

Microscope Worksheet

I. Magnification

The magnification, or power, of a lens is usually indicated by a whole number followed by an "X". (Sometimes the "X" is omitted.)

The total magnification of the microscope is obtained by **multiplying** the eyepiece power times the power of the objective. Provide the magnification of the following.

_____ Eyepiece alone

_____ Scanning objective alone

_____ Low power objective alone

_____ High power objective alone

_____ Eyepiece and scanning objective combined

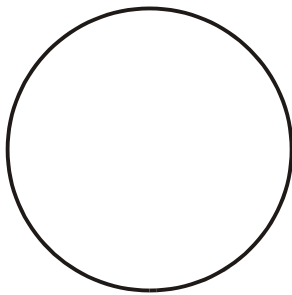
_____ Eyepiece and low power objective combined

_____ Eyepiece and high power objective combined

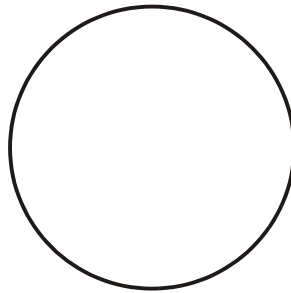
Note: These observed and calculated are correct only for the microscope you are currently using, other microscopes may have different values, check each microscope before use!

II. Power Comparison

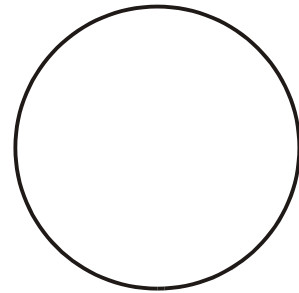
Use a letter "e" on a slide, place the slide on the stage with the letters **Right-Side-Up**. Center it in the field and focus; draw it exactly as it appears in the microscope. Do for all three magnifications, starting, always, with the lowest and working up.



Scanning Power



Low Power



High Power

Push the slide to the right. The image moves to the _____.

Push the slide up and away from you. The image moves _____.

If the specimen on the slide is right side up, the image will appear _____.

III. Brightness of the field/image.

The **field** is the illuminated circular area you “see” when you look into a microscope. (If it is all black, check the position of the turret/indentation.) As you increase the magnification, does the field become brighter or darker?

IV. Sharpness of the Image

As you increase magnification, does the image appear darker or fuzzier?

V. Measuring the Field

Start in Scanning power, Take a clear plastic ruler and place it under the clips as if it were a slide. Use the metric scale. Look through the microscope, place one black dividing line at the extreme left edge of the field, and measure the width of the field by counting the number of divisions visible plus estimate the distance to/from the next/last division. Repeat for low and high powers.

Scanning field _____ mm diameter

Low Power field _____ mm diameter

High Power field _____ mm diameter

As the magnification increases, does the field encompass a larger or smaller area? _____

Whenever you lose sight of your specimen, you should always look for it at a lower power. Why is this?

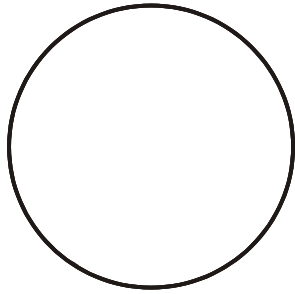
Note: As you increase the magnification, the image becomes larger and larger; at the same time the field grew darker and the image became fuzzier. While it is possible to keep increasing magnification, the resolving power of the light microscope is limited, and you obtain “empty” magnification, extremely fuzzy images!

VI. Before putting the microscope away,

1. Remove the slide, 2. Rotate the shortest objective lens into position, 3. Lower the body tube all the way down (giving the microscope the shortest profile).

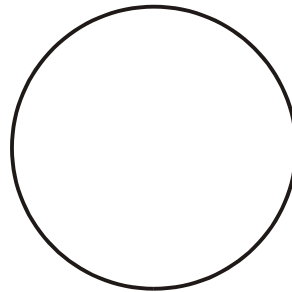
VII. Microscope Specimens - Each drawing should have a **title** and a **magnification**: insert on two lines under the drawing!

A. Moisten the slide by wetting your fingertip and rubbing the slide with it. Sprinkle five grains of salt on the moisture. Do not use water or a cover slip. Draw the salt at high power.



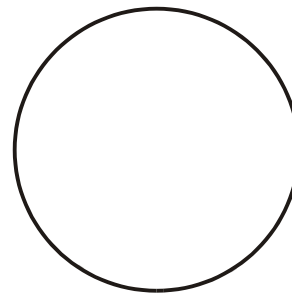
B. Swish a little saliva around in your mouth to make it foamy, get a small drop of it on the tip of your tongue, and touch the tip of your tongue to the center of a clean cover slip.. Drop the slip, saliva side down, onto a clean slide.

The saliva should not contain anything visible except air bubbles, which are what you are looking for. Draw a small and a large bubble at low power and remember what they look like, You will see them again.



C Obtain one of the prepared slides of colored silk fibers. Observe it in scanning, low, and high power. Using high power, carefully focus to determine which thread is on the top, middle, and bottom. When you believe you have figured out the arrangement, check with the instructor to have it signed off. Note: leave the fiber set up under high power so the instructor can check your work!!!!

D. Use one of the available specimen preparations, observe and draw it at high power.



Top _____

Middle _____

Bottom _____