

# **Lesson 14 - Review (Part 1)**

## **(Downloadable Student Document)**

Science - Biology - Key Stage 3

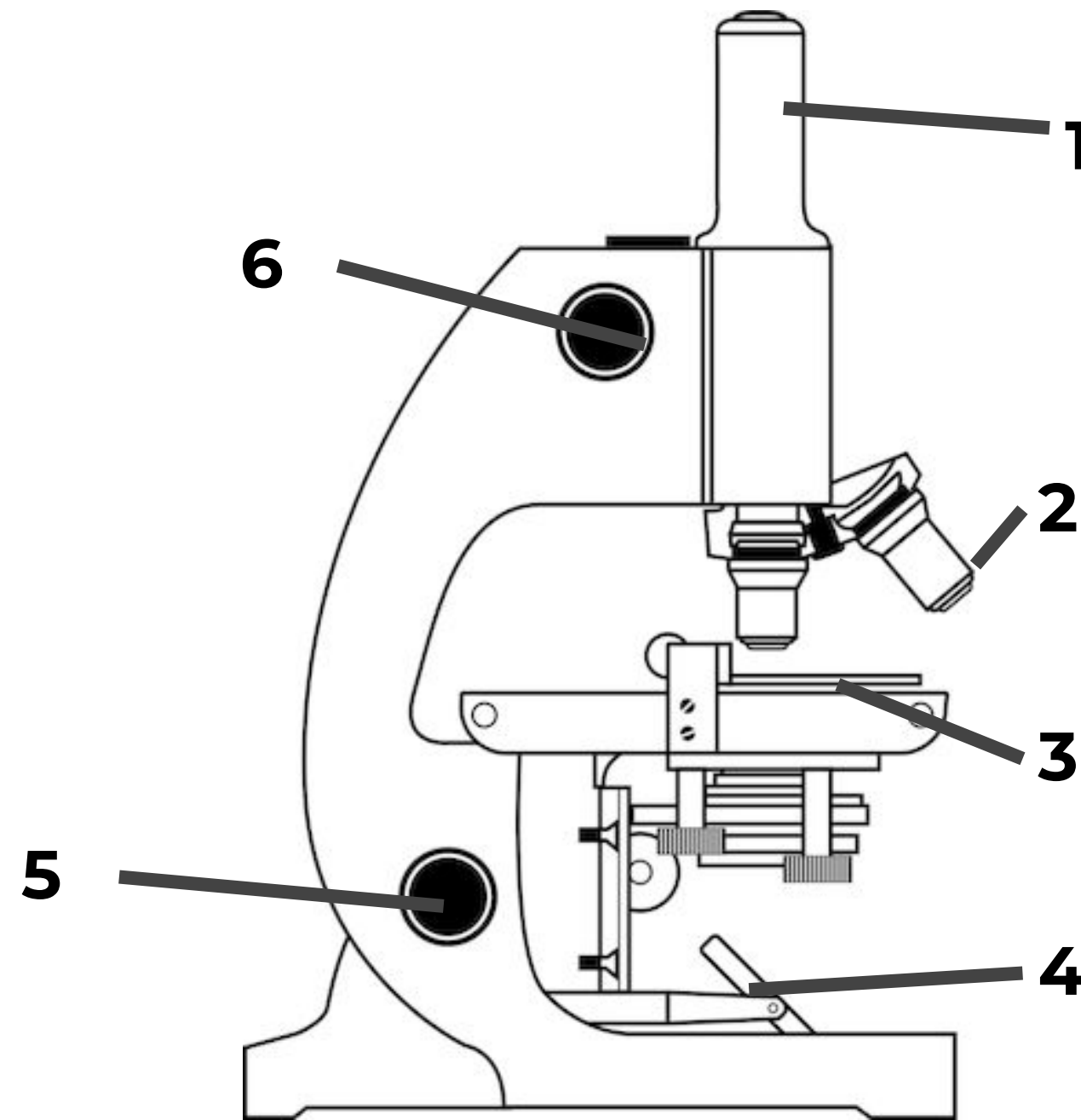
Cells, Tissues and Organs

Miss Wickham



# Recap on Part of a Microscopes

Label the parts of the microscope using these keywords: **eyepiece lens**, **mirror**, **objective lens**, **coarse focus**, **stage**, **fine focus**



# Match up the part to the description

Part of the microscope
(1) Eyepiece lens
(2) Coarse focus
(3) mirror
(4) stage
(5) Fine focus
(6) Objective lens

Functions of parts
(a) Reflects light onto stage
(b) Moves the stage up and down
(c) Where the specimen is placed to be viewed
(d) Changes the magnification
(e) The viewer looks through to see the specimen
(f) Used to make a clearer image



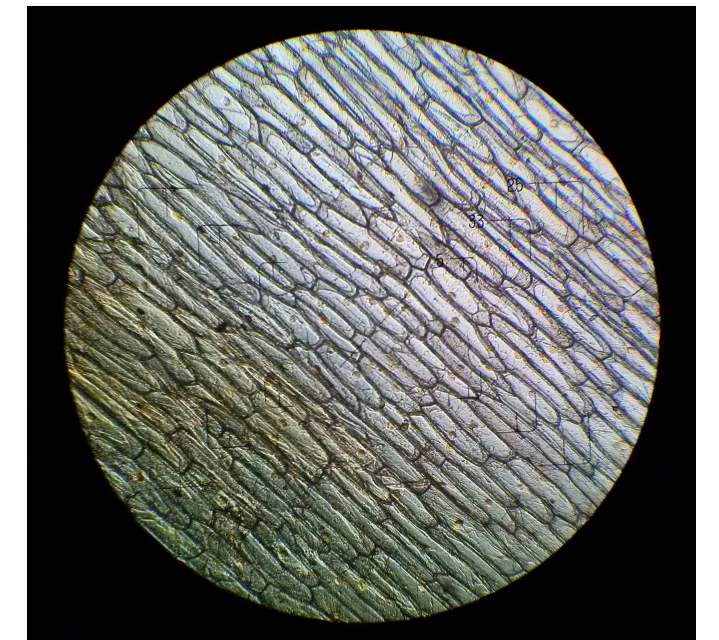
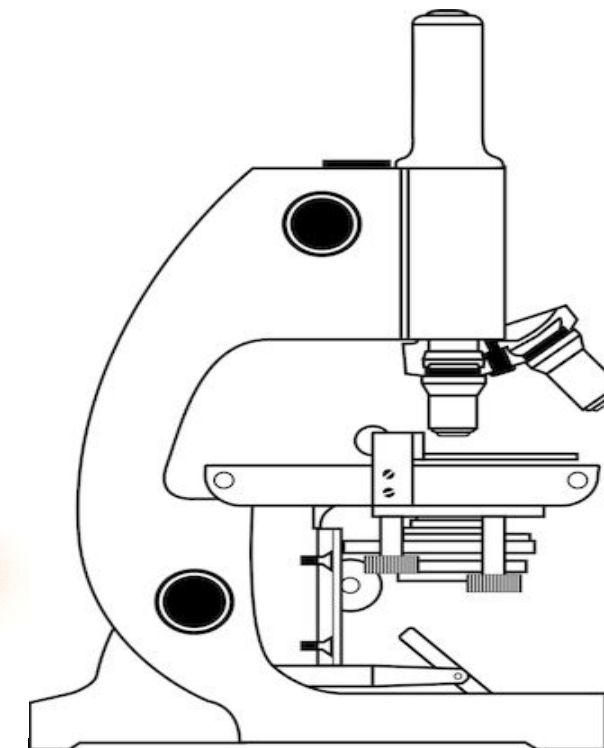
# Looking at animal and plant cells with a microscope

## Task - describe how to prepare a slide to view plant cells

Use the images to help you.

Include:

- 5 steps
- Objects seen in the images below



# **Task - spot the mistakes in the description on how to view cheek cells under the microscope**

Method of preparing a cheek slide:

1. Take a dirty cotton wool and gently scrape the inside of your nose.
2. Smear the cotton wool on the centre of the microscope stage for 2 to 3 seconds.
3. Add a drop of iodine solution and place a coverslip on top, making sure there is no air bubbles and remove any excess with a bath towel
4. Place the glass slipper onto the mirror on the microscope



**Describe how to view the animal/plant cells under the microscope.**

**Include:**

- **Numbered steps**
- **Each part of the microscope (eyepiece lens, fine focus, coarse focus, stage, mirror, objective lens)**

**1. Prepare the \_\_\_\_\_ and place on the \_\_\_\_\_.**





# Calculating magnification

**Magnification = image size ÷ actual size**

1. An animal cell in a photograph measures **23 mm** across. If the actual size of the cell is **0.020 mm**, what is the magnification in the photograph?
2. A bacteria cell in a photograph measures 36 mm across. If the actual size of the cell is 0.018 mm, what is the magnification in the photograph?
3. A euglena is 0.034 mm in length, but under the microscope the image of the euglena appears to be 26mm long. What is the magnification?



# Magnification

4. The nucleus in a photograph of a cell measures **3 mm** across. If the magnification in the photograph is **× 500**, what is the **actual size** of the nucleus?

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# Magnification

5. You are looking at onion cells under a microscope and want to know how big the cells really are. You measure the size of the cells as it appears and find out that it measures 20mm with a magnification of x1000. Work out the actual size of the cell.

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# Magnification

6. What is the **image size** of a virus head, in the actual size is 6.8mm and it has been magnified x2500?

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# Magnification

7. A butterfly wing measured **10cm** in length and was magnified x 10. Calculate the image size of the butterfly wing.

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# Magnification

7. A root hair cell measured **102 micrometres** in length and was magnified x 20. Calculate the image size of the root hair cell.

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# Extension magnification questions

1. Calculate the magnification of a euglena cell if the image size is 10 millimeters and actual size is 0.001 centimeters.
2. Calculate the image size of a red blood cell if actual size is 2.3cm and is magnified x15.
3. Calculate the actual size of a flea if the image measures 3.43 cm and is magnified x20.
4. Calculate the magnification of a bee if the image is 6.77 millimeters and actual size is 3.4 micrometers.
5. Calculate the actual size of a skin cell if the image size is 67.7 micrometers and is magnified x 10.



# References

- Slide [2, 4] -[Outlined image of microscope] - [public domain] - [publicdomainvectors]
- Slide [4] - [Public Health Image Library] - [Dr. Mae Melvin] - [publicdomainlibrary]
- Slide [4] - [Microscope glass] - [Szócs TamásTamasflex] - [Wikimedia Commons]
- Slide [4] - [An onion on a white background] - [Colin] - [Wikimedia Commons]
- Slide [4] - [Onion cells through the light microscope] - [Kateryna Kot] - [wikimedia commons]

