

**Forces**

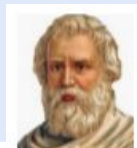
**Significant Scientists**

**Galileo**



Was a professor of mathematics in Italy (1564 - 1642). Discovered the idea of air resistance and how it affects the rate the objects fall. He discovered that all objects, no matter their mass, would fall at the same rate in a vacuum.

**Archimedes**



He was a philosopher and mathematician (287 - 212 BC), who lived in Greece. He discovered the idea of water resistance, density and water displacement and how it affects objects moving through water.

**Key Knowledge**

A force is either a push or a pull. It is measured in Newtons.

Forces can make objects: speed up, slow down, change shape or change direction.

Magnets (Year 3) attract or repel each other or other objects. North and South poles attract whereas North and North poles or South and South poles will repel each other.

Air resistance slows down moving objects, because air slows you down as you move through it. To travel faster through the air, things need to be streamlined.

Water resistance slows down moving objects, because water slows you down as you move through it. To travel faster through the water, things need to be streamlined.

Friction happens when two surfaces touch each other. It gives us grip. It produces heat. Rougher surfaces slow objects down a lot whereas smoother surfaces do not slow objects down as much.

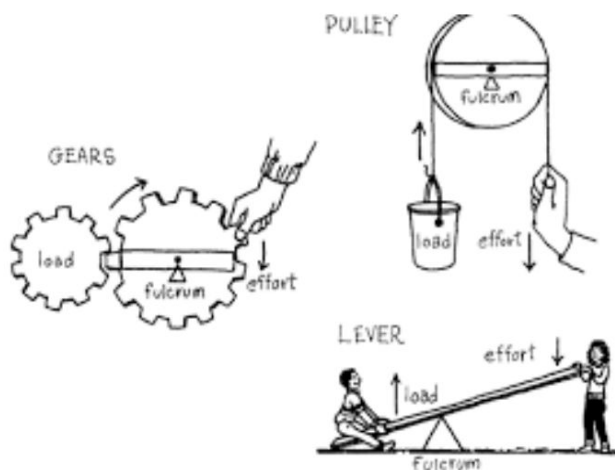
Lever: A way to lift heavy weights using the least amount of effort. The longer the lever, the easier it is to lift the weight. The fulcrum is where the lever pivots in order to lift the load. The closer the fulcrum is to the load the easier it is to lift.

Pulleys: Used like levers to lift loads with less effort. Rope is passed through a pulley and then is returned back round to be pulled.

Gears: Used to transmit power from one part of a machine to another. Connected gears can increase speed, increase force. When joined, the direction of rotation of the driven gear is the opposite of the drive gear.

**Key Vocabulary**

<b>air resistance</b>	Air resistance is the force on an object moving through air.
<b>water resistance</b>	A force that slows things down that are moving through water.
<b>friction</b>	The resistance that a surface or object encounters when moving over another surface or object.
<b>gravity</b>	Gravity is the pulling force acting between the Earth and a falling object.
<b>lever</b>	A rigid bar that rests on a fulcrum. It is used to lift/move heavy objects.
<b>gear</b>	A toothed wheel that works with others to increase speed.
<b>pulley</b>	A machine with a wheel and a fixed axle.
<b>Newtons</b>	The force necessary to provide a mass of one kilogram with an acceleration of one metre per second.



**Working Scientifically Skills**

- Plan
- Measure
- Fair test
- Report data – scientific diagrams, labels, bar graph and line graphs
- Present – conclusions, casual relationships, explanations

**Enquiry Skills**

- Fair testing
- Pattern seeking
- Research

