



Subject: Science
 Year group: 5
 Term: Autumn
 Unit name: Forces
 Strand: Physics

Prior Knowledge – Compare how things move on different surfaces. (Y3 - Forces and magnets)
 Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)
 Observe how magnets attract or repel each other and attract some materials and not others. (Y3 - Forces and magnets)
 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. (Y3 - Forces and magnets)
 Describe magnets as having two poles. (Y3 - Forces and magnets) Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3 - Forces and magnets)

Key Vocabulary: Force, Gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears, Newton, up thrust, opposing, streamline, brake, cog, weight, mass.

Key Scientists:
 Sir Isaac Newton
 Galileo Galilei






















- National curriculum:**
- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (*The act of gravity on our lives*)
 - Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.
 - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

- Working Scientifically:**
- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (Lessons 2,4 and 6)
 - Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Lesson 1)
 - Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Lesson 5)
 - Using test results to make predictions to set up further comparative and fair tests (Lesson 6)
 - Reporting and presenting 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 (Lesson 3)
 - Identifying scientific evidence that has been used to support or refute ideas or arguments. (Lesson 1/3)

Excellence

Nurture

Key learning objectives- Highlighted boxes = Learning Objective for that lesson. The other two are your Success Criteria.		
Knowledge	Working Scientifically	Scientific Enquiry
To explain that unsporing objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	To observe different forces and measure the force using scientific equipment. 	To research the effects of gravity and research Sir Isaac Newton's theories. 
To explain that unsporing objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	To set up a test which answers a scientific enquiry, to change the speed of a pendulum. 	To observe over time how many times the pendulum swings. 
To identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	To interpret and communicate results, from my data using scientific vocabulary. I can make recommendations to the sky diving company. 	To conduct a fair test to explore the effects of air resistance on a falling object. 
To identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	To plan different types of enquiry to answer questions. 	To conduct a comparative test to investigate water resistance. 
To identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	To take measurements using a range of scientific equipment with increasing accuracy and precision taking repeat readings. 	Comparative/fair testing.  
To know that some mechanisms, including levers, pulleys and gears allow a smaller force to have a great effect.	To record my results in a table. 	To look for patterns in my results. 
Scientific Enquiry Key	Comparative / fair testing Changing one variable to see its effect on another, whilst keeping all others the same. 	Pattern-seeking Identifying patterns and looking for relationships in enquiries where variables are difficult to control. 
	Research Using secondary sources of information to answer scientific questions. 	Identifying, grouping and classifying Making observations to name, sort and organise items. 
	Observation over time Observing changes that occur over a period of time ranging from minutes to months. 	Problem-solving Applying prior scientific knowledge to find answers to problems. 
Assessment- Key indicators: Can demonstrate the effect of gravity acting on an unsupported object. Can give examples of friction, water resistance and air resistance. Can give examples of when it is beneficial to have high or low friction, water resistance, and air resistance. Can demonstrate how pulleys, levers and gears work.		