B1 L9 Mandatory worksheet: Osmosis

Name: _____ Class: _____

A. Plant cells in two solutions

Help: online screens 2 and 5 [6]

Figure 1 shows the same kind of plant cell in two solutions, X and Y.

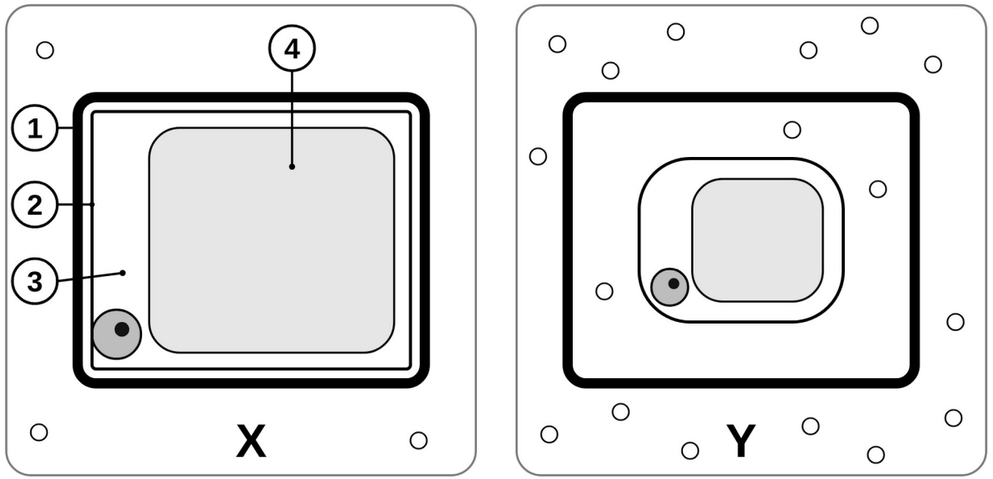


Figure 1

(a) Name the parts labelled 1 to 4. [4]

1 _____ **3** _____

2 _____ **4** _____

(b) Which cell, X or Y, is turgid? [1]

_____

(c) Name the process that moved water out of cell Y. [1]

_____

B. In or out?

Help: online screens 5, 6 and 10 [6]

Tick (✓) one box in each row. Does water move into the cells, or out of them?

Cells and solution	Water moves in	Water moves out
1. A potato cylinder in pure water		
2. A red blood cell in a very concentrated salt solution		
3. A root hair cell in moist soil		
4. A red onion cell in a strong salt solution		
5. A red blood cell in pure water		
6. A potato cylinder in a 1.0 mol/dm³ sugar solution		

C. Short answers

Help: online screens 3 and 5 [7]

1. Complete the sentence. [3]

Osmosis is the diffusion of _____ from a _____ solution to a _____ solution through a partially permeable membrane.

2. Give the word for a plant cell that is soft because it has lost water. [1]

_____

3. What stops a plant cell bursting when it takes in a lot of water? [1]

_____

4. Describe what happens to the cytoplasm and cell membrane of a plant cell during plasmolysis. [2]

_____

_____

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D. Results

Help: online screens 10 and 11 [6]

A student did the practical. Table 1 shows the results.

percentage change in mass = change in mass ÷ starting mass × 100

Concentration (mol/dm³)	Starting mass (g)	Final mass (g)	Change in mass (g)	% change in mass
0.0	2.00	2.28	+0.28	(a)
0.3	2.50	2.50	0.00	0
0.5	2.40	2.16	(b)	−10
0.8	2.00	1.64	−0.36	(c)

(a) Calculate the percentage change in mass at 0.0 mol/dm³. [2]

_____ %

(b) Calculate the change in mass at 0.5 mol/dm³. [1] _____ g

(c) Calculate the percentage change in mass at 0.8 mol/dm³. [2]

_____ %

(d) At which concentration was there no net movement of water? [1]

_____ mol/dm³

E. The potato practical

Help: online screens 8 and 9 [7]

(a) The steps of the method are mixed up. Write the letters in the right order.

P Leave the cylinders in the solutions overnight.

Q Blot each cylinder and find its starting mass.

R Cut cylinders with a cork borer and trim them to the same length.

S Blot each cylinder again and find its final mass.

T Put each cylinder into a tube of sugar solution.

First ☐ → ☐ → ☐ → ☐ → ☐ **Last** [4]

(b) Name the independent variable. [1]

_____

(c) Give **two** control variables. [2]

1 _____

2 _____

F. Explain

Help: online screen 6 [3]

A red blood cell is put in pure water. Explain what happens to it. [3]

_____

_____

_____

_____