B1 L4 Magnification and cell size: Exam questions worksheet

AQA GCSE Combined Science: Trilogy (8464) and Biology (8461)
Biology Paper 1 · Topic B1 Cell biology

Name _____ Class _____

Total: ..... / 20

Instructions

- Answer **all** questions in the spaces provided.
- Use black ink or black ball-point pen.
- The marks for each question are shown in brackets.
- In calculations, show clearly how you work out your answer.
- You may use a calculator and a ruler.
- Time: about 25 minutes.

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0 1 This question is about the units used to measure cells.

0 1 . 1 Draw **one** line from each unit to the length it is equal to. [2 marks]

Unit	Equal to
1 cm	10 mm
1 mm	100 µm
1 µm	1000 µm
	1000 nm

0 1 . 2 Which structure is the smallest? [1 mark]

Tick (✓) **one** box.

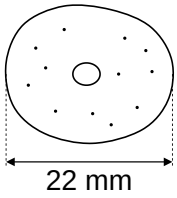
- a bacterium, 2 µm long ☐
- a mitochondrion, 1 µm long ☐
- a nucleus, 0.006 mm wide ☐
- a ribosome, 25 nm wide ☐

Turn over for the next question

Do not write outside the box

0 2 **Figure 1** shows a student's drawing of a cheek cell.

Figure 1



The drawing was made at a magnification of × 400.

In **Figure 1**, the cell is 22 mm wide.

0 2 . 1 **Calculate** the real width of the cell. [3 marks]

Give your answer in micrometres (µm).

1 mm = 1000 µm

Real width = ... µm

0 2 . 2 What does "× 400" mean for the drawing in **Figure 1**? [1 mark]

Tick (✓) **one** box.

- The drawing is 400 mm wide. ☐
- The drawing is 400 times bigger than the real cell. ☐
- The real cell is 400 µm wide. ☐
- The real cell is 400 times bigger than the drawing. ☐

0 2 . 3 Write your answer to Question **02.1** in metres. [1 mark]

Give your answer in standard form.

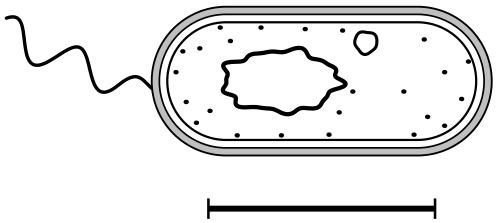
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Turn over for the next question

Do not write outside the box

0 3 **Figure 2** shows a drawing of a bacterium with a scale bar.

Figure 2



In **Figure 2**, the scale bar is 30 mm long and the bacterium is 45 mm long. [2 marks]

Calculate the real length of the bacterium.

Real length = ... µm

0 4 A student uses a light microscope to look at the cells in a moss leaf.

On this microscope, at a magnification of × 100, the field of view is 1.8 mm across.

The student counts 30 cells across the middle of the field of view.

0 4 . 1 **Estimate** the length of one moss leaf cell. [2 marks]

Give your answer in µm.

Length = ... µm

0 4 . 2 The student changes the magnification to × 400. [2 marks]

Explain why the student sees fewer cells across the field of view.

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Turn over for the next question

Do not write outside the box

0 5 A student has two micrographs. [6 marks]

- Micrograph **A** shows plant cells at a magnification of × 200.
- Micrograph **B** shows bacteria at a magnification of × 20 000.

The student wants to find out how many times bigger a plant cell is than a bacterium.

Describe how the student could use the two micrographs to find this out.

END OF QUESTIONS

There are no more questions in this paper. Original practice paper © sciencegcse.co.uk – free to use for non-commercial education. Not an AQA paper.

Do not write outside the box