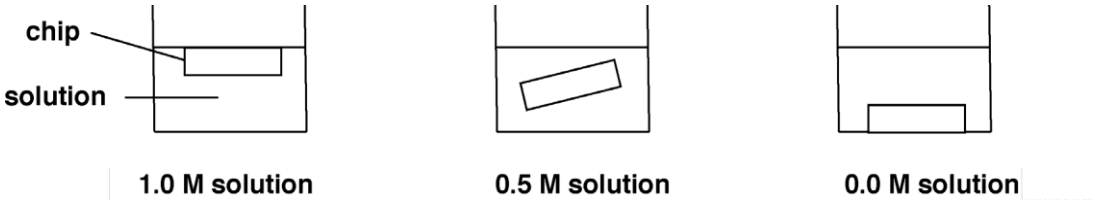
GCSE Biology A (Gateway)

J247/03 B1-B3 and B7 Higher (Higher Tier)

Question Set 5

1 A student investigates how different concentrations of sucrosesolutions affect potatoes.

- Three chips are cut from a potato.
- Each chip is 5.0 cm long.
- Each chip is left in a different concentration of sucrose solution for two hours.



These are the results.

Concentration of sucrose solution	Length of potato chip	
	Start (cm)	After two hours (cm)
1.0 M	5.0	4.5
0.5 M	5.0	5.0
0.0 M	5.0	5.5

(a) Explain why the length of the chip increases in the **0.0 M solution**.

It absorbs water because of higher water potential outside

[2]

(b) Explain why the length of the chip stays the same in the **0.5 M solution**.

Potato had same water potential as solution so no net gain or loss of water from chip.

[2]

(c) **(i)** Calculate the percentage change in the length of the chip in the **1.0 M solution**.

4.5/5 = 0.9 so 10% decrease.

[2]

(ii) In experiments like this, what is the advantage of calculating percentage change, rather than just the actual change?

you can still compare if the original sizes are different.

[1]

(d) **(i)** Measuring the length of the chips is a quick and easy way to get results. However, it does **not** measure the total change to the chips.

Explain why.

Ignores changes to width.

[1]

(ii) What could the students measure to see the total change to the chips?

Measure changes to mass.

[1]

Total Marks for Question Set 5: 9