



Topic Title: Forces

Year Group: 5

Academic Year: 2021-2022

Science Intent: Children will be able to explain the effect of gravity on falling, unsupported objects and will be able to identify the effects of air resistance, water resistance and friction between moving surfaces. Children will also understand that some mechanisms allow smaller forces to have greater effects.

<p>Prior Scientific Learning/Linked Topics:</p> <p>Recapping and building on knowledge of forces in Year 3. Developing vocabulary and scientific enquiry.</p>	<p>Literacy Links (including texts/media used):</p> <p>None</p>	<p>Maths Links:</p> <p>Mass and Weight.</p> <p>Units and measurement</p> <p>Shape (Streamlined objects)</p>		
<p>Scientific Knowledge</p>	<p>Working Scientifically</p>			
	<p>Observing and Measuring over time</p>	<p>Identifying, classifying and grouping</p>	<p>Comparative and fair testing (controlled investigations)</p>	<p>Research</p>
<ul style="list-style-type: none"> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction that act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	<ul style="list-style-type: none"> • Taking measurements of weight and mass using a range of scientific equipment, with increasing accuracy and precision. 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Using test results to make predictions to set up further comparative and fair tests. 	<ul style="list-style-type: none"> •

Content:

- Start – Gravity - Concept cartoon to assess prior learning and starting point.
- Activity – Marble run investigation – Problem-solving – Observing and measuring and Interpreting and communicating results.
- Activity - Rocket mice conclusions – Pattern seeking – Prediction and Evaluating

- Start – Water/air resistance/friction - Air resistance – Running with cardboard

- Activity – Aquadynamics test – Comparative/fair testing- Setting up tests and Recording data

- Activity (Friction) - rolling cars on different surfaces – Comparative / fair testing – setting up tests and recording data.



- Start – levers/pulleys/gears/mechanisms – Picture for talking



Pattern-seeking



Problem solving – Asking questions and Evaluating

- How to slow down the ball in the marble run using all the knowledge gained throughout the topic? – (Assessment opportunity) - Problem solving



No Limits
To Learning!

Key Vocabulary:

- Force
- Gravity
- Earth
- Friction
- Air resistance
- Water resistance
- Mechanisms
- Simple machines
- Levers
- Pulleys
- gears

Stunning Start/Marvellous Middle/Fabulous Finish:

Stunning Start:
Science Week

Marvellous Middle:
Science Week

Fabulous Finish:
Science Week

Survival challenge! Shelter building, using pulleys to raise up canopies etc.

OAA/Trips/Visits/Visitors:

InTech