

Year 5 – Forces

ALP Trust Science 2020

Side 1 Prior Learning

Key Scientific Words

Key Word	Definition (Meaning)
Attract	When a magnet pulls a magnetic material or another magnet towards it
Repel	When a magnet pushes another magnet away from it
Magnetic materials	Magnetic materials are attracted to magnets
Iron	A metal that is a magnetic material
Steel	A mixture made using iron
Magnet	A substance that can attract magnetic materials
Bar magnet	A magnet shaped like a bar
Magnetism	A non-contact force
Magnetic field	The area around a magnet that affects magnetic materials
North pole	One end of a magnet
South pole	One end of a magnet
Compass	A magnet that is free to move – pointing north

Key Knowledge

Forces are pushes, pulls or twists

Objects move differently on different surfaces. **Rougher** surfaces cause objects to **slow down** and **stop** most quickly

Contact forces need to touch the thing that they are affecting. **Magnetism** is a non-contact force. This means **magnetic forces** can act at a distance.

Magnets attract **magnetic materials**. **Iron** is a magnetic material. Mixtures, like **steel**, that include a magnetic material, are also be attracted to a magnet. You can **make a magnet** from a piece of iron.

Substances that are not magnetic material are **not attracted to magnets**. Wood and plastic are examples of materials that are not magnetic materials. Most metals, like **aluminium**, are not magnetic and will not be attracted to a magnet.

Magnets can be **useful**. Magnets can be used to sort iron and aluminium cans for recycling. Only the iron cans are attracted to the magnet.

The two ends of a bar magnet are called the **north pole** and **south pole**.

A north pole and a south pole **attract** each other.



Two north poles or two south poles will **repel** (push each other away) each other.



The space around a magnet where it can affect magnetic materials and other magnets is called its **magnetic field**. The **Earth** has a **magnetic field**.

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Side 2 Current Learning

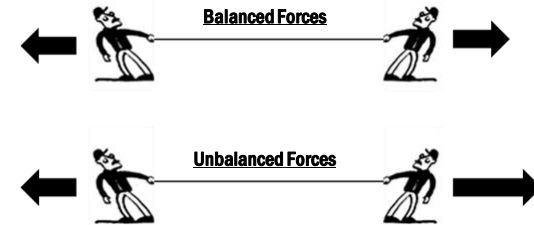
Key Scientific Words

Key Word	Definition (Meaning)
Contact force	Something that needs to be in contact with an object before it can affect it
Non-contact force	A force that can affect something from a distance
Newton meter	A piece of equipment used to measure forces
Newton (N)	The unit of measurement for force
Weight	The pull (force) caused by gravity
Balanced forces	When forces work in opposite directions are equally as large
Unbalanced forces	When forces work in opposite directions are not equally as large
Gravity	The force of attraction between any two objects
Speed	How fast something is moving
Metres per second (m/s)	A unit of measurement for speed
Friction	A force that tries to slow things down when two things rub against each other
Lubricant	A substance used to reduce friction
Air resistance	A force that tries to slow things down that are moving through air
Water resistance	A force that tries to slow things down that are moving through water

Key Knowledge

We cannot see **forces** but can measure them. We can use a **newton meter** (force meter) to measure forces. The units for measuring force are **newtons (N)**.

When forces work in opposite directions and are equally as large – they are **Balanced**. When forces work in opposite directions and not equally as large – they are **Unbalanced**.

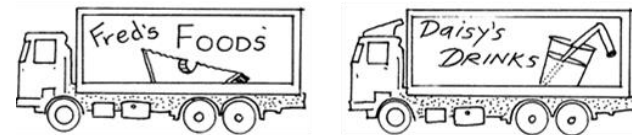


Friction is a force that acts between moving surfaces. Friction can slow things down, wear things away, produce heat and produce sound. Friction is a **contact force**. There must be **contact** before friction can affect an object.

Friction is sometimes helpful. For instance, your shoes grip the floor because of friction. **However, Friction is not always helpful. For instance**, friction can make bicycles harder to pedal.

Friction can be increased by using **rough surfaces** and **increasing the weight of an object**. Friction can be reduced by using **smooth surfaces**, or by **lubrication (A substance used to reduce friction)**

Air resistance and **water resistance** are types of friction caused by objects moving through air or water. The amount of air or water resistance can be reduced by giving an object a smooth, **streamlined** shape.



Gravity is the force of attraction between two objects. **Unsupported objects** fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

To measure how **fast** something is travelling you need to measure the **distance it travels and the time taken**.

Average (mean) speed = distance travelled ÷ time taken

Speed can be measured in **metres per second (m/s)**

Levers, Pulleys and Gears

Levers, Pulleys and Gears are examples of mechanisms. They allow a smaller force to have a greater effect