



Film Canister Rockets

9 - 12 yrs | 15 min | Stage 3



Mission

Can you predict how long it will take before the rocket launches?

? Wonder & Predict

I PREDICT THAT.....

- ☐ The rocket will launch in less than 5 seconds
- ☐ The rocket will launch in 5-10 seconds
- ☐ The rocket will launch in 10-20 seconds
- ☐ Something else: _____

There are no wrong predictions.

WHY DO YOU THINK THAT?



What you will need



- Film canister with push-on lid



- Water



- Effervescent tablet (Alka-Seltzer)



- Stopwatch (or count aloud)



- Safety Goggles

- Outdoor space



Investigate

Follow the steps carefully while observing.

1 Prepare the Rocket

Fill the canister about one-third full with water.

2 Add the Tablet

Break an effervescent tablet in half and drop it into the canister. Seal the lid

3 Launch and Time It

Turn the rocket upside down. Step back immediately. Time how long it takes before launch. Record results.

My launch time: _____

4 Add More Tablet

Increase the amount of tablet used. Use a whole tablet instead of half a tablet. Predict how long it will take to launch.

☐ Faster

☐ Slower

5 Test Again

Launch the rocket again using the whole tablet. Use a stopwatch or count aloud.

My launch time: _____



Test Results

What did you notice?

- ☐ Launched faster than I expected
- ☐ Launched slower than I expected
- ☐ Saw bubbles forming inside the canister
- ☐ The whole tablet launched faster than the half tablet
- ☐ The whole tablet launched slower than the half tablet
- ☐ I noticed something unexpected



What did you observe?

Describe what happened.

Why do you think this happened?



What happened?

Fill in the sentences using words from the box.

pressure | gas | reaction | lid | launch | tablet

1. The water and tablet began a chemical _____.
2. The reaction produced a _____.
3. The gas built up _____ inside the canister.
4. The _____ kept the gas trapped inside.
5. The rocket did not _____ immediately.
6. Changing the size of the _____ changed the launch time.



The science behind it

Why didn't the rocket launch immediately?

When the tablet touched the water, a chemical reaction began straight away. The reaction produced tiny bubbles of carbon dioxide gas. At first, there was not enough gas to launch the rocket, but more gas was being produced every second. As the gas became trapped inside the canister, the pressure increased.

Why did the rocket suddenly launch?

The lid held the gas inside the canister. Eventually, the pressure became strong enough to push the lid off. When the lid popped free, the gas rushed out (action), and the rocket shot upward (reaction) - Newton's Third Law!

What changed when you used a whole tablet?

A larger tablet can produce gas more quickly. This may change how fast pressure builds inside the rocket. Scientists often change one variable at a time to discover how it affects the results.



Take it further - Rocket Scientist Challenge

Can you improve your prediction?

Scientists rarely rely on just one test.

Launch your rocket three times using the same amount of water and the same tablet size.

Record the launch time each time.

My Results

Launch 1: _____ seconds

Launch 2: _____ seconds

Launch 3: _____ seconds

What did you notice?

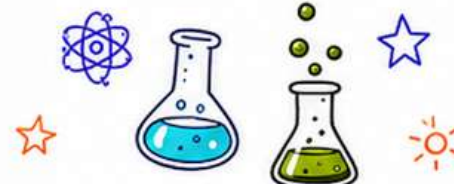
If you launched the rocket 10 times, do you think the launch time would always be exactly the same? Why or why not?

Alex our engineer



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Alex
our engineer



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Mystery missions



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Strange clues



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