SUITE SCIENCE

Marshmallow Squisher!

CLASS: 4th – 6th | 10 mins | PHYSICS

Learning Objectives - WALT (We are learning to…)

1. Understand the effects of pressure
2. Use mechanical devices to use air pressue to change the volume of materials

Curriculum links
Temperature and Pressure

- **Science** – Learning about materials and how they behave. How temperature and pressure can change how materials behance.
- **Physics** – Pressure relative to volume at constant temperature

Fun Nature Experimenting Chemisty

Teaching Methodologies

- **Talk and Discussion** - listening, questioning
- **Collaborative/Cooperative Learning** - group work
- **Active Learning** – Through observation and participation
- **Skills through Content:** observing, predicting, describing, recording,

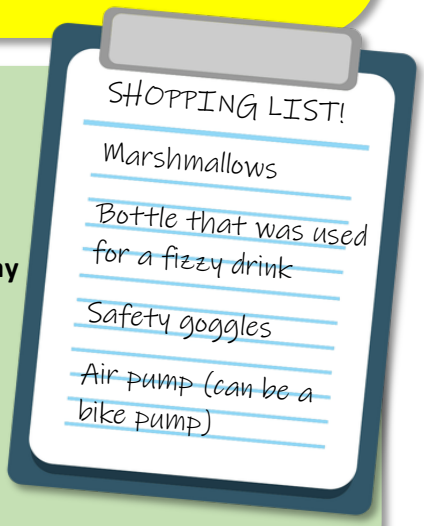
Introduction

Mmmm Marshmallows are just fluffy wonderful puffs of delight. There really isn't very much to them, they're just sugar and air. You use them to demonstrate how pressure and volume and inversely proportional to each other.

Whaaaa?? That mean when the value of one goes up the value of the other goes does. So if you increase the pressure on something is should get smaller. It also means that the volume goes up the pressure goes down. Imagine a balloon going deeper under water. At about 10 metres below the surface it'll be half the size it was originally.

Activity

- **This is the easiest experimental procedure we have. The difficulty is not eating the marshmallows before you're done!**
- **Put the marshmallows into the bottle and fill them up to at least ¾ the way up the side. Use sweets that will just fit inside the next of the bottle but don't cut of tear the marshmallows as they will stick to the side.**
- **Attached the air pump to the top of the bottle and start adding air. This will increase pressure and you should see the marshmallows decrease in size.**
- **When you're ready, slowly release the pressure and allow for the air to come out. The marshmallows with regain their original size.**



The marshmallow shrinks when you add air inside but then regains its original size when you release the top. The structure of a marshmallow is such that there are many bubbles of air trapped by sugar molecules. There is a fixed number of air molecules inside the marshmallow–bottle system.

As the air is pushed in, the pressure inside the bottle increases and the bubbles of air decrease in size, therefore the volume of the marshmallow decreases. Exactly the opposite then occurs when the top is opened again. Eventually the marshmallow responds less well because bubbles of gas inside it have been punctured because their internal pressure is much greater than the external pressure.

REFER BACK TO YOUR **WALT** GOALS AND HAVE THE CHILDREN SHARE WHAT THEY LEARNED TODAY AS WELL AS RECAPPING ON ANYTHING THEY MISSED!

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