

Mackay Elementary School



Grade Level: 4th

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Mackay Elementary

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SUBJECT INFORMATION

Science: 4th grade science consists of five components: Nature of Science, Physical Science, Biology, Earth and Space Systems, and Personal, Social Perspectives, and Technology.

COMMON CORE / STATE CONTENT STANDARDS/VOCABULARY OBJECTIVES

By the end of Grade 4, the student will be able to:

- * Explain that a system consists of an organized group of related objects that form a whole.
- * Make and record observations then analyze and communicate the collected data.
- * Make, describe, and/or use models.
- * Describe how changes occur and can be measured.
- * Measure in both U.S. Customary and International System of Measurement (metric system) units.
- * Explain the relationship between shape and use.
- * Conduct scientific tests.
- * Use appropriate tools and techniques to gather and display data.
- * Use data to construct a reasonable explanation.
- * Make predictions based on data.
- * Communicate the results of tests to others in multiple formats.
- * Analyze and follow multi-step instructions.
- * Describe the physical properties of solids, liquids, and gases.
- * Explain the changes caused by heating and cooling materials.
- * Analyze and communicate the adaptations of plants and animals to their environment.
- * Describe the difference between vertebrate and invertebrate animals.
- * Classify the five groups of vertebrates (mammal, reptiles, amphibians, birds, fish) based on characteristics.

- * Compare and contrast the basic components of our solar system (planets, sun, moon, asteroids, comets, meteors).
- * Explain the effect of gravity on orbits and objects.
- * Explain the effect of moon's gravity on Earth's tides.
- * Identify tools used for space exploration and for scientific investigations.
- * Understand the relationship between science and technology.

INSTRUCTIONAL MATERIALS

Science Kits from Carolina Scientific (Received from grant money obtained by Mrs. Larsen)
Textbook: Harcourt Science (Science Kit Activities will be supplemented with reading and activities found in the Harcourt Science book.)

UNITS WITH INSTRUCTIONAL DATES

******This schedule is subject to change. Activities will be taught throughout the year, and the dates taught will depend upon availability of kits. ******

Activity Description	State Standard
<p>Food Chain & Trophic Levels Magnetic Board Manipulatives</p> <p>Using 5 information packets, students are assigned cooperative learning groups and manipulate this web of interactions between organisms.</p>	<p>Label a food chain that shows how organisms cooperate and compete in an ecosystem; Diagram the food web and explain how organisms both cooperate and compete in ecosystems.</p>
<p>Microscopic Explorations GEMS Kit</p> <p>Students explore the microscopic world in 10 captivating learning stations. These stations present a potpourri of investigations designed to pique students' interest in science.</p> <p>After they complete the 10 stations, students have the opportunity to show what they have learned at the 11th station, which can be used as a wrap-up or quiz.</p>	<p>Communicate the results of tests to others in multiple formats.</p>

<p>Building Blocks of Science: Human Bodyworks</p> <p>Human Bodyworks consists of 12 activities that explore the muscular, skeletal, nervous, digestive, respiratory, and circulatory systems. Students build models and perform experiments that simplify complex anatomical structures and functions of the human body to a level of elementary understanding.</p>	<p>Explain that a system consists of an organized group of related objects that form a whole. Make, describe, and or use models.</p>
<p>Create a Vertebrate Kits</p>	<p>Describe the difference between vertebrate and invertebrate animals; Classify the five groups of vertebrates (mammal, reptiles, amphibians, birds, and fish) based on characteristics.</p>
<p>Comparing and Measuring</p> <p>Students use standard and non-standard units to measure their worlds in this physical science activity.</p>	<p>Measure in both standard and non-standard units.</p> <p>Make and record observations, collect data, and use data; demonstrate cooperation and interaction skills; follow multi-step instructions; Follow multi-step instructions.</p>
<p>Matter GEMS Kit</p> <p>Designed to meet the demand for improved physical science units in the early grades, the GEMS Matter guide challenges students to inquire into the physical world around them. Within this unit students explore solids, liquids, and gases, then delve deeper into states of matter when looking at "challenging substances."</p>	<p>Use instruments to measure properties; Describe the physical properties of solids, liquids, and gases; Explain the changes caused by heating and cooling materials.</p>

<p>Investigating Force Kit</p> <p>Covers friction, pressure, work, and power.</p>	<p>Explain how force affects the position and motion of objects</p> <p>Identify questions to be investigated; make observations, record and interpret data; analyze information and evidence; communicate observations; practice cooperation and interaction skills; follow multi-step instructions.</p>
<p>Oobleck: What Do Scientists Do?</p> <p>Consists of 4 sessions. What is Oobleck? It is an amazing material that exhibits the properties of a solid and a liquid. Oobleck helps to teach the scientific method as students observe, hypothesize, and experiment to determine just what Oobleck is.</p> <p>By practicing the scientific method, students get a better idea of what scientists do. Cooperative learning is emphasized as students share their ideas and work together during the course of their investigations.</p>	<p>Describe the differences among elements, compounds, and mixtures; Compare the physical differences among solids, liquids and gases; Explain the nature of physical change and how it relates to physical properties.</p>
<p>Chemical Reactions GEMS Kit</p> <p><i>Chemical Reactions</i> is an exciting and motivating first encounter with chemistry. Chemicals in a resealable bag bubble, change color, and produce gas, heat, and an odor. Watch student excitement build as the plastic bag they hold gets hot and inflates with gas, and its bubbling contents change color while they watch.</p>	<p>Explain the nature of physical change and how it relates to physical properties; Use instruments to measure properties; Describe the physical properties of solids, liquids, and gases; Explain the changes caused by heating and cooling materials.</p>
<p>Aquatic Habitats GEMS Kit</p> <p>Consists of 5 activities. Student groups set up models of a living pond in the classroom. Then they use hands-on activities to study the dynamic interaction of plants and animals in an ecosystem.</p>	<p>Discuss how animals are suited to live in different habitats; Identify four basic needs of all living things (food, shelter, water, space); Compare and contrast man-made and natural environments; identify issues for environmental studies.</p>

<p>Paper Towel Testing</p> <p>Which paper towel is the best buy? Students find the answer through a series of experiments that help them grade 4 different brands of paper towels based on wet strength, absorbency, and cost. As they analyze their data and make their decision, students hone their skills in teamwork and logical thinking.</p>	<p>Describe how science and technology are part of a student's life. Describe how science and technology are part of our society. Describe how science and technology are interrelated.</p>
<p>Dry Ice Investigations GEMS Kit</p> <p>Consists of 4 activities. Most young students are fascinated by dry ice. This kit uses this curiosity to capture students' attention while serving as a powerful unit on scientific inquiry.</p> <p>It introduces the properties of matter, phase change, the nature of solids and gases, and the history of science.</p>	<p>Explain the nature of physical change and how it relates to physical properties; Use instruments to measure properties; Describe the physical properties of solids, liquids, and gases; Explain the changes caused by heating and cooling materials.</p>
<p>Crime Lab Chemistry GEMS Kit</p> <p>Drawing on students' interest in and enthusiasm for solving mysteries, <i>GEMS Crime Lab Chemistry</i> provides multiple experiences for students to strengthen their inquiry skills and abilities, and to convey important scientific concepts, methods, and techniques.</p> <p>Chromatography is one of the most important techniques in analytical chemistry. It is used for separating mixtures, and has applications in many other scientific disciplines. In crime labs, chromatography is used to separate the components of "clue" substances, such as blood, ink, gases, or other mixtures found at the scene of a crime.</p>	<p>Describe the differences among elements, compounds, and mixtures; Compare the physical differences among solids, liquids and gases; Explain the nature of physical change and how it relates to physical properties.</p>

<p>Convection GEMS Kit</p> <p>Consists of 3 sessions. To help students understand convection, they are asked to observe and chart convection currents in a liquid. Then they apply what they learn to everyday situations.</p>	<p>Explain the nature of physical change and how it relates to physical properties; Use instruments to measure properties; Describe the physical properties of solids, liquids, and gases; Explain the changes caused by heating and cooling materials.</p>
<p>Earth and Space Science Kit</p> <p>Space Exploration: The Planets, Moon, Stars, Solar System, & Rockets Kit.</p>	<p>Compare and contrast the basic components of our solar system (planets, sun, moon, asteroids, comets, meteors); Explain the relationship between shape and use of an object; Explain that a system consists of an organized group of related objects that form a whole.</p>
<p>Earth, Moon, and Stars GEMS Kit</p> <p>The activities in this unit guide students into using the sky to answer their questions about the Earth, Moon, and stars. They improve their thinking skills, such as observing, measuring, recording, map reading, using models to explain observations, and inventions.</p>	<p>Compare and contrast the basic components of our solar system (planets, sun, moon, asteroids, comets, meteors); Explain the effect of gravity on orbits and objects; Explain the relationship between shape and use of an object; Explain that a system consists of an organized group of related objects that form a whole.</p>
<p>Moons of Jupiter GEMS Kit</p> <p>Students perform activities that explore crater formation, scale modeling, and the Jupiter system as seen through the eyes of the Voyager unmanned probe.</p>	<p>Identify tools used for space exploration and for scientific investigations; Explain the relationship between shape and use of an object; Explain that a system consists of an organized group of related objects that form a whole.</p>

<p>River Cutters GEMS Kit</p> <p>Consists of 7 sessions. Teach students how rivers form with this fascinating kit. Using a dripper system and diatomaceous earth, students create models that really help them study and understand the birth and life of a river.</p> <p>As they build and operate their models, students learn geological terms and gain insight on the active and perpetually changing nature of rivers. Environmental topics such as erosion, pollution, toxic waste, and human manipulation are also introduced.</p>	<p>Make, describe, and/or use models.</p>
<p>Weather Kit</p> <p>Students use tools, collect data, and make predictions in this earth science unit. Students make and use thermometers and rain and wind gauges while learning math and pattern-recognition skills in context.</p>	<p>Make observations and collect data; measure in non-standard units; apply the concepts of yesterday, today, and tomorrow.</p>

ASSESSMENTS / TESTS	
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<p>Kit Activity sheets and quizzes</p> <p>Tests</p> <p>Data Collection</p>	

GRADING PROCEDURES	
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Tests	100 points
Participation	Letter grade
Worksheets	100 points
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

CLASS RULES

We will listen to ALL adults in the building.

We will work quietly.

We will come to class prepared and with our school work completed.

We will respect our school, classmates, and the belongings of our classmates.

We will not bully others.

We will speak only when others are not speaking.

We will finish all schoolwork first.

We will put away all items correctly and keep all areas of the room clean.

My Pledge to Students

The following is a list of goals that I have set for myself this year. I will make every effort to live up to these goals:

- 1) I will treat you with respect, so you will know how to treat me.
- 2) Feel free to do anything that doesn't cause a problem for anyone else.
- 3) If you can't solve a problem, or choose not to, I will do something.
- 4) What I do will depend on the special person and the special situation.
- 5) If you feel something is unfair, whisper to me, "I'm not sure that is fair," and we will talk.

- 6) I will greet students each morning with a smile, and will be generous with my smiles throughout the day.
- 7) I will look for opportunities to reward and praise students for their work and good behavior.
- 8) I will not show favoritism, and will try to be fair to all.
- 9) I will use fair and appropriate methods of discipline.
- 10) I will try to make classroom instruction as interesting as possible and look for new and diverse ways of presenting materials.
- 11) I will maintain a positive atmosphere for learning.
- 12) I will treat my students with respect and will not embarrass them in front of their classmates.
- 13) I will make myself available and approachable to students.

- 14) I will recognize the individuality of my students and will provide opportunities for each of them to experience success. I pledge to work diligently to make this a very successful year for us all.

MISCELLANEOUS

	GRADING PROCEDURES	
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	CLASS RULES	
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