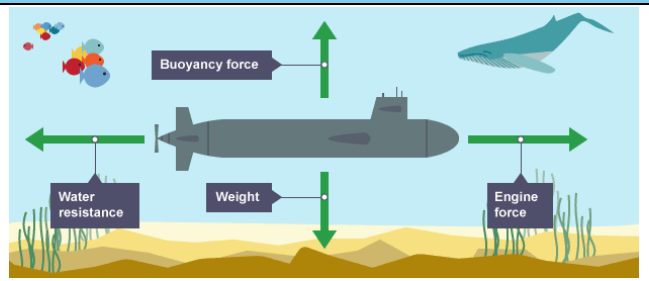
Autumn 1 Year 5 Science Knowledge Organiser
Forces

Subject specific Vocabulary

Air resistance	Resistance or drag, acts against gravity on falling objects.
Earth's gravitational pull	Pull that Earth exerts on an object pulling it towards the Earth's centre.
Forces	Changes the motion of an object. Pushes and pulls in a particular direction.
Gravity	A force which pulls things towards the centre of the Earth. Discovered by Sir Isaac Newton.
Mass	A measure of how much matter (stuff) is inside an object.
Resistance	A force between surfaces that are touching.
Water resistance	A type of force that uses friction to slow things down that are moving through water.
Weight	The measure of the force of gravity on an object.

Images/Diagrams/Maps



Writing/Provision/ Enrichment opportunities

Create parachutes to investigate air resistance

Writing - Write a biography about Sir Isaac Newton

Important Knowledge

<u>Weight</u>

The weight of an object is caused by gravity pulling down on it. Objects with more mass have a greater weight, as the force of gravity pulls them down more strongly.

<u>Water resistance</u>

A submarine that is streamlined has a pointed front to cut through the water and a smooth body to allow the water to flow over it

<u>Sir Isaac Newton</u>

An English mathematician, physicist, astronomer and author who is famous for his laws of motion, theory of colour and the discovery of gravity. Gravity is measured in Newtons (N)

Scientific Enquiry Skills

Working Scientifically Skills

Presentation	Working Scientifically and Scientific Enquiry Assessment		
	• Children can observe what is happening and can verbalise what is happening to the objects.	• Children can observe carefully and notice where forces have been applied to move the object or change its shape. • Children can label each picture with arrows indicating forces.	• Children can label the pictures with the forces acting upon the objects. They can make scientific comments about the experiment and notice reasons why objects are behaving like they are.
	• Children can identify the type of enquiry needed. Children need support to complete the planning stage but can identify some variables. They can make suggestions about what they are measuring.	• Children can recognise what test is needed to answer the question. They know how to set up a fair test and can identify the independent and dependent variable.	• Children can independently set up the fair test and identify many variables to control. They understand the independent and dependent variable and have a clear understanding of why the other variables must not change.
	• Children can draw simple conclusions based on observations. With support they can use the data to compare something and use some scientific language to communicate their findings.	• Children can interpret data to generate simple comparative statements based on evidence. They can use results to draw on external factors that cannot be controlled. They use scientific language to communicate their results.	• Children can independently set up the fair test and identify many variables to control. They understand the independent and dependent variable and have a clear understanding of why the other variables must not change.
	• Can identify the type of enquiry needed to answer a question. • Follow a plan to carry out observations and tests. • Can select from a range of resources to gather evidence and answer questions, to classify, compare and perform fair tests. • Use post it note planning approach with more independence in identifying variables and what needs measuring. Children choose their method to carry out the investigation.	• Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and changed. Can identify independent and dependent variables to identify causal relationships. • Understand what type of scientific enquiry is needed to answer and prove/disprove scientific questions or phenomenon.	• Children choose the type of enquiry needed to carry out their investigation. • Children can pose and answer their own questions, controlling variables where necessary independently. • Decide whether they need to increase the sample size for validity. Children understand how to gather data to prove a prediction. Can identify a range of factors which may affect their investigation.
	• Children can take measurements and use equipment safely. They may need support identifying the scale. They can take repeat measurements with support. They take measurements to nearest scale.	• Children can take repeat measurements where appropriate and notice any anomalies in results. They can choose the middle value or find the mean average. They can take measurements with accuracy using a force metre and understand the measurement is in Newtons.	• Children can take accurate repeat measurements and can take an average. They understand anomalies in results and can explain why. They understand the scale on different force metres and can choose the most appropriate force metre for the test.
	• Children may need support with some of the headings and drawing the table. They can record in the correct boxes and are beginning to work independently with composing their own table.	• Children can produce their own results table with accurate title and headings. They indicate cause and effect from their planning. They can record their results systematically with repeat reading where required.	• They can accurately and independently create their own results table which is neat and accurately drawn. They identify cause and effect from planning and can use multiple sets of data where mean and range can be calculated.