B1 L1 Challenge worksheet: Animal and plant cells

Name: _____ Class: _____

A. Three mystery cells

Help: online screens 3, 7 and 11 [5]

Figure 1 shows three cells, X, Y and Z. They are not drawn to the same scale.

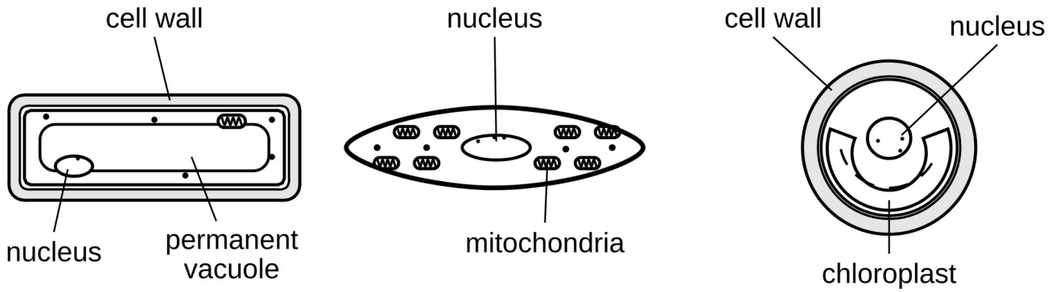


Figure 1

(a) Which **two** cells are plant or algal cells? Give a reason for your answer. [2]

_____

_____

(b) Cell X comes from a plant root. Suggest why it has no chloroplasts. [1]

_____

(c) Cell Y has many more mitochondria than most cells. Suggest what this tells you about cell Y. Explain your answer. [2]

_____

_____

B. Estimating sizes

Help: online screen 9 [6]

(a) An onion epidermis cell is 0.2 mm long (larger than most plant cells). Its nucleus is about 10 µm across. Estimate how many nuclei would fit along the cell. Use 1 mm = 1000 µm. Show your working. [3]

_____ nuclei

(b) A mitochondrion is about 1 µm long. A ribosome is about 25 nm across. Use 1 µm = 1000 nm. Calculate how many times longer the mitochondrion is than the ribosome. [2]

_____ times

(c) A light microscope cannot show anything smaller than about 200 nm. Explain why a light microscope cannot show ribosomes. [1]

_____

_____

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C. When a part stops working

Help: online screens 3 and 4 [4]

Scientists treat some animal cells with chemicals. Each chemical stops one sub-cellular structure from working.

(a) Chemical 1 stops the mitochondria working in a muscle cell. Suggest what would happen to the muscle cell. Explain your answer. [2]

(b) Chemical 2 damages the cell membrane, so substances leak out of the cell. Suggest why the cell would die. Explain your answer. [2]

D. Extended response

Help: online screens 4, 6 and 10 [6]

Explain how the sub-cellular structures in a leaf cell work together to keep the cell alive and growing. [6]

In your answer, name at least five structures and say what each one does.