

# SCIENCE - Grade 5

Christ Lutheran School, Costa Mesa, CA

Revised 2008

**Goal:** The student will develop an understanding and appreciation of God's creation and the skills of scientific investigation and observation through the study of a variety of science topics.

## Objectives:

### Physical Sciences

1. The student will demonstrate knowledge that elements and their combinations account for all the varied types of matter in the world.
  - Each element is made of one kind of atom and is organized in the periodic table by its chemical properties.
  - Living organisms and most materials are composed of just a few elements.
  - Metals have properties in common. Some metals are pure elements while others are composed of a combination of elemental metals.
  - Differences in chemical and physical properties of substances are used to separate mixtures and identify compounds.
  - During chemical reactions the atoms in the reactants rearrange to form products with different properties.
  - Salts have common properties.
  - Solid, liquid, and gaseous substances have different properties.
  - Scientists have developed instruments that can create discrete images of atoms and molecules that show that they often occur in well-ordered arrays.
2. The student will gain an appreciation of the complexity and order of God's creation.
3. The student will follow a sequence of directions when performing investigations.

**Materials:** *Harcourt Science (California Edition)*, Harcourt, Inc., 2000.

## Life Sciences

1. The student will be able to explain the differences and similarities of plant and animal structures for respiration, digestion, waste disposal, and transport of materials.

- Many multicellular organisms have specialized structures to support the transport of materials.
- Plants use carbon dioxide and energy from sunlight to manufacture food.
- Plant and animal cells break down sugar to obtain energy in a process called respiration.
- Blood circulates through the heart chambers, lungs, and body; carbon dioxide and oxygen are exchanged in the lungs and tissues.
- The process of digestion has sequential steps and functions through the roles of the digestive system's organs and tissues.
- The excretory system removes cellular waste from blood and converts it into urine.
- Sugar, water, and minerals are transported in a vascular plant.

2. The student will develop an appreciation for how God sustains life in plants, animals, and human beings.

3. The student will develop the skill of sketching and diagramming in making scientific observations.

**Materials:** *Harcourt Science (California Edition)*, Harcourt, Inc., 2000.

## Earth Sciences (Earth's Water)

1. The student will be able to describe that water on earth moves between the oceans and land through the processes of evaporation and condensation.

- Most of earth's water is present as salt water.
- When liquid water evaporates, it turns into water vapor in the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.
- Water vapor in the air moves from one place to another, can form fog or clouds, and can fall to earth as rain, hail, sleet, or snow.

- The amount of earth's fresh water is limited, but fresh water can be recycled and conserved.
- Our local community, Costa Mesa, gets its water from different sources.

2. The student will increase efforts to recycle and conserve fresh water in an attempt to care for the resources God has provided.

3. The student will construct and use recycling containers at home.

**Materials:** *Harcourt Science (California Edition)*, Harcourt, Inc., 2000; Ocean Institute Kit: *Weather & Water*, Beckman Science Kit: *Water & Weather*.

Earth Sciences (Weather)
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1. The student will be able to describe how energy from the sun heats earth unevenly causing air movements that result in changing weather patterns.

- Uneven heating of earth causes convection currents in the atmosphere.
- Prevailing winds cause global weather patterns.
- The earth's atmosphere exerts a pressure that decreases with distance above earth's surface, and at any point it exerts this pressure equally in all directions.
- The water cycle plays an important role in weather patterns.
- The oceans influence the weather.
- Different types of severe weather have varying causes and effects.
- Weather forecasts depend on many variables.
- Weather maps and data can be used to predict local weather.

2. The student will develop a healthy lifestyle by proactively adapting to changing weather conditions.

3. The student will take steps to physically protect possessions at home from the effects of the weather.

**Materials:** *Harcourt Science (California Edition)*, Harcourt, Inc., 2000; Ocean Institute Kit: *Weather & Water*; Beckman Science Kit: *Water & Weather*.

## Earth Sciences (The Solar System)

1. The student will be able to describe that the solar system consists of planets and other bodies that orbit the sun in predictable paths.

- The sun is the central star in the solar system.
- The solar system includes the planet earth, its moon, the sun, eight other planets and their satellites, and smaller objects such as asteroids and comets.
- The path of a planet around the sun is due to the gravitational attraction between the sun and the planet and the planet's inertia.

2. The student will be able to explain the ways that man has explored space.

- Man has developed and applied technology.
- Man has explored space using unmanned spacecraft and space probes.
- Man has personally explored space and its alien environment through the development of life-support systems.
- Man has used dreams and imagination as a basis for setting goals in space exploration.

3. The student will acknowledge self-worth as a child of God by understanding that man was created as the pinnacle of God's creation of the universe.

4. The student will develop the skill of identifying stars and constellations by using various kinds of guides and models.

**Materials:** *Harcourt Science (California Edition)*, Harcourt, Inc., 2000.

## Investigation and Experimentation

1. Students will use a variety of investigation methods to reinforce scientific knowledge.

- Develop a testable question.
- Plan and conduct a simple investigation based on a student-developed question and write instructions that others can follow.
- Identify the dependent and controlled variables in an investigation.

- Identify a single independent variable in a scientific investigation and explain how this variable can be used to collect information to answer a question about the results of the experiment.
- Select appropriate tools and make quantitative observations.
- Record data by using appropriate graphic representations and make inferences based on those data.
- Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.
- Write a report of an investigation.

**Materials:** *Harcourt Science (California Edition)*, Harcourt, Inc., 2000; Ocean Institute Kit: *Weather & Water*; Beckman Science Kit: *Water & Weather*; Science notebooks.