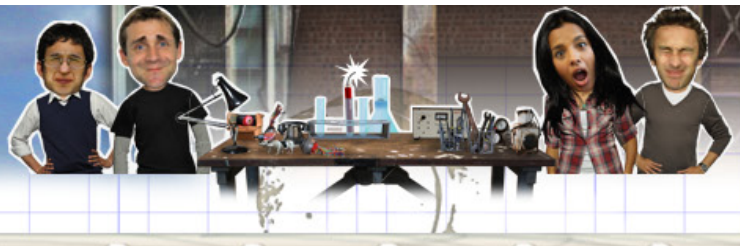
bang goes the theory

Get ready to put science to the test



BBC one

WATER BOTTLE ROCKETS

Isaac Newton's laws of motion are anything but dry old physics when you can soak your friends launching these rockets.

These notes accompany the hands-on video guide and detailed explanation and safety tips at: bbc.co.uk/bang/handson

Safety: Adult supervision required. Please do this experiment outside in an open space.

WHAT:

- A 2 litre plastic bottle
- A wine cork that fits snugly into bottle spout
- A valve from a bicycle inner tube – the longer the valve, the better
- A hand or foot pump that fits the valve
- Something that can hold the bottleneck down at an angle to the ground – a garden fork works well
- Tap water

HOW:

Make a hole through the cork and push the valve through. It should fit snugly and go all the way through.
Prepare your 'launchpad'. One good method is to plant a garden fork at a low level in the ground supporting the bottleneck through the handle.
Fill the bottle approx 1/4 full of water. Seal the bottle with the cork and valve.
Check surrounding area is clear.
Place bottle into 'launchpad' neck down.
Attach valve to pump and begin to pump gently and steadily.
Keep pumping until the cork pops and your bottle rocket takes flight!

WHY:

This is how your rocket works: the water in the bottle is forced downwards and the rocket therefore flies up into the air.

TIP:

Decorate your rocket with fins or try different-shaped bottles or varying amounts of water to see if it can make your rocket fly further.