Microscopes: Calculating Magnification

1. Calculate the missing values in the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Power | Field of View  (FOV) | Ocular lens magnification | Objective lens magnification | Total Magnification |
| **LOW** | 4.5 mm | 10x |  | 40 x |
| **MEDIUM** | 2 mm | 10x | 10 x |  |
| **HIGH** | 0.5 mm | 10x |  | 400 x |

**METRIC CONVERSIONS**

2. Since microscope magnifications are very small, we will often use micrometers (µm). Convert the following:

**1000 µm = 1 mm 10,000 µm = 1 cm 1,000,000 µm = 1 m**

Ex. 5 mm = \_\_\_\_\_\_ µm

1. 3.3 mm = \_\_\_\_\_\_\_\_ µm
2. 0.78 mm = \_\_\_\_\_\_\_ µm
3. 390 µm = \_\_\_\_\_\_\_\_ mm
4. 4600 µm = \_\_\_\_\_\_\_ mm

**ACTUAL SIZE**

Find the actual size of each of the following:

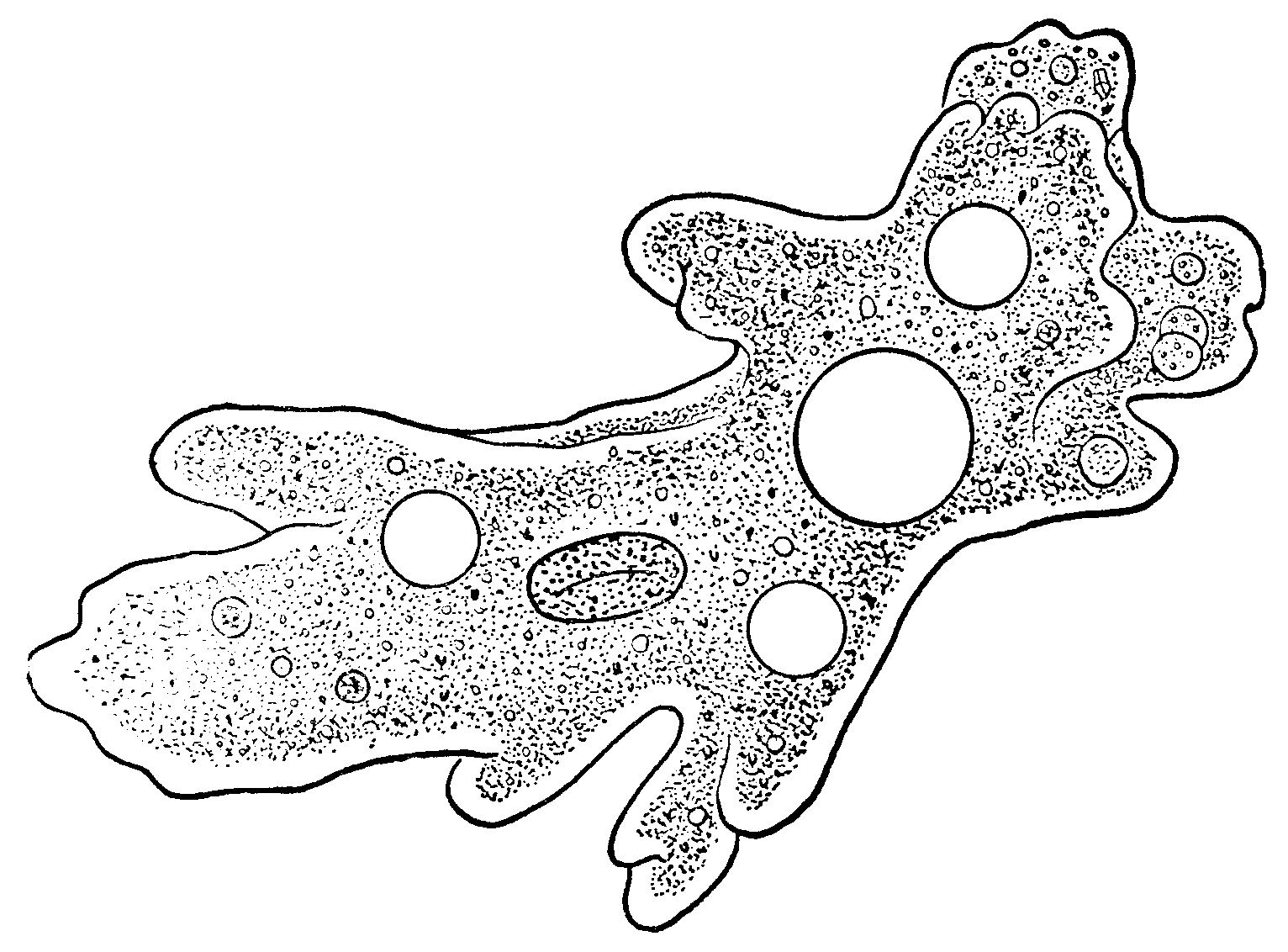
1. 18 cells fit across high power
2. 10 cells fit across medium power



40 X

**MAGNIFICATION**

1. If the actual size of an amoeba is 46 µm, calculate the drawing’s magnification



1. If the drawing size of the Euglena is 24 mm, and the actual size is 83 µm, calculate the drawing’s magnification
2. If you are looking at a paramecium at MEDIUM power and you measured it to be 0.3 mm, and your drawing size is 2.5 cm, calculate your drawing’s magnification.