

Lesson 1 - Microscopes

Science - Biology - Key Stage 3

Cells, tissues and organs

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Match the following key words to the definition

Stage

Where the viewer looks through to see the specimen

Objective lens

Where the slide is clipped down

Eyepiece lens

The part that changes the magnification of the image



Match the following key words to the definition

Coarse focus

Reflect the light onto the stage

Mirror

Moves the stage up and down

Fine focus

Used to make the image clearer



Task - put the following in the correct order

A - adjust the coarse focus to move stage closer to objective lens

B - prepare your slide and place on the stage

C - select the lowest objective lens



Task - Identify the mistakes in the following method for using a microscope

1. Prepare specimen on a piece of plastic
2. Select the highest magnification on the objective lens
3. Move the stage closer to the objective lens using the fine focus knob
4. Look down the nosepiece at the specimen and slowly move the stage away from the objective lens
5. Rotate the objective lens to a higher magnification and use the coarse focus to make the image clearer



Calculating magnification

Overall magnification = eyepiece lens x objective lens

Calculate the total magnification for the following:

Eyepiece lens	Objective lens	Total magnification
10x	10x	
10x	40x	
10x	100x	
20x	50x	



Calculating image size

Calculate the image size in the following questions:

- a) If a student uses a microscope which magnifies 200x a 10 mm onion cell.
- b) A 2.5 mm piece of a flower is placed under a microscope which magnifies 40x

CHALLENGE: A student uses a microscope which has an eyepiece of 10x and an objective lens of 10x to look at a 5 mm piece of hair.



TASK - Put the following in the correct order

Look down the eyepiece lens

Increase the magnification to view the cells in more detail

Turn the objective lens to the lowest power

Move the slide to find some cells

Turn the focusing knob to bring the cells into focus

Put the slide onto the stage

