

## Learning Targets: Unit 3 – Microscopy

When providing the best possible answer to the following questions please apply all learned scientific techniques and procedures, do not use abbreviations, use proper scientific terminology, show work for all mathematical calculations, use all significant figure and scientific notation rules, apply appropriate writing strategies, and note that at all times spelling counts. Your ability to meet these and all established classroom expectations, including labeling of BINs, providing heading information, and your ability to follow directions may be included in computation of grade.

**Instructions:** This is a list of topics covered in this Unit. You should treat this like a checklist. The bolded items are standards defined by Kentucky of Education to be taught in High School Biology. The items in italics connect these standards to our specific course work. You should have complete understanding and knowledge of these items and be able to apply them to problems/tasks. Although it may help you to write out answers and explanations to the listed items it is not required.

- Demonstrate organizational skills such as keeping a daily calendar of assignments and activities and maintaining a notebook of class work.
  - *Keep your binder organized and updated.*
- Apply strategies before, during, and after reading to increase fluency and comprehension (e.g., adjusting purpose, previewing, scanning, making predictions, and comparing, inferring, summarizing, using graphic organizers) with increasingly challenging texts.
  - *Use graphic organizers or step by step flowcharts to better understand the requirements of performing mathematical analysis in science.*
  - *Improve understanding of material by outlining material presented in class.*
- Use a variety of appropriate sources (e.g. Internet, scientific journals) to retrieve relevant information; cite references properly.
  - *Know how to evaluate a web site for accuracy, objectivity, and authority*
- Apply active reading, listening, and viewing techniques by taking notes on classroom discussions, lectures, oral and/or video presentations, or assigned at-home reading, and by underlining key passages and writing comments in journals or in margins of texts, where permitted.
  - *Stay on task during class, annotate provided PowerPoint notes and take additional notes during board discussions.*
  - *Outline materials and assimilate this information into material presented in class.*
- Apply knowledge of Greek, Latin, and Anglo-Saxon affixes, inflections, and roots to understand unfamiliar words and new subject area vocabulary in increasingly challenging texts.
  - *Be able to define and correctly spell all vocabulary words.*
- Actively participate in small-group and large-group discussions, assuming various roles.
  - *Participate in class discussions and ask questions when needed on a daily basis.*
- Use graphical models, mathematical models, and simple statistical models to express patterns and relationships determined from sets of data

- Collect, organize, and analyze data accurately and precisely (e.g. using scientific techniques and mathematics in experiments)
  - *Understand the concept of statistics and how they should be represented in science.*
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- Identify and clarify scientific research questions and design experiments.
  - *Be able to use critical thinking skills and science reasoning skills to analyze and evaluate hypotheses, experimental design and conclusions.*
- Design and conduct investigations appropriately using essential processes of scientific inquiry.
- Use mathematics to enhance the scientific inquiry process (e.g., choosing appropriate units of measurement, graphing and manipulating experimental data)
- Revise, refine, and proofread own and other's writing, using appropriate tools to find strengths and weaknesses and to seek strategies for improvement (using good writing methods).
- Safely use laboratory equipment and techniques when conducting scientific investigations.
  - *Understand the brief history of microscopes and the theory of how they work including total magnification and resolution.*
  - *Be able to label the parts of compound light microscopes and explain the function of each part.*
  - *Be able to correctly use both types of compound light microscopes.*
- Interpret results and draw conclusions, revising hypothesis as necessary and/or formulating additional questions or explanations.
- Distinguish between fact and opinion, basing judgments on evidence and reasoning.
- Write and speak effectively to present and explain scientific results, using appropriate terminology and graphics.
- Use appropriate essay-test taking and timed-writing strategies that address and analyze the questions.
- Demonstrate familiarity with test formats and test administration procedures to increase speed and accuracy.
  - *Complete tests within permitted time limits.*