



# Rocket Challenge

## Modifying your rocket

### Video transcript

Kia ora e hoa mā! It's me again!

You've reached one of the most exciting parts of the challenge – modifying your rocket. And I'm here to guide you through it.

To get prepared, you'll need:

- 2 x 1.5L soda bottles per crew
- Recyclable materials for your fins
- Scissors
- A hot glue gun or strong tape
- Decorations

And, all the knowledge and data you've built so far. Like the features of an aerodynamic rocket!

Step tuatahi: Rocket body

An aerodynamic rocket body is streamlined, which means it's smooth and curved to help it cut through the air.

Grab the soda bottle you'll use for the base of your rocket and check it for any lumps, bumps or holes.

Oh, and make sure it's not too old! Don't want your rocket to crumble under the air pressure.

Step tuarua: Nosecone

A nose cone will help make your rocket even more streamlined.

Create yours using the top of another 1.5 litre soda bottle.

Cut off the top of your bottle around 10cm below the cap or just above the label. You've now got a nosecone!

Place it on the bottom of your base bottle. This will become the top of your rocket.

Don't use anything to stick it down. The air pressure from launch will hold the nosecone in place.

#### Step tuatoru: Weight distribution

Rockets are more stable when there's more weight at the top and more drag force at the base.

So, before you move onto the next step, think about these pātai...

I wonder how I could add more weight to the top of my rocket?

I wonder what other things will impact my rocket's weight?

#### Step tuawhā: Fins

There are four key things to think about when creating your fins. They are:

- Shape
- Size
- Number
- And materials.

Before you create your fins, think carefully about how each of these factors will impact your rocket's performance.

Then, when you're ready, grab your chosen material and draw your fin design with a pencil.

Then, cut it out.

Once you've created your chosen number of fins, make them your own with decorations.

And finally, stick them on with hot glue or sturdy tape!

If you're using hot glue, apply it in a series of dots instead of a straight line. This is called the skip weld method and helps to make sure your rocket doesn't bend out of shape from the heat.

And now, it's your turn.

Kua rite koutou?

Karawhiua. You've got this.