# Magnification calculations

Most cells are very small and can only be seen through a microscope. The cell image that you see through the microscope will be much larger than the object is in real-life, and so it can be hard to imagine exactly how small it actually is. However, if we know the magnification of the microscope then we can use the image size to calculate the actual size of the cell using the following formula:
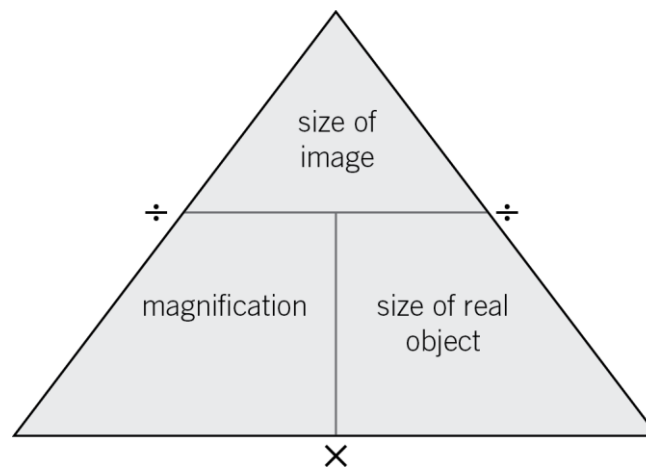
$$\text{size of real object} = \frac{\text{size of image}}{\text{magnification}}$$

We can also rearrange this equation so that, if we need to, we can work out what the image size will be or what the magnification of the microscope is. These two equations are:

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

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

As long as you know or can measure two of the factors, you can find the third.



## Questions

**1** Work out the real size of these objects.

| Size of image (mm) | Magnification | Size of real object (mm) |
|---|---|---|
| 5 | 40 | |
| 10 | 1000 | |
| 12 | 60 | |
| 8 | 200 | |
| 15 | 500 | |

**2** Use the equations given to complete the table.

| Size of image (mm) | Magnification | Size of real object (mm) |
|---|---|---|
| 10 | | 0.002 |
| | 400 | 0.05 |
| 6 | | 0.006 |
| | 50 | 0.05 |
| 15 | | 0.15 |