

# I wonder how rockets fly?



Wonder  
Project

Rocket  
Challenge



**The Wonder Project is Engineering New Zealand's free programme for schools, designed to get young Kiwis excited about 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, Year 5–6  
Term 2

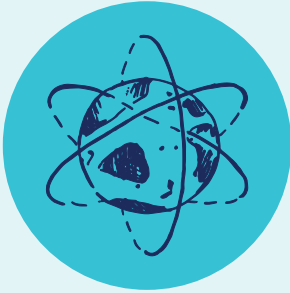
Houston, we have lift off! Ākonga blast off into STEM by designing, building and launching a water rocket. They'll learn about Newton's laws, the engineering design process, and working as a rōpū.



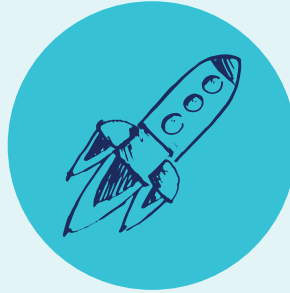
engineering  
new zealand  
te ao rangahau

## Rocket Challenge

Starting anytime in Term 2 each year, the Rocket Challenge provides scaffolded learning aligned to Level 3 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 lesson plans and support notes
- Where possible, support from a volunteer STEM professional (online support available)
- Free rocket kit with all the gear
- Online community of kaiako and ambassadors

### Our impact

Here's what participants said about the 2023 Rocket Challenge:

- 94% of kaiako increased their confidence teaching STEM
- 98% of kaiako and 81% of ākonga said they would do it again
- 53% 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](https://wonderproject.nz)

   @WonderProjectNZ

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.

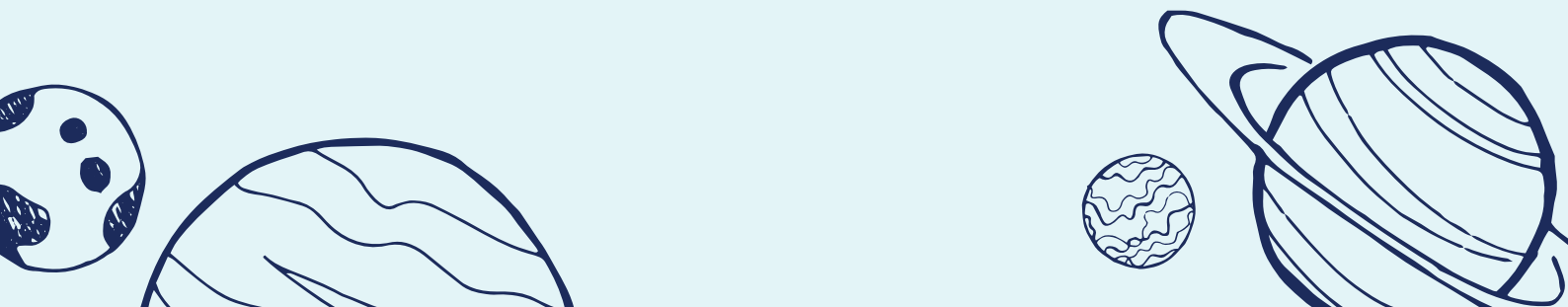
### Module 6

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 ākongā level and individual learning programmes.

Achievement objectives	Ākongā will	Curriculum level	Year level
<b>Science:</b> Physical world	<b>Physical inquiry and physics concepts</b>  Identify and describe how movement and forces effect the motion of rockets.	3	5–6
<b>Technology:</b> Technological knowledge	<b>Technological modelling</b>  Undertake functional modelling of rocket prototypes to inform decision making.  Evaluate rocket prototype fitness of purpose to refine further developments.	3	5–6
<b>Mathematics and statistics:</b> Geometry and measurement	<b>Measurement and shape</b>  Represent rockets through drawings and models.  Use metric units to find length, volume, weight (mass) of the rockets and the angle of rocket launch.	3	5–6



# I wonder how we can ignite creativity in young Kiwis?

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



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Term 2

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## Power Challenge

Level 4, Year 7–8  
Term 3

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.

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Showcase the immense possibilities of a future in STEM to rangatahi.



## 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.

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[wonderproject.nz](http://wonderproject.nz)

   @WonderProjectNZ