



Student Worksheet

Introduction to the Microscope Lab Activity

Name:

This is adapted from a lab created by Mr. Buckley from Edward Knox High School. Credit is given for the original activity to Mr. Buckley. Original can be accessed at:

<https://www.rcsdk12.org/cms/lib04/NY01001156/Centricity/Domain/4824/IntroductiontotheMicroscopeLab.pdf>

Objectives:

1. Demonstrate the proper procedures used in correctly using the compound light microscope.
2. Determine the total magnification of the microscope.
3. Explain how to properly handle the microscope.
4. Describe the changes in the field of view and available light when going from low to high power using the compound light microscope
5. Explain how to increase the amount of light when going from low to high power using the compound light microscope.
6. Explain the proper procedure for focusing under low and high power using the compound light microscope.

Materials:

- Compound microscope
- Materials to create a slide from a letter from newsprint:
 - blank glass slides
 - cover slips
 - eye dropper
 - beaker of water
 - letter "e" cut from newsprint (or any letter your choose)
 - scissors

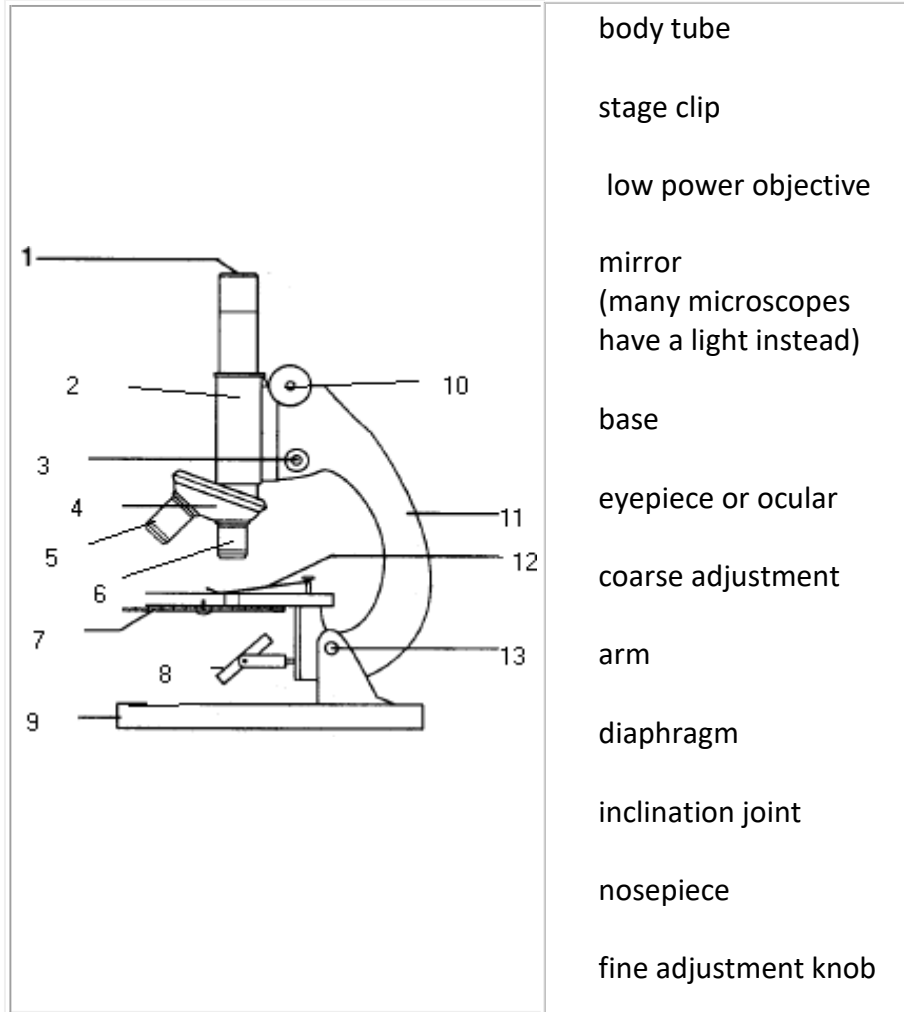
Procedures:

Part 1. Microscope handling

1. **Carry the microscope with both hands** --- one on the arm and the other under the base of the microscope.
2. One person from each group will now go over to the microscope storage area and properly **transport one microscope to your working area.**
3. The other person in the group will **pick up a pair of scissors, newsprint, a slide, and a cover slip**, if preparing your own slide.



4. **Remove the dust cover** and store it properly. Plug in the scope. Do not turn it on until told to do so.
5. **Examine the microscope and put the number of the part for the function of each of the parts** listed on the right side of the diagram.



Indicate the parts of the microscope (correct number) and their functions. You may use a separate sheet for the answers.

Part 2. Determining total magnification:

Locate the numbers on the eyepiece and the low power objective and fill in the blanks below.

Eyepiece magnification _____	(X)	Objective magnification _____	=	Total Magnification _____ X
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Do the same for the high power objective.

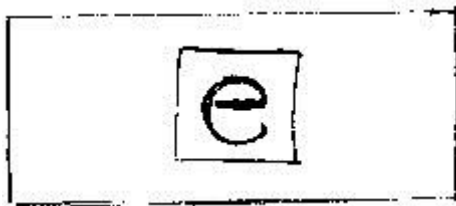
Eyepiece magnification _____	(X)	Objective magnification _____	=	Total Magnification _____ X
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Write out the **rule for determining total magnification of a compound microscope.**

Part 3. Preparing and viewing a wet mount of the letter "e" or any letter of your choosing.

Preparation:

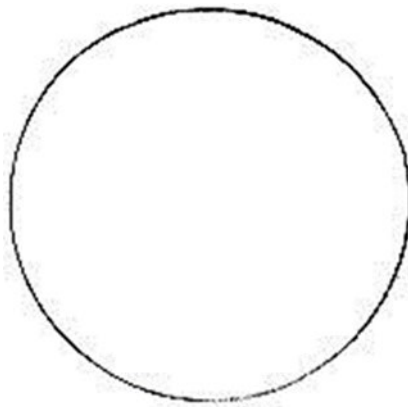
1. With your scissors, cut out the letter "e" from the newspaper.
2. Place it on the glass slide as it would look like when reading.
3. Cover the letter with a clean cover slip. See the figure below. **Note:** the "e" will be much smaller than in the example below.



4. Using your eyedropper, place a drop of water on the edge of the cover slip where it touches the glass slide. The water should be sucked under the slide if done properly.

Viewing:

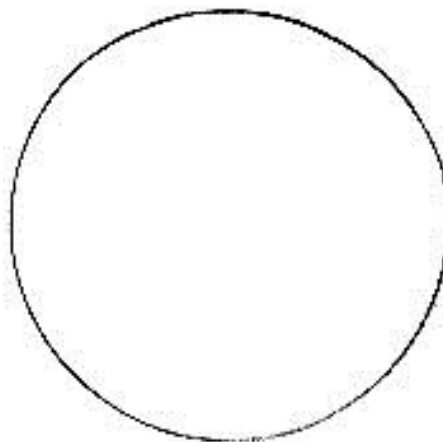
1. Turn on the microscope and place the slide on the stage; making sure the "e" is facing the normal reading position (see the figure above). Using the coarse focus and low power, move the body tube down until the "e" can be seen clearly. Draw what you see in the space below. All drawings should be neat and drawn with pencils.



Total magnification:

2. Describe the relationship between what you see through the eyepiece and what you see on the stage.
3. Offer an explanation of why this happened.
4. Looking through the eyepiece, move the slide to the upper right area of the stage. What direction does the image move?
5. Now, move it to the lower left side of the stage. **What direction does the image move?**
6. Re-center the slide and change the scope to high power. You will notice the "e" is out of focus. **Do Not** touch the coarse focus knob, instead use the fine focus to resolve the picture. Draw the image you see of the letter e (or part of it) on high power.

Total Magnification: _____



7. Locate the diaphragm under the stage. Move it and record the changes in light intensity as you do so.

Part IV. Concluding Questions:

1. Discuss 3 procedures which should be used to properly handle a light microscope.
2. Explain why the light microscope is also called the compound microscope.
3. Images observed under the light microscope are reversed and inverted.
Explain what this means.
4. Explain why the specimen must be centered in the field of view on low power before going to high power.
5. A microscope has a 20 X ocular (eyepiece) and two objectives of 10 X and 43 X respectively:
6. Calculate the low power magnification of this microscope. Show your formula and all work.



7. Calculate the high power magnification of this microscope. Show your formula and all work.

8. Describe the changes in the field of view and the amount of available light when going from low to high power using the compound microscope.

9. Explain what the microscope user may have to do to combat the problems incurred in question # 6.

10. How does the procedure for using the microscope differ under high power as opposed to low power?

