Combined Science - Biology - KS4

Cell Biology

Osmosis Required Practical Part 1

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OAK NATIONAL ACADEMY

Osmosis

Osmosis

The movement of water from a region of higher water concentration to a region with lower water concentration.

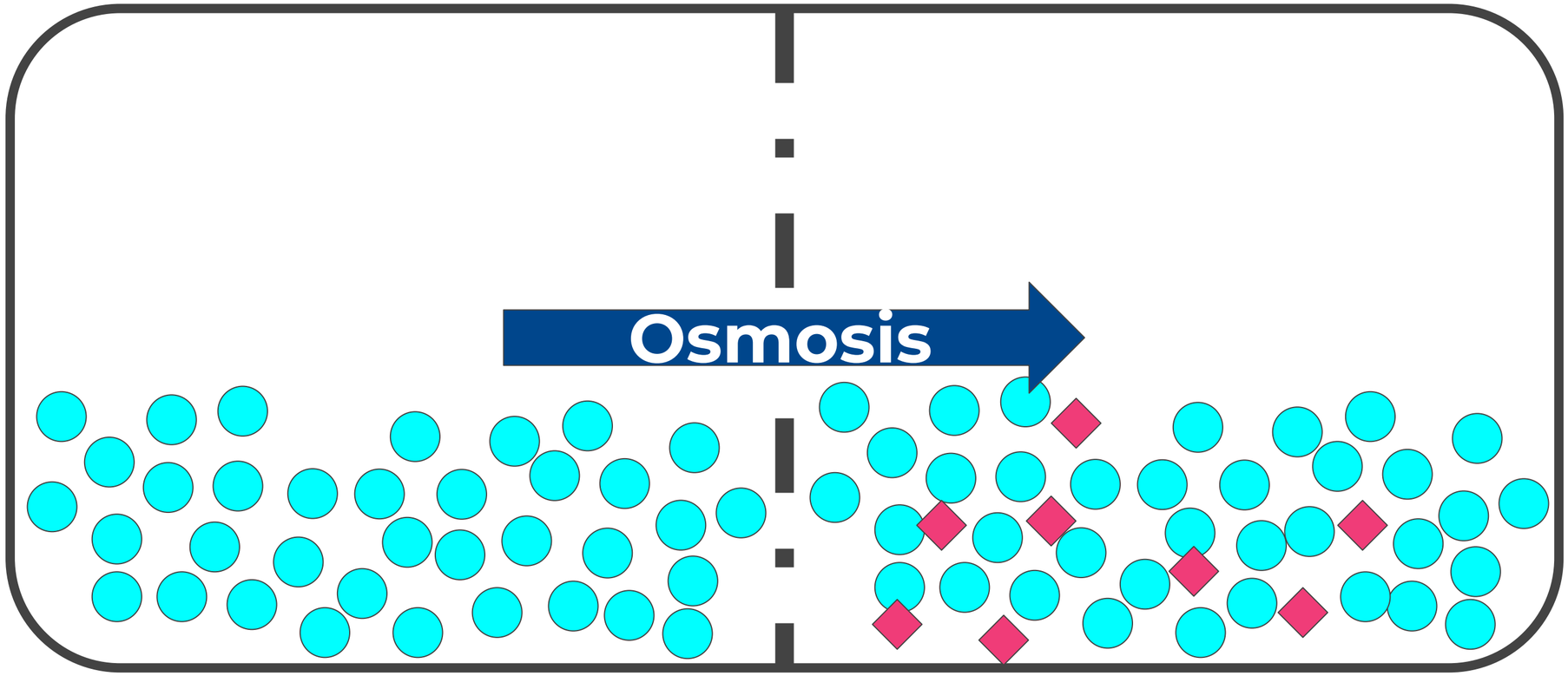


Image by Miss C. Wong, Oak National Academy

Pause the video to complete your task

Quick concept check

1. What is osmosis?
2. Does it require energy?

Resume once you’re finished

Pause the video to complete your task

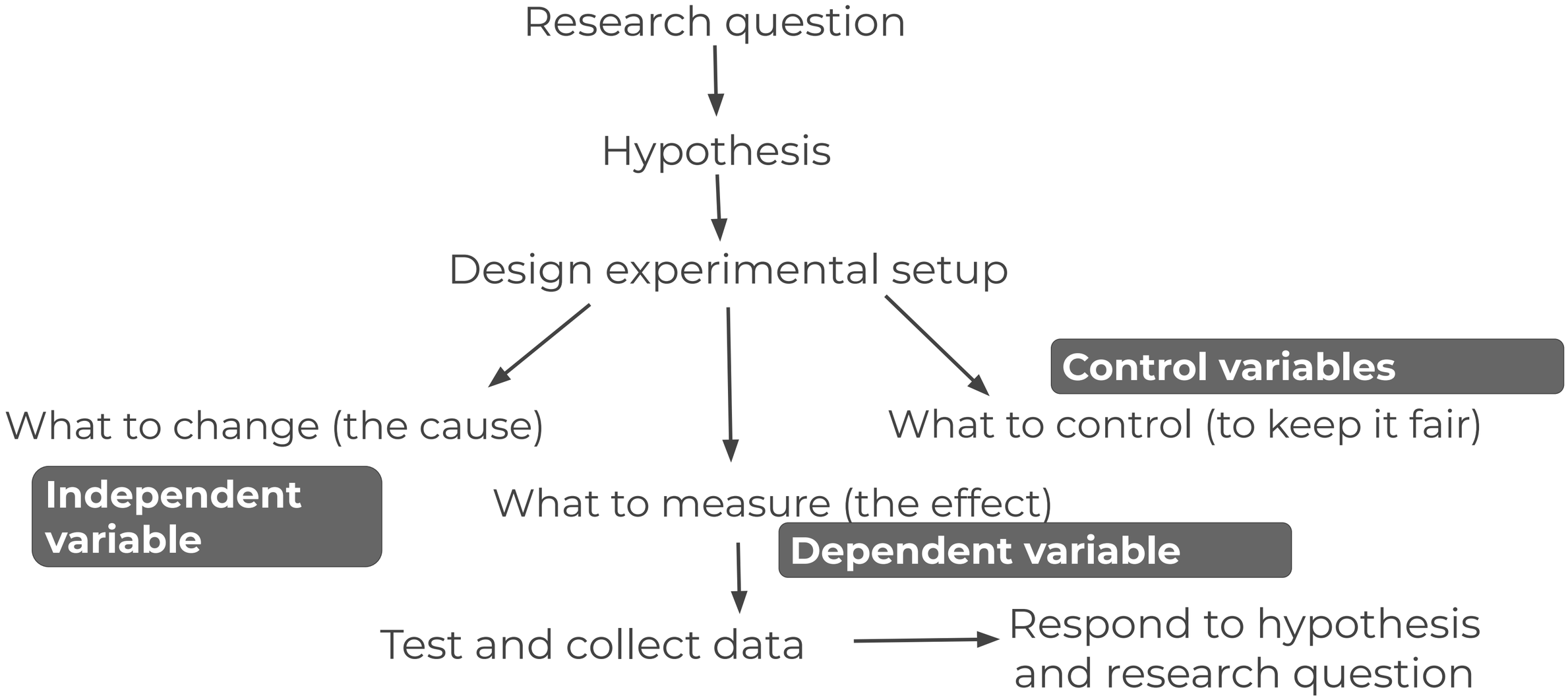
Answers to quick concept check

Osmosis is the movement of water from a region of higher concentration of water to a region of lower concentration of water through a partially permeable membrane. It does not require energy.

Resume once you're finished

Working scientifically

Working scientifically as a process



Working scientifically as a process

Who runs the fastest in the family?

I run the fastest.

Design experimental setup

Who is running.
E.g. Myself, my sister or my parents.

Everyone is running 100 metres.

Time needed to finish the race.

Test and collect data → **Am I the fastest?**
Who is the fastest?

Pause the video to complete your task

Quick concept check

1. Independent variable is the one you _____.
2. Dependent variable is the one you _____.
3. Control variable is the one you _____.

Resume once you're finished

Pause the video to complete your task

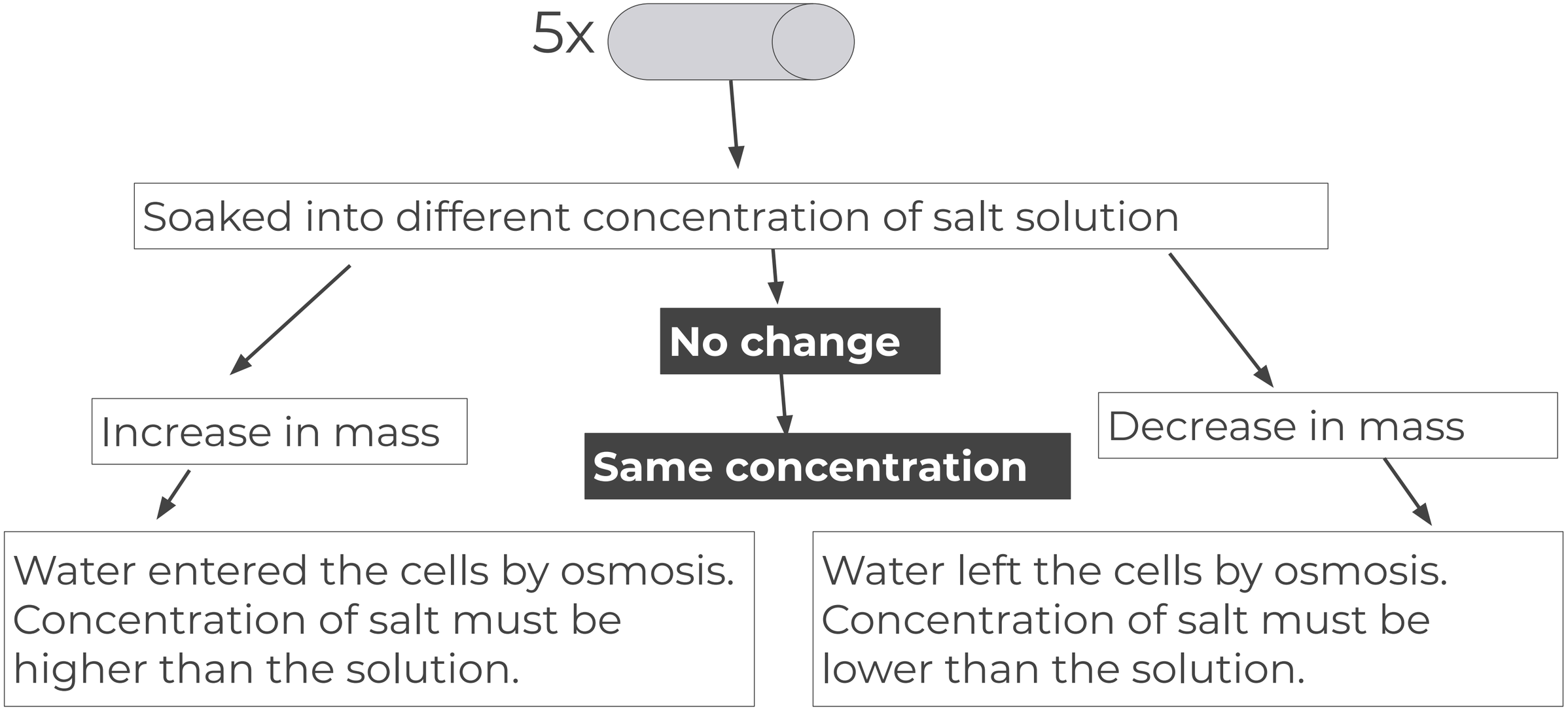
Answers

1. Independent variable is the one you change.
2. Dependent variable is the one you measure.
3. Control variable is the one you keep the same.

Resume once you’re finished

The Method

What is the salt concentration inside a potato?



What is the salt concentration inside a potato?

Watch the video and write down:

1. What are the concentrations of salt solution used?
2. What equipment was used to make the cylinders?
3. What equipment was used to measure the length of the cylinders?
4. What equipment was used to measure the mass of the cylinders?

Answers

Watch the video and write down:

1. What equipment was used to make the cylinders?
2. What equipment was used to measure the length of the cylinders?
3. What equipment was used to measure the mass of the cylinders?

A Cork-borer

A ruler

A weighing scale/ a balance

Working scientifically as a process

What is the concentration of salt in the cells of a potato?

↓

The concentration is 0.4 molar

↓

Design experimental setup

Different concentrations of salt solution is being used.

The change in mass and length.

Time of potatoes being soaked in the solution.

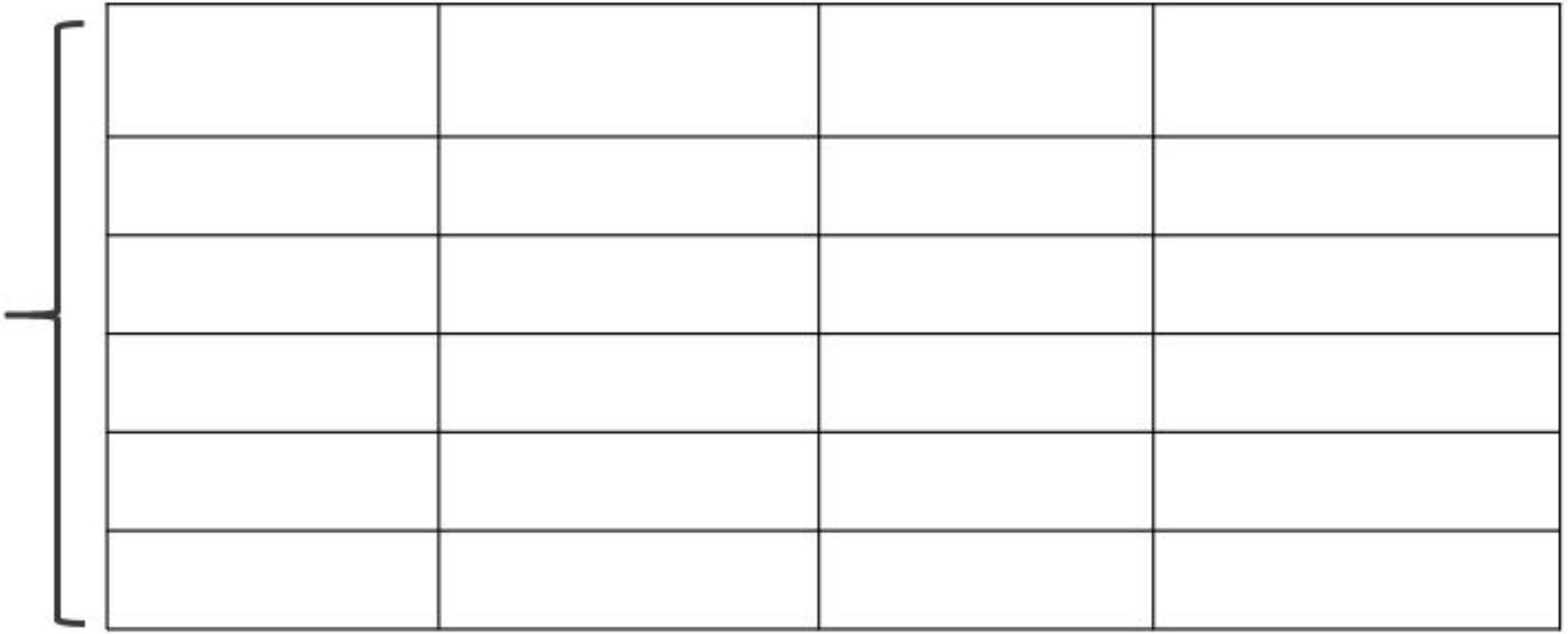
↓

Test and collect data → **Is the concentration of salt 0.4 molar?**

The results table

Dependent variable

Independent variable



Headings to be put into the top row:

Starting mass/g Final mass/g Change in mass/g

Concentration of salt solution/M

Independent variable

Concentration of salt solution/M	Starting mass/g	Final mass/g	Change in mass/g
1	4.92	4	
0.75	5.26	4.5	
0.5	5.11	4.7	
0.25	5.08	5.18	
0 (pure water)	5.20	5.8	

Concentration of salt solution/M	Starting mass/g	Final mass/g	Change in mass/g
1	4.92	4	-0.92
0.75	5.26	4.5	-0.76
0.5	5.11	4.7	-0.41
0.25	5.08	5.18	0.1
0 (pure water)	5.20	5.8	0.6

Pause the video to complete your task

Complete the sentences below

1. The potato cylinder in 0M salt solution gained mass because.....
2. The potato cylinder in 1M salt solution lost mass because.....

Resume once you're finished

Answers

The potato cylinder in 0M salt solution gained mass because **water passes into the potato cells by osmosis. There is a higher concentration of water outside the cylinder than the inside.**

The potato cylinder in 1M salt solution lost mass because **water passes out of the potato cells by osmosis. There is a higher concentration of water inside the cylinder than the outside.**

What was the independent variable?

What was the dependent variable?

What was the control variable?