

## Key Vocabulary

<b>forces</b>	Pushes or pulls.
<b>gravity</b>	A pulling <b>force</b> exerted by the Earth (or anything else which has <b>mass</b> ).
<b>Earth's gravitational pull</b>	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's <b>gravitational pull</b> which keeps us on the ground.
<b>weight</b>	The measure of the <b>force</b> of <b>gravity</b> on an object.
<b>mass</b>	A measure of how much matter (or 'stuff') is inside an object.

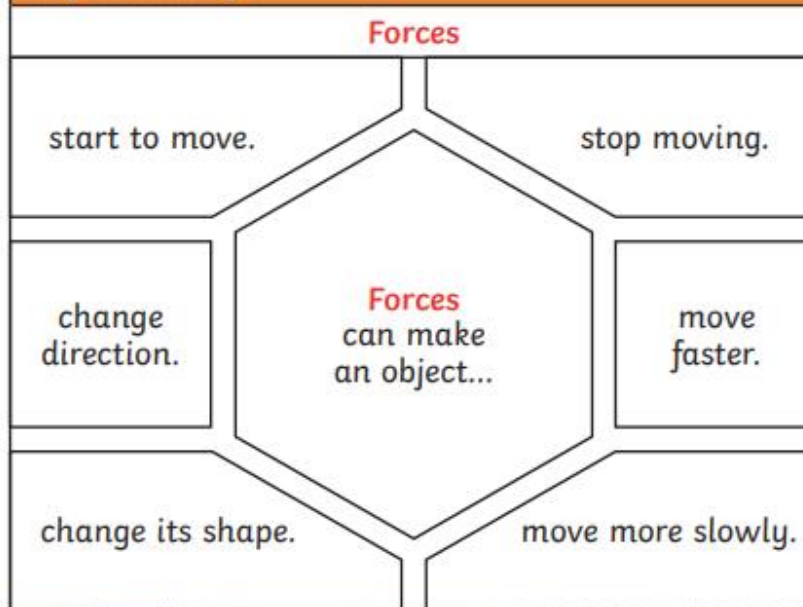
The Moon has a smaller **mass** than Earth so the **gravitational pull** on the Moon is smaller than it is on Earth.



Jupiter has a greater **mass** than Earth so the **gravitational pull** on Jupiter is stronger than on Earth.



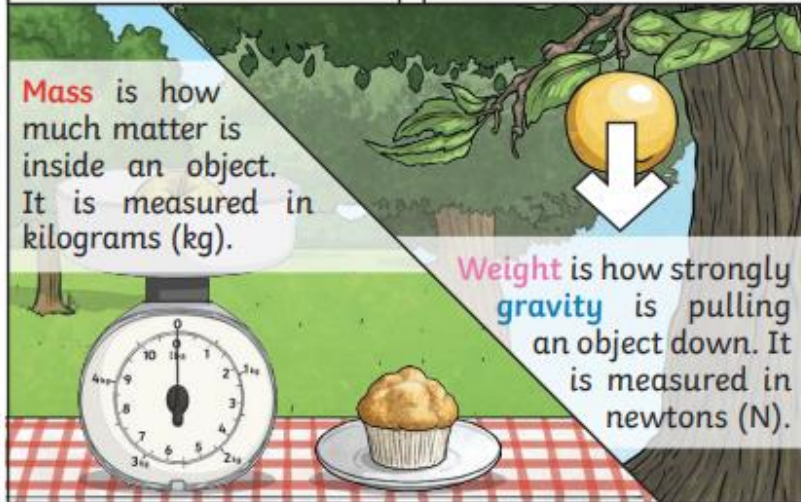
## Key Knowledge



## Isaac Newton



**Mass** is how much matter is inside an object. It is measured in kilograms (kg).



**Weight** is how strongly **gravity** is pulling an object down. It is measured in newtons (N).

Isaac Newton is famously thought to have developed his theory of **gravity** when he saw an apple fall to the ground from an apple tree.



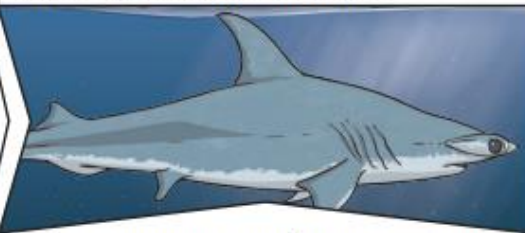


### Key Vocabulary

<b>friction</b>	A <b>force</b> that acts between two surfaces or objects that are moving, or trying to move, across each other.
<b>air resistance</b>	A type of <b>friction</b> caused by air pushing against any moving object.
<b>water resistance</b>	A type of <b>friction</b> caused by water pushing against any moving object.
<b>buoyancy</b>	An object is buoyant if it floats. This is because the weight of the object is equal to the <b>upthrust</b> .
<b>streamlined</b>	When an object is shaped to minimise the effects of <b>air</b> or <b>water resistance</b> .
<b>mechanism</b>	Mechanisms are simple machines with moving parts that change input forces and movement into a set of useful output forces. Examples of <b>mechanisms</b> are pulleys, gears and levers.
<b>upthrust</b>	A <b>force</b> that pushes objects up, usually in water.

It has a pointed nose to cut through the water, and a smooth, low, curved back to allow the water to flow over and around it.

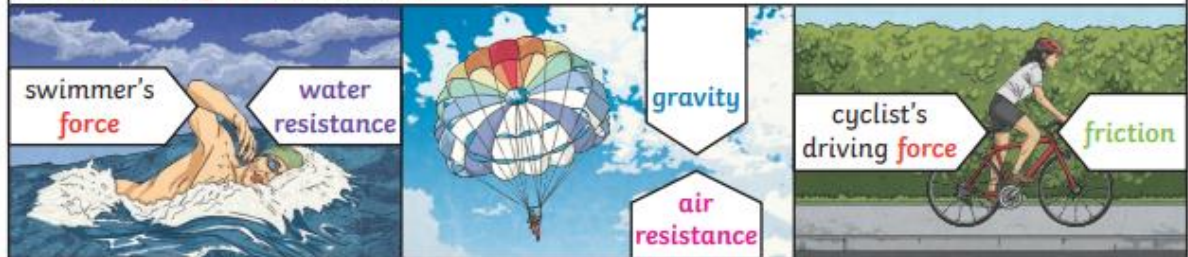
This shark is **streamlined**.



It does not create much **water resistance** so it can move through the water quickly.

### Key Knowledge

Examples of **forces** in action:



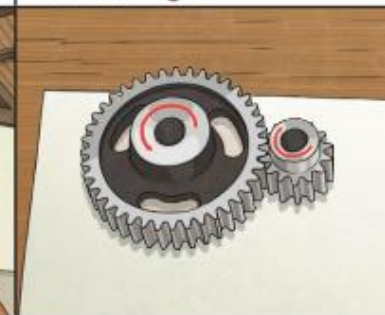
**Water resistance** and **air resistance** are forms of **friction**. **Friction** is sometimes helpful and sometimes unhelpful. For example, **air resistance** is helpful as it stops the skydiver hitting the ground at high speed. **Friction** on a bike chain can make the bike harder to pedal so it is unhelpful.

#### Pulleys



Pulleys can be used to make a small **force** lift a heavier load. The more wheels in a pulley, the less **force** is needed to lift a **weight**.

#### Gears/Cogs



Gears or cogs can be used to change the speed, **force** or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.

#### Levers




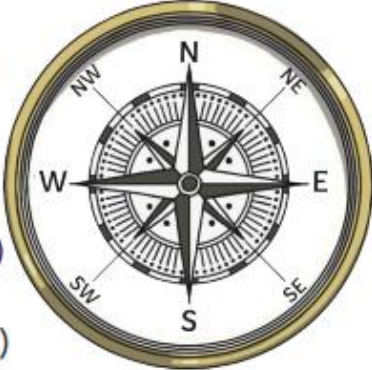
Levers can be used to make a small **force** lift a heavier load. A lever always rests on a pivot.



### Key Vocabulary







<b>atlas</b>	A collection of maps often of each country in the world.
<b>compass</b>	A tool used for showing direction.
<b>digital map</b>	A map that uses technology such as a satnav.
<b>easting</b>	The numbers used in a <b>grid reference</b> that run west to east.
<b>grid references</b>	The numbered squares on a map used to locate a place.
<b>National Grid</b>	A system used to split Great Britain into 100km squares.
<b>northing</b>	The numbers used in a <b>grid reference</b> that run south to north.
<b>Ordnance Survey maps</b>	Detailed maps of Great Britain where each square represents 1km squared (1km <sup>2</sup> ).
<b>symbols</b>	Small pictures, letters or lines that represent a feature.

### Compass Points

Four-Point Compass	Eight-Point Compass
<p>N - north</p> <p>E - east</p> <p>S - south</p> <p>W - west</p> 	<p>north (N)</p> <p>north-east (NE)</p> <p>east (E)</p> <p>south-east (SE)</p> <p>south (S)</p> <p>south-west (SW)</p> <p>west (W)</p> <p>north-west (NW)</p> 

### Symbols

- Maps use **symbols** instead of words to label real-life features.
- A key on the map tells you what the **symbol** means.

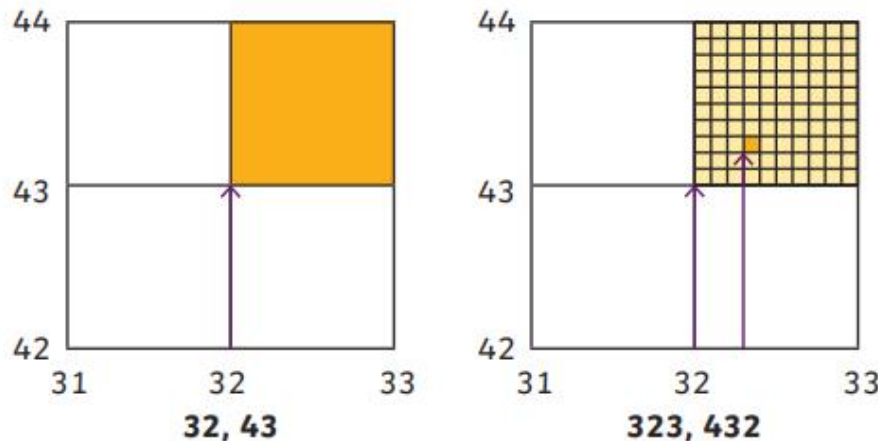
	Nature Reserve		Cycle Trail		Footpath
	Motorway		Train Station		Place of Worship

### Grid References

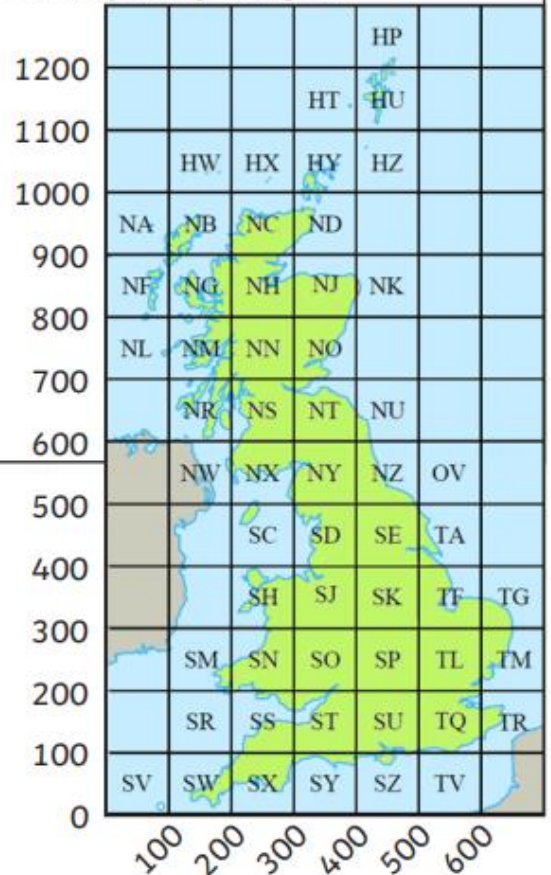
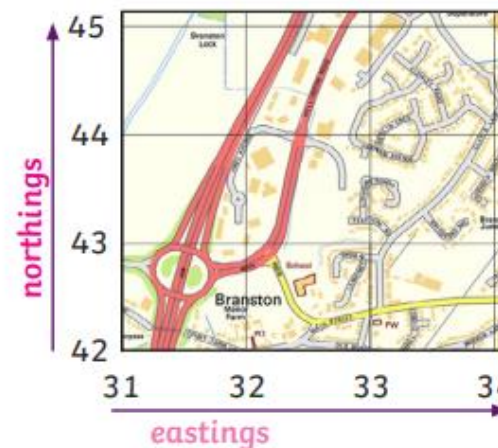
- A map is criss-crossed with horizontal and vertical lines that create a grid.
- The grid and squares help to narrow a search area so you can locate features on a map.
- Usually, the lines are numbered with two digits.
- Eastings** are the numbers that run from west to east.
- Northings** are the numbers that run from south to north.
- The **easting** and **northing** numbers are put together to create a four-digit **grid reference**, e.g. (32,43), which refers to the bottom left corner of a square on the map.
- Grid references** can be even more specific by adding an extra digit to both the **easting** and **northing** numbers.
- These six-digit **grid references**, e.g. (323,432), tell us more precisely whereabouts in the square something is.

### The National Grid

- The **National Grid** is a **grid reference** system for the whole of Great Britain.
- It splits Great Britain into squares - each is 100km.
- The spaces can be identified by using two letters e.g. SK
- Easting** and **northing** numbers can be used to split the squares into smaller sections making them easier to use.



Four-figure and six-figure **grid references**.



Ordnance Survey Map (March 2015) by OS Open Data is licensed under [CC BY 3.0](#). National Grid for Great Britain with central meridian.gif by Wikimedia Commons is licensed under [CC BY 1.0](#)



Key Vocabulary	
<b>Internet</b>	The <b>Internet</b> is a vast network of computers connected to each other all around the world.
<b>search engine optimisation (SEO)</b>	The process of getting more clicks onto a <b>web page</b> from a search engine by improving the <b>web page</b> content.
<b>search engine results page (SERP)</b>	<b>Search engine results page</b> is the list of <b>web pages</b> , images and videos generated by search engines in response to inputted search terms.
<b>Uniform Resource Locator (URL)</b>	This is the address given to find <b>web pages</b> on a <b>web browser</b> , for example, www.twinkl.co.uk.
<b>web browser</b>	A <b>web browser</b> allows you to access the <b>Internet</b> , including search engines and other <b>web pages</b> .
<b>web crawler</b>	A computer program that crawls across the World Wide Web to find and index pages for search engines. It is sometimes called a spider.
<b>web page</b>	This is a specific page that is viewed on a <b>web browser</b> by entering a <b>URL address</b> . It can display text, graphics and hyperlinks to other <b>web pages</b> .
<b>website</b>	This is a collection of <b>web pages</b> grouped together.

### Search Engine

A search engine is a service you use on the **Internet** to help you find information via the World Wide Web.

They allow us to input words or phrases into the search bar or address bar. The search engine then provides a list of **websites** or **web pages** that link to the words or phrases that were inputted.



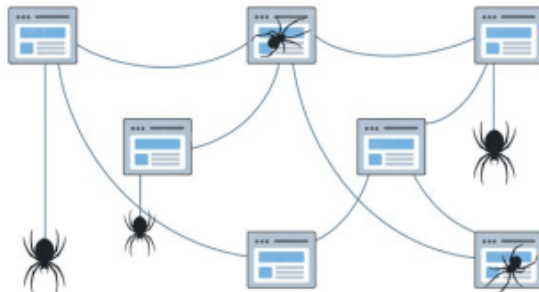
### What Does a Search Engine Results Page (SERP) Look Like?

Each **search engine's results page** will look different, however they will all contain the same content, such as **web pages** or **websites**, images, videos, shopping links and advertisements. The suggested **web pages** or **websites** are based on a user's inputted search terms, which could be a word or set of keywords. The order of the search results is based on a page ranking computer program.

### How Do Search Engines Work?

When a user inputs their search terms, a search engine will scan its index of **web pages** to find results that relate to the search terms. A search engine makes its own index through a program called spider or **web crawler**.

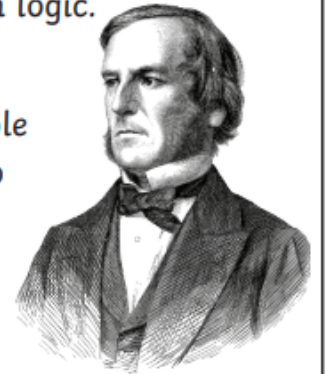
A spider or **web crawler** is programmed to visit **web pages** through hyperlinks and store information about each **website** they visit.



### Boolean Operators

George Boole, who was a British mathematician and computer scientist, created the idea of Boolean logic.

A user can alter their search results by using Boolean operators. Boolean operators are simple words (AND, OR, NOT) used as conjunctions to combine or exclude keywords in a search. Using Boolean operators can help to narrow or broaden the search in a search engine.



### Parts of the URL

A **web page's URL** is located in the address bar.

