# Full Proof – Surface Tension

**ABC ME screening details: Thursday** 4 June 2020 at 12:10pm

This episode can also be viewed on [ABC iView](https://iview.abc.net.au/show/full-proof).

**Key learning areas:** science and technology

**Level:** upper primary

**About: Maureen is** 12 years old & lives at a tulip plantation in North of the Netherlands. She regularly finds water on the surface of the tulip leaves. In Full Proof, she experiments with water drops and surface tension.

## Before the episode

1. Water is needed to sustain life. Without water, there is no life on Earth. Write or draw some of the ways we use water.

## During the episode

1. During the episode you will see an insect called a water strider. Make notes or draw a sketch to show what you notice about this insect on water.

| Notes | Sketch |
| --- | --- |
|  |  |

## After the episode

1. **Challenge:** Make an object walk on water

**Introduction**

**In this episode Maureen explored a ‘property’ of water – surface tension. You might remember a ‘property’ describes how an object looks, feels or acts. For example, a property of a liquid like water is that it can flow. A property of clear glass is that it’s transparent – you can see through it.**

**You will model this property of water (surface tension) in your own investigation.**

**Materials**

* Paper clips or similar item (safety pins)
* Container of water
* Strips of tissue paper

**What to do**

* When the water is very still, carefully lower a dry paper clip onto the surface of the water. You need to do this step very slowly. If you find this too hard, you can get a strip of tissue paper and place the paper clip on this and very carefully lower the strip of tissue with the paper clip on the water.
* If you can float one pin or paper clip, try another. How many could you float on the surface of the water before they all sank?

**Draw a labelled picture/diagram of your investigation**

**Explanation**

As Maureen explains in this episode, there is a ‘skin’ on the surface of the water where the water molecules hold on tight together. The paper clip is not really floating on the surface; it is sitting on the surface. It is being held up by the surface tension forces that exist between the water molecules. What happens to the surface tension if you modify the investigation by adding detergent, salt or oil? Find out by completing the next challenge.

1. Repeating your investigation by changing variables

**Materials**

* Paper clips or similar items Salt
* Container of water Detergent
* Strips of tissue paper Oil

**What to do**

Repeat the investigation in Activity 1, but this time, you will investigate what happens if something (variable) is changed. Remember, in science, you can only change one variable at a time. For example, if you add detergent and oil to the water at the same time and discover that you can’t float the paper clip, you won’t know if it is due to the detergent or oil.

Make sure you only investigate one variable at a time.

Before doing this investigation, you need to write the question you will investigate. For example: ‘What happens to the surface tension if I add detergent to the water?’

**Recording your investigation**

Question: What happens to the surface tension if …

Purpose: To find out

Materials: I used these things: …

Method: This is what I did (record this in steps)

Results:On a separate piece of paper describe and draw a picture to show what you found out

# NSW Teacher notes

This is an optional standalone resource that could supplement student learning. The activities align with syllabus outcomes across stages and can be modified to meet the needs of your students. Students can complete the activities while learning at home and in the classroom. All activities can be completed without access to the internet or a device. Teachers could collect student work to offer feedback and as evidence of learning.

## Learning intentions

* To conduct an investigation about surface tension.

## NSW Science and Technology K-6 Syllabus outcomes

|  |  |
| --- | --- |
| Strands | Stage 3 |
| Skills  | plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions (ST3-1WS-S) |
| Physical World  | explains how energy is transformed from one form to another (ST3-8PW-ST) |

[NSW Science and Technology K-6 Syllabus](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/science/science-and-technology-k-6-new-syllabus) © 2017 NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales. See the [NESA website](https://educationstandards.nsw.edu.au/wps/portal/nesa/mini-footer/copyright) for additional copyright information.