

Force and Motion

Newton's First Law

- an object at rest remains at rest and an object in motion remains in motion, unless acted upon by an external unbalanced force.

Constant Force

- If a constant force is applied to an object, the object has a constant acceleration.

No Unbalanced Forces

- If there are no unbalanced external forces, then there is constant velocity.

Summary

- An unbalanced external force on an object causes acceleration.

Examples

- Falling object
 - Gravity
- Car stopping
 - Friction in the brakes
- Car speeding up
 - Force from the engine and friction between the tires and the road.

Newton's Second Law

- Force is proportional to acceleration
 - The greater the force, the greater the acceleration
- Force is proportional to mass
 - More massive objects need a greater force to accelerate them
- Force can change the direction of motion

Newton's Third Law

- To every action there is an equal and opposite reaction
 - Forces always come in pairs
 - In other words, if you push down on the table, the table is pushing back up at you with equal force