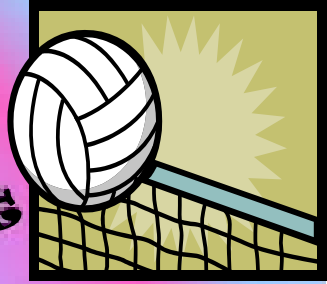


Newton's laws of motion

By: Gabrielle Pagni

Newton's First Law



▶ In the absence of force, a body either is at rest or moves in a straight line with constant speed

▶ An object that is not moving will not move until a force acts upon it.

▶ An object that is moving will not change its velocity until a net force acts upon it



Newton's First Law

- Newton's first law is more commonly known as the law of inertia. It states that if the net force of all forces acting on an object is zero and it's velocity is constant.
- An object at rest will remain at rest unless acted upon by an unbalanced force. An object in motion continues in motion with the same speed in the same direction.



Newton's Second Law



$$\mathbf{F} = m\mathbf{a}$$



- An unbalanced force acting on an object causes it to accelerate.
- Acceleration is related to

- » Size of force
- Mass of object

AND

- In the same direction as the force



Large force, large acceleration

Newton's Second Law

- Newton's second law states that the force applied to a body produces a proportional acceleration
- Acceleration is produced when a force acts on a mass. The greater the mass the greater the amount of force needed.



Newton's Third Law

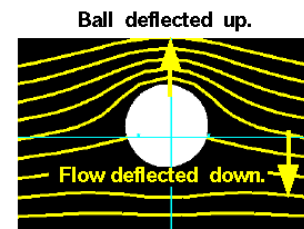
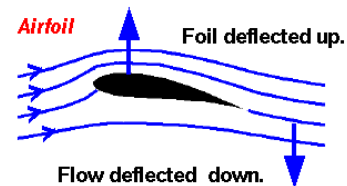
- All forces result from the interaction of two bodies.
- The unit of force is defined as a Newton
- Whatever draws or presses another is as much drawn or pressed by that other.



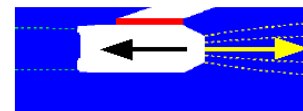
Newton's Third Law Applied to Aerodynamics

Glenn
Research
Center

For every action, there is an equal and opposite re-action.



Engine pushed forward.



Flow pushed backward.

Jet Engine

Newton's Third Law

- For every action there is an equal and opposite re-action.
- *motion* is Newton's name for momentum, hence his careful distinction between motion and velocity.



Work cited

- [En.wikipedia.org/wiki/Newton's law of motion](http://en.wikipedia.org/wiki/Newton's_law_of_motion)
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