

Grow a Rainbow Experiment

We have seen many images of rainbows recently - they are used to symbolise the NHS and the hope for a better future. In the Bible, God sent a rainbow to Noah following the flood as a sign of his promise to us:

And God said, "I am making an agreement between me and you and every living creature that is with you. It will continue from now on. This is the sign: I am putting my rainbow in the clouds. It is the sign of the agreement between me and the earth. When I bring clouds over the Earth, a rainbow appears in the clouds. Then I will remember my agreement. It is between me and you and every living thing. Floodwaters will never again destroy all life on the earth. When the rainbow appears in the clouds, I will see it. Then I will remember the agreement that continues forever. It is between me and every living thing on the earth."

Genesis 9



You can see a rainbow come together in this simple science experiment!

What is the science behind this experiment?

This science experiment is a great example of **chromatography**. Chromatography is a way of separating out a mixture of chemicals.

Capillary action makes the marker dye move up the paper towel. The water moves upward through the paper towel, lifting the washable dye molecules with it. Since the washable markers are water based, they disperse in water.

Set up a few different scenarios and hypotheses. For example, if you were to try this experiment without any dye, you would still see the water rising upwards towards the centre of the paper towel.

If you were to try this experiment with permanent markers it would not work. This is because the markers are not water based (they are alcohol based) so the dye in the marker does not travel with the water.

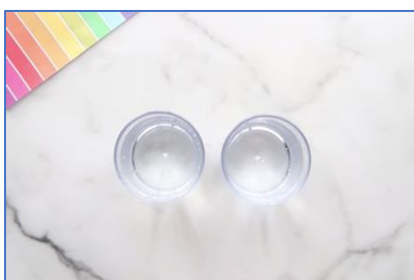
Instructions

You will need: A piece of absorbable kitchen towel
 2 cups, $\frac{3}{4}$ full with water
 Washable markers (not permanent)
 Scissors
 Ruler

1. Fold the kitchen paper in half. Trim the length so that it is no longer than 7.5 inches (otherwise the water may not travel far enough for the rainbow to join up).
2. Draw rectangles of colour at each end. Make sure to colour them in well so that there is plenty of ink!



3. Place the paper towel in the cups, with one end in each cup. Do not place them too deeply in the water or the ink may dissolve instead of travelling up the towel.



4. The ink will travel up both ends of the paper towel and after 10-15 minutes will meet in the middle to form a rainbow!

