**Introduction to Microscopes**

**NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Total Pts /60**

**\*OBJECTIVES:** To be able to use the microscope properly, make a wet mount, find and examine specimens under high power. Distinguish between a prokaryote and a eukaryote. Sketch the different types of cells and what you observe.

**\*\*\*Remember to write CLEARLY, ANSWER ALL QUESTIONS, ANSWER ALL PARTS OF EACH QUESTION, TRIPLE CHECK YOUR WORK WHEN YOU ARE DONE!!!!!**

**CARE OF MICROSCOPE**

1. Carry with both hands, one beneath the base and one holding the arm.

2. Make sure you use lens paper to clean the lens and objectives.

3. Wrap cord around base and place cover on and put away.

4. DO NOT LEAVE SLIDES ON THE BASE!! AND CLEAN up any mess and put it back on the low objective.

Locate the nosepiece and gently turn it so that the low-power scanning objective is in line with the body tube. The nosepiece will click into place when the objective is in the proper position.

**Field of View:** Keeping both eyes open look through the eyepiece. You will see a circle of light. This is called the field of view. To make the circle of light as bright as possible, you may have to adjust the diaphragm.

1. Describe your hand positioning when carrying the microscope?(1pt)

2. Give the name for the circle of light you see when looking through the eyepiece? (1pt)

3. Name the microscope part used to adjust the amount of light in the field of view? (1pt)

**Part I. Magnification**

4. Examine your microscope. Familiarize yourself with the parts of the microscope.

The magnification written on the ocular lens (eyepiece) is \_\_\_\_\_ (1pt)

5. The magnification written on: the low objective (this is the first and largest number written on it) \_\_\_\_\_ x (1pt)

6. The medium power objective is \_\_\_\_\_\_x (1pt)

7. The high power objective is \_\_\_\_\_\_x (1pt)

8. **The total magnification using the lenses can be determined by multiplying the objective lens with the ocular lens.** What is the total magnification of an item viewed with the?:

LOW POWER objective? \_\_\_\_\_ The MEDIUM POWER? \_\_\_\_\_\_\_ The HIGH POWER ?\_\_\_\_\_\_\_ (3pt)

9. Examine the diaphragm (underneath the stage).   
The numbers on the edge of it range from ONE to \_\_\_\_\_\_\_\_\_\_\_ (1pt)

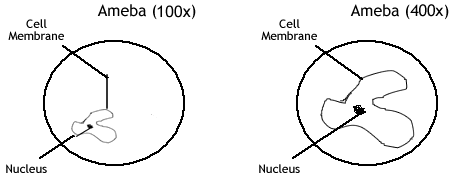
10. Twist the ocular lens, does yours have a pointer? \_\_\_\_\_\_\_\_\_\_\_\_\_ (1pt) What is the purpose of the pointer? (1pt)

11. What happens to your viewing field if you do not have an objective fully clicked into place? (1pt)

**Part II. WHEN YOU Draw Specimens -**

1. Use pencil - you can erase and shade areas  
2. All drawings should include clear and proper labels (and be large enough to view details). Drawings should be labeled with the specimen name and magnification.  
3. Labels should be written on the outside of the circle. The circle indicates the viewing field as seen through the eyepiece, specimens should be drawn to scale - ie. if your specimen takes up the whole viewing field, make sure your drawing reflects that.

Example:



**Low Power** (3pt)

**Part III Viewing a Slide - get a prepared slide .**

1. **Always start with the low power objective**. Odds are, you will be able to see something on this setting. Use the Coarse Knob to focus, image may be small at this magnification, but you won't be able to find it on the higher powers without this first step. Do not use stage clips, try moving the slide around until you find something. **DRAW YOUR SPECIMEN IN THE SPACE PROVIDED !!!**

**High Power** (3pt)

2. **Once you've focused on low power, switch to high power**. Use the fine Knob to refocus. Again, if you haven't focused on this level, you will not be able to move to the next level. **DRAW exactly WHAT YOU SEE!!!!!!**

3. **Put the Specimen in the center of the field of view. If you don't it will disappear on high power. WHY????** (2pt)

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**Power**

**Part IV. Preparing and Observing a Wet Mount**

1. Obtain a glass slide and cover slip. Wipe both sides of the slide with a cloth to remove dust, etc. The cleaned slide and cover slip should be handled by their edges.

2. Cut out a small piece of newspaper that contains the **letter "e."** This should be a standard newsprint letter-NOT a headline-size letter-Avoid dark background (black)

3. Place the letter **"e"** in the center of the slide as it would appear in the newspaper-face-up. right side up. Using a pipette, place a drop of tap water on top of the "e." Use a probe to hold the "e" in place while you add the drop of water, if necessary.

4. Hold a covers lip at about a 45o angle over the drop of water. Gently lower the cover slip onto the slide. If air bubbles appear in gently tap the cover slip with the back end of the probe.

\*5. **Draw the "e" as** it appears at each magnification. **Drawings should be drawn to scale and you should note the orientation of the e in the viewing field (is it upside down or right side up?)**

Low Power (2pt) Medium Power (2pt) High Power (2pt)

6. While looking at your drawings of the letter 'e', What did you notice about the e? List ***2*** things. (2pt)

7. While looking through the eyepiece at the letter e, move the slide to your right. How did the letter move? (1pt)

8. While looking through the eyepiece at the letter e, move the slide to your left. How did the letter move? (1pt)

9. If you were tracking a microorganism that appeared to be moving from the right side of your field of vision to your left, which way would you move the slide to keep it in view? Why? (2pt)

10. If that same organism suddenly changed direction and started to move toward the bottom of your field of vision, which way would you move the slide to keep it in view? Why? (2pt)

**VI. Answer true or false to each of the statements *(Write true or false)*** (1pt each)

\_\_\_\_\_\_\_\_\_\_ On high power, you should use the coarse adjustment knob.  
\_\_\_\_\_\_\_\_\_\_ The diaphragm determines how much light shines on the specimen.  
\_\_\_\_\_\_\_\_\_\_ The fine focus knob visibly moves the stage up and down.  
\_\_\_\_\_\_\_\_\_\_ Images viewed in the microscope will appear upside down.   
\_\_\_\_\_\_\_\_\_\_ The type of microscope you are using is a scanning microscope.  
\_\_\_\_\_\_\_\_\_\_ For viewing, microscope slides should be placed on the objective.   
\_\_\_\_\_\_\_\_\_\_ In order to switch from low to high power, you must rotate the revolving nosepiece.  
\_\_\_\_\_\_\_\_\_\_ The total magnification of a microscope is determined by adding the ocular lens power to the objective lens power.

LABEL ALL THE PARTS OF THE MICROSCOPE.

