



How to Build a Bottle Rocket



It takes some of the brightest scientists in the world to launch a rocket into space. However, by using the same principle they do – Newton's Third Law of Motion – you can launch your very own bottle rocket.

Step 1:

Roll a piece of paper or thin card into a cone that will fit over the bottom of your bottle. This will be the nose cone of the rocket which will make it more aerodynamic.

Wrap the nose cone with duct tape. This will make it stronger and more water-resistant.

If you want to add a bit of colour to your rocket, you can use coloured duct tape to wrap the nose cone or paint over the top of it.



You will need:

Large empty plastic soft drink bottle
Card: some thick, some thin
Adhesives: sticky tape/duct tape/glue
Water

Step 2:

Attach the nose cone to the bottom of the bottle. You can glue it or use duct tape.

Try to put it onto the bottle as straight as you can and make sure it is secure.



Step 3:

Cut out four fins from the thick card. Turn the bottle upside down and tape the fins to the neck end. Your rocket should be able to stand upright on its fins with enough room underneath to attach the pump valve. *The bottle opening should be at least 7cm off the ground.*

Feel free to use coloured or patterned paper to design the rocket attachments.



Step 4:

Quarter-fill the bottle with water and put the lid on for transportation to school.

Step 5: (Taking place at school on the Oval) - Launching the bottle rocket.

Make sure you are in an open, outdoor area. The rocket will shoot up quite fast and high so remove any obstructions and warn anyone around you before you launch it. To launch the rocket:

- Insert the rubber inflation valve into the bottle opening. Make sure it fits securely and tightly.
- Place the rocket on the ground so that it is standing upright on its fins with the bottle opening facing down.
- Begin pumping air into the bottle. The rocket will go off when the stopper can no longer withstand the pressure building up in the bottle.
- When the rocket launches, the water will shoot out everywhere so make sure everyone is standing back a safe distance.
- Do not approach the rocket once you start pumping, even if it appears that nothing is happening with the launch, as this can lead to injury.

HOW DOES THIS WORK?

As you pump air into the bottle, the pressure builds up inside. Eventually, the force of the air pushing on the water is enough to push the cork out of the bottle. The water rushes out of the bottle in one direction and the bottle pushes back in the other, which results in the bottle being launched skyward.

As you pump, pressure builds inside bottle

Water pushes out, launching the rocket

