

**GCSE Biology A (Gateway)**

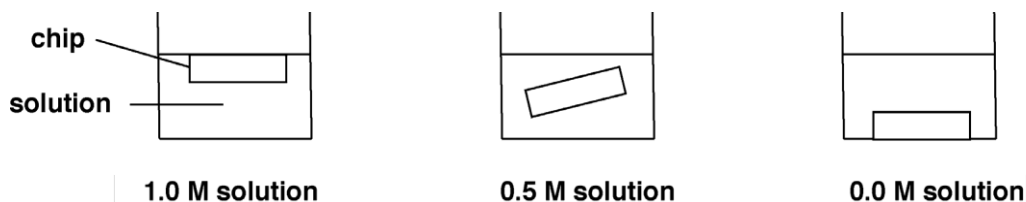
**J247/03 B1-B3 and B7 Higher (Higher Tier)**

**Question Set 5**

1

A student investigates how different concentrations of sucrose solutions 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.

*Ignore s 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**

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