

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).

In Aotearoa, there's a huge skills shortfall in STEM. We simply don't have enough young people pursuing careers in these fields. STEM jobs pay well, are secure – and you don't always have to go to university. The Wonder Project aims to change this shortfall by showing young Kiwis they really can do anything.

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.



**Engineering
New Zealand**
Te Ao Rangahau

Rocket Challenge

Houston, we have lift off! Ākonga blast off into STEM by designing, building and launching a water rocket.

Your child's school has registered to take part in the Rocket Challenge this year. Over Term 2 they'll learn about Newton's laws, the engineering design process, and working as a rōpū.

What your child will learn

Your child may bring home some weird and wonderful new kupu and concepts – so it's good for you to be familiar with them too!

Newton's laws of motion

1. An object will remain at rest or keep moving forever at the same speed and in a straight line unless there is another force acting on it. So a rocket needs a force to lift it off the ground.
2. $\text{Force} = \text{mass} \times \text{acceleration}$ – or the more weight an object has, the more force is needed to make it move. A heavier rocket will need stronger forces to make it accelerate.
3. For every action there is an equal and opposite reaction. Exhaust gases are ejected from a rocket engine at high speed and this accelerates the rocket forward.

Engineering design process

They'll learn how to think like an engineer, using the engineering design process:

1. Ask
2. Imagine
3. Create
4. Improve

What you can do to help

- Ask about their rocket building
- Talk about new kupu and concepts they're learning
- Ignite curiosity with some simple experiments at home
- Add another book to your reading list with *The Awesome A-Z Of How Stuff Works* – order from shop.wonderproject.nz

Ignite your wonder today at
wonderproject.nz

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