Name _____ **Per.** _____ **Date** _____

Chapter 1- Lab
Techniques for Better Microscope Use

Purpose: To learn the proper techniques in preparing a wet mount slide.
To determine the position of an object when viewed through a microscope.
To use a diaphragm correctly.
To find the proper depth of field for objects.
To properly stain a prepared wet mount slide

Materials:

microscope	scissors	iodine dropper	potato
slide	newspaper	cotton ball	pond water (optional)
cover slip	water dropper	thread (2 colors)	

Procedure: **Part A- Position of Objects When Viewed With a Microscope**

1. Prepare a wet mount of a lower case letter "e" from a piece of newspaper. Preparation of a wet mount slide can be found in Appendix D on pg. 1071.
2. Place the wet mount on your microscope's stage. Position the slide on the stage so that the letter "e" faces you as you would read these procedures.
3. Observe the letter "e" under low power. Next, find and observe the letter "e" under high power.

   Draw the letter "e" you observed in your field under high power. Be sure to include your total magnification.

   Total Magnification _____

4. While looking through the eyepiece, move the slide from left to right.

   Question: In what direction does the letter "e" move as you move the slide from left to right?

   _____

5. While looking through the eyepiece, move the slide toward you and away from you.

   Question: In what direction does the letter "e" move as you move the slide toward you and away from you?

   _____

Part B- Using the Diaphragm

1 Prepare a wet mount of a few strands of cotton ball.
2 Observe the cotton under low power.
3 While looking through the microscope, change the amount of light entering the microscope field by adjusting the diaphragm.

Draw the strands of cotton you observed in your field under low power. Be sure to include your total magnification.

Total Magnification _____

Question: Under what diaphragm setting are the cotton fibers the sharpest (clearest to see)?

_____

4 Next, observe the cotton under high power.
5 While looking through the microscope, change the amount of light entering the microscope field by adjusting the diaphragm.

Draw the strands of cotton you observed in your field under high power. Be sure to include your total magnification.

Total Magnification _____

Question: Under what diaphragm setting (low, medium, or high) are the cotton fibers the s harpest (clearest to see)?

_____

Part C- Depth of Field

1 Prepare a wet mount of 2 different colored strands of thread. Cross the 2 strands to form an "X" before adding the drop of water and coverslip.
2 Observe the strands under low power.

3 Center the slide so you are looking at the point where the 2 strands cross. Adjust the diaphragm for proper lighting.

Question: Can both strands be observed clearly at the same time under low power?

_____

4 Observe the strands under medium power. You may have to move the slide to see the "X." Adjust the diaphragm for proper lighting.

Question: Can both strands be observed clearly at the same time under medium power?

_____

Question: Explain why it is impossible to observe objects clearly at different depths under medium power at the same time.

_____

_____

_____

5 While looking through the microscope under medium power, turn the fine adjustment knob back and forth to view the 2 strands of thread in 3-dimension.

Draw and color the 2 strands you observed in your field under medium power. Be sure to include your total magnification.

Total Magnification _____

Part D- Stains as an Aid to Identifying Things Under the Microscope

1 Obtain potato cells from the teacher.
2 Prepare a wet mount of your potato cells.
3 View the potato cells under low power.

Draw and color the unstained potato cells you observed in your field low power. Be sure to include your total magnification.

Total Magnification _____

4 Remove the slide from the microscope and carefully remove the cover slip.
5 Add 1 drop of iodine to the potato cells and place the cover slip back onto the slide. Techniques on staining specimens can be found in Appendix D on pg. 1071.
6 View the stained potato cells under low power.

Draw and color the stained potato cells you observed in your field low power. Be sure to include your total magnification.

Total Magnification _____

Question: Explain why scientists stain specimens to be observed under the microscope.

_____

_____

_____

Part E- Comparing Fields of View- Observations Under Low Power vs. Observations Under High Power

1 Observe the stained potato cells, from Part D, under low power.
2 Count and record the number of potato cells you observed. # of Potato Cells _____
3 Observe the stained potato cells under high power.
4 Count and record the number of potato cells you observed. # of Potato Cells _____

Question: What happened to the number of potato cells you observed when you switched from low power to high power. Explain why this happened.

Part F- (Optional)- Finding and Observing Live Specimens in Pond Water

1 Using the techniques you learned in Parts A - C, find and observe living specimens in pond water under high power.

Draw and color the organisms you observed in your field under high power. Be sure to include your total magnification.

Total Magnification _____

Question: Give 2 reasons why finding living specimens under a microscope can be difficult.