

St. Raphael the Archangel Science

8th Grade 2017-2018

First and Second Quarter

Matter and Energy

1. Describe evidence that supports the theory that matter is composed of small particles (atoms, molecules) that are in constant, random motion.
2. 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.
3. Identify and classify changes in matter as chemical and/or physical.
4. Identify more than 100 known elements (unique atoms) exist that may be combined in nature or by man to produce compounds that make up the living and nonliving substances in the environment.
5. Distinguish between acids, bases, and solutions.
6. Identify and describe the different states of matter (solid, liquid, gas).
7. Understand how the different elements are organized within the Periodic Table.
8. Understand and describe how the element Carbon forms bonds and compounds.

Third and Fourth Quarter

Living Organisms

1. Compare and contrast the processes of mechanical and chemical digestion, and their role in providing materials necessary for survival of the cell and organism.
2. Compare and contrast the chemical reactions of Photosynthesis and Respiration, and where each occurs.
3. Identify and give examples of each level of organization (cell, tissue, organ, organ system) in multicellular organisms (plants, animals).
4. Identify and describe the functions of each part of a cell.
5. Identify chromosomes as cellular structures that occur in pairs that carry

hereditary information in units called genes, and predict outcome that crossing of genotypes has on phenotype.

6. Recognize and describe how when sexual reproduction occurs, genetic material from both parents is passed on and combined to form the genetic code for the new organism.
7. Compare and contrast Mitosis and Meiosis and the effect on genetic material in the cell.
8. Understand and describe how the genetic process can result in genetic disorders.

Next Generation Science Standards

NGSS Crosscutting Concepts 7 Cause and Effect: Mechanism and Prediction

1. Cause and effect relationships may be used to predict phenomena in natural or designed systems.

Physical Sciences 7 Matter and Its Interactions

2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

First - Fourth Quarter

Scientific Inquiry

1. Calculate the range and average/mean of a set of data.
2. 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, pictograph), and writings.
3. Compare amounts/measurements.
4. Formulate testable questions and hypotheses.
5. Identify and describe the importance of the independent variable, dependent variables, control of constants, and multiple trials to the design of a valid experiment.
6. Use data as support for observed patterns and relationships, and to make predictions to be tested.