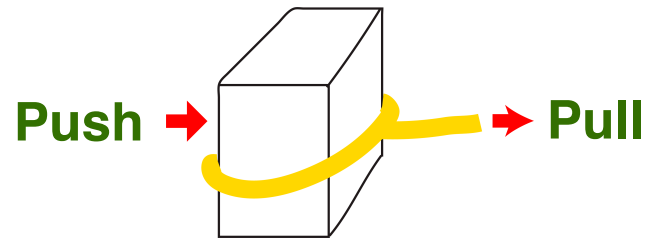
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# Force



A **force** is a **push** or **pull** that causes objects to change motion or velocity



# Units of Force



Force Units are Newtons (N)  
**1N = 1kg meter/s<sup>2</sup>**

A **Newton** is the amount of force required to accelerate a **1 kg mass** to **1 meter/s<sup>2</sup>**

# Newton's Second Law



Acceleration of an object is directly proportional to force acting on the object and inversely proportional to its mass

# Inertia



**Inertia** is the tendency of objects to resist changes in motion

All objects on Earth show inertia



# Applied & Magnetic Forces



Forces can act through *direct contact*

## Applied forces

Forces can act *over distances*

## Magnetic forces

# Life on Earth

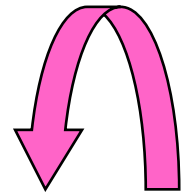
## Why are forces large?



Forces are large because masses are large

Newton's second law explains many actions on Earth

inertia



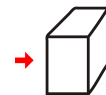
gravity force

$$F = ma$$

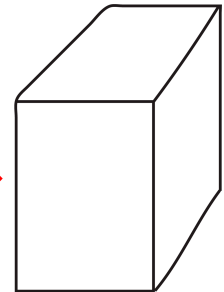
# Newton's Second Law in Action



Greater masses require greater forces to accelerate



$$F = ma$$



$$F = m a$$

# How Does Inertia Change With Mass?



Inertia varies directly with mass and increases with mass

Objects of greater mass show greater inertia or resistance to changes in motion