

# become a ROCKET SCIENTIST

## You will need:

- film canister or similar small plastic container with a tight fitting lid
- baking soda
- vinegar
- paper
- tape
- scissors

## What's happening?

Combining baking soda and vinegar causes a chemical reaction that produces carbon dioxide gas. Because the canister is sealed, the gas cannot escape. Pressure builds up until the lid pops off!

## But why does the rocket go up?

Newton's Third Law says "for every action, there is an equal but opposite reaction." The gasses are pushed out the bottom of the canister (the action). As a result, the rocket is pushed upwards (the opposite reaction). The more pressure is able to build up before the lid pops off, the faster the gasses are pushed out, and the higher the rocket flies!

1 Cut out a circle for a nose cone and triangles for wings. Cut from the edge to the center of the circle.

2 Curve the circle around itself to form a cone and secure with tape. Tape it in place on the closed end of the canister.

3 Tape 2, 3, or 4 wings evenly spaced around the canister.

4 Mix some baking soda with a few drops of water to make a paste and fill the indentation inside of the lid. The paste should be wet enough to stick, but not so runny it flows out of the lid.

5 Find a flat spot outside with plenty of space above and around you.

6 Add small amount of vinegar to the canister. Make a note of how much you used.

7 Holding the rocket firmly, pointy end down, snap the lid on.

8 Turn the rocket over (pointy end up), give it a shake, and place it on the ground. Step back and watch how high it goes!

**[CAUTION:** If the launch fails, do not stand over the rocket. Approach it low, and from the side, give it another shake, and step back.]

9 How high did your rocket fly? Can you make it fly higher? Experiment!

