

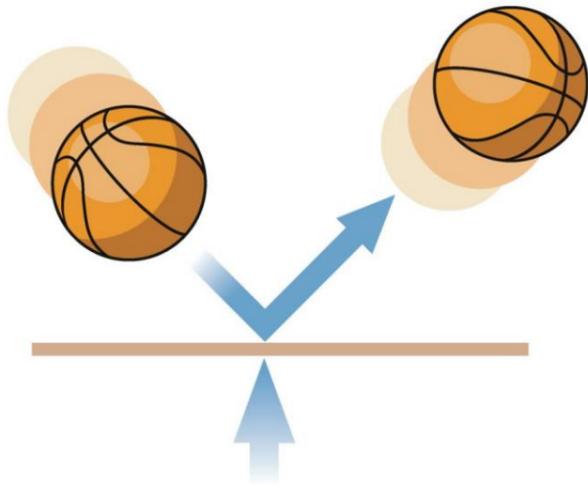


FORCES

KNOWLEDGE ORGANISER



What you should already know...

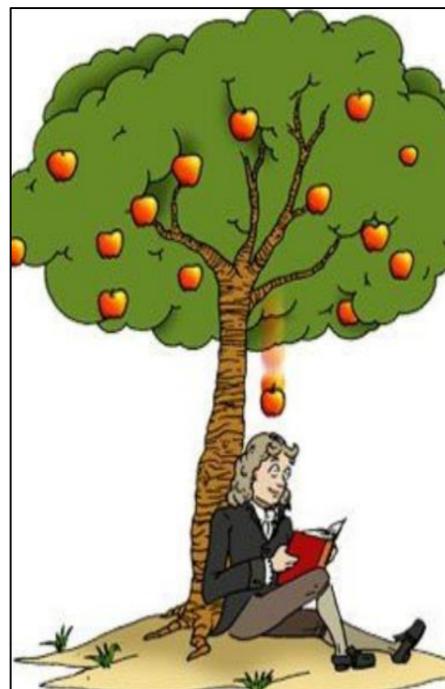


- Forces are pushes and pulls which make things move and stop moving.
- Most forces need contact between objects, but magnets can act at a distance.
- Magnets are made of materials that create a magnetic field (the area in space where the force of magnets can be detected).
- Forces are shown by arrows in diagrams. The bigger the arrow, the bigger the force.
- When forces are unbalanced, objects can speed up, slow down, or change direction.

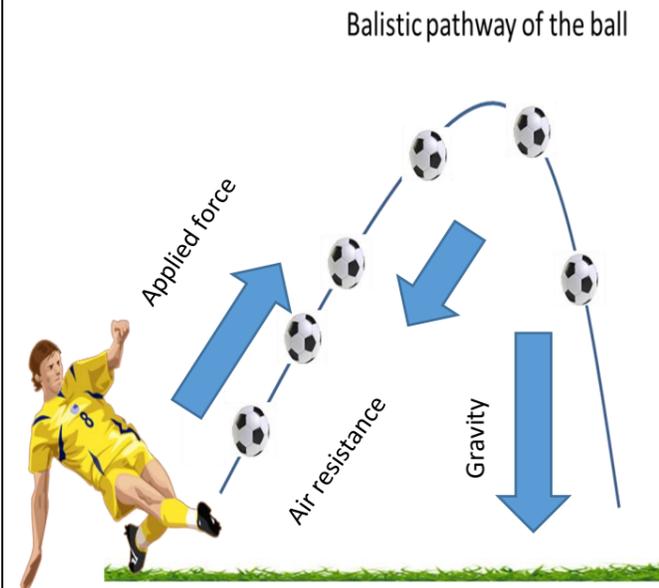
Gravity

Gravity attracts all matter towards each other.

- It has been around since the beginning of the Universe and applies to all matter in the Universe.
- The bigger an object's mass, the more gravity it will have. The smaller the mass of an object, the less gravity it will be subject to.
- Without gravity we would fly right off the planet! The moon's gravity causes our ocean tides on Earth. The Sun's gravity keeps Earth in orbit around the Sun.
- We don't actually "feel" gravity. We only feel the effects of trying to overcome it by jumping or when we fall.
- Sir Isaac Newton discovered gravity around 300 years ago. The tale is that he saw an apple fall from a tree, and wondered what force made it fall to the ground.



Definitions of Forces



Applied force: The force placed on an object by a living creature.

Gravity: definition bottom left

Friction: the 'sticking' force that occurs when an object moves over another.

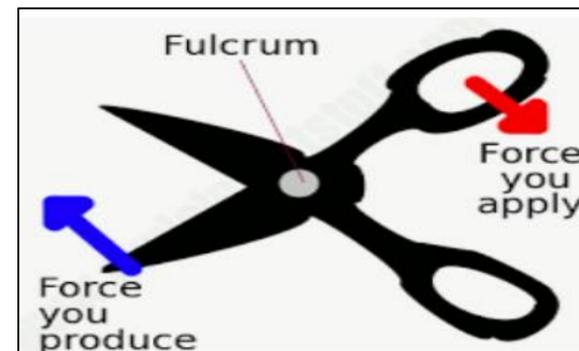
Air resistance: a type of friction force that pulls against an object travelling through the air. Some objects are more 'streamlined', meaning that the air pulls on them less, and they travel faster.

Water resistance: the friction force on objects floating or moving in water.

Surface resistance is the friction force of objects moving across a surface.

Machines and Mechanisms

- Simple machines and mechanisms include pulleys, gears and levers. They can be used to turn a small force into larger forces. This means that we can use these machines to accomplish things more easily.



- Levers give us extra pushing or pulling force and help us lift greater weights.

- Gears are different sized cogs which work together to give a machine extra force.

- Pulleys are wheels and ropes that work together to lift heavy objects.

Machines and Mechanisms

Scissors

Wheelbarrows

Fishing rods

Shovels

Boat Oars

Well

Exercise Equipment

Elevators

Window Blinds

Brooms

Key Vocabulary

Accelerate

Begin to move more quickly.

Air resistance

A force that is caused by air with the force acting in the opposite direction to an object moving through the air.

Attract

Drawing closer by a physical force.

Force

A push or pull upon an object resulting from its interaction with another object.

Friction

The resistance that one surface or object encounters when moving over another.

Gears

A toothed wheel that works with others to alter the speed.

Gravity

The force that attracts a body towards the center of the earth.

Lubricant

A substance introduced to reduce friction between surfaces.

Mass

The weight measured by an objects acceleration under a given force or by the force exerted on it by gravity

Pivot

The central point, pin, or shaft on which a mechanism turns

Repel

Resist mixing with or touching.

Tension

The state of being stretched tight.