

The following learning targets represent the major concepts studied and assessed in science at this grade.

1st Semester

Scientific Inquiry

Quarter 1 (and ongoing throughout the year)

- Determine the appropriate tools and techniques to collect data.
- Identify and describe the importance of the independent variable, dependent variable, control of constants, and multiple trials.
- Formulate testable questions and hypotheses.
- Calculate the range and average/mean of a set of data.
- Communicate the procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables (allowing for the recording and analysis of data relevant to the experiment such as independent and dependent variables, multiple trials, beginning and ending times or temperatures, derived quantities) graphs (bar, single line and pictograph), writings and use data as support for observed patterns and relationships to make predictions to be tested.
- Use quantitative and qualitative data as support for reasonable explanations (conclusions).

Living Organisms:

Cells and Photosynthesis

Quarter 1

Cells

- Identify and contrast the structures of plants and animals that serve similar functions (e.g. taking in water and oxygen, support, response to stimuli, obtaining energy, circulation, digestion, excretion, reproduction).
- Describe how the cell membrane helps regulate the transfer of materials in and out of the cell.
- Recognize all organisms are composed of cells, the fundamental units of life, which carry on all life processes.
- Identify and give examples of each level of organization (cell, tissue, organ, organ system) in multicellular organisms (plants, animals).

Photosynthesis and Respiration

- Describe photosynthesis is a chemical change with reactants (water and carbon dioxide) and products (energy-rich sugar molecules and oxygen) that takes place in the presence of light and chlorophyll.
- Describe how oxygen is needed by all cells of most organisms for the release of energy from nutrient (sugar) molecules

Living Organisms: Reproduction and Body Systems

Quarter 2

Reproduction and Heredity

- Identify examples of asexual reproduction (i.e. plants budding, binary fission of single cell organisms). Describe how flowering plants reproduce sexually.
- Identify chromosomes as cellular structures that occur in pairs that carry hereditary information in units called genes.
- Recognize and describe how when asexual reproduction occurs, the same genetic information found in the parent cell is copied and passed on to each new daughter cell.
- Recognize and describe when sexual reproduction occurs, the offspring is not identical to either parent due to the combining of the different genetic codes contained in each sex cell.
- Compare and contrast the reproductive mechanisms of classes of vertebrates (i.e. internal vs. external fertilization).
- Identify plants and animals using dichotomous keys.

The following learning targets represent the major concepts studied and assessed in science at this grade.

1st Semester contd.

Body Systems

- Explain the interactions between human body systems (i.e., nervous and muscular, digestive and circulatory).
- Explain the role of antibiotics and vaccines in the treatment and prevention of diseases.

2nd Semester

Ecology

Quarter 3

- Identify populations within a community that are in competition with one another for resources.
- Predict the possible effects of changes in the number and types of organisms in an ecosystem on the populations of other organisms within that ecosystem.
- Describe beneficial or harmful activities of organisms, including humans (e.g. deforestation, overpopulation, water and air pollution, global warming, restoration of natural environments, river bank/coastal stabilization, recycling, channelization, reintroduction of species, depletion of resources), explain how these activities affect organisms within an ecosystem
- Describe the possible solutions to potentially harmful environmental changes within an ecosystem.
- Relate examples of adaptations (specialized structures or behaviors) within a species to its ability to survive in a specific environment (e.g. hollow bones/flight, hollow hair/insulation, dense root structure/compact soil, seeds/food, protection for plant embryo vs. spores, fins/movement in water).
- Classify populations of unicellular and multicellular organisms as producers, consumers and decomposers by the role they serve in an ecosystem.

Impact of Science, Technology and Human Activity

Ongoing throughout the year

- Explain how technological improvements, such as those developed for the use in space exploration, the military, or medicine have led to the invention of new products that may improve lives here on Earth. (e.g. new materials, freeze-dried foods, infrared goggles, Velcro, satellite imagery, robotics, lasers).
- Identify the link between technological developments and the scientific discoveries made possible through their development (e.g. Hubble telescope and stellar evolution, composition and structure of universe, the electron microscope and cell organelles, sonar and composition of the Earth, manned and unmanned space missions and space exploration, Doppler radar and weather conditions, MRI and CAT scans and brain activity).
- Describe how technological solutions to problems (e.g. storm water runoff, fiber optics, windmills, efficient car design, electronic trains without conductors, sonar, robotics, Hubble telescope) can have both benefits and drawbacks (e.g. design constraints, unintended consequences, risks).
- Describe ways in which science and society influence one another (e.g. scientific knowledge and the procedures used by scientists influence the way many individuals in society think about themselves, others and the environment; societal challenges often inspire questions for scientific research; social priorities often influence research priorities through the availability of funding for research).

Quarter 4

MAP Review