

**A. USING THE MICROSCOPE**

**Determining the Magnifying Power:**

**Total Magnification = Ocular magnification X Objective magnification**

Ocular Lens X Objective Lens = Total Magnification

- 1a. Scanning Power: \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_  
1b. Low Power: \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_  
1c. High Power (Dry): \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_  
1d. Oil Immersion: \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_

**Image Orientation and Focusing:**

2. Describe the orientation of the letter "e" when viewed under the microscope.
3. What direction in the field of view did the letter "e" move when you moved the slide slightly to the left or right using the slide movement knobs? Up or down?
4. Describe the differences when viewing the letter "e" under the three different magnifications.
5. What happened to the light intensity when you switched from low to high power?
6. What can you do to adjust for this change?
7. What happened to the working distance (distance between the slide and the objective lens) when you increased magnification from 40X → 100X → 430X?

**Diameter of the Field of View:**

8. Scanning power diameter: \_\_\_\_\_

9. Low power diameter: \_\_\_\_\_

10. Calculate the high power diameter: **Show your work.**

11. Convert the high power diameter to  $\mu\text{M}$ . **Show your work.**

12. What are the advantages of knowing the diameter of the field of view at a given magnification?

**Calibration of the reticle:**

13. Using the 4x objective, what is the length of 2 mm in reticle units?  
a. Divide 2 mm by your measurement  
b. What is the length of one reticle unit at 40x (=Total Mag)?

14. Using the 10x objective, what is the length of 1 mm in reticle units?  
a. Divide 1 mm by your measurement  
b. What is the length of one reticle unit at 100x (=Total Mag)?

15. What is the length of one reticle unit at 400x (=Total Mag)?  
a. In mm?  
b. In  $\mu\text{M}$ ?

**Depth of Field:**

16. Are all three colored threads in focus at low power?

17. Why should you always focus an object on a lower power before focusing on high power?

