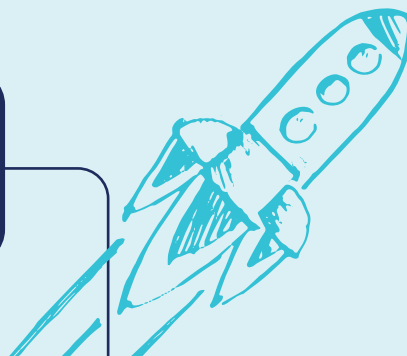




Wonder  
Project

## Rocket Challenge

### Mission Brief 4: First test flights



The countdown to blast off is on!  
This is your chance to test the best  
way to set up your rocket to send  
it sky-high.

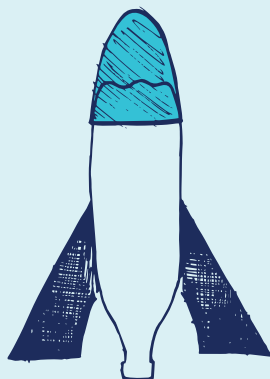
#### Time to test variables!

The variable you're testing is the **water level** in your bottle, and how different water levels impact your rocket's flight.

**Remember:** **Variables** are things that change or can be changed.

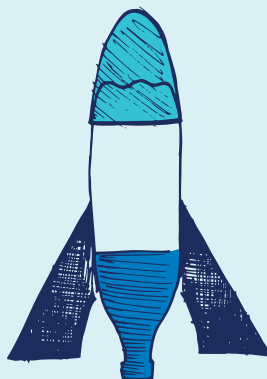
#### Water level

No water



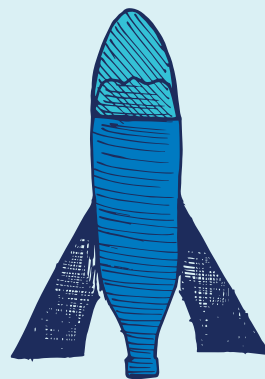
Not enough thrust

'Goldilocks' effect



Just right!

Too much water



Too heavy

#### Mission measurement

You'll need to measure the water level before each launch to get accurate results from your test flights.

What's the best unit of measurement to use? (circle one)

psi / g / ml

What tool will you use to measure the water level?

**Ask:** How will the water level  
impact our rocket's flight?

**Our conjecture:**

We think our rocket will fly best when  
the water level is:

Amount

unit

We think this because:

# All systems are go!

For this series of flights, you'll be launching a plain bottle. With each launch, change the water level and observe how it affects your rocket's flight.



## What you'll need:

- Rocket – empty 1.5 litre soda bottle
- Rocket launcher
- Bike pump – a foot pump is best
- Hi-vis vests and safety glasses
- Bucket of water and measuring cups
- Phone or tablet for filming your test flights

## Ready for lift-off?

### Measurements key

psi

Pound-force per square inch

ml

Millilitres

## Record your data

For this flight, you'll be pumping the air pressure to 60 psi.



Test flight number	Water level (ml)	Air pressure (psi)	Observations	Launch rating (1–5)
Example	10ml	60 psi	Not enough force, rocket didn't launch.	1
1		60 psi		
2		60 psi		
3		60 psi		
4		60 psi		
5		60 psi		

## Analysis:

Our rockets flew best when the **water level** was:

## Conjecture comparison

Does this result match with your crew's conjecture? Why/why not?