CHAPTER 2 : Basic components of living systems

Magnification and calibration

Magnification, resolution and the magnification formula

-Magnification is how many times larger the image is than the actual size of the object being viewed
-Interchangeable objective lense adjust magnification (compound light microscope)

-Resolution determines amount of detail that can be seen
-High resolution = more visible details

-Resolution is limited by diffraction of light as it passes through light and samples
-Diffraction = tendency of light waves to spread as they pass close to physical structures
-In optical microscopy structures that are closer than half the wavelength of light cannot be seen separately (resolved)

-Increase resolution by beams of electrons which have a wavelength of a thousand times shorter than light
-Electron beams are still diffracted
-Shorter wavelength means individual beams can be much closer before they overlap
-Objects that are small and close together can be seen separately without diffraction blurring the image

Calculation for magnification

-Magnification = image / actual size