



FORCES

KNOWLEDGE ORGANISER



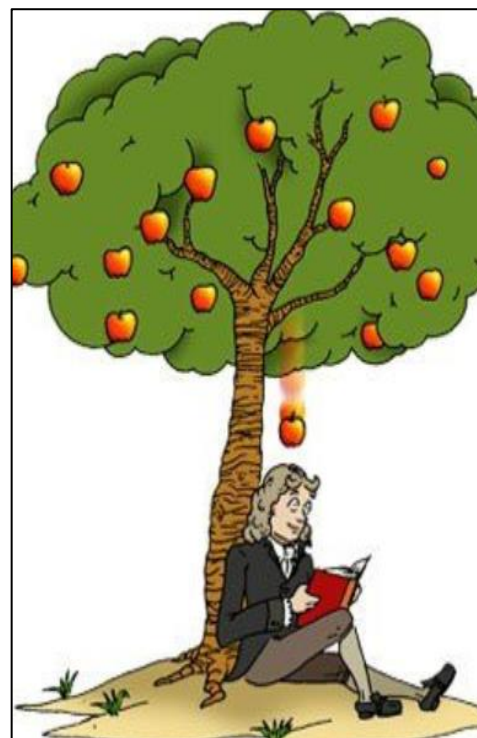
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What you should already know...	Key Objectives
<ul style="list-style-type: none"> - Forces are pushes and pulls which make things move and stop moving. - Most forces need contact between objects, but magnets can act at a distance. - Magnets are made 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. 	<ol style="list-style-type: none"> To know what forces are What is a force? What examples do we already know? To know what gravity is What is gravity? How does it work? Who discovered it? How do we measure force? To plan and carry out an investigation How do parachutes work? How can we make our test fair? Which parachutes were more successful? To investigate friction What is friction? Which materials have more friction? Which shoes should James Bond wear? To investigate water resistance What is water resistance? Which objects move through water more easily? To know how levers, gears and pulleys work What is a lever, gear or pulley? How do they work?

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.



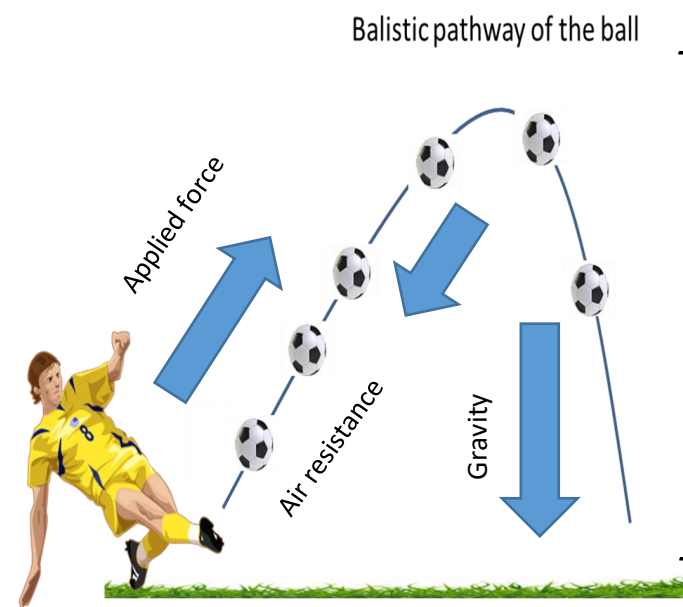
Machines and Mechanisms

- Scissors
- Wheelbarrows
- Fishing rods
- Shovels
- Boat Oars
- Well
- Exercise Equipment
- Elevators
- Window Blinds
- Brooms

Key Vocabulary

There are a number of different forces that affect us in our daily lives:

- **Applied force:** The force placed on an object by a living creature.
- (see 'Gravity' definition bottom left);
- **Friction:** the 'sticking' force that occurs when an object moves over another.
- **Air resistance** is 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** is 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.

