I wonder how rockets fly?

Wonder Project

Rocket Challenge

The Wonder Project is Engineering New Zealand's not-for-profit, free programme for schools, designed to inspire young Kiwis with science, technology, engineering and maths (STEM).

The Wonder Project is a series of project-based hands-on programmes that knit seamlessly into the New Zealand school curriculum. They're designed to spark wonder and awe in young Kiwis from Year 5–13 and get them excited about a future STEM career.

Rocket Challenge

Level 3 | Phase 2, Year 5–6
Term 2

Houston, we have lift off! Ākonga blast off into STEM by designing, building and launching a water rocket. They'll learn about Newton's laws, the engineering design process, and working as a rōpū.

Engineering New Zealand
Te Ao Rangahau

Rocket Challenge

Starting anytime in Term 2 each year, the Rocket Challenge provides scaffolded learning aligned to Level 3 or Phase 2 of the New Zealand school curriculum. The challenge takes around 12–16 hours to complete across 6–8 weeks, or longer if required. It's also possible to complete the challenge in a more condensed timeframe.

Newton's laws of motion

Rocketry

Teamwork

Physics concepts

Engineering design process

What we offer schools

- Online training on core STEM principles
- Ākonga learning material and activities
- Detailed challenge guide
- Where possible, support from a volunteer STEM professional (online support available)
- Free rocket kit with all the gear
- Online community of kaiako and ambassadors
- Resources to assess ākonga on their challenge learning

Our impact

Here's what participants said about the 2025 Rocket Challenge:

- 95% of kaiako increased their confidence teaching STEM
- 96% of kaiako and 83% of ākonga said they would do it again
- 56% of ākonga were more interested in STEM jobs after the challenge
- 92% of kaiako said ākonga were engaged with the programme

Become a wonder school today at
wonderproject.nz

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Te reo Māori ākonga activities also available

Rocket Challenge modules

Module 1

Get ready for the Rocket Challenge, meet your Wonder Project Ambassador, and find out how the engineering design process can help launch a rocket.

Module 2

Explore what rockets need to get off the ground, understand the health and safety rules for launches. Launch your first test flights and play with variables.

Module 3

Learn about Newton's first law of motion, the forces acting on a rocket and start designing the ultimate rocket.

Module 4

Explore Newton's second law of motion, understand the key features on a rocket, and develop a prototype based on designs.

Module 5

Learn about Newton's third law of motion, launch your second test flights with prototype rockets and record data about each launch.

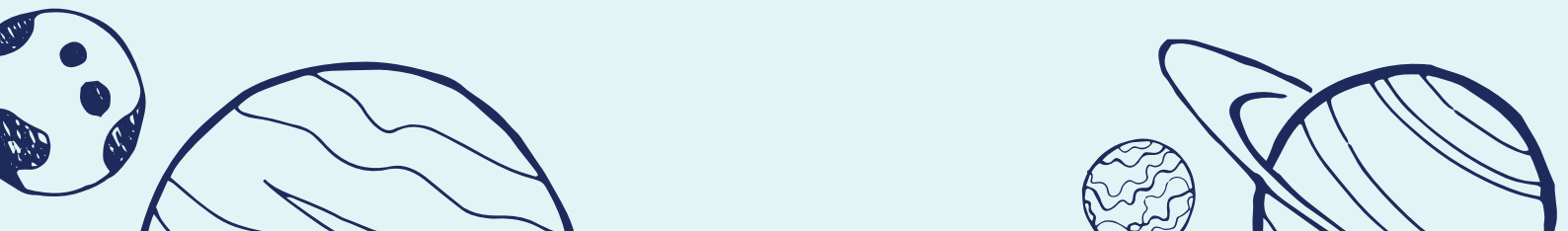
Module 6

Analyse test flight data to improve on rocket designs, launch your best rocket for the final blast-off, and celebrate and share your Rocket Challenge journey.

Achievement objectives

Kaiako can also make wider curriculum links to other achievement objectives depending on ākonga level and individual learning programmes.

Strand	Ākonga will	Curriculum level/phase	Year level
Science: Physical world	**Physical inquiry and physics concepts** Identify and describe how movement and forces effect the motion of rockets.	Level 3	5–6
Technology: Technological knowledge	**Technological modelling** Undertake functional modelling of rocket prototypes to inform decision making. Evaluate rocket prototype fitness of purpose to refine further developments.	Level 3	5–6
Mathematics and statistics: Geometry and measurement; Statistics	**Measurement** Use metric units to find length, volume, weight (mass) of the rockets, the angle of rocket launch and distance of flight. **Statistics** Investigate what influences a rocket's flight (eg force, aerodynamics, Newtons laws of motion).	Phase 2	5–6



I wonder how we get rangatahi excited about STEM?

Engage your ākonga in the wonders of STEM by registering for one of our hands-on, project-based challenges.

Rocket Challenge

Level 3 | Phase 2, Year 5–6 – Term 2

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Power Challenge

Level 4 | Phase 3, Year 7–8 – Term 2

Power up! Ākonga design and build a wind turbine and work as a rōpū to light up their own mini town. Along the way they discover the amazing phenomenon of electricity and renewable energy.

Ice Cream Challenge

Level 3 | Phase 2, Year 5–6 – Term 3

Let's chill! Ākonga experiment with flavour, texture, and techniques, using dairy or alternative ingredients to create their own sweet treat. They'll explore states of matter, food composition and nutrition and discover the science behind ice cream innovation.

Water Challenge

Level 4 | Phase 3, Year 7–8 – Term 3

Ready, set, flow! Ākonga construct and test a mini model of Aotearoa New Zealand's wai network. They'll explore the journey of wai and how STEM is used to collect, clean, connect and care for one of Earth's most precious taonga.

Showcase the immense possibilities of a future in STEM.

STEM Careers

Year 7–13 – Year round

The future is bright! Ākonga are inspired to keep taking STEM subjects, and given a taste of the real world with industry visits and motivating career talks from STEM professionals.

Become a wonder school today at **wonderproject.nz**

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