

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).

Matter and Energy

- Identify matter is anything that has mass and volume.
- Describe and compare the volumes (amount of space an object occupies) of objects using a graduated cylinder or displacement method.
- Describe the physical and chemical properties (e.g., magnetic attraction, conductivity, melting point and boiling point, reactivity) of pure substances (elements or compounds) (e.g., copper wire, aluminum wire, iron, charcoal, sulfur, water, salt, sugar, sodium bicarbonate, galena, quartz, magnetite, pyrite) using appropriate senses and tools.

- Describe appropriate ways to separate components of different types of mixtures (sorting, evaporation, filtration, magnets, boiling, chromatography, screening).
- Predict how various solids (soluble/insoluble) behave (e.g., dissolve, settle, float) when mixed with water.
- Using the Kinetic Theory model, illustrate and account for the physical properties (i.e., shape, volume, malleability, viscosity) of a solid, liquid, or gas in terms of the arrangement and motion of molecules in a substance.
- Identify chemical changes (i.e., rusting, oxidation, burning, decomposition by acids, decaying, baking) in common objects (i.e., rocks such as limestone, minerals, wood, steel wool, plants) as a result of interactions with sources of energy or other matter that form new substances with different characteristic properties.
- Identify the different energy transformations that occur between different systems (e.g. chemical energy in battery converted to electricity in circuit converted to light and heat from a bulb).

Quarter 2

Light, Sound, and Heat

- Predict how different surfaces (transparent, translucent, opaque) and lenses (convex, concave) affect the behavior of light rays.
- Describe how sound energy is transferred by wave-like disturbances that spread away from the source through the medium.
- Observe and describe the evidence of energy transfer in a closed series circuit.

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2nd Semester

Quarter 3/4

Force and Motion

Motion

- Given an object in motion, calculate its speed (distance/time).
- Interpret a line graph representing an object's motion in terms of distance over time (speed) using metric units.

Force

- Identify and describe the types of forces acting on an object in motion, at rest, floating/sinking (i.e. type of force, direction, amount of force in Newtons).
- Compare the effects of balanced and unbalanced forces (including magnetic, gravity, friction, push or pull) on an object's motion.
- Explain that when forces (including magnetic, gravity, friction, push or pull) are balanced, objects are at rest or their motion remains constant.
- Explain how the acceleration of a moving object is affected by the amount of net force applied and the mass of the object. .
- Explain how simple machines affect the amount of effort force, distance through which a force is applied, and/or direction of force while doing work.

manned 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). (Assess locally).
- 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).

Science and Technology *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 un-