Summer Preparation Work for A-Level Biology

Welcome to Biology at Comberton Sixth Form

The 5 activities in the transition pack are designed to give you practice in some of the core knowledge and skills needed for A level biology. You are expected to complete all of these tasks and *bring them to your first lesson in September*.

Task A- Magnification skills

Print out this document A4 size and complete the questions.
Maths for Biology- Magnification

Task B- Keyword cards on Cells and Nucleic cards and multiple choice questions.

These are attached. You must print off each keyword card set, stick the meanings pages to the keywords pages, so they are back to back. These words need to be memorised. Then complete the **multiple choice questions**. Use the keywords to help.
Take a look at these videos that cover some of this content:
https://www.youtube.com/watch?v=URUJD5NEXC8
https://www.youtube.com/watch?v=zwibgNGe4aY

Task C- Independent research task

Hopefully you will be able to take a trip to a museum, zoo or other place of biological interest locally or further afield if lockdown restrictions have been lifted in some way. Be prepared to share your experience in a biology lesson, with photos/leaflets and a summary paragraph. Cambridge has many possibilities. E.g. The Cambridge University museum of Zoology/ the Cambridge Botanic Garden. If lockdown continues, we would like you to visit a place online, watch a video on their site and complete the task in that way. You could go anywhere in the world!

Task D - Oxford A Level Sciences *Biology* GCSE → A level transition

Read the sheet, print it off and complete the ***Practice questions*** in each section.

Task E – Head Start on Biology booklet

Read the instructions at the start and complete the tasks.

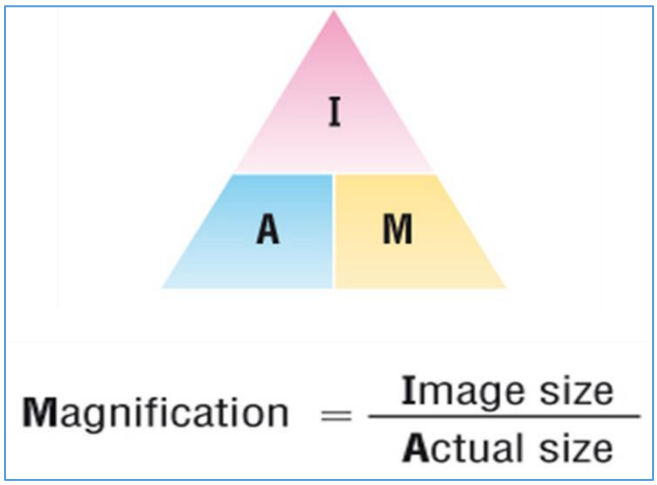
Other

For safety reasons all students studying a science A level will need a lab coat and goggles. Lab coats with studs (not buttons) can be purchased from Amazon.

If you want to find out more about the course visit http://www.ocr.org.uk/Images/171736-specification-accredited-a-level-gce-biology-a-h420.pdf for A level Biology.

Mrs R James. *Head of A Level Biology* rjames@combertonvc.org

Task A Maths for Biology- Magnification



Step 1)

Measure the image size using a ruler in millimetres (mm)

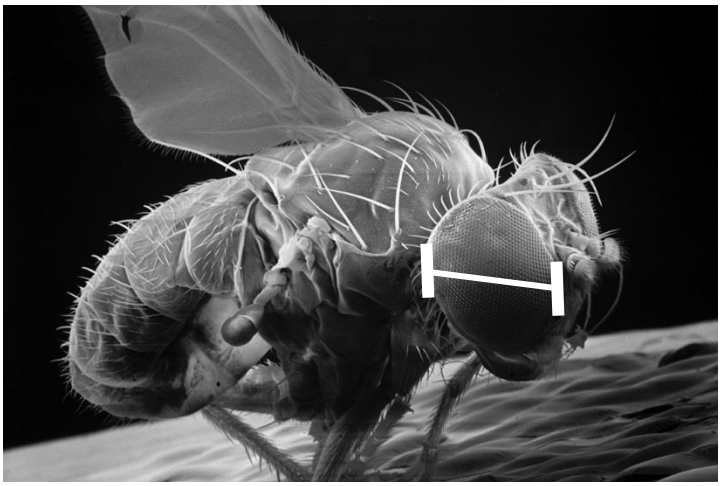
Step 2)

Convert the millimetres (mm) into micrometres (µm)

Step 3)

Divide your answer by the actual size

Question 1



This is a fly. Its actual eye size is 1,000µm. What is the magnification?

1) Length of eye is _____ mm

2) _____ mm x1000 = _____ µm

3) Image size = _____ µm

4) Magnification = Image ÷ Actual

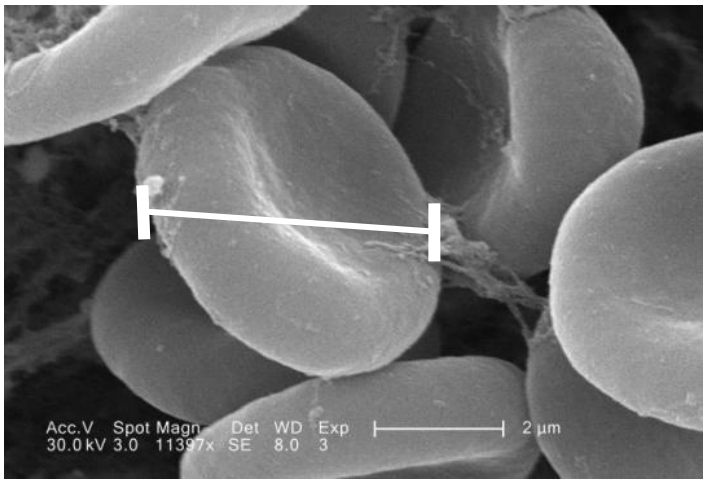
Magnification = _____ µm ÷ _____ µm

Magnification = _____

The picture shows the eye magnified (zoomed in) by _____ times.

Question 2

This is a red blood cell. Its actual size is 300µm. What is the magnification?



1) Length of cell is _____ mm

2) _____ mm x1000 = _____ µm

3) Image size = _____ µm

4) Magnification = Image ÷ Actual

Magnification = _____ µm ÷ _____ µm

Magnification = _____

The picture shows the cell magnified (zoomed in) by _____ times.

Question 3

This is an insect. Its wings are 2,500µm. What is the magnification?

1) Length of wing is _____ mm

2) _____ mm x1000 = _____ µm

3) Image size = _____ µm

4) Magnification = Image ÷ Actual

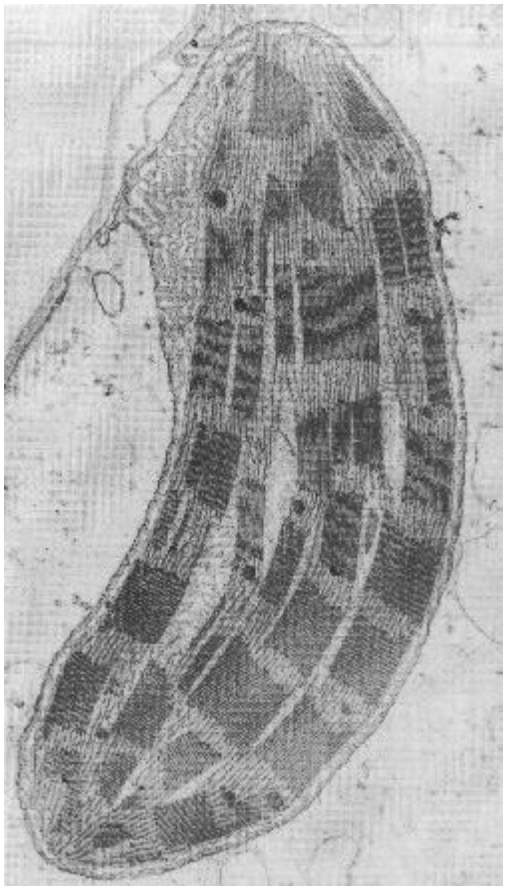
Magnification = _____ µm ÷ _____ µm

Magnification = _____

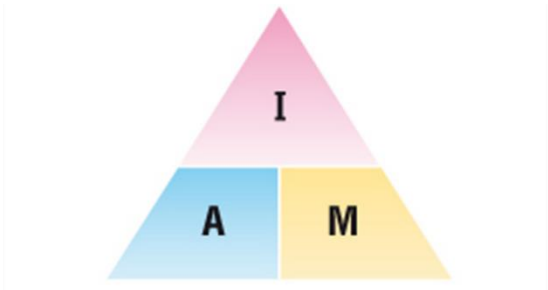
The picture shows the wing magnified (zoomed in) by _____ times.

Question 4

If the actual length of this chloroplast is 10 µm, what is the
magnification?
Show your working…



Actual Size



$$\text{Actual size} = \frac{\text{Image size}}{\text{Magnification}}$$

Step 1)

Measure the image size using a ruler in millimetres (mm)

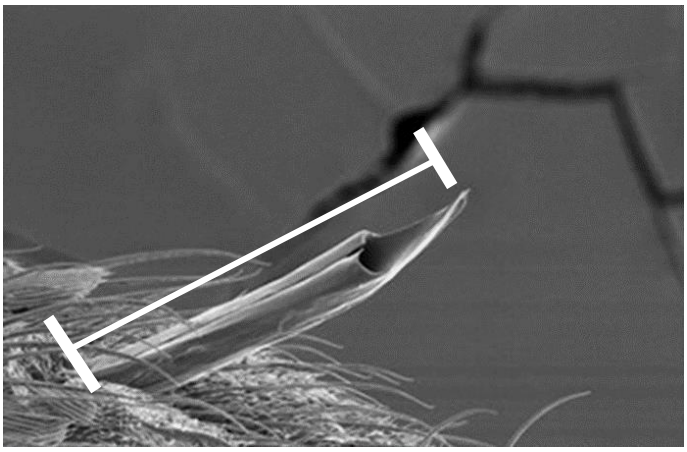
Step 2)

Convert the millimetres (mm) into micrometres (µm)

Step 3)

Divide your answer by the magnification

Question 1



This is a mosquito stinger. The magnification is x4. What is the actual size?

1) Length of stinger is _____ mm

2) _____ mm x1000 = _____ µm

3) Image size = _____ µm

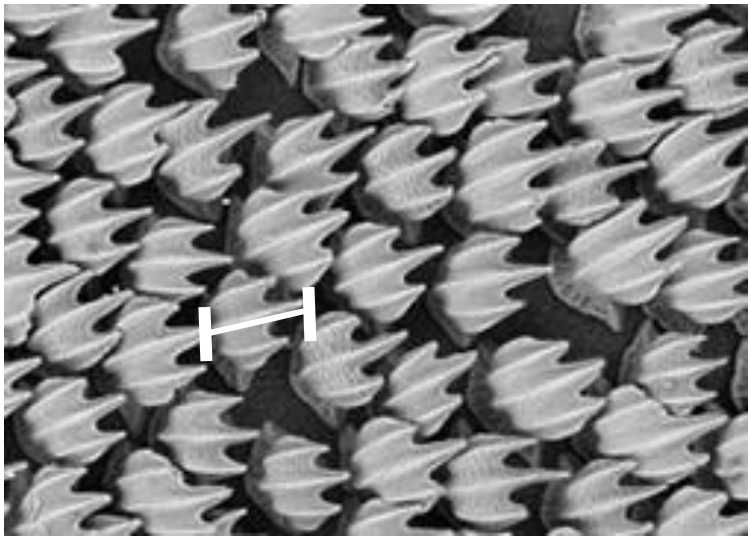
4) Actual size = Image ÷ Magnification

Actual size = _____ µm ÷ _____

Actual size = _____

The actual size of this stinger is _____ µm. We can see it because it has been magnified.

Question 2



This is shark skin. It is made of teeth. The magnification is x50. What is the actual size of 1 tooth?

1) Length of tooth is _____ mm

2) _____ mm x1000 = _____ µm

3) Image size = _____ µm

4) Actual size = Image ÷ Magnification

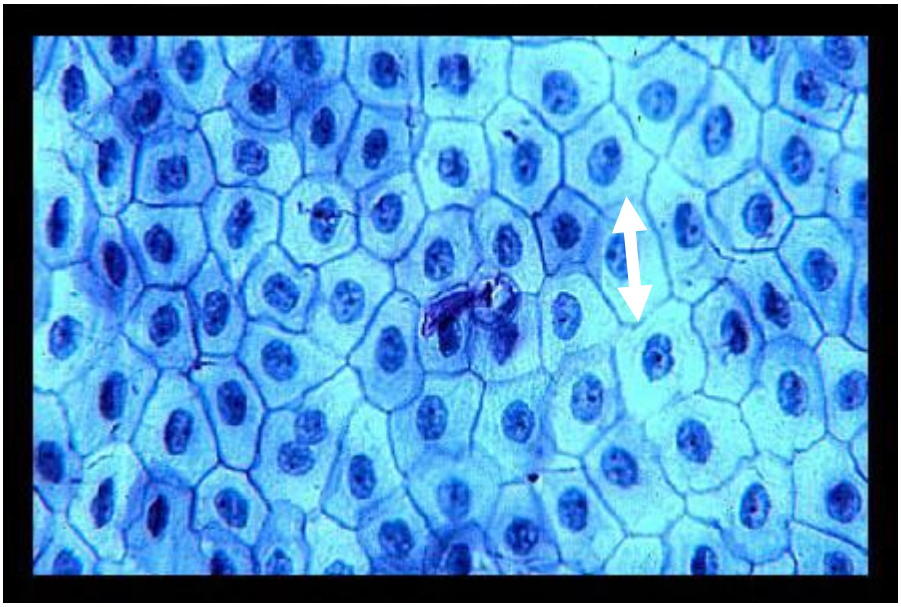
Actual size = _____ µm ÷ _____

Actual size = _____

The actual size of this tooth is _____ µm. We can see it because it has been magnified.

Question 3

If the magnification is x100
What is the actual length of one of these epithelial cells?
Show your working….



Question 4

If the magnification is x600, what is the **actual width** of:
a) the white stripe of the muscle fibre?
b) the dark stripe of the muscle fibre?
c) a mitochondrion?