

Year 5 Science Autumn 1 Unit

Forces

Key Scientific Skills	Year 5 Forces
Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	
Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	
Use test results to make predictions to set up further comparative and fair tests	
Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations	
Identify scientific evidence that has been used to support or refute ideas or arguments	

Lesson Sequence

1. Explore gravity and the life and work of Isaac Newton
2. Examine the connection between air resistance and parachutes
3. Explore factors which affect an object's ability to resist water
4. Investigate the effects of friction on different surfaces
5. Investigate mechanism – levers and pulleys
6. Investigate mechanisms - gears



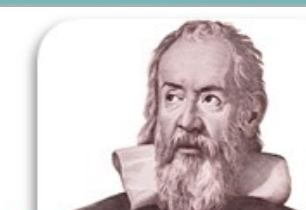
Mass and Weight

The mass of an item can be measured in **Grams/ Kilograms**.

Weight is how much force is needed to pull an object and is measured in **Newtons**.



Sir Isaac Newton developed his theory of gravity.



Galileo conducted experiments to test mass.

Progression of Knowledge

Unit	YEAR 3	YEAR 5
Forces	<p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>Describe magnets as having 2 poles</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>

Mechanisms

Pulleys
A pulley is a wheel over which a belt, rope, or chain is pulled to lift or lower a heavy object.

Levers
Levers are a bar that rotates around a point. They make it easier to lift a heavy load.

Gears/Cogs
Gears are toothed wheels that mesh together, they rotate in opposite directions.

Rocket Words

Sir Isaac Newton	an English physicist and mathematician
gravity	force which draws objects towards the centre of a planet
Galileo Galilei	an Italian scientist, and the first astronomer
parachute	a device, usually made from cloth, designed to create air resistance and slow descent
water resistance	friction which acts on an object as it moves through water
streamlined	an object that is shaped to travel through air or water with little resistance
buoyant	to float
upthrust	any force that is causing something to be pushed upwards
friction	the resistance of motion when one object rubs against another
newton	the international metric unit of force
lever	a long arm that rests on a support called a fulcrum
pulley	a wheel over which a belt, rope, or chain is pulled to lift or lower a heavy object