

Name:

Date:

Period:

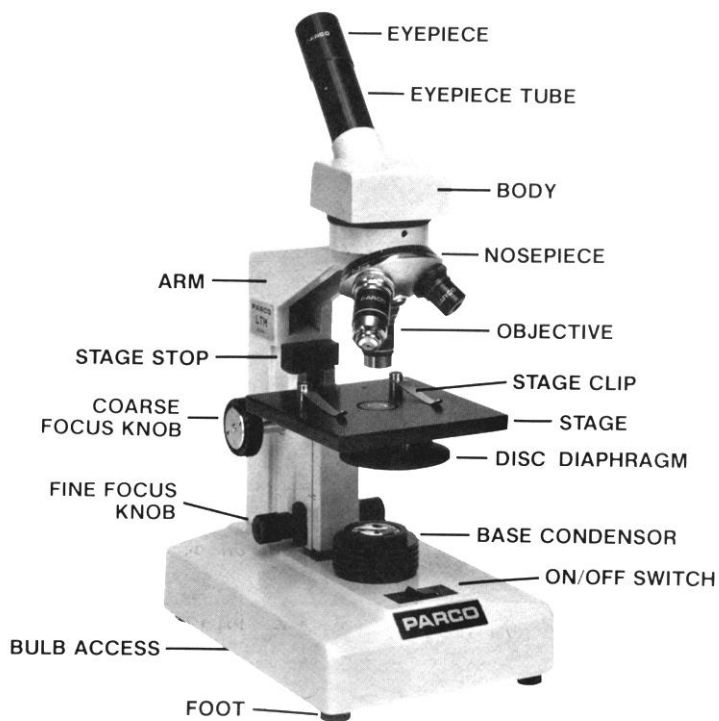
Microscope Introduction Lab

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.

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. Do not turn it on until told to do so.



II. Calculating Actual Size

It is possible to calculate and estimate for any object you view through a microscope.

1. First, determine your field of view diameter (the diameter of what you see in the microscope). For these microscopes, the follow data applies to the field of view diameter:

$$40X = 3.75\text{mm}$$

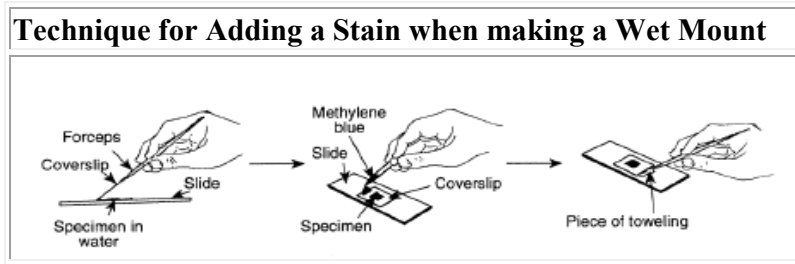
$$100X = 1.25\text{mm}$$

$$400X = 0.40\text{mm}$$

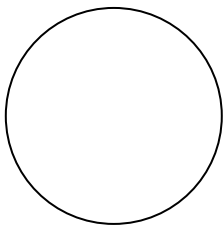
2. Estimate what percentage of the field of view diameter you feel the object takes up.
3. Multiply the percent estimate times the field of view diameter to obtain the length of the actual object.

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 as to look like (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.



1. Following the instructions given in class, prepare a slide with the letter "e". Position the slide so the "e" is in its NORMAL position (facing you in it's reading position) when looking at it on the slide (not through the microscope). Place the slide on the stage and secure if possible. Focus under low power and draw what you see below.



How does the letter "e" look different under the microscope compared to when viewed with the naked eye?

2. Looking through the microscope, what ways does the "e" appear to move when you move the slide?

Moved:

Appears to Move:

Moved:

Appears to Move:

a. to the right

c. Away from you

b. to the left

d. Towards you

3. What is the total magnification of your microscope in these positions?

(remember total magnification = eye piece x objective)

a. Low power objective=

_____ X _____ = _____

b. Medium power objective=

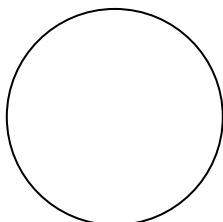
_____ X _____ = _____

c. High power objective=

_____ X _____ = _____

4. How many *times* greater is the magnification increased when you change from low power to high power? _____ times greater

5. Focus the letter "e" under high power and draw what you see below. *(remember: focus only with the fine adjustment under high power!)*



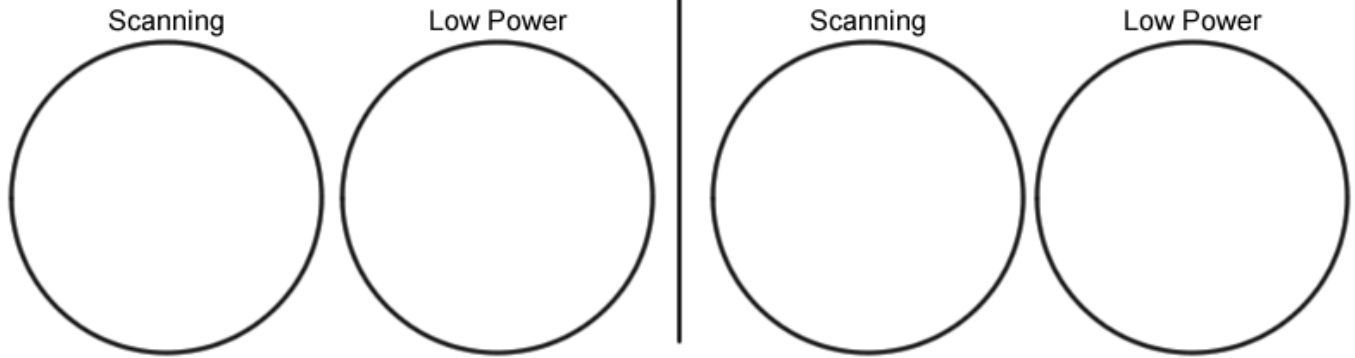
Describe what happens to the field of view as you change from low power to high power magnification.

6. Random Specimens

Choose 2 specimens from the box of "common things". Use the circles below to sketch your specimens under SCANNING and LOW power. You may practice focusing with the high power, but you do not need to sketch it on high power. Exercise caution, some slides say that high power is not possible because the slide is too thick. Label your specimens from the name written on the slide.

Specimen 1: _____

Specimen 2: _____



7. Turn off the microscope and wrap the cord around the scope properly. Return your microscope to its proper storage area. Fill in the following sentences about transportation and storage.

- Always store microscope with the _____ power in place (not on/off!)
- Always carry the microscope with one hand on the _____ and the other hand on the _____.

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.