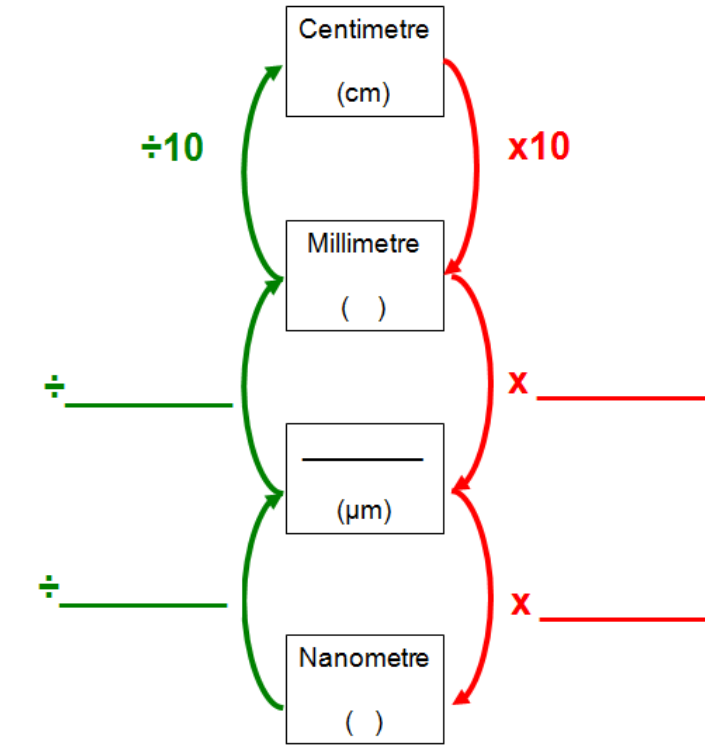


Units of measurement

- 1) Complete the diagram below to show: names of the units of measurement, unit symbols, mathematical operations for converting between units.



- 2) Complete the table below to show the corresponding value nanometres, micrometres and millimetres for the measurements given in each row. The first row has been completed for you. Ensure that your answers use the correct unit symbols.

<u>Nanometre</u>	<u>Micrometre</u>	<u>Millimetre</u>
5	0.005	0.000005
1		
	1	
		1
	3	
7		
		0.5

- 3) When studying cells structure using a microscope the smallest unit of measurement commonly used to describe findings is the nanometre. Explain why.

Magnification and Resolution

1) Define the following terms:

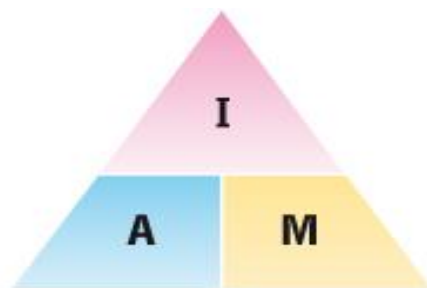
Magnification:

Resolution:

Calculating total Magnification of a compound light microscope

Eyepiece Magnification	Objective Magnification	Overall Magnification
X10	X4	
X10	X10	
X10	X40	
X10	X100	

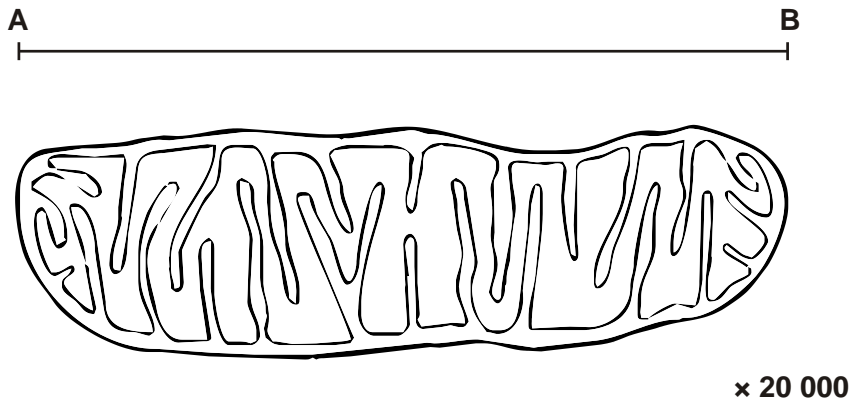
Calculating Cell Magnification from images



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

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

The diagram below is a drawing of an organelle from a ciliated cell as seen with an electron microscope.

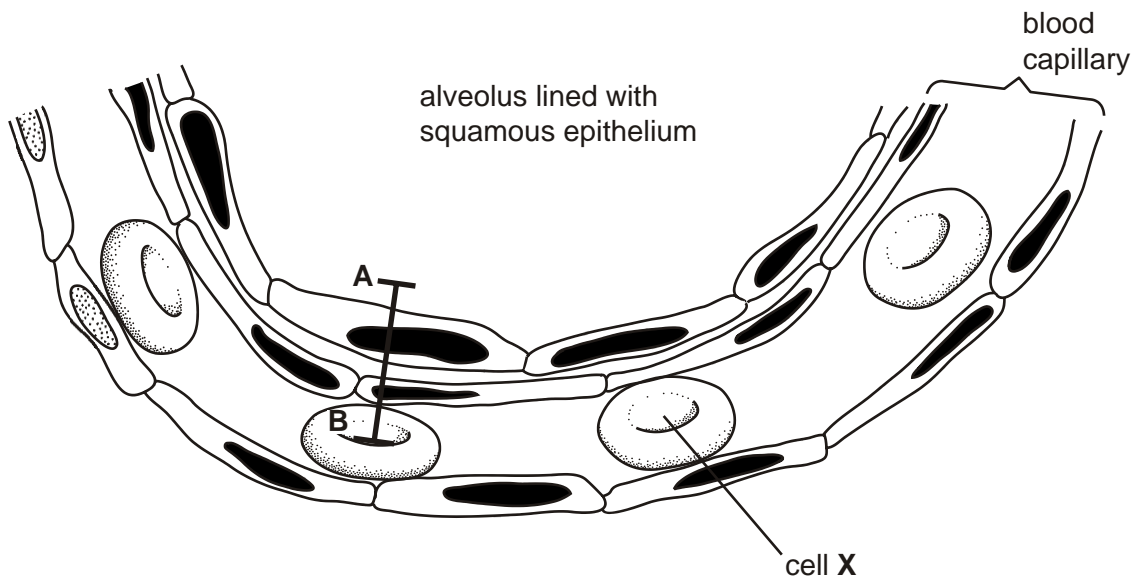


Calculate the actual length of the organelle as shown by the line AB in the diagram. Express your answer to the nearest micrometer (μm).

Show your working.

Answer = μm

The diagram below is a drawing of an alveolus together with an associated blood capillary.



The line **AB** in the diagram represents an actual distance of $1.5 \mu\text{m}$.

Calculate the magnification of the drawing. Show your working.

Answer = x