Name: _____ Period:_____ Date: _____

Pre-lab Worksheet.

1. What is the title of this lab?

2. What is the purpose of this lab?

3. What equipment will you be working with in this lab?

4. What safety precautions must you follow during this lab?

Name: _____ Period:_____ Date: _____

5. What is the product of this lab (what will YOU be producing)?

6. List 3 key guidelines for drawing diagrams in the lab.

7. Write down at least 1 question about this lab.

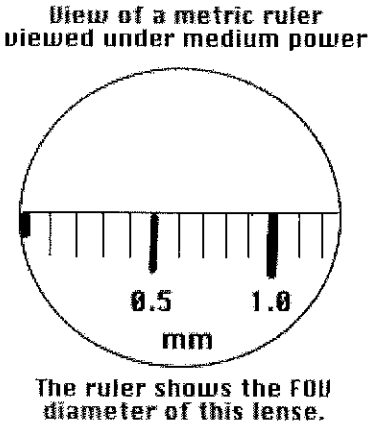
Microscopy Lab:

Estimating Size of Specimens under the Microscope

Purpose: To determine an approximate field of view diameter for each of the objective lenses on our microscopes in order to calculate the approximate size of a specimen.

Part 1: LOW POWER DIAMETER

1. Place the edge of a clear ruler on the microscope stage. Place the ruler so that when viewed through the microscope eyepiece, the ruler is filling half of the diameter of the field of view. Like this:



2. With low power only, focus on the ruler so that the millimeter lines become clear. Remember to start with the course focus before switching to the fine focus adjustment.
3. On a ¼ sheet of white paper, draw the FOV circle and the millimeter marking lines observed in the FOV. Follow the rules for drawing.
4. Tape your ¼ sheet of paper into your lab book.
5. Show your teacher for a stamp in your lab book.

Part 2: LOW POWER SPECIMEN

1. Place a prepared specimen slide (likely *Diatom*, *Paramecium* or *Amoeba*) on the microscope stage. With low power only, focus on the specimen so that it becomes clear. If there are multiple specimens visible in the low power field of view, just pick ONE. Remember to start with the course focus before switching to the fine focus adjustment.
2. On a ¼ sheet of white paper, draw the FOV circle and the ONE specimen observed in the FOV. Follow the rules for drawing.
3. Tape your ¼ sheet of paper into your lab book.
4. Show your teacher for a stamp in your lab book.

Part 3: HIGH POWER SPECIMEN

1. Zoom into the same ONE specimen as above by switching to medium power. Focus on the specimen so that it becomes clear. Remember to start with the course focus before switching to the fine focus adjustment.
2. Zoom even further on the ONE specimen as above by switching to high power. Focus on the specimen so that it becomes clear. Remember to start with the course focus before switching to the fine focus adjustment.
3. On a ¼ sheet of white paper, draw the ONE specimen observed in the FOV. Do NOT draw the FOV circle. Follow the rules for drawing.
4. Tape your ¼ sheet of paper into your lab book.
5. Show your teacher for a stamp in your lab book.

Self check for each drawing:

- ❑ Descriptive title indicating what is being drawn
- ❑ If relevant, title includes scientific name of specimen with conventions for capitalization and italics
- ❑ Title includes "viewed at..." microscope magnification
- ❑ Title includes "drawn at..." drawing magnification
- ❑ Drawing magnification is accurate and includes the correct precision of digits
- ❑ Specimen is drawn accurately, with clear lines and no shading
- ❑ Specimen fills at least ½ of page
- ❑ Drawing is done in pencil on unlined white paper
- ❑ If needed, a ruler has been used to draw a straight, horizontal lines to the right of the side of the drawing for labels.
- ❑ If multiple labels are needed, the labels form an aligned, vertical list.
- ❑ If needed, all labels are printed (not cursive).
- ❑ Scale bar is drawn with a ruler, adjacent to specimen drawing
- ❑ Scale bar is labeled with the correct size for the sample, including unit and correct precision of digits

Source: www.biologyforlife.com (G.VBargen)

Guidelines for Lab Drawings

Drawing materials: All drawings should be done with a sharp pencil line on white, unlined paper. Pencil allows for corrections. Lines must be clear and without smudging. Stippling should be done instead of shading, where appropriate.

Positioning: Center the drawing on the page. Do not draw in a corner. This will leave plenty of room for the addition of labels.

Size: Make a large, clear drawing. It should occupy at least half a page.

Labels: Use a ruler to draw straight, horizontal lines to the right side of the drawing. The labels should form a vertical list. All labels should be printed (not cursive). Label lines must not cross over.

Accuracy: Draw only what you actually see. Avoid making "idealized" drawings. Do not necessarily draw everything that is seen in the field of view. Draw only what is asked for. A small section, shown in detail, will often suffice. It is time consuming and unnecessary, for example, to accurately reproduce the entire microscopic field. When drawing on low power, do not draw individual cells. Show only the distribution of tissues. When making high power drawings, draw only a few representative cells, indicate the thickness of walls, membranes, etc.

Technique: Keep looking back at your specimen whilst you are drawing. Begin on low magnification to visualize the entire specimen. While observing, increase the magnification to observe even more details and reduce the magnification to get a more general view. Use the focusing controls on the microscope to observe at different depths of the specimen. Move the specimen around; do not just concentrate on one part. (Remember to take care and use the fine focus on the 40X objective to avoid breaking a slide).

Title. The title should state what has been drawn and what lens power it was drawn under. For example: "*Paramecium*, drawn as seen through 400X magnification". Title is informative, centered and larger than the other text. The title should always include the scientific name (which is *italicized* or underlined).

Source: www.biologyforlife.com (G.VBargen)

Scale: Include how many times larger the drawing is compared to life size and a scale bar that indicates relative size. To determine magnification, use the equation:

Measurement of the scale line you drew with the ruler (image size)/ Size the line represents (actual)

Your calculations are estimates and therefore should be rounded to one significant digit.