He Ngohe Pūtaiao Kati Mahana
Science Experiment

Learning Resource
Worksheet

Taku ingoa (name):

Ko te Whakamakoha Poihau ki te Hauhā
Blowing up Balloons with CO_2

Carbon dioxide is invisible. It comes out of your mouth every time you breathe. You can make it and capture it in this simple experiment.

Contain the carbon dioxide given off by the baking soda and lemon juice reaction by funnelling the gas through a soft drink bottle and into your awaiting balloon!

Materials:

- ☐ Balloon
- ☐ About 40mL of water (about 2 ½ tablespoons)
- ☐ Soft drink bottle
- ☐ Drinking straw
- ☐ Juice from a lemon (or 1 Tablespoon vinegar)
- ☐ 1 teaspoon of baking soda

Procedure:

1. Before you begin, make sure that you stretch out the balloon to make it as easy as possible to inflate.
2. Pour the 40ml of water into the soft drink bottle.
3. Add the teaspoon of baking soda and stir it around with the straw until it has dissolved.
4. Pour the lemon juice in and quickly put the stretched balloon over the mouth of the bottle.

Results:

If all goes well, then your balloon should inflate! Adding the lemon juice to the baking soda creates a chemical reaction. The baking soda is a base, while the lemon juice/vinegar is an acid.

$$CH_3COOH \text{ (Acetic Acid)} + NaHCO_3 \text{ (Sodium Bicarbonate)} \rightarrow$$
$$CH_3COONa \text{ (Sodium Acetate)} + H_2O \text{ (Water)} + CO_2 \text{ (Carbon Dioxide Gas)}$$

When the two combine they create carbon dioxide (CO_2). The gas rises up and escapes through the soft drink bottle, it doesn't however escape the balloon, pushing it outwards and blowing it up.

Notes and observations: