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Activity Booklet

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The Open
University



Basic Science: Understanding Experiments

Activity booklet

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Experiment 1

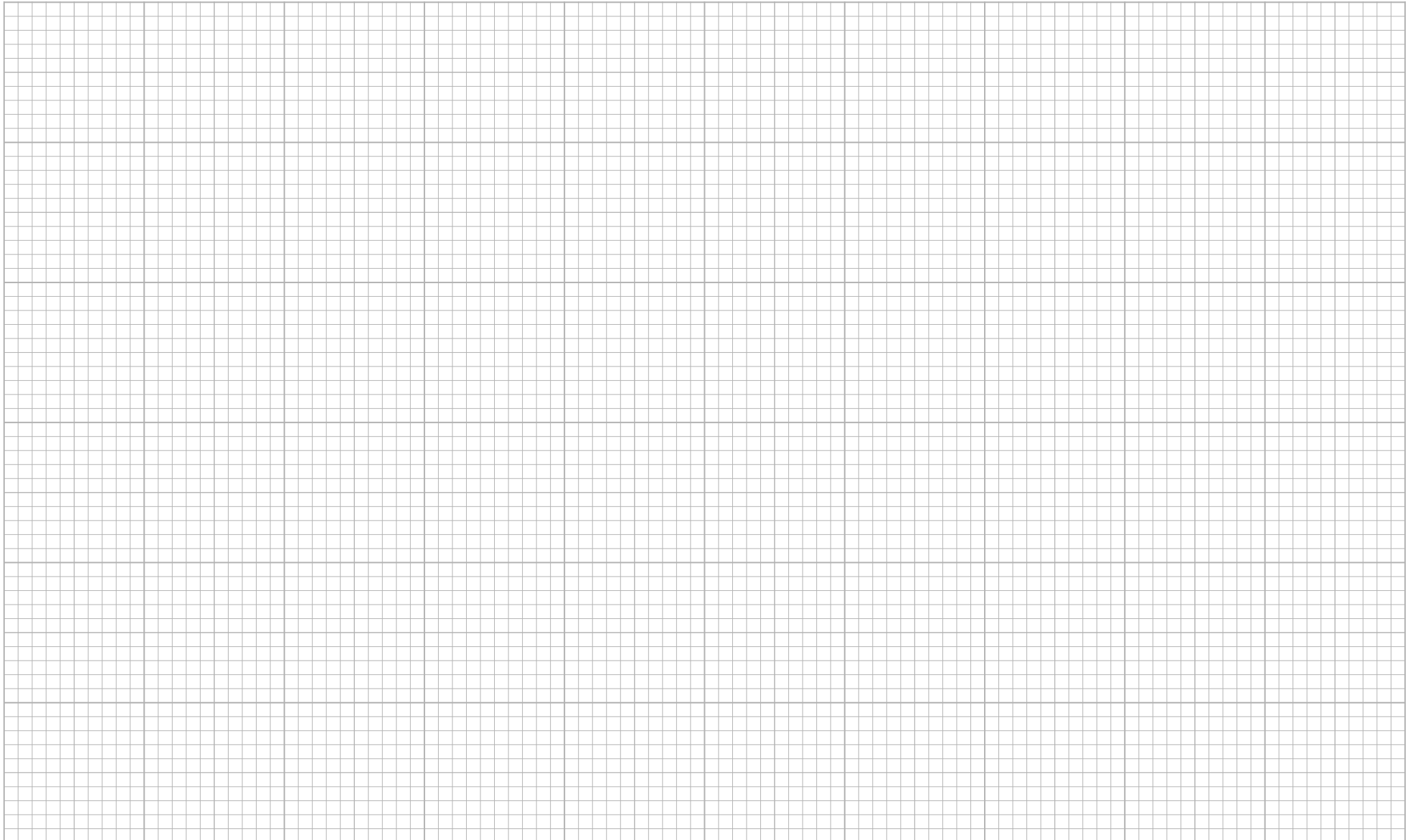
Potato Experiment

You will need:

A potato, kitchen scales, a microwave or conventional oven, your activity booklet, a pen, oven gloves and a ruler.

Instructions:

1. Weigh your potato and note down the start weight in grams.
2. Microwave the potato for one minute and weigh it again.
3. Repeat Step 2 until the weight of the potato remains constant between readings.
4. Use the graph paper to plot your results.



Experiment 2

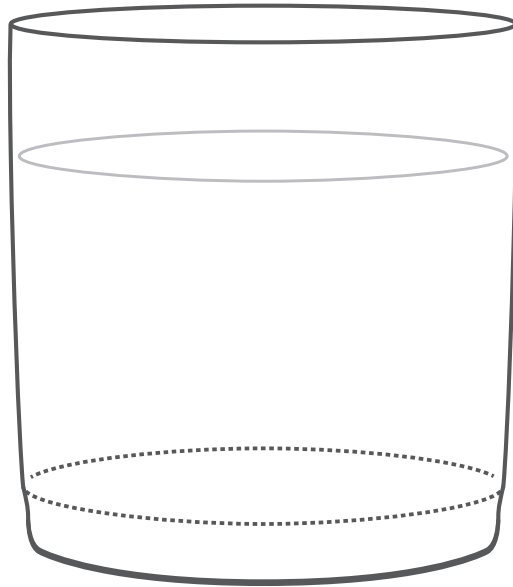
Cucumbers and Osmosis

You will need:

Tap water, distilled water, salt, a cucumber, kitchen scales, a vegetable peeler, a knife, kitchen towels, two large glasses and a tablespoon.

Instructions:

1. Peel the skin off the cucumber and cut two equal slices.
2. Fill a glass with tap water and add two tablespoons of salt to make a saline solution.
3. Fill another glass with distilled water. If you don't have distilled water, you can use boiled water from the kettle, but you'll have to make sure it's cooled down before you use it.
4. Label your saline solution and distilled water glasses.
5. Weigh the cucumber slices and drop one in each glass.
6. After an hour, remove the cucumber slices from the water, pat them down with kitchen towels to remove surface water, weigh the slices and note down their weights.
7. Repeat the previous step.
8. Leave the experiment overnight and reweigh the cucumber slices.



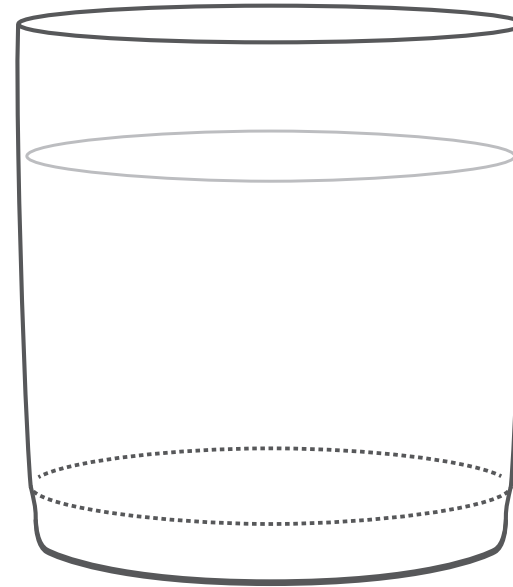
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Starting weight

Weight (1 hour)

Weight (2 hours)

Weight (..... hours)



.....

Starting weight

Weight (1 hour)

Weight (2 hours)

Weight (..... hours)

Experiment 3

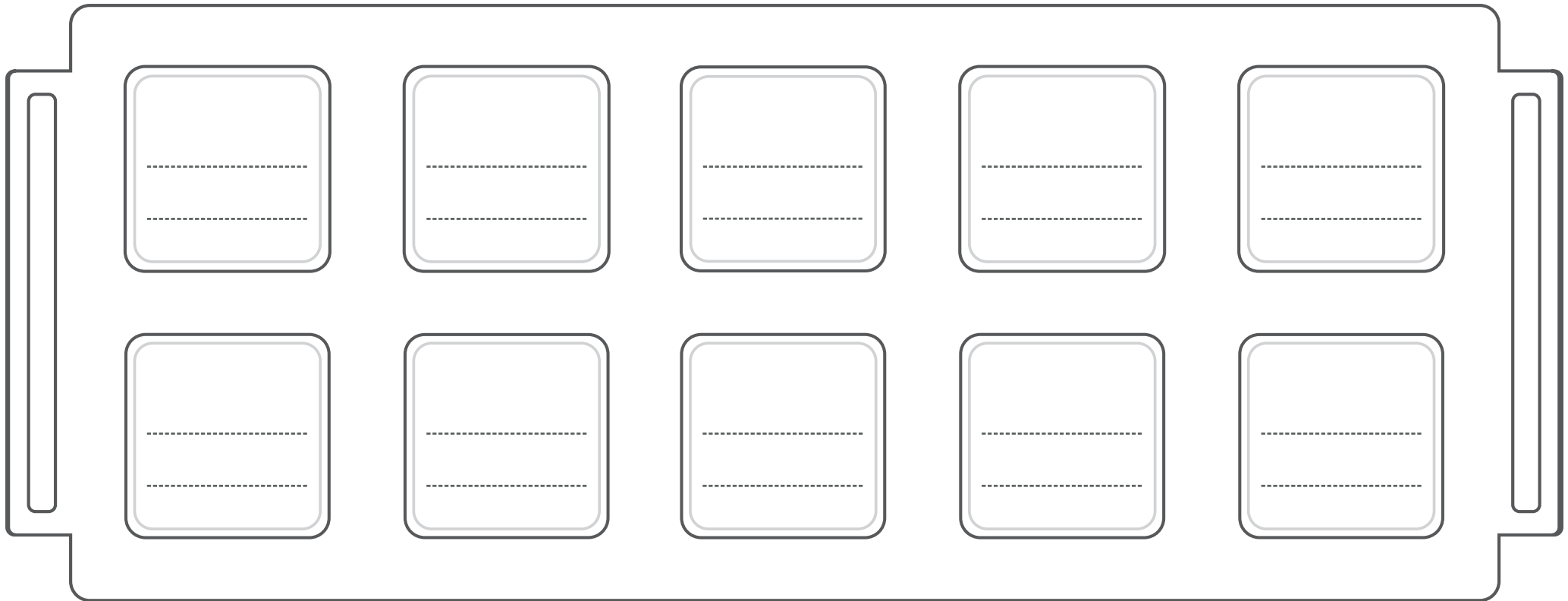
Ice Tray Experiment

You will need:

An ice cube tray, tap water, salt water (add a couple of tablespoons of salt to a glass of tap water), olive oil, another liquid of your choice, four glasses and a freezer.

Instructions:

1. Fill up the individual compartments of your ice cube tray with the liquids (tap water, a saline solution, oil and the liquid of your choice) and label which is which. Leave overnight in the freezer.
2. Fill four glasses with the same liquids (tap water, saline solution, oil and your chosen liquid) and clearly label these.
3. Remove the frozen cubes and drop them in their corresponding liquid.
4. Record your results.



Experiment 4

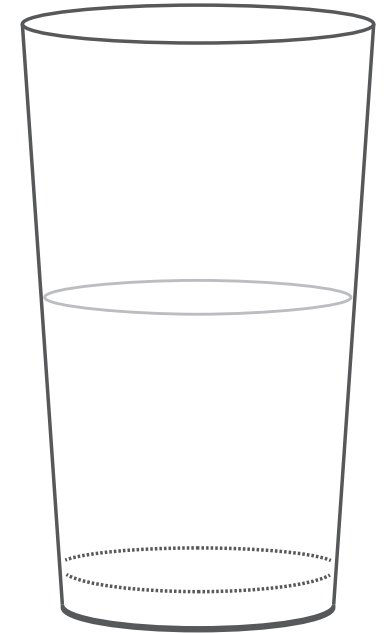
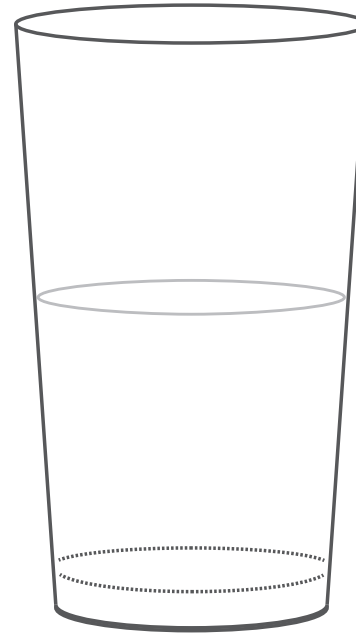
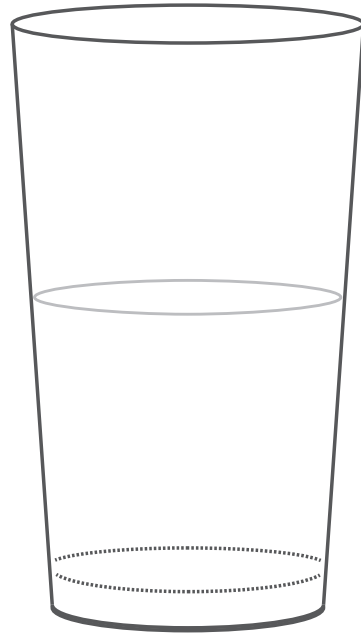
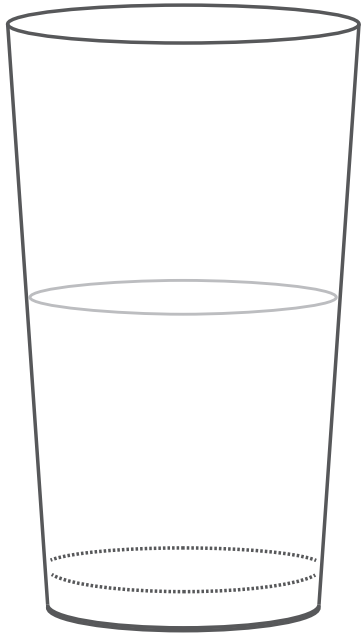
Yeast Experiment

You will need:

Four large glasses, four sachets of Baker's yeast, sugar, tap water at room temperature, tap water at body temperature, tap water; boiled and left to cool for a few minutes, cling film, a marker pen, a tablespoon.

Instructions:

1. Take four glasses and add a spoonful of sugar to each one.
2. Add the same volume of water to each glass. To the first glass, you should add cold water. To the second glass, boiling water. To the third and fourth glasses, you should add warm water.
3. Add a sachet of baker's yeast and measure the level of water for each glass.
4. Cover one of your warm water-filled glasses with cling film.
5. After five minutes, measure the thickness of the foam in each glass.
6. After five more minutes, measure the thickness of the foam again.



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Foam thickness (5 mins)

Foam thickness (10 mins)

.....
Foam thickness (5 mins)

Foam thickness (10 mins)

.....
Foam thickness (5 mins)

Foam thickness (10 mins)

.....
Foam thickness (5 mins)

Foam thickness (10 mins)

Experiment 5

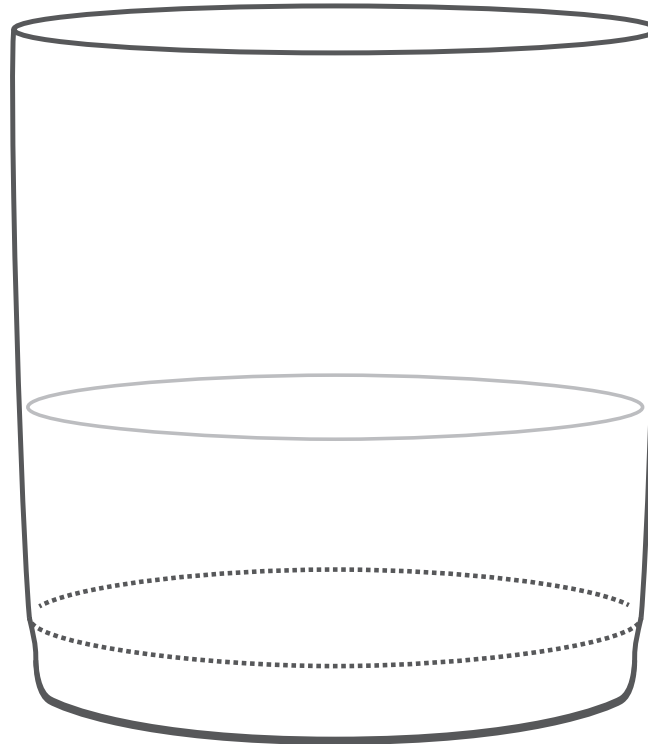
Kiwi Experiment

You will need:

A kiwi fruit (or another fruit or vegetable of your choice), a peeler/knife, a fork, methylated spirit (chilled in a freezer for 30 minutes), a fine sieve or filter paper, a couple of bowls, salt, water, washing-up liquid, teaspoon, measuring beaker, a couple of glasses, a paper clip.

Instructions:

1. Put your alcohol in the freezer half an hour before you start the experiment.
2. Peel the skin off your fruit or vegetable. Discard the skin, and chop up and then mash the rest in a small bowl.
3. Mix 2g of salt with 100ml of water in a beaker and slowly add 5g of washing up liquid.
4. Add this mixture to your fruit and vegetable and continue mashing.
5. Place your bowl in a larger bowl or warm water for 15 minutes.
6. Strain your mix into a glass through a strainer.
7. Gently add the alcohol to your glass of kiwi DNA.
8. Use a paper clip to remove the DNA, which has appeared at the join between the two liquids.



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