



## Topic Title: Let's Experiment! Year 5 Term Summer 1



### Skills Taught:

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.

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. • Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.

• Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.

This unit will also be used to recap the key skills and knowledge taught in Science in Year 5 in Chemistry, Physics and Biology.

**Immersion Activity/Provocation:** Set a challenge which requires the children to work in teams to design and make products that use levers, pulleys, gears and/or springs and explore their effects.

Key question?  
Why does that happen?

### Big Questions:

How do levers work?

When might I use a lever?

How can I make gears and levers?

Can a smaller force have greater effect? Why?

How can force and motion be transferred through mechanical devices?

Topic Title: Let's Experiment!

Enquiry Question: Why does that happen?

Focus Texts: Non-fiction collections.



### Challenge for All:

	<u>Skills and Knowledge</u>
Some children will:	<ul style="list-style-type: none"><li>• Ask simple questions.</li><li>• Observe closely, using simple equipment.</li><li>• Perform simple tests.</li><li>• Identify and classify.</li><li>• Use observations and ideas to suggest answers to questions.</li><li>• Gather and record data to help in answering questions.</li></ul> <p>+ a recap of all scientific concepts taught in Year 5</p>
Most children will:	<ul style="list-style-type: none"><li>• Ask relevant questions.</li><li>• Set up simple, practical enquiries and comparative and fair tests.</li><li>• Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.</li><li>• Gather, record, classify and present data in a variety of ways to help in answering questions.</li><li>• Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</li><li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li><li>• Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li><li>• Identify differences, similarities or changes related to simple, scientific ideas and processes.</li><li>• Use straightforward, scientific evidence to answer questions or to support their findings.</li><li>• <i>Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.</i></li><li>• Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.</li></ul> <p>+ a recap of all scientific concepts taught in Year 5</p>
Some children will progress further and will:	<ul style="list-style-type: none"><li>• Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</li><li>• Take measurements, using a range of scientific equipment, with increasing accuracy and precision.</li><li>• Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.</li><li>• Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.</li></ul>

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|  | <ul style="list-style-type: none"><li>• Present findings in written form, displays and other presentations.</li><li>• Use test results to make predictions to set up further comparative and fair tests.</li><li>• Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</li><li>• Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.</li><li>• Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.</li></ul> |
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+ a recap of all scientific concepts taught in Year 5

Celebration of knowledge and skills gained (opportunities for assessment):

Culminate all learning with a 'Learning Together'. The session could have a 'mad science' theme where the children celebrate all of their science learning in Year 5.

### Enrichment/Outdoor Learning:

<https://www.stem.org.uk/resources/community/collection/13378/gears-levers-and-pulleys>

<https://www.stem.org.uk/resources/elibrary/resource/470703/levers-wheels-and-axels>

<https://www.stem.org.uk/resources/elibrary/resource/446808/seesaw-scales>

They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.

### Previously....(Links to prior learning)

Build on 'working scientifically' elements of Year 3 and 4 curriculum. Pupils in years 5 and 6 should use their science experiences to: explore ideas and raise different kinds of questions; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. They should use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. They should make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately. They should decide how to record data from a choice of familiar approaches; look for different causal relationships in their data and identify evidence that refutes or supports their ideas. They should use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.

### Key Vocabulary:

All of the key vocabulary taught this year including-

force   moving surfaces   pulleys   gears   surfaces  
levers   mechanism   friction effect

### Cross-curricular links:

Design Technology – Pulleys and gears, weight-bearing structures, how to stiffen and strengthen complex structures

Maths – Data handling, Measurements, Percentages/ fractions of change

Geography – Poles of the earth, physical geography