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**Big Ideas/Substantive Concepts**

Non-contact and contact forces

Resistance

Inspirational Scientists

Levers, pulleys and gears

Pupils should be taught to:

* 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

Questions

When is friction helpful and when is it not?

What’s the effect of air resistance?

What’s the effect of water resistance?

Who was Galileo Galilei?

How do leavers help us?

How do pulleys help us?

**Key Vocabulary**

|  |  |
| --- | --- |
| **Tier 2** | **Tier 3** |
| opposite | pulley |
| reaction | gear |
| advantage | pivot |
| displace | fulcrum |
| weight | lever |
| mass | upthrust |
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Year 5: Forces

**Resources:** [CUSP curriculum](https://www.unity-curriculum.co.uk/history/history-ks2/) and [Curriculum vision](https://www.curriculumvisions.com/indexHistory.html) resources for online non-fiction texts

Making connections to prior learning

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| **Year 3:** Forces**Year 4:** Electricity**Year 4:** States of Matter**Year 4:** Sound**Year 5:** Earth and space**Year 5:** Properties and changes of materials |

Working Scientifically

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| --- | --- | --- | --- |
| Plan enquiries, including recognising and controlling variables where necessary | Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work | Take measurements, using a range of scientific equipment, with increasing accuracy and precision | Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models |
| Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions | Present findings in written form, displays and other presentations | Use test results to make predictions to set up further comparative and fair tests | Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments |

**Outdoor Learning Opportunities**

Alfresco Learning: Year 5-Forces