



# HOMework BOOKLET

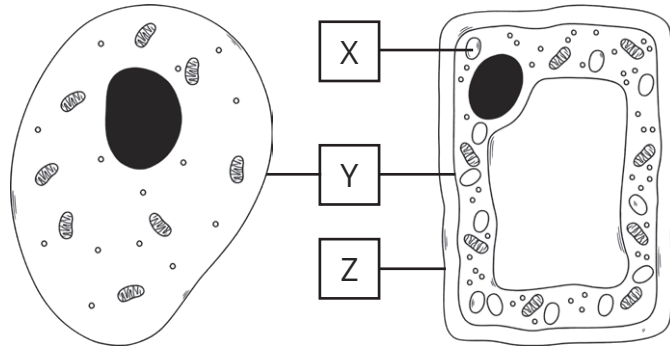
**B1**

0 1

**Figure 1** shows a typical animal cell and a typical plant cell.

Three parts of the cell have been labelled X, Y and Z.

**Figure 1**



0 1 . 1

Draw **one** line from each letter to the name of the cell part.

[3 marks]

**Letter**

**Cell Part**

X

cell membrane

Y

cell wall

Z

chloroplast

cytoplasm

0 1 . 2

Both animal cells and plant cells contain ribosomes and mitochondria.

Complete the sentences. Choose answers from the box.

DNA	energy	photosynthesis
protein synthesis	respiration	food

[3 marks]

Ribosomes are the site of \_\_\_\_\_.

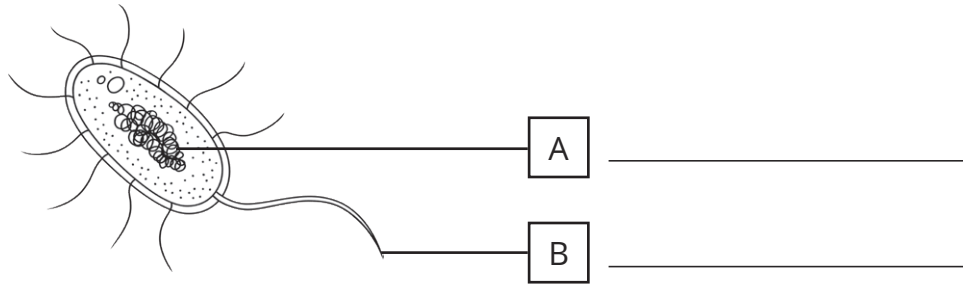
Mitochondria are the site of \_\_\_\_\_,

which releases \_\_\_\_\_ for the cell.

0 2

Figure 2 shows a prokaryotic cell.

Figure 2



0 2 . 1

Complete **Figure 2** by labelling structures **A** and **B**.

Choose answers from the box.

DNA loop	flagellum	villus
nucleus		plasmid

[2 marks]

0 2 . 2

Give the function of structure **B**.

[1 mark]

---

---

0 2 . 3

Give one similarity and one difference between prokaryotic cells and plant cells.

[1 mark]

Similarity \_\_\_\_\_

---

[1 mark]

Difference \_\_\_\_\_

---





# Calculating Magnification

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

Hint: always check the units; you may need to convert. Read the question carefully and make sure you understand what you are being asked to find; you may need to rearrange the equation.

Bronze	Silver	Gold
The image size of a cell is 2mm. The real size of the cell is 0.01mm. Calculate the magnification.	A cell with a length of 0.05mm is observed at $\times 200$ magnification. Calculate the size of the image. Give your answer in mm.	The nucleus of a cell viewed at $\times 500$ magnification has an image size of 2.4mm. Calculate the real size of nucleus. Give your answer in $\mu\text{m}$ .
The image size of a bacterial cell viewed under a microscope is 10mm. The real size of a bacterial cell is 0.002mm. Calculate the magnification.	The tail of a sperm cell has a real length $50\mu\text{m}$ . The tail of the sperm cell in an image is measured as 7.5mm. Calculate the magnification of the image.	A leaf cell is observed at $\times 400$ magnification. The size of the image is 2cm. Calculate the real size of the cell. Give your answer in $\mu\text{m}$ .
A red blood cell has a diameter of 0.007mm. An image of a red blood cell has a diameter of 3.5mm. Calculate the magnification of the image.	Goblet cells from the lining of the intestine are observed at $\times 250$ magnification. One of the cells has an image size of 2.75mm. Calculate the real size of the cell. Give your answer in mm.	Three adjacent onion cells are viewed under a microscope at $\times 200$ magnification. The combined image size of all three cells is 75mm.  Assuming all the cells are the same size, calculate the real size of a single onion cell. Give your answer in $\mu\text{m}$ .

# Osmosis Practical Questions

- A group of students decided to investigate the effect of placing potato chips into different concentrations of sugar solutions.
- A range of potato chips closely matched in size were weighed and their mass recorded.
- Five chips were placed in each of the following sugar solutions: 80% concentrated, 40% concentrated and distilled water. They were then left for several hours.
- The chips were removed from the solutions, blotted with paper to remove surface water and reweighed.

1. State the following variables:

Independent: \_\_\_\_\_

Dependent: \_\_\_\_\_

Control: \_\_\_\_\_

2. Why was it important that the chips were blotted with paper before being reweighed?

---



---

3. The results are shown in the table below:

	80% Sugar Solution	40% Sugar Solution	Distilled Water
Initial Mass (g)	0.67	0.70	0.65
Final Mass (g)	0.56	0.72	0.73
Percentage Change in Mass			

a) Complete results table by calculating the percentage change in mass using the formula:

$$\% \text{ change in mass} = \frac{\text{end mass} - \text{start mass}}{\text{start mass}} \times 100$$

b) What does a positive change in mass show?

---

c) What does a negative change in mass show?

---

4. Plot a graph with:

- 'Change in Mass (g)' on the Y axis;
- 'Concentration of Sugar Solution' on the X axis.



# Comparing Diffusion, Osmosis and Active Transport

Sort the statements below into the correct sections of the Venn diagram.

movement of particles
involves transport of dissolved solutes
involves transport of water only
from an area of high solute concentration to an area of low solute concentration
from a dilute solution to a concentrated solution
down a concentration gradient
against a concentration gradient
across a partially permeable membrane
passive process (no energy required)
requires energy from respiration

