

Grade 6 Expectations in Science and Technology/Engineering

Learning standards are taken from the October, 2006 MA Science and Technology/Engineering Curriculum Framework. The learning standard numbers in this document correspond to the learning standard numbers in the Framework.

Learning standards from the MA Science and Technology/Engineering Curriculum Framework for the end of Grade 6 are numbered and printed in bold. All students are expected to master all grade level expectations.

Strand 1: INQUIRY

**Inquiry is integrated throughout all units rather than taught as a separate unit.*

Curriculum Framework Learning Standard
1. Design and conduct an investigation specifying variables to be changed, controlled and measured.
2. Use more complex tools (e.g., microscopes, graduated cylinders, and timers), technologies (e.g., computer probes) and appropriate measurement units to make observations, collect and organize qualitative and quantitative data.
3. Present and explain data and findings using multiple representations including tables, mathematical and physical models, demonstrations and graphs.
4. Communicate scientific procedures, results, and explanations using appropriate science and technology terminology.
5. Critique and revise investigation explanations and procedures without changing data to match expected results.

**Strand 2: DOMAINS OF SCIENCE
LIFE SCIENCE**

Curriculum Framework Learning Standard

Classification of Organisms

1. Classify organisms into the currently recognized kingdoms according to characteristics that they share. Be familiar with organisms from each kingdom.

2. Recognize that all organisms are composed of cells, and that many organisms are single-celled (unicellular), e.g., bacteria, yeast. In these single-celled organisms, one cell must carry out all of the basic functions of life.

3. Compare and contrast plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles).

4. Recognize that within cells, many of the basic functions of organisms (such as extracting energy from food and getting rid of waste) are carried out. The way in which cells function is similar in all living organisms.

Energy and Living Things

16. Recognize that producers (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.

Strand 3: DOMAINS OF SCIENCE EARTH SCIENCE

Curriculum Framework Learning Standard
Physical Features and Earth History
1. Recognize, interpret and be able to create models of the earth's common physical features in various mapping representations, including contour maps.
2. Describe the layers of the earth, including the lithosphere, the hot convection mantle, and the dense metallic core.
5. Describe how the movement of the earth's crustal plates causes both slow changes in the earth's surface (e.g., formation of mountains and ocean basins) and rapid ones (e.g., volcanic eruptions and earthquakes).
6. Describe and give examples of ways in which the earth's surface is built up and torn down by natural processes, including deposition of sediments, rock formation, erosion, and weathering.
7. Explain and give examples of how physical evidence, such as fossils and surface features of glaciation, supports theories that the earth has evolved over geologic time.

**Strand 4: DOMAINS OF SCIENCE
PHYSICAL SCIENCE (CHEMISTRY AND PHYSICS)**

Curriculum Framework Learning Standard
Properties of Matter
2. Differentiate between volume and mass. Define density.
3. Recognize that the measurement of volume and mass requires understanding of the sensitivity of measurement tools (e.g., rulers, graduated cylinders, balances) and knowledge and appropriate use of significant digits.