

You've made it to the final lift-off!

For your final flights, you'll measure the distance your rocket travels and time how long it's in the air.

Measurements key

psi Pound-force per square inch

ml Millilitres

m Metres

s Seconds

° Degrees

What you'll need:

- Your improved rocket prototype
- Rocket launcher
- Bike pump – a foot pump is best
- Hi-vis vests and safety glasses
- Bucket of water and measuring cups
- Stopwatch
- Protractor to set launch angle
- Rolling distance counter, measuring tape or long rulers
- Phone or tablet for filming your final flights

Ask: How will our design improvements impact our rocket's flight?

Our conjecture

We think our design improvements will impact our rocket's flight by:

We think this because:

Record your data

Flight	Crew name	Launch angle	Air pressure	Water level (ml)	Time in air (s)	Distance (m)	Launch rating
1		45°	60 psi				☆☆☆☆☆
2		45°	60 psi				☆☆☆☆☆
3		45°	60 psi				☆☆☆☆☆
4		45°	60 psi				☆☆☆☆☆
5		45°	60 psi				☆☆☆☆☆
6		45°	60 psi				☆☆☆☆☆
7		45°	60 psi				☆☆☆☆☆
8		45°	60 psi				☆☆☆☆☆

Double check your data!
 Before you analyse your launch data, check it's accurate by comparing your results with another crew to see if they match.

Does your data match?

Yes!

No

Figure out what the correct data is. Then, make sure the data in your table is accurate before starting your analysis.

Analysis: The furthest distance our class achieved was

The longest airtime our class achieved was

's rocket flew the best because:
 (insert crew name)

Conjecture comparison: Did your results match your conjecture? Why/why not?



Conclusion

Space crews, you've collected heaps of data, learned lots of new things, and launched some out-of-this-world rockets. It's now time to use this information to answer our challenge pātai.

I wonder how rockets fly?

How do your conjectures from Mission Briefs 4, 10 and 12 compare to your final result?

Have you met your challenge goals? Why/why not?

Think about Newton's laws when forming your conclusion!

Newton's first law

An object will remain at rest (not moving) or keep moving forever at the same speed and in a straight line unless there is another force acting on it

Newton's second law

Force = mass x acceleration

Newton's third law

For every action there is an equal and opposite reaction