

# Scouting at Home



Suitable for: Joey's | Cubs | Scouts

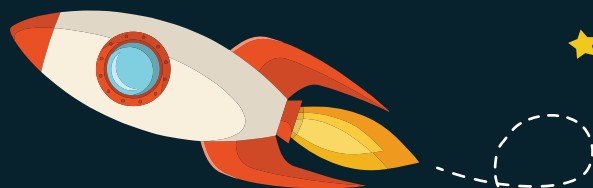
Time needed: 45 minutes



Creative  
Challenge Area

## Launch a rocket

Make a rocket out of baking soda and vinegar and see how high it can soar!



### You will need

- Large plastic bottle
- Three sturdy drinking straws
- Sticky tape
- A cork
- Cardboard
- White vinegar
- Baking soda (bicarbonate of soda)
- Funnel
- Scissors
- Paper towels

### Instructions

**1** Take a bottle and tape three straws to it. They should be positioned at the drinking end so they act as a stand for the upside-down bottle. The straws are secured in place by wrapping tape around both them and the bottle several times.

**2** Next, draw four rocket fins on a piece of cardboard and cut them out. Wrap the fin in a layer of tape, to retain its shape. Stick a fin to each side of the bottle using tape.

**3** Make a cone out of cardboard for the top of the rocket, securing it with tape. It should fit over the bottom of the bottle. Secure the cone to the bottle using tape.

**4** Next, make sure the cork fits the neck of the bottle correctly. If necessary, use some tape to make it fit more securely. The cork needs to be tight enough to allow pressure to build up in the bottle once baking soda is added, but not so tight it won't be forced out by the pressure.

**5** Take the bottle outside, along with the baking soda, paper towels and vinegar. Find a safe place to launch the rocket, keeping away from any walls and windows.

**6** Pour a tablespoon of baking soda into a paper towel. Wrap the soda with the towel, making a sausage shape so it can be inserted in through the neck of the bottle (but don't do this yet). The paper towel acts as a time release, allowing enough time to step away from the bottle before it takes off. Make sure to stand at least two meters away from the rocket.

**7** Pour the vinegar into the bottle until it is half full, then insert the parcel of baking soda. At the same time, replace the cork swiftly and then turn the bottle upside down. Step back quickly and watch as the rocket launches into the air!

### Outcome

What is the chemical reaction that occurs within the bottle? The baking soda contains sodium bicarbonate and the vinegar contains acetic acid. When these two elements are mixed, carbon dioxide forms and builds up inside the corked bottle. The pressure forces the top off and causes the rocket to 'fly'.

### Taking it further

Why is the shape of the rocket important for flight, especially the fins and the nose. What would you change about the design to make the rocket reach a certain height. If you were to design a rocket that had the capacity to carry a fragile object, such as an egg, what kind of design changes would that need?

