

# SCIENCE SHOW OFFS

## EFFERVESCENT TABLET ROCKET

### RESOURCES NEEDED

- **Effervescent tablet**
  - Ask your parents if they have one!
- **Effervescent tablet container**
  - Reuse an empty one.
- **Water**
  - Anything metallic will work too.
- **Cardboard**
  - Best if it's recycled, and not too thick. Card from a cereal package is perfect.
- **Tape, Scissors & Pencil**
- **Large, high-sided container**
  - This will be your launch pad – if you can find a clear one, you'll be able to see inside.

## SET-UP

- This Science Show Off is best to be done outdoors. Clear a table or a flat piece of ground to set up your launch pad. Place the high-sided container on the area, bottom down, ready for your rocket.

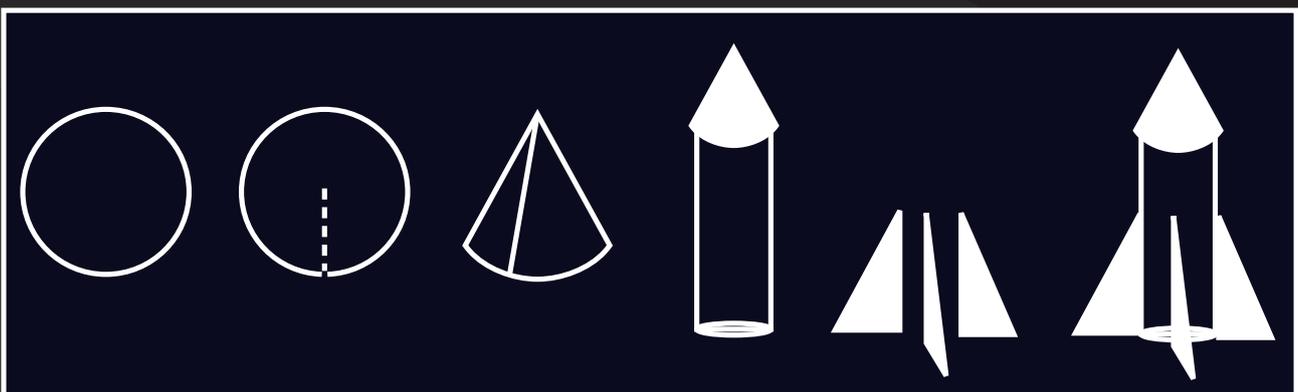
If you are indoors, make sure there is nothing fragile around that could be hit by the rocket, and that the ceiling is high enough!

## STEP 1

- To make your rocket more aerodynamic, create a cone for the top and fins for the sides.

You can make the cone from a circle (approximately 5cm in diameter) cut from cardboard. Mark the centre of the circle with a dot. Cut from the edge into the centre of the circle. Take the two edges and bring them together until they overlap, making a cone. Keep making the cone smaller until it will fit the top of your tube, like a hat! Fix the edge with tape and then tape it on to the enclosed end of the tube (not the end with the lid).

Take more cardboard and cut three triangles that have a right angle, so that the long edge can be stuck against the tube, while the short bottom edge is flat to the ground. Each triangle should be about 5 cm high and 2cm wide. Tape it length ways down the longest side of the triangle so that half of the tape overlaps. Take the part that has overlapped and stick it on the tube, at the opposite end from the cone. Tape the other side of the triangle, so that it is firmly attached and repeat this process with the other two triangles so they are evenly placed around the tube, as shown in the illustration.



## STEP 2

- Add a tablespoon of water into the empty tube part of the rocket.

## STEP 3

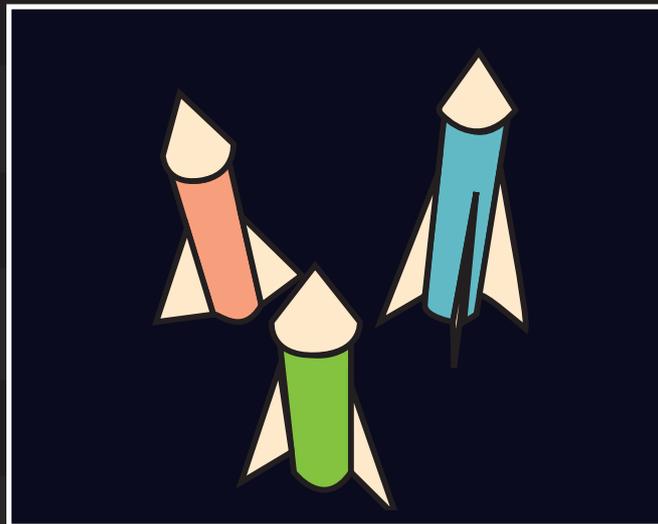
- Break an effervescent tablet into four pieces. You will only need one quarter of it for each launch.

## STEP 4

- Put a quarter of the effervescent tablet into the rocket with the water, and put the lid on as quickly and as tightly as you can.

## STEP 5

- Carefully place the rocket in your launch pad container, step back, and wait for it to launch!



## DISPOSAL AND CLEAN UP

- Use a towel to dry the water that spills when the rocket launches. All other materials can be reused!

## RISK MANAGEMENT

### RISK

Rocket can hit cars, pets, people etc.

Rocket could fall on its side before it launches due to wind or vibrations. This means that it could launch directly towards people.

### MANAGING THE RISK

Be aware of your surroundings when launching rockets. Ask everyone around to watch the rocket as it flies, so they can move away if it drops in their direction.

Placing the rocket into a high-sided container means it will be contained if it falls over. The container will also collect the spilt water.

## SCIENCE EXPLAINED

The chemical reaction of the tablet with water releases carbon dioxide gas, which builds up pressure in the closed tube. When the pressure gets great enough to pop the lid, it pushes down on the ground. This results in an upwards push on the tube, thus launching the rocket! This is Newton's third law, which states that for every action there is an equal and opposite reaction.

## REAL WORLD EXAMPLES

Newton's laws apply to every movement we see around us, from jumping to driving! You can see Newton's third law of motion in action when you are rowing in a boat. You use your paddle to move the water backwards, and as a result, your boat moves forward.

## PARENTAL GUIDANCE

Science Show Offs should take place with appropriate adult supervision.

## COMPETITION

To enter the Science Show Offs Competition, go to;  
[otagomuseum.nz/scienceshowoffs](http://otagomuseum.nz/scienceshowoffs)