

# Physiology and IB Biology 1 - H

## How to measure through a microscope

1. Draw the object (cell, fiber, tissue, etc.) accurately and in proportion to the circle. Remember the circle on the paper represents the field of view of the ocular (eyepiece).
2. Determine which dimension you are going to measure. Make two small parallel lines to mark what you are going to measure
3. Measure between these lines in mm. (A)
4. Measure the diameter of the circle in mm. (B)
5. Set up a proportion as shown below. Make sure you use the correct value for the actual diameter of the objective (D). If you used 100x then use 1.85 mm as the diameter. If you used 400x then use .45 mm as the diameter. The value in the proportion C will be the unknown and the actual measurement. Solve for C.

$$\frac{A}{B} = \frac{C}{D}$$

6. Place the calculations in the upper left corner next to the circle. (See Figure 1.)
7. After giving your answer in mm and in the correct scientific notation and significant figures, give the answer in micrometers ( $\mu\text{m}$ ) and also in nanometers (nm).

1 meter = $10^6 \mu\text{m}$
1 meter = $10^9 \text{nm}$

