

Lab 4: Microscopic Measurements

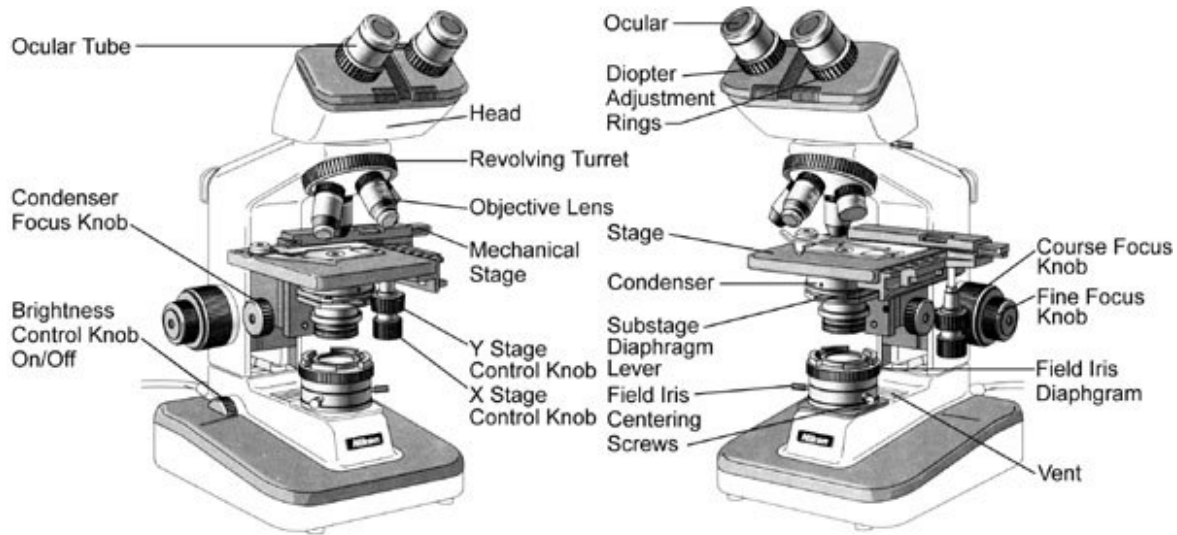
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Objective: Familiarize self with microscope parts, care and operation. Calibrate the microscope for size of field of view for each of the objective lenses.

Introduction: A stage micrometer will be used to measure the field of view of ONE of the objective lenses. This will be used to mathematically figure the fields of view for the remaining three objective lenses.

Terms to be familiar with:

- stage micrometer: a finely divided scale ruled on a microscope slide
- resolution: ability to distinguish two points as separate



Methods:

- bring micrometer into focus on low magnification
- bring micrometer into fine focus at the lowest resolution where the field of view is covered with the graduations of the micrometer
- count the diameter's field of view (each small graduation is 10  $\mu\text{m}$  or 0.01 mm)
- calculate the remaining 3 fields of view relative to the first, using mathematical relationship between the calculated and other objectives.

Results

objective lens	field of view
4x	4900 $\mu\text{m}$
10x	1960 $\mu\text{m}$
40x	490 $\mu\text{m}$
100x	196 $\mu\text{m}$

field of view using 40x objective was measured to be 490 $\mu\text{m}$ . 40 multiplied by 2.5 is 100, so 490 divided by 2.5 will yield the field of view using 100x objective. 40 divided by 4 is 10, so 490 multiplied by 4 will yield the

field of view using the 10X objective. 40 divided by 10 is 4, so 490 multiplied by 10 will yield the field of view using the 4X objective.

Questions:

1. ~~Find~~<sup>cdw</sup> The distance between each of the graduations is  $10\mu\text{m}$  or  $0.010\text{mm}$ .
2. n/a

Discussion/Conclusion

Field of view measurements can be used to determine the approximate size of any object seen under the microscope. Field of view and magnification change with equivalent but OPPOSITE magnitude.