

MICROSCOPE INSTRUCTION SHEET # _____

Introduction

"Micro" refers to **tiny**, "scope" refers to **view or look** at. Microscopes are tools used to enlarge images of small objects so as they can be studied. The compound light microscope is an instrument containing **two lenses**, which magnifies, and a variety of **knobs to resolve (focus)** the picture. Because it uses more than one lens, it is sometimes called the compound microscope in addition to being referred to as being a light microscope. In this lab, we will learn about the proper use and handling of the microscope.

Instructional Objectives

- Demonstrate the proper procedures used in correctly using the compound light microscope.
- Prepare and use a wet mount.
- Determine the total magnification of the microscope.
- Explain how to properly handle the microscope.
- Describe changes in the field of view and available light when going from low to high power using the compound light microscope
- Explain why objects must be centered in the field of view before going from low to high power using the compound light microscope.
- Explain how to increase the amount of light when going from low to high power using the compound light microscope.
- Explain the proper procedure for focusing under low and high power using the compound light microscope.

Materials

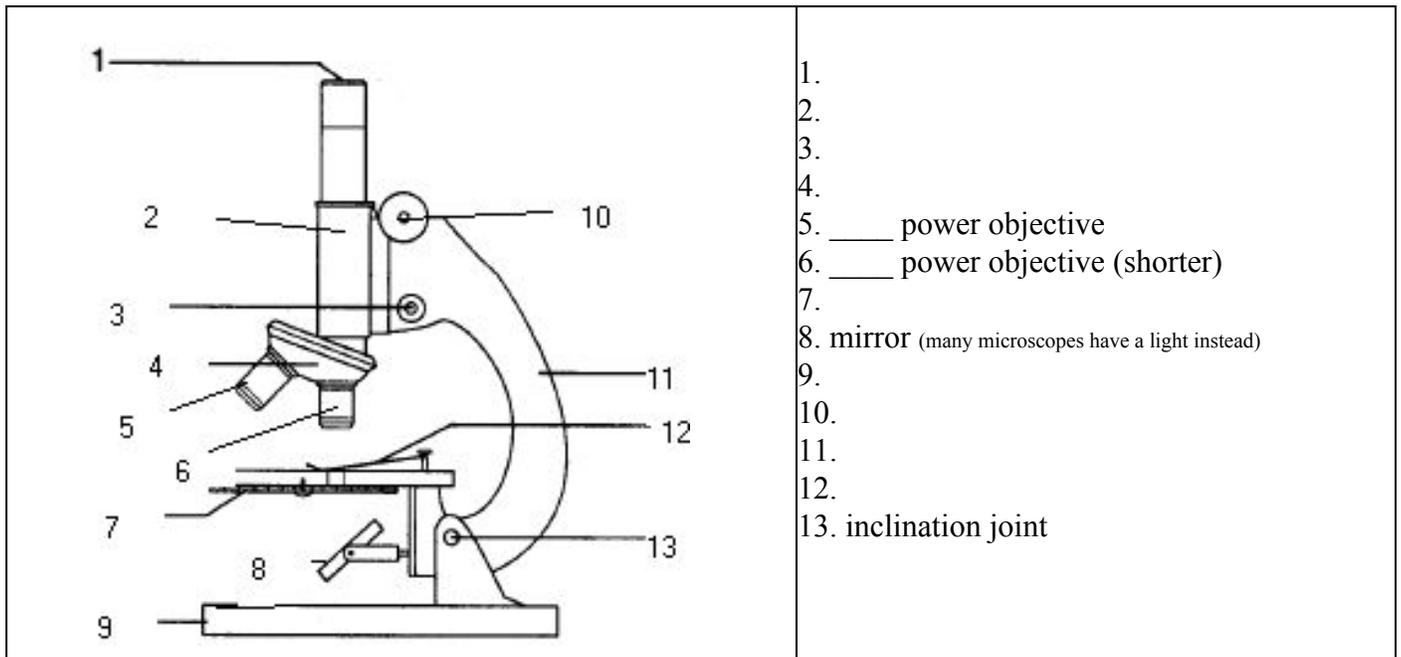
- Compound microscope
- Glass slides
- Cover slips
- Eye dropper
- Beaker of water
- The letter "e" cut from newsprint
- Scissors

~Procedure Steps~

I. Microscope Parts and Function

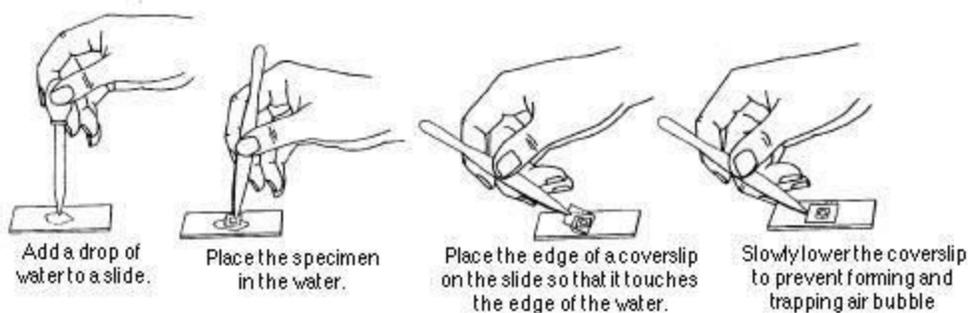
1. **Carry the microscope with both hands** --- one on the arm and the other under the base of the microscope.
2. One person from each group will now go over to the microscope storage area and properly transport one microscope to your working area.
3. The other person in the group will pick up a pair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

5. Examine the microscope and give the function of each of the parts listed on the right side of the diagram. Use the answer sheet to list and define the function of each part of the microscope (this is NOT the same order as your notes)



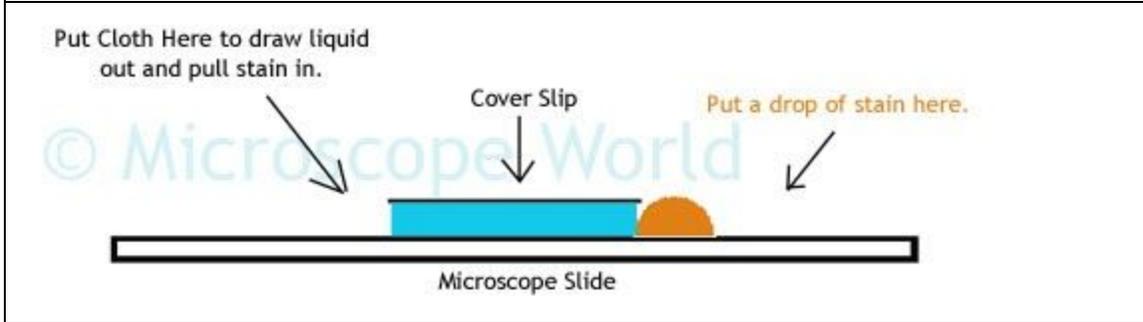
Part II. Preparing a wet mount of the letter "e".

1. With your scissors **cut out the letter "e" from the newspaper.**
2. Place it on the **glass slide** so it looks like a readable (e).
3. **Cover it with a clean cover slip.** See the figure 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. Be sure that you have no air bubbles.

Technique for Adding a Stain when making a Wet Mount



5. 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** on the answer sheet.
6. Describe the relationship between what you see through the eyepiece and what you see on the stage. Complete your answer on the answer sheet.
7. Looking through the eyepiece, move the slide to the upper right area of the stage. What direction does the image move?
8. Now, move it to the lower left side of the stage. What direction does the image move?
9. 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 (make it clear) the picture. Draw the image you see of the letter e (or part of it) on high power onto the answer sheet.
10. Locate the diaphragm under the stage. Move it and record the changes (onto the answer sheet) in light intensity as you do so.
11. Find the Colored Thread Slide.
12. Repeat steps 7-9.
13. All drawings go on the answer sheet.

III. Determining Total Magnification:

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

Eyepiece magnification Power	X	Objective magnification Power	=	Total Magnification Power of Low
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2. Do the same (repeat #1) for the **high** power objective.

Eyepiece magnification Power	X	Objective magnification Power	=	Total Magnification Power High
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4. **Remove the slide and clean it up.** Turn off the microscope and wind up the wire so it resembles its original position. Place the low power objective in place and lower the body tube. Cover the scope with the dust cover. Place the scope back in its original space in the cabinet.

Conclusion Questions:

1. State TWO procedures that 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.
 - a) Calculate the low power magnification of this microscope. Show your formula and all work.
 - b) Calculate the high power magnification of this microscope. Show your formula and all work.
6. In three steps using complete sentences, describe how to make a proper wet mount of a specimen.
7. How does the procedure for using the microscope differ under high power as opposed to low power?
8. Why are microscopes useful? List 5 very specific ways.