

SCIENCE FOR ONE

bottle

Activities for doing practical science while respecting social distancing

- * Each activity sheet is based around **one easy to obtain resource**
- * Children **work independently** but should be encouraged to talk in pairs or groups
- * Any additional resources needed are minimal and easy to provide for each child
- * Activities are **linked to topics** and suggestions are given for **three age ranges**
- * The activities **can be done outside**.

Science with plastic bottles

Plastic bottles are a great science resource. They can be upcycled into a rain gauge or planted up to make a bottle garden or a terrarium. They are also useful, full or empty, for a range of science investigations.



AGE 5-7 EXPLORATION BOTTLE

Give the children time to explore their resources and describe their properties. Encourage them to talk about:

- whether they can bend, twist or tear them
- what they are made from and whether they are similar or different

Explain to the children that they are going to create an exploration bottle by putting scraps of paper, pieces of pipe cleaner and a paper clip into the bottle and putting the lid on. Challenge them to observe and describe:

- What the materials sound like when they shake the bottle
- What happens to the materials when they move a magnet around the outside of the bottle

The children could sort their materials according to their observations, using a simple table or pre-prepared Venn diagram. They could also find and add other materials to the bottle, making predictions about how these will change the sound when they shake the bottle, and about what will happen with the magnet.

Resources per child

- Empty plastic bottle with a lid
- Small pieces of pipe cleaner
- Paper clip
- Tissue paper
- Magnet

Science explored

- Materials
- Forces and magnets

Interesting links

- [Exciting magnet experiments](#)
- [Material workshop](#)

Important note: The Primary Science Teaching Trust is not liable for the actions or activity of any person who uses the information in this resource or in any of the suggested further resources. The Primary Science Teaching Trust assumes no liability with regards to injuries or damage to property that may occur as a result of using the information on this sheet and recommend that a full risk assessment is carried out before doing any of the activities suggested.

AGE 7-9 ROLLING BOTTLES

This activity should be done outside. The children should write their name on their bottles. Explain that their challenge is to roll a bottle past a target line (drawn with chalk or made with string) and that they are first going to try this with the full bottle. Encourage the children to try this a few times and discuss how much force they used each time.

Ask the children to transfer all the water from the full bottle into their empty bottle and try rolling the empty bottle to cross the target line. Prompt them to discuss if they needed more, less, or the same amount of force as they did with the full bottle. Then challenge the children to explore what happens with different amounts of water in the bottle.

To make more accurate comparisons, the children could set up a ramp with a gentle incline, using some stiff card and a pile of books. They can then hold the bottle at the top of the ramp and simply release it and observe how far it travels from the bottom of the ramp.



Resources per child

- 2 plastic bottles with lids: one full of water, one empty
- Marker pen
- Chalk or string to mark a target line
- OPTIONAL – thick card and books to make a ramp

Science explored

- Forces
- Testing predictions

Interesting links

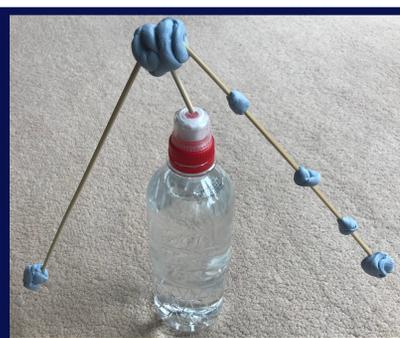
- [Playground physics app](#)



Stick a 2-3cm piece of wooden skewer into a blob of sticky tack or moulding putty.

Stick the two skewers into the blob at 45 degree angles to create a structure.

Explore adding sticky tack at different points along the skewers to balance the structure.



Resources per child

- Plastic bottle filled with water
- Large blob of sticky tack or moulding putty
- 2 wooden skewers

Science explored

- Forces – centre of mass

Interesting links

- [Make a balancing butterfly](#)
- [Making a mobile](#)

AGE 9-11 STABILITY CHALLENGE

If you can, start by watching this [Royal Institution balancing sculptures video](#) to see how to create a balanced structure on their bottle lid. The children should start by breaking off a 2-3cm piece of skewer and sticking it into a blob of sticky tack or moulding putty. Challenge them to balance this, skewer end down, on the lid of their plastic bottle; they will find it impossible! Encourage them to think about how they can make it balance by experimenting with:

- Adding two skewers to either side of the original blob
- Placing sticky tack on the end of the skewers
- Adding sticky tack to different points along the skewers

The children should discuss how they made their structure balance, and why they think this works.

HEALTH AND SAFETY NOTE: take care with the skewers, especially near eyes.