

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).

### Universe

#### **Quarter 1**

- Classify celestial bodies in the solar system into categories: Sun, moon, planets, and other small bodies (i.e., asteroids, comets, meteors) based on physical properties.
- Describe the relative proximity of common celestial bodies (i.e., Sun, Moon, planets, smaller celestial bodies such as comets and meteors and other stars) in the sky to the Earth.
- Describe how the appearance of the Moon that can be seen from Earth changes approximately every 28 days in an observable pattern (moon phases).
- Relate the axial tilt and orbital position of the Earth as it revolves around the Sun to the intensity of sunlight falling on different parts of the Earth during different seasons.
- Describe how the planets' gravitational pull keeps satellites and moons in orbit around them.

### Earth Systems

#### Rock Cycle/Weather and Climate

#### **Quarter 2/3**

- Describe how the movement of crustal plates can cause earthquakes and volcanic eruptions that can result in mountain building and trench formation.
- Describe the methods used to estimate geologic time and the age of the Earth (e.g. techniques used to date rocks and rock layers, presence of fossils).
- Use rock and fossil evidence to make inferences about the age, history, changing life forms and environment of the Earth (i.e. changes in successive layers of sedimentary rock and the fossils contained within them, similarities between fossils in different geographic locations, similarities between fossils and organisms present today, fossils of organisms indicating changes in climate, fossils of extinct organisms).
- Explain and trace the possible paths of water through the hydrosphere, geosphere, and atmosphere (i.e., the water cycle: evaporation, condensation, precipitation, surface run-off/groundwater flow).
- Relate the different forms water can take (i.e., snow, rain, sleet, fog, clouds, dew, humidity) as it moves through the water cycle to atmospheric conditions (i.e., temperature, pressure, wind direction and speed, humidity) at a given geographic location.
- Explain how the differences in surface temperature, due to the different heating and cooling rates of water and soil, affect the temperature and movement of the air above.
- Identify weather conditions associated with cold fronts and warm fronts.
- Differentiate between weather and climate.
- Identify factors that affect climate (e.g., latitude, altitude, prevailing wind currents, amount of solar radiation).
- Describe the affect of human activities (e.g., landfills, use of fertilizers and herbicides, farming, septic systems) on the quality of water.

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## 2nd Semester

### Rock Cycle/Weather and Climate

*Quarter 3*

### 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).