

Year 5 Spring Term

Forces

Prior knowledge learned in 3



compare how things move on different surfaces -notice that some forces need contact between 2 objects, but magnetic forces can act at a distance - observe how magnets attract or repel each other and attract some materials and not others - compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials - describe magnets as having 2 poles - predict whether 2 magnets will attract or repel each other, depending on which poles are facing

National Curriculum for year 5

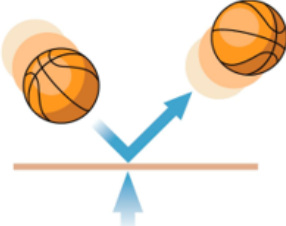
explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces - recognise that some mechanisms including levers, pulleys and gears allow a

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.

Definitions of Forces

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

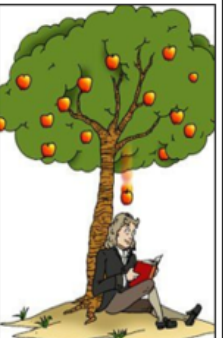
- **Applied force:** The force placed on an object by a living creature.
- (see 'Gravity' definition bottom left):
- **Friction:** the 'sticking' force that occurs when an object moves over another.
- **Air resistance** is a type of friction force that pulls against an object travelling through the air. 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.



Gravity

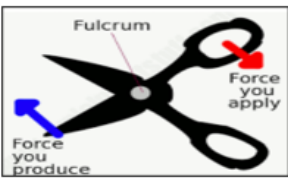
Gravity attracts all matter towards each other.

- 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

-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.

Key vocabulary

Air resistance, Water resistance, Gravity, Newton, Gears, Pulleys Friction,

Suggested texts

Foxton – Forces
smaller force to have a greater effect.

Scientists

Isaac Newton- Gravity, Albert Einstein- The Theory Of relativity, Galileo Galilei - Gravity and

What is gravity and how does it work?

What effect

What is

Machines and Mechanisms

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

Can you explain
what friction is?