



4th Grade Microscopic World

Unit Overview

The Microscopic World unit provides students the opportunity to study the life at a microscopic level. Preceding this unit, students engaged in a Living Environment unit that emphasized the needs of living things. Students apply what they learned at the macroscopic level to the small, microscopic world. Through extensive microscope work, students learn that single-celled organisms exist and have the same needs as larger organisms. Students also observe collections of cells within the same multi-celled organisms. Through the experiences, students begin to understand that some organisms are made up of a similar collection of cells and others are made up of cells having different properties and functions.

Essential Questions:

1. What do living things made up of one cell need to live?
2. How and why do the cells within some living things differ?

Unit Questions:

1. Why are microscopes important? Why is it sometimes helpful to magnify things?
2. What are some ways to describe microscopic objects?
3. What are the proper techniques for using a microscope?
4. How do we draw objects magnified under the microscope?

Lesson Summary

Lessons 1 – 3: Students use hand lenses to magnify common objects. They learn that materials may be composed of parts that are too small to see without some type of magnification. The students make written observations and sketches of the objects. Sketching magnified objects is skill addressed throughout the unit.

Lessons 4 & 5: The students are introduced to the microscope and proper techniques for using it effectively. By observing layers of thread under the microscope, students learn about depth of field.

Lessons 6 – 8: Using books, videos, the Internet, and live specimens, students delve into the microscopic world of single-celled organisms. They observe and sketch euglena, paramecium, amoeba, stentor, blepharisma, and vorticella. Students learn that even these small creatures need food, water, and a place to live.

Lesson 9: After using the microscopes extensively, students demonstrate their skills through a microscope performance assessment. The students are expected to use the microscope properly and be able to bring a particular specimen into focus.

Lessons 10 & 11: The unit shifts from single-celled organisms to multi-celled organisms. Students make onion slides and observe a collection of cells that make up the onion. Students also observe cells from different parts of an organism. For example, they examine the stem, root, petal, and leaf cells from a flower. Students learn that not all cells within an organism may look alike or have the same role.