

Mackay Elementary School



Grade Level: 6th Grade

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SUBJECT INFORMATION

Science

The sixth grade science curriculum is a combination of life, earth and physical sciences.

Life science: Students study cells, genetics and heredity, classification, plant growth and responses, types of plants, invertebrates and vertebrates.

Earth Science: Students will study the characteristics, cycles, and interactions of ecosystems, Earth's oceans, weather changes, movement of Earth's crust, rocks and the rock cycle, cycles in the Solar System and exploring the universe.

Physical Science: Atoms, elements and compounds, properties and changes in matter, energy, sound and light, forces and motion, machines and work are topics covered.

COMMON CORE / STATE CONTENT STANDARDS/VOCABULARY OBJECTIVES

Upon successful completion of earth science, the student will be able to:

- ❖ Plan and conduct investigations in which volume, area, mass, elapsed time, direction, temperature, pressure, distance, density, and changes in elevation/depth are calculated utilizing the most appropriate tools.
- ❖ Construct and interpret scales, diagrams, maps, charts, graphs, tables, and profile.
- ❖ Construct and define a scientific viewpoint.
- ❖ Manipulate experimental variables.
- ❖ Analyze how science explains and predicts the interactions and dynamics of complex Earth systems.
- ❖ Recognize that evidence is required to evaluate hypotheses and explanations.
- ❖ Compare different scientific explanations for a set of observations about the Earth.
- ❖ Investigate and understand how to read and interpret maps, globes, models, charts, and imagery including maps (bathymetric, geologic, topographic, and weather) and star charts, aerial photography and satellite images.
- ❖ Determine direction and measurements of distance on any map or globe.
- ❖ Calculate location by latitude and longitude and topographic profiles.
- ❖ Investigate and understand how to identify major rock-forming and ore minerals based on physical and chemical properties.
- ❖ Investigate and understand the rock cycle as it relates to the origin and transformation of rock types and how to identify common rock types based on mineral composition and textures.

- ❖ Identify the three types of rocks by their characteristics.
 - ❖ Understand the differences between renewable and nonrenewable resources.
 - ❖ Discuss the advantages and disadvantages of various energy sources.
 - ❖ Make informed judgments related to resource use and its effects on Earth systems and the environmental costs and benefits.
 - ❖ Understand plate tectonics.
 - ❖ Describe how processes such as faulting, folding, volcanism, metamorphism, weathering, erosion, deposition, sedimentation, subduction, rifting and sea floor spreading, and continental collision create various geologic features on earth.
 - ❖ Describe how freshwater resources are influenced by geologic processes and the activities of humans.
 - ❖ Understand the processes of soil development.
 - ❖ Understand that many aspects of the history and evolution of the Earth and life can be inferred by studying rocks and fossils.
 - ❖ Describes how oceans are complex, interactive physical, chemical, and biological systems and are subject to long- and short-term variations.
 - ❖ Understand that physical and chemical changes occur in the oceans such as tides, waves, currents, sea level and ice cap variations, upwelling, and salinity variations.
 - ❖ Identify the features of the sea floor as reflections of tectonic processes.
 - ❖ Explain the interrelationship of geologic processes, biologic processes, and human activities on its composition and dynamics of the atmosphere.
 - ❖ Describe the atmospheric regulation mechanisms including the effects of density differences and energy transfer; and the potential atmospheric compositional changes due to human, biologic, and geologic activity.
 - ❖ Understand that energy transfer between the sun and the Earth and its atmosphere drives weather and climate on Earth.
 - ❖ Observe and collect weather data and understand how meteorologists predict weather.
 - ❖ Identify the factors that create severe weather occurrences, such as tornadoes, hurricanes, and major storm
 - ❖ Describe the position of the Earth in the solar system.
 - ❖ Explain how the sun-Earth-moon relationships creates seasons, tides, and eclipses.
 - ❖ Recognize the sun, planets and their moons, comets, meteors, and asteroids by their characteristics.
 - ❖ Describe the history and contributions of the space program.
- Understand the scientific concepts related to the origin and evolution of the universe including nebulae, stellar evolution, structure of galaxies and the big bang theory.

Vocabulary:

Cells	concepts	conclusion	controls
critical thinking	data	evaluate	evidence
function	hypothesis	inference	investigation
metric measurements	models	observation	organ systems
organism	organs	predications	scientific explanations
scientific procedures	stable	system	technical instructions
techniques	tissues	tools	variables
dependent variable	independent variable		
compare	compound	contrast	density
element	forces	friction	gas
gravity	liquid	matter	mixture
molecules	physical change	physical properties	property
solid	water vapor		

abundance	atoms	biosphere	carnivores
cells	chemical reactions	components	cycle
decomposers	distribution	dominant traits	ecosystems
energy	energy flow	function	herbivores
inheritance	limits to resources	living	molecules
natural selection	nonliving	organ systems	organisms
photosynthesis	recessive traits	relationships	resources
species	tissues organs		
atmosphere	cirrus cloud	climate	cumulus cloud
organism	stratus cloud	water cycle	alternative energy
technology			
adaptation	adapted	additive	allele
arteries	artificial light	ATP	cellular respiration
Celsius	centimeter	clotting	composition
Consumer	deoxygenated	diaphragm	dominant
Erosion	excessive	endoplasmic reticulum	extend
Flex	flow chart	fossilized	graduated cylinder
guard cells	heterozygous	homozygous	indicator solution
juvenile	larva	larvae	manipulated variable
maturity	measured variable	membrane	millimeter
mitochondria	mitosis	mutation	natural light
nutrients	omnivores	organelle	osmosis
oxygen	oxygenated	pH indicator	phloem
pores	predator	producer	protein
recessive	standard	succession	trait
tropism	vacuole	veins	Venn diagram
vital	xylem		

INSTRUCTIONAL MATERIALS

Harcourt Science Text Book
 Student Edition on
 Audiotext (CD)
 Transparencies
www.harcourtschool.com/science

Harcourt Science Reader Books
 Student Lab and Assessments
 Challenge Book
 Teacher Resources

UNITS WITH INSTRUCTIONAL DATES

Unit A: Understanding Living Things
 Chapter 1—Cells, Reproduction, and Heredity
 Chapter 2—Classifying Living Things
 Chapter 3—Plants and Plant Growth

August/September/October

Safety, metric ruler, mass balance, stopwatch, graduated cylinder, thermometer
 Recognize/analyze patterns and trends
 Sequence events
 Identify cause & effect relationships
 *Using a compound microscope

	<p>Measuring with a compound microscope Introduction and practice using punnett squares to predict probability of traits *Classify objects according to trends-observable characteristics Develop & use a dichotomous key Classify living things according to a scheme Identify and control variables Observe, compare, record data, draw conclusions Hypothesize Simple investigations Classify, measure, infer Develop & use a dichotomous key Identify structure & function relationships in organisms Classify living things according to a scheme</p>
<p>Unit B: Interactions in Ecosystems Chapter 4—Ecosystems Chapter 5—Resources in Ecosystems</p>	<p>October/November Recognize/analyze patterns and trends Latitude and longitude in biomes. Interpret and/or be able to illustrate energy flow in a food chain, energy pyramid, or food web</p>
<p>Unit C: Exploring Earth Chapter 6—Changes to Earth’s Surface Chapter 7—Earth’s Rocks Chapter 8—Fossils</p>	<p>November/December Plot location of recent earthquake and volcanic activity on a map and identify patterns of distribution Classify objects according to a scheme Identify minerals using identification tests and flow charts MOHS Hardness scale Use diagrams of the rock cycle to determine geologic processes/events that led to the formation of specific rock types</p>
<p>Unit D: Cycles on Earth and in Space Chapter 9—The Water Planet Chapter 10—Earth’s Weather Patterns Chapter 11—The Universe—Near and Far</p>	<p>January/February Predict characteristics of an air mass based on origin Measure weather variables (wind speed, direction, relative humidity, barometric pressure, etc.) Use time/space relationships Formulate or use models Recognize/analyze patterns and trends</p>
<p>Unit E: Matter and Energy Chapter 12—Atoms and Elements Chapter 13—Matter and How It Changes Chapter 14—Energy Chapter 15—Heat and Electricity</p>	<p>February/March Identify/Apply Scientific Method: Question, hypothesis, problem, procedure, results, conclusion How to write a hypothesis/question vs. hypothesis Identifying variables (independent, dependent, constants) Control groups How to write a conclusion/results vs. conclusion</p>
<p>Unit F: Forces and Machines Chapter 16—Forces and Motions Chapter 17—Work and Simple Machines</p>	<p>April/May Identify/Apply Scientific Method: Question, hypothesis, problem, procedure, results, conclusion Identifying variables (independent, dependent, constants)</p>

ASSESSMENTS / TESTS

Chapter & Unit Assessments

Student/group projects, reports, presentations, role playing, models, demonstrations

Science fairs/contests

Performance Tasks

Assessments should utilize grade 5 & Grade 7 Level Science ISAT questions

GRADING PROCEDURES

Harcourt Science Chapter and Unit Reviews/Test upon completion

Comprehension tests—scored by percentage (points correct over points possible)

Percentage Values:

99-100—A+

94-98—A

90-93—A-

86-89—B+

83-85—B

80-82—B-

76-79—C+

73-75—C

70-72—C-

66-69—D+

63-65—D

60-62—D-

59↓-- F

*Students will be able to correct errors on homework for additional points to increase their scores

CLASS RULES

Students are expected to arrive prepared for class with homework complete and items required for class.

Students are expected to actively participate in discussions and engage in activities related to class assignments.

Students are expected to treat one another with respect and the same courtesy they need to complete assignments quietly and cooperatively.

MISCELLANEOUS

Active Participation is Essential to Success.

Ask Questions and Challenge Yourself

Syllabus is open to review and changes as needed.