

DISTRICT



Educational Excellence for Everyone

DR. BETTY A. ROSA
Community Superintendent

Irma N. Nesci
Deputy Superintendent

Roberto E. Tillman
Deputy Superintendent

Steven Rosenthal
Director of Mathematics,
Science, Technology

Jay M. Wiprovnick, Ph.D.
Science Coordinator

Science
Instructional Sequence
Harcourt Science
2001-2002

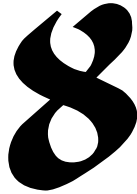
Kindergarten



BOARD OF EDUCATION
Office of School District 8

650 WHITE PLAINS ROAD, BRONX, NEW YORK 10473
TELEPHONE: (718) 409-8100 FAX: (718) 409-8185

DISTRICT



Educational Excellence for Everyone

DR. BETTY A. ROSA
Community Superintendent

To All District 8 Science Instructors,

District 8 has created the *Scope and Sequence Charts, Calendars* and the *Science Concept Maps* in order to provide you greater flexibility in developing your classroom programs.

We are aware that materials vary from school to school. The curriculum map allows you to develop your program using available materials, while at the same time addressing the content that must be covered on each grade level. When more than one material is indicated per topic, the teacher may choose any one of them to teach the topic i.e. Foss or Insight Kits.

As this fall marks the first year of transition for science instructional materials (grades K - 8), not all schools have received sufficient numbers of books and kits to support all teaching staff at grade level. Therefore, it is necessary to schedule the distribution of these materials with your fellow teachers to best accommodate your school. Wherever necessary, the implementation of the district's suggested curriculum must be supported. It is expected that all materials will be rotated however necessary to support effective instruction in all content areas regardless of the curriculum materials in use.

Implementation of grade level assessments are of extreme importance this year. As novel forms of assessment accompany newly adopted curricula, we must follow-up on the success of our endeavors. Therefore, the District will issue new assessment materials for grades 2-8 according to the *Scope and Sequence Calendar*. These assessment materials will emulate the hands-on inquiry based model for science instruction as mandated by the State of New York. Along with your teacher based assessments, it is the District's intent to use these tools to assist in identifying students who might be at risk of falling below State Standards, as well as to measure the progress of our newly adopted curriculum. **Have a wonderful year!**

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Harcourt Science Pacing

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Appendix

Science Calendar Grade K

Concept Map Grade K

Grade K
Harcourt Science Pacing
2001-2002

Unit	Objectives	Lesson	Suggested Number of Days
<p>A Animals</p>	<ul style="list-style-type: none"> Identify animals and plants as living things. Understand that things can be classified as living or nonliving based on their characteristics. Describe the differences between living and nonliving things. 	<p>1 What Is Living? What is Nonliving?</p>	<p>5</p>
	<ul style="list-style-type: none"> Recognize that animals have various kinds of similarities and differences. Describe the sizes, shapes, and structures of animals. Observe, describe, and sort animals. 	<p>2 What is an Animal?</p>	<p>5</p>
	<ul style="list-style-type: none"> Recognize the various kinds of body coverings of animals and how each helps the animal. Observe and compare animals' body coverings. 	<p>3 What Body Coverings Do Animals Have?</p>	<p>4</p>
	<ul style="list-style-type: none"> Recognize that animals need food, water, air, and a place to live. Explain how plants and animals interact with and depend on each other. Identify animals by their habitat and explain how habitat loss can endanger them. 	<p>4 What Do Animals Need?</p>	<p>5</p>
	<ul style="list-style-type: none"> Recognize ways in which animals move. Describe, compare, and classify animals by the ways they move. 	<p>5 How Do Animals Move?</p>	<p>4</p>
	<ul style="list-style-type: none"> Identify some of the different homes that animals live in. Sort animals as wild, farm, zoo, or pet, depending on where they live. 	<p>6 Where Do Animals Live?</p>	<p>4</p>
	<ul style="list-style-type: none"> Recognize that animals grow, change, and go through a life cycle. Observe, describe, and sequence how animals grow and change. Recognize that some animal young look like their parents and some do not. 	<p>7 How Do Animals Grow?</p>	<p>4</p>

Grade K

Harcourt Science Pacing

2001 - 2002

Unit	Objectives	Lesson	Suggested Number of Days
B Plants	<ul style="list-style-type: none"> • Identify trees, grass, shrubs, and flowers as plants. • Compare and describe the sizes and shapes of various plants. • Observe and describe similarities and differences between plants. 	1 What Are Some Plants?	4
	<ul style="list-style-type: none"> • Recognize that roots, stems, leaves, and flowers are some parts of plants. • Observe and record the parts of plants. 	2 What Are the Parts of a Plant?	4
	<ul style="list-style-type: none"> • Recognize that leaves have similarities and differences. • Recognize the pattern in the shape of leaves from the same plant. • Observe and sort leaves by one attribute. 	3 How Are Leaves the Same and Different?	4
	<ul style="list-style-type: none"> • Recognize that a plant's seeds are found in its fruit or flowers. • Recognize the pattern of shape, size, color, or growth of seeds. • Observe changes from seeds to flowers to fruit. 	4 Where Are a Plant's Seeds?	5
	<ul style="list-style-type: none"> • Recognize that plants need air, water, light, nutrients, and a place to live, and that many need to be cared for to grow. • Compare the common needs of plants and animals. • Observe and compare the growth of plants. 	5 What Do Plants Need to Grow?	4
	<ul style="list-style-type: none"> • Recognize that seeds sprout and grow into plants similar, but not identical, to the parent plant. • Recognize that during its life cycle, a flowering plant changes in size, may or may not have branches, and may or may not be able to produce flowers or fruit. • Observe, measure, and record the growth of seeds. 	6 What Is the Life Cycle of a Plant?	5
	<ul style="list-style-type: none"> • Recognize that people use plants and animals to make products such as food and clothing and that plants and animals depend upon each other • Classify products of plants and animals. 	7 How Do Plants and Animals Help People?	4

Grade K

Harcourt Science Pacing

2001 - 2002

Unit	Objectives	Lesson	Suggested Number of Days
C Earth's Land, Air, and Water	<ul style="list-style-type: none"> • Recognize that Earth is a planet that looks like a sphere from space. • Describe physical features of Earth, water, land, and air. • Contrast the appearance of oceans and continents as seen from space. • Compare and contrast the characteristics of day and night. 	1 How Does Earth Look?	5
	<ul style="list-style-type: none"> • Recognize that mountains, valleys, and plains are different types of land. • Compare the characteristics of landforms 	2 What Makes Up the Earth's Land?	4
	<ul style="list-style-type: none"> • Recognize that both natural and human-made objects may change over time. • Explain how water, wind, plants, and severe weather can change Earth's land. 	3 What Changes Earth's Land?	5
	<ul style="list-style-type: none"> • Identify the physical properties of soil. • Observe and classify substances found in soil. 	4 What Can We Observe About Soil?	4
	<ul style="list-style-type: none"> • Identify the physical properties of rocks, including color, size, and texture. • Observe and classify rocks by their properties. 	5 How Can We Sort Rocks?	4
	<ul style="list-style-type: none"> • Recognize that water is found in lakes, rivers, streams, and oceans. • Observe that water flows downhill. 	6 Where Do We Find Water?	4
	<ul style="list-style-type: none"> • Identify the resources of Earth that people, plants, and animals use every day. • Recognize and identify materials that come from Earth, such as soil, rocks, water, and air. • Recognize that plants and animals interact with and depend upon each other. 	7 How Do We Use Earth's Resources?	5
	<ul style="list-style-type: none"> • Identify reusing, recycling, and conservation as ways of protecting Earth's natural resources. • Explain the results of not protecting our natural resources. • Recognize that plants and animals can become endangered when their habitats are polluted or natural resources are used up. 	8 How Can We Care for Earth's Resources?	5

Grade K

Harcourt Science Pacing

2001 - 2002

Unit	Objectives	Lesson	Suggested Number of Days
D Weather and Seasons	<ul style="list-style-type: none"> • Recognize kinds of weather and weather tools and how weather affects Earth and its inhabitants. • Describe weather differences using terms related to weather. • Observe and record weather conditions. 	1 How Can We Keep Track of Weather?	5
	<ul style="list-style-type: none"> • Recognize that changes in weather occur over seasons, affecting Earth and its inhabitants. • Recognize that the seasons occur in a pattern. 	2 What Are the Seasons?	4
	<ul style="list-style-type: none"> • Identify weather that is characteristic of spring and tell how it affects people, plants, and animals. • Use tools to measure and record weather data. 	3 What Is Spring?	4
	<ul style="list-style-type: none"> • Identify weather that is characteristic of summer, and tell how it affects people, plants, and animals. • Observe the sun's heating power. 	4 What Is Summer?	4
	<ul style="list-style-type: none"> • Identify the weather that is characteristic of fall and tell how it affects people plants, and animals. • Measure wind strength. 	5 What Is Fall?	4
	<ul style="list-style-type: none"> • Identify the weather that is characteristic of winter and tell how it affects people, plants and animals and objects. • Measure temperature. 	6 What Is Winter?	4
	<ul style="list-style-type: none"> • Recognize seasonal changes throughout the year: different types of precipitation, variations in wind and sky conditions. • Predict weather, based on the season and daily measurements. 	7 How Can I Predict the Weather?	5

Grade K

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2001 - 2002

Unit	Objectives	Lesson	Suggested Number of Days
E Objects Around Us	<ul style="list-style-type: none"> • Observe and describe common objects and their properties by using the five senses. • Describe and compare objects in terms of properties such as shape and texture. 	1 What Can We Find Out About Objects?	4
	<ul style="list-style-type: none"> • Sort and order objects by their properties, including size and weight. • Predict the next object in a sequence to complete a pattern. 	2 How Can We Sort Objects?	4
	<ul style="list-style-type: none"> • Describe objects in terms of physical properties. • Describe objects by their relative position. 	3 How Can We Describe the Position of Objects?	4
	<ul style="list-style-type: none"> • Describe how objects can be changed by being cut, torn, bent, or folded. • Describe how objects can be changed by water, heat, and abrasion. 	4 How Can Objects Change?	3
	<ul style="list-style-type: none"> • Recognize that an object makes a shadow when it blocks light. • Observe that the shape of a shadow depends on the objects and the direction of the light source. • Recognize that shadows can be matched to the objects that make them. 	5 Why Do Objects Make Shadows?	3
	<ul style="list-style-type: none"> • Recognize that objects can be moved by pushes or pulls and through the force of gravity. • Describe how objects can be moved and sort them. • Investigate and describe the movement and speed of objects. • Develop questions based on observations. 	6 How Do We Move Objects?	5
	<ul style="list-style-type: none"> • Recognize that magnets attract objects that contain iron or steel. • Predict which objects magnets will and will not attract. • Recognize that opposite poles attract each other and like poles repel each other. 	7 Which Objects Do Magnets Move?	4

Grade K

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2001 - 2002

Unit	Objectives	Lesson	Suggested Number of Days
F Investigating Water	<ul style="list-style-type: none"> • 0 	1 How Does Water Move?	4
	<ul style="list-style-type: none"> • Recognize and describe the surface tension of water as it reacts to other objects. • Predict and observe the effects of surface tension of water. 	2 What Is Water Like?	4
	<ul style="list-style-type: none"> • Recognize that when placed in water, some objects sink and some objects float. • Plan and conduct a simple investigation to predict, test, and classify what sinks and what floats. 	3 Which Objects Sink? Which Objects Float?	4
	<ul style="list-style-type: none"> • Observe that water can change objects • Recognize that objects can change over time and that those changes can be observed and measured. • Predict and test changes in properties of matter. 	4 How Does Water Change Objects?	4
	<ul style="list-style-type: none"> • Recognize that water can be a liquid of solid and can be made to change back and forth. • Recognize that water has properties that can be observed and tested. • Communicate observations of water in liquid and solid forms and of evaporation taking place. 	5 How Does Water Change?	5

Grade K Science Pacing 2001 - 2002

New York City HIV Curriculum	Suggested Number of Periods	Calendar Dates
What does it mean to be healthy? <u>(Classroom Teacher)</u>	1	June 20 - 26
What does it mean to be sick? <u>(Classroom Teacher)</u>	1	
How do we stay healthy? <u>(Classroom Teacher)</u>	1	
Who helps us when we are sick? <u>(Classroom teacher)</u>	1	
How do people get sick with aids? <u>(Classroom Teacher)</u>	1	

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PERFORMANCE STANDARDS – SCIENCE
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Standards	Grade K
S1 Physical Sciences Concepts	
S1a The student produces evidence that demonstrates understanding of properties of objects and materials, such as similarities and differences in the size, weight, and color of objects; the ability of materials to react with other substances; and different states of materials.	C 52 D 46 E 10-11, 12-15, 16, 17, 18-19, 20-23, 24, 25, 32-33, 34-35, 36, 37, 54-55, 56-57, 58, 59, 61 F 10-11, 12-13, 14, 30-31, 32-35, 36, 37, 38-39, 40-43, 44, 45 AC 35, 36, 38, 41, 45, 46
S1b The student produces evidence that demonstrates understanding of position and motion of objects, such as how the motion of an object can be described by tracing and measuring its position over time; and how sound is produced by vibrating objects.	E 46-47, 48-51, 52, 53 AC 40
S1c The student produces evidence that demonstrates understanding of light, heat, electricity, and magnetism, such as the variation of heat and temperature; how light travels in a straight line until it strikes an object or how electrical circuits work.	D 30-31, 42-43 E 38-39, 40-43, 44, 45, 54-55, 56-57, 58, 59 AC 31, 33, 39, 41
S2 Life Sciences Concepts	
S2a The student produces evidence that demonstrates understanding of characteristics of organisms, such as survival and environmental support; the relationship between structure and function; and variations in behavior.	A 10-11, 12-13, 14, 15, 16-17, 18-23, 21, 22, 24, 25, 26-27, 28-29, 30, 31, 32-33, 34-39, 36, 38, 40, 41, 42-43, 44-45, 46, 47, 48-49, 50-53, 54, 55, 56, 58-61, 65 B 9, 10-11, 12-15, 16, 17, 18-19, 20-21, 22, 23, 24-25, 26-27, 28, 29, 30-31, 32-35, 36, 37, 38-39, 40-41, 42, 43, 48, 49, 57 C 33, 42-43, 48-51, 53 D 25, 26-27, 28, 29, 32-33, 38-39, 40, 41, 44-45, 46 AC 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 26
S2b The student produces evidence that demonstrates understanding of life cycles of organisms, such as how inheritance and environment determine the characteristics of an organism; and that all plants and animals have life cycles.	A 56-57, 58-61, 62, 63, 65 B 9, 32-35, 44-45, 46-47, 48, 49, 57 D 25 AC 12
S2c The student produces evidence that demonstrates understanding of organisms and environments, such as the interdependence of animals and plants in an ecosystem; and populations and their effects on the environment.	A 34-39, 36-37, 40, 41 B 9, 55 C 56-59 D 25
S2d The student produces evidence that demonstrates understanding of change over time, such as evolution and fossil evidence depicting the great diversity of organisms developed over geologic history.	
S3 Earth and Space Sciences Concepts.	
S3a The student produces evidence that demonstrates understanding of properties of Earth materials, such as water and gases; and the properties of rocks and soils, such as texture, color, and ability to retain water.	C 24-25, 27, 28-29, 30-31, 32, 33, 34-35, 36-37, 38, 39, 40-41, 42-43, 45, 48-51, 52 F 10-11, 12-13, 14, 15, 16-17, 18-19, 20, 21, 22-23, 24-27, 26, 28, 29, 30-31, 32-35, 36, 37 AC 23, 24, 42, 43, 44, 45
S3b The student produces evidence that demonstrate understanding of objects in the sky, such as Sun, Moon, planets, and other objects that can be observed and described; and the importance of the Sun to provide the light and heat necessary for survival.	C 10-11, 12-13, 15 D 12-15, 30-31, 43 E 40-43, 42-43 AC 20, 31
S3c The student produces evidence that demonstrates understanding of changes in Earth and sky, such as changes caused by weathering, volcanism, and earthquakes; and the patterns of movement of objects in the sky.	C 18-19, 21, 22-23, 24-25, 26, 27, 40-41, 42-43, 49 D 10-11, 12-15, 13, 16, 17, 18-19, 20-21, 22, 23, 24-25, 26-27, 28, 29, 32-33, 34, 35, 36-37, 38-39, 40, 41, 42-43, 44-45, 46, 47, 48-49, 50-51, 52, 53, 55 AC 22, 25, 28, 29, 32, 33, 34
S4 Scientific Connections and Applications	
S4a Big ideas and unifying concepts, such as order and organization; models, form and	A 16-17, 18-23, 26-27, 28-29, 30, 31, 34-39, 36-37, 42-43, 44-45, 46, 47, 56-

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Standards	Grade K
<p>function; change and constancy; and cause and effect.</p> <p>S4a Big ideas and unifying concepts, such as order and organization; models, form and function; change and constancy; and cause and effect. Continued</p>	<p>57, 58-61, 62, 63, 65 B 18-19, 20-21, 22, 23, 27, 28, 30-31, 32-35, 44-45, 46-47, 48, 49, 57 C 10-11, 12-13, 16-17, 18-19, 21, 22-23, 24-25, 26, 27, 28-29, 30-31, 32, 33, 34-35, 36-37, 38, 39, 40-41, 42-43, 44, 45, 48-51, 49, 56-59, 63 D 10-11, 12-15, 13, 16, 17, 18-19, 20-21, 22, 23, 24-25, 26-27, 28, 29, 32-33, 34, 35, 36-37, 38-39, 40, 41, 44-45, 46, 47, 48-49, 50-51, 52, 53, 55 E 32-33, 34-35, 36, 37 F 30-31, 32-35, 36, 37, 38-39, 40-43, 44, 45 AC 7, 8, 10, 12, 14, 16, 20, 21, 22, 23, 24, 25, 26, 29, 32, 34, 38, 45, 46</p>
<p>S4b The designed world, such as development of agricultural techniques; and the viability of technological designs.</p>	
<p>S4c Personal health, such as nutrition, substance abuse, and exercise; germs and toxic substances; personal and environmental safety.</p>	
<p>S4d Science as a human endeavor, such as communication, cooperation, and diverse input in scientific research; and the importance of reason, intellectual honesty, and skepticism.</p> <p>S4d Science as a human endeavor, such as communication, cooperation, and diverse input in scientific research; and the importance of reason, intellectual honesty, and skepticism. Continued</p>	<p>A 48-49, 52 B 18-19, 30-31, 34, 44-45, 50-51 C 16-17, 34-35, 36, 40-41, 46-47, 49, 50, 54-55, 57, 63 D 10-11, 24-25, 38, 42-43, 44, 48-49 E 26-27, 28 F 12, 16-17, 18, 25, 38-39, 42 AC 14, 16, 18, 19, 21, 24, 25, 26, 27, 28, 30, 33, 34, 37, 41, 43, 46</p>
<p>S5 Scientific Thinking</p>	
<p>S5a Asks questions about natural phenomena; objects and organisms; and events and discoveries.</p>	<p>A 8 B 8 C 8 D 8 E 8 F 8</p>
<p>S5b Uses concepts from Science Standards 1 to 4 to explain a variety of observations and phenomena.</p> <p>S5b Uses concepts from Science Standards 1 to 4 to explain a variety of observations and phenomena. Continued</p>	<p>A 10-11, 16-17, 19, 26-27, 32-33, 35, 37, 42-43, 48-49, 51, 52 B 10-11, 14, 18-19, 20, 24-25, 30-31, 33, 34, 38-39, 40, 44-45, 46, 50-51, 57 C 10-11, 16-17, 18, 22-23, 24, 28-29, 30, 34-35, 36, 40-41, 42, 46-47, 49, 50, 54-55, 57, 58, 63 D 10-11, 13, 14, 24-25, 26, 30-31, 32, 38, 42-43, 44, 48-49, 50 E 10-11, 13, 14, 26-27, 28, 32-33, 38-39, 41, 42, 46-47, 49, 50, 54-55 F 10-11, 12, 16-17, 18, 22-23, 25, 26, 30-31, 33, 38-39, 41, 42, 47 AC 6, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46</p>
<p>S5c Uses evidence from reliable sources to construct explanations.</p>	<p>B 44-45 D 24-25, 36-37, 48-49, 55 F 22-23, 34 AC 18, 30, 32, 34, 44</p>
<p>S5d Evaluates different points of view using relevant experiences, observations, and knowledge; and distinguishes between fact and opinion.</p>	<p>A 10-11, 32-33, 48-49, 52 B 10-11, 18-19, 20, 24-25, 30-31, 33, 34, 38-39, 44-45, 50-51, 57 C 10-11, 16-17, 22-23, 24, 28-29, 34-35, 36, 40-41, 46-47, 49, 50, 54-55, 57, 63 D 10-11, 13, 14, 24-25, 26, 30-31, 36-37, 38, 42-43, 44, 48-49, 55 E 10-11, 26-27, 28, 32-33</p>

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Standards	Grade K
	F 10-11, 12, 16-17, 18, 22-23, 25, 30-31, 38-39, 42, 47 AC 6, 9, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34, 35, 37, 41, 42, 43, 44, 45, 46
<p>S5e Identifies problems; proposes and implements solutions; and evaluates the accuracy, design, and outcomes of investigations.</p> <p>S5e Identifies problems; proposes and implements solutions; and evaluates the accuracy, design, and outcomes of investigations. Continued</p>	B 30-31 D 10-11, 14, 42-43, 44 F 22-23, 34 AC 16, 28, 33, 44
<p>S5f Works individually and in teams to collect and share information and ideas.</p>	A 9 B 9 C 9 D 9 E 9 F 9
<p>S6 Scientific Tools and Technologies</p>	
<p>S6a Uses technology and tools (such as rulers, computers, balances, thermometers, watches, magnifiers, and microscopes) to gather data and extend the senses.</p>	B 10-11, 18-19, 30-31 C 28-29 D 10-11, 14, 42-43, 44 E 18-19 AC 13, 14, 16, 23, 28, 33
<p>S6b Collects and analyzes data using concepts and techniques in Mathematics Standard 4, such as average, data displays, graphing, variability, and sampling.</p>	A 24, 30, 40, 46, 54, 62 B 16, 22, 28, 36, 42, 48, 54 C 20, 26, 32, 38, 44, 52, 60 D 11, 16, 22, 28, 34, 40, 46, 52 E 16, 24, 30, 36, 44, 52, 58 F 14, 20, 28, 36, 44
<p>S6c Acquires information from multiple sources, such as experimentation and print and non-print sources.</p>	
<p>S7 Scientific Communication</p>	
<p>S7a Represents data and results in multiple ways, such as numbers, tables, and graphs; drawings, diagrams, and artwork; and technical and creative writing.</p>	A 30, 48-49, 52 B 18-19, 34, 50-51 C 16-17, 34-35, 36, 40-41, 44, 46-47, 49, 50, 54-55, 57, 63 D 11, 22, 34, 38, 42-43 E 26-27, 28, 44 F 12, 14, 18, 25, 38-39, 42 AC 14, 19, 21, 24, 25, 26, 27, 33, 37, 41, 46
<p>S7b Uses facts to support conclusions.</p>	B 30-31 D 10-11, 14, 42-43, 44 AC 16, 28, 33
<p>S7c Communicates in a form suited to the purpose and the audience, such as writing instructions that others can follow.</p>	A 30 B 54 C 57 D 22 F 14
<p>S7d Critiques written and oral explanations, and uses data to resolve disagreements.</p>	
<p>S8 Scientific Investigation</p>	
<p>S8a An experiment, such as conducting a fair test.</p>	
<p>S8b A systematic observation, such as a field study.</p>	A 10-11, 16-17, 19, 26-27, 32-33, 42-43, 48-49, 51 B 10-11, 14, 18-19, 20, 24-25, 30-31, 33, 38-39, 44-45, 50-51, 57

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Standards	Grade K
<p>S8b A systematic observation, such as a field study. Continued</p>	<p>C 10-11, 16-17, 18, 22-23, 24, 28-29, 30, 40-41, 42, 54-55, 63 D 10-11, 13, 14, 24-25, 26, 30-31, 32, 42-43, 44, 48-49 E 10-11, 13, 14, 26-27, 28, 32-33, 38-39, 41, 46-47, 49, 50 F 10-11, 12, 16-17, 18, 22-23, 25, 30-31, 33, 38-39, 41, 47 AC 6, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 30, 31, 33, 34, 35, 37, 38, 39, 40, 42, 43, 44, 45, 46</p>
<p>S8c A design, such as building a model or scientific apparatus.</p>	
<p>S8d Non-experimental research using print and electronic information, such as journals, video, or computers.</p>	

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LEARNING STANDARDS FOR MATHEMATICS, SCIENCE, AND TECHNOLOGY
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Standards	Grade K
STANDARD 1 - ANALYSIS, INQUIRY, AND DESIGN Scientific Inquiry	
1. The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.	
ask "why" questions in attempts to seek greater understanding concerning objects and events they have observed and heard about.	A 8 B 8 C 8 D 8 E 8 F 8
question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings.	A 10-11, 16-17, 26-27, 32-33, 42-43, 56-57 B 10-11, 18-19, 24-25, 30-31, 44-45, 50-51 C 16-17, 28-29, 40-41, 46-47, 54-55 D 10-11, 18-19, 24-25, 30-31, 36-37, 42-43, 48-49 E 10-11, 18-19, 46-47, 54-55 F 10-11, 16-17, 22-23, 38-39 AC 7, 10, 13, 14, 18, 19, 21, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 40, 41, 42, 43, 44, 46
question the explanations they hear from others and read about, seeking clarification and comparing them with their own observations and understandings. Continued	A 10-11, 30, 32-33, 56-57, 60, 62 B 10-11, 18-19, 20, 24-25, 30-31, 33, 38-39, 44-45, 50-51, 57 C 10-11, 16-17, 22-23, 24, 28-29, 40-41, 54-55, 63 D 10-11, 13, 18-19, 20, 24-25, 26, 30-31, 42-43, 44, 48-49 E 10-11, 18-19, 22, 26-27, 28, 32-33 F 10-11, 14, 16-17, 18, 22-23, 24-27, 25, 28, 29, 30-31, 38-39, 47 AC 6, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 42, 43, 44, 45, 46
develop relationships among observations to construct descriptions of objects and events and to form their own tentative explanations of what they have observed.	A 10-11, 30, 32-33, 56-57, 60, 62 B 10-11, 18-19, 20, 24-25, 30-31, 33, 38-39, 44-45, 50-51, 57 C 10-11, 16-17, 22-23, 24, 28-29, 40-41, 54-55, 63 D 10-11, 13, 18-19, 20, 24-25, 26, 30-31, 42-43, 44, 48-49 E 10-11, 18-19, 22, 26-27, 28, 32-33 F 10-11, 14, 16-17, 18, 22-23, 24-27, 25, 28, 29, 30-31, 38-39, 47 AC 6, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 42, 43, 44, 45, 46
2. Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity	
develop written plans for exploring phenomena or for evaluating explanations guided by questions or proposed explanations they have helped formulate.	F 22-23, 34 AC 44
share their research plans with others and revise them based on their suggestions.	F 22-23, 34 AC 44
carry out their plans for exploring phenomena through direct observation and through the use of simple instruments that permit measurements of quantities (e.g., length, mass, volume, temperature, and time).	A 10-11, 32-33 B 10-11, 18-19, 20, 24-25, 30-31, 33, 38-39, 44-45, 50-51, 57 C 10-11, 16-17, 22-23, 24, 28-29, 32, 40-41, 54-55, 63 D 10-11, 13, 24-25, 26, 30-31, 34, 36-37, 42-43, 48-49, 55 E 10-11, 18-19, 26-27, 28, 32-33 F 10-11, 16-17, 18, 22-23, 25, 30-31, 38-39, 47 AC 6, 9, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 30, 31, 32, 34, 35, 37, 42, 43, 44, 45, 46
3. The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.	
organize observations and measurements of objects and events through classification and the preparation of simple charts and tables.	A 10-11, 12, 15, 16-17, 21, 22, 28, 32-33, 38, 42-43, 44, 65

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Standards	Grade K
<p>organize observations and measurements of objects and events through classification and the preparation of simple charts and tables. Continued</p>	<p>B 10-11, 18-19, 20, 24-25, 26, 30-31, 33, 38-39, 44-45, 48, 50-51, 52, 57 C 10-11, 12, 16-17, 22-23, 24, 28-29, 34-35, 40-41, 54-55, 63 D 10-11, 13, 24-25, 26, 30-31, 36-37, 48-49, 55 E 10-11, 18-19, 21, 26-27, 28, 32-33, 34, 46-47, 54-55, 56, 61 F 10-11, 16-17, 18, 22-23, 25, 26, 30-31, 38-39, 47 AC 6, 7, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 30, 31, 32, 34, 35, 36, 37, 38, 40, 41, 42, 43, 44, 45, 46</p>
<p>interpret organized observations and measurements, recognizing simple patterns, sequences, and relationships.</p>	<p>A 10-11, 16-17, 19, 26-27, 32-33, 42-43, 48-49, 51, 56-57, 60, 62 B 10-11, 14, 18-19, 20, 24-25, 30-31, 33, 38-39, 44-45, 50-51, 57 C 10-11, 16-17, 18, 22-23, 24, 28-29, 30, 40-41, 42, 54-55, 63 D 10-11, 13, 14, 18-19, 20, 24-25, 26, 30-31, 32, 36-37, 42-43, 44, 48-49, 55 E 10-11, 13, 14, 18-19, 22, 26-27, 28, 32-33, 38-39, 41, 46-47, 49, 50 F 10-11, 12, 16-17, 18, 22-23, 25, 30-31, 33, 38-39, 41, 47 AC 6, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 46</p>
<p>share their findings with others and actively seek their interpretations and ideas.</p>	<p>A 48-49, 52 B 18-19, 30-31, 34, 44-45, 50-51 C 16-17, 34-35, 36, 40-41, 46-47, 49, 50, 54-55, 57, 63 D 10-11, 24-25, 38, 42-43, 44, 48-49 E 26-27, 28 F 12, 16-17, 18, 22-23, 24-27, 25, 28, 29, 38-39, 42 AC 14, 16, 18, 19, 21, 24, 25, 26, 27, 28, 30, 33, 34, 37, 41, 43, 44, 46</p>
<p>adjust their explanations and understandings of objects and events based on their findings and new ideas.</p>	
STANDARD 2--INFORMATION SYSTEMS	
<p>1. Information technology is used to retrieve, process, and communicate information and as a tool to enhance learning.</p>	
<p>use a variety of equipment and software packages to enter, process, display, and communicate information in different forms using text, tables, pictures, and sound.</p>	<p>A 24, 30 B 16, 28, 54 C 60 D 16, 22 E 16</p>
<p>access needed information from printed media, electronic data bases, and community resources</p>	<p>A 11, 17, 33, 43, 51, 57, 61 B 13, 25, 33, 39, 45, 51 C 41 F 11, 23</p>
<p>2. Knowledge of the impacts and limitations of information systems is essential to its effective and ethical use.</p>	
<p>describe the uses of information systems in homes, schools, and businesses.</p>	<p>A 24, 30 B 16, 28, 54 C 60 D 16, 22 E 16</p>
<p>demonstrate ability to evaluate information</p>	<p>A 38</p>
<p>3. Information technology can have positive and negative impacts on society, depending upon how it is used.</p>	
<p>describe the uses of information systems in homes and schools.</p>	<p>A 24, 30 B 16, 28, 54 C 60 D 16, 22 E 16</p>
<p>demonstrate ability to evaluate information critically.</p>	<p>A 38</p>

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Standards	Grade K
STANDARD 4 - SCIENCE	
Physical Setting	
1. The Earth and celestial phenomena can be described by principles of relative motion and perspective.	
describe patterns of daily, monthly, and seasonal changes in their environment.	D 10-11, 12-15, 16, 17, 18-19, 20-21, 22, 23, 24-25, 26-27, 28, 29, 32-33, 34, 35, 36-37, 38-39, 40, 41, 44-45, 46, 47, 48-49, 50-51, 52, 53, 55 E 42-43 AC 28, 29, 30, 32, 34
2. Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.	
describe the relationships among air, water, and land on Earth.	C 22-23, 24-25, 26, 27, 28-29, 30-31, 32, 33, 34-35, 36-37, 38, 39, 40-41, 42-43 D 12-15 F 38-39, 40-43, 44, 45 AC 22, 23, 24, 25
3. Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.	
observe and describe properties of materials using appropriate tools.	B 10-11, 18-19, 30-31 C 28-29, 52 E 10-11, 12-15, 16, 17, 18-19, 20-23, 24, 25, 61 F 10-11, 12-13, 14, 40-43 AC 13, 14, 23, 35, 36
describe chemical and physical changes, including changes in states of matter.	D 46 E 32-33, 34-35, 36, 37, 61 F 30-31, 32-35, 36, 37, 38-39, 40-43, 44, 45 AC 38, 45, 46
4. Energy exists in many forms, and when these forms change energy is conserved.	
describe a variety of forms of energy (e.g., heat, chemical, light) and the changes that occur in objects when they interact with those forms of energy.	D 30-31 E 32-33, 37, 38-39, 40-43, 44, 45 F 30-31, 32-35, 36, 37 AC 31, 38, 39, 45
observe the way one form of energy can be transformed into another form of energy present in common situations (e.g., mechanical to heat energy, mechanical to electrical energy, chemical to heat energy).	D 30-31 E 40-43 AC 31
5. Energy and matter interact through forces that result in changes in motion.	
describe the effects of common forces (pushes and pulls) on objects, such as those caused by gravity, magnetism, and mechanical forces.	E 46-47, 48-51, 52, 53, 54-55, 56-57, 58, 59 AC 40, 41
describe how forces can operate across distances.	E 48-51, 56-57, 58
The Living Environment	
1. Living things are both similar to and different from each other and nonliving things.	
describe the characteristics of and variations between living and nonliving things.	A 10-11, 12-13, 14, 15, 16-17, 18-23, 24, 25, 26-27, 28-29, 30, 31, 32-33, 34-39, 36, 42-43, 44-45 B 9, 18-19, 20-21, 22, 23, 24-25, 26-27, 28, 29, 30-31, 32-35, 36, 37, 38-39, 40-41, 42, 43, 44-45, 46-47, 48, 49, 57 C 48-51, 53 D 25 AC 6, 7, 8, 9, 14, 15, 16, 17, 18
describe the life processes common to all living things.	A 18-23, 32-33, 34-39, 40, 42-43, 44-45, 46, 47, 56-57, 58-61, 62, 63, 65 B 20-21, 30-31, 32-35, 36, 44-45, 46-47, 48, 49, 57 AC 9, 10, 12, 16, 18
2. Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.	

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Standards	Grade K
recognize that traits of living things are both inherited and acquired or learned.	A 56-57, 58-61 AC 12
recognize that for humans and other living things there is genetic continuity between generations.	A 56-57, 58-61 B 49 AC 12
3. Individual organisms and species change over time.	
describe how the structures of plants and animals complement the environment of the plant or animal.	A 34-39, 40, 41 C 56-59
observe that differences within a species may give individuals an advantage in surviving and reproducing.	A 28-29
4. The continuity of life is sustained through reproduction and development.	
describe the major stages in the life cycles of selected plants and animals.	A 56-57, 58-61, 62, 63, 65 B 30-31, 32-35, 36, 44-45, 46-47, 48, 49, 57 AC 12, 16, 18
describe evidence of growth, repair, and maintenance, such as nails, hair, and bone, and the healing of cuts and bruises.	A 56-57, 58-61 B 44-45, 46-47, 48, 49 AC 12, 18
5. Organisms maintain a dynamic equilibrium that sustains life.	
describe basic life functions of common living specimens (guppy, mealworm, gerbil).	A 18-23, 32-33, 34-39, 40, 42-43, 44-45, 46, 47, 56-57, 58-61, 63 B 9, 30-31, 32-35, 36, 40-41, 42, 43 C 33, 42-43, 48-51, 53 D 25 AC 9, 10, 12, 16
describe some survival behaviors of common living specimens.	A 28-29
describe the factors that help promote good health and growth in humans.	
6. Plants and animals depend on each other and their physical environment.	
describe how plants and animals, including humans, depend upon each other and the nonliving environment.	A 34-39, 48-49, 50-53, 54, 55 B 40-41, 42, 43, 50-51, 52-53, 54, 55 C 32, 33, 42-43, 45, 46-47, 48-51, 53, 63 AC 11, 19, 26
describe the relationship of the sun as an energy source for living and nonliving cycles.	B 20-21, 40-41, 42, 43 D 30-31 AC 31
7. Human decisions and activities have had a profound impact on the physical and living environment.	
identify ways in which humans have changed their environment and the effects of those changes.	A 34-39 C 55, 56-59, 60, 61
STANDARD 5 - TECHNOLOGY	
Computer Technology	
3. Computers, as tools for design, modeling, information processing, communication, and system control, have greatly increased human productivity and knowledge.	
use the computer as a tool for generating and drawing ideas.	A 24, 30 B 16, 28, 54 C 60 D 16, 22 E 16
Technological Systems	
4. Technological systems are designed to achieve specific results and produce outputs, such as products, structures, services, energy, or other systems.	
identify familiar examples of technological systems that are used to satisfy human needs and wants, and select them on the basis of safety, cost, and function.	
assemble and operate simple technological systems, including those with interconnecting mechanisms to achieve different kinds of movement.	
understand that larger systems are made up of smaller component subsystems.	
History and Evolution of Technology	
5. Technology has been the driving force in the evolution of society from an agricultural to an industrial to an information base.	

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Standards	Grade K
identify technological developments that have significantly accelerated human progress.	
Impacts of Technology 6. Technology can have positive and negative impacts on individuals, society, and the environment and humans have the capability and responsibility to constrain or promote technological development	
describe how technology can have positive and negative effects on the environment and on the way people live and work.	A 34-39 C 54-55, 56-59, 60, 61 AC 27
STANDARD 6--INTERCONNECTEDNESS: COMMON THEMES	
Systems Thinking 1. Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.	
observe and describe interactions among components of simple systems.	A 16-17, 34-39, 42-43, 44-45 B 20-21, 22, 55 C 28-29, 30-31, 32, 33 AC 23
identify common things that can be considered to be systems (e.g., a plant population, a subway system, human beings).	A 16-17, 34-39, 42-43, 44-45 B 20-21, 22, 55 C 28-29, 30-31, 32, 33 AC 23
Models 2. Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	
analyze, construct, and operate models in order to discover attributes of the real thing.	
discover that a model of something is different from the real thing but can be used to study the real thing.	
use different types of models, such as graphs, sketches, diagrams, and maps, to represent various aspects of the real world.	D 11
Magnitude and Scale 3. The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems.	
provide examples of natural and manufactured things that belong to the same category yet have very different sizes, weights, ages, speeds, and other measurements.	A 10-11, 16-17, 25 B 24-25, 26-27, 28, 29 C 34-35, 39, 52 D 34, 42-43 E 10-11, 12-15, 16, 17, 18-19, 20-23, 24, 25, 46-47, 54-55, 61 F 14 AC 7, 15, 36
identify the biggest and the smallest values as well as the average value of a system when given information about its characteristics and behavior.	B 38-39, 42 C 32, 38, 39, 53 E 20-23 AC 17
Equilibrium and Stability 4. Equilibrium is a state of stability due either to a lack of changes (static equilibrium) or a balance between opposing forces (dynamic equilibrium).	
cite examples of systems in which some features stay the same while other features change.	A 10-11, 12-13, 15, 36-37 C 15, 22-23, 24-25, 26, 27, 34-35, 36-37, 38, 39, 40-41, 56-59 D 13, 18-19, 20-21, 22, 23, 26-27, 28, 29, 32-33, 34, 35, 38-39, 40, 41, 42-43, 44-45, 46, 47, 48-49, 50-51, 53, 55 F 38-39, 40-43, 44, 45 AC 6, 22, 24, 25, 29, 33, 34
distinguish between reasons for stability - from lack of changes to changes that counterbalance one another to changes within cycles.	A 36-37 C 22-23, 24-25, 26, 27, 40-41 D 48-49, 50-51 AC 22, 25, 34

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Standards	Grade K
<p>Patterns of Change 5. Identifying patterns of change is necessary for making predictions about future behavior and conditions.</p>	
<p>use simple instruments to measure such quantities as distance, size, and weight and look for patterns in the data.</p>	<p>B 44-45 C 32 E 45</p>
<p>analyze data by making tables and graphs and looking for patterns of change.</p>	<p>B 48 C 60 D 11, 22</p>
<p>Optimization 6. In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.</p>	
<p>determine the criteria and constraints of a simple decision making problem.</p>	
<p>use simple quantitative methods, such as ratios, to compare costs to benefits of a decision problem.</p>	
STANDARD 7--INTERDISCIPLINARY PROBLEM SOLVING	
<p>Connections 1. The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those relating to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.</p>	
<p>analyze science/technology/society problems and issues that affect their home, school, or community, and carry out a remedial course of action.</p>	<p>C 54-55, 56-59, 60, 61 AC 27</p>
<p>design solutions to problems involving a familiar and real context, investigate related science concepts to inform the solution, and use mathematics to model, quantify, measure, and compute.</p>	<p>A 24, 30, 40, 46, 54, 62 B 16, 22, 28, 36, 42, 48, 54 C 20, 26, 32, 38, 44, 52, 60 D 16, 22, 28, 34, 40, 46, 52 E 16, 24, 30, 36, 44, 52, 58 F 14, 20, 28, 36, 44 AC 40</p>
<p>observe phenomena and evaluate them scientifically and mathematically by conducting a fair test of the effect of variables and using mathematical knowledge and technological tools to collect, analyze, and present data and conclusions.</p>	<p>A 24, 30, 36-37, 40, 46, 54, 62 B 16, 22, 24-25, 26-27, 28, 29, 36, 42, 48, 54, 57 C 20, 26, 32, 38, 44, 52, 60 D 16, 22, 28, 34, 40, 46, 52 E 16, 24, 30, 36, 44, 52, 58 F 14, 20, 28, 36, 44 AC 15</p>
<p>Strategies 2. Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.</p>	
<p>students participate in an extended, culminating mathematics, science, and technology project. The project would require students to: work effectively gather and process information generate and analyze ideas observe common themes realize ideas present results</p>	<p>A 9 B 9 C 9, 54-55, 56-59, 60, 61 D 9 E 9 F 9 AC 27</p>

Life Science

Grade K Harcourt
Science Concept
Map

Earth Science



Physical Science

Educational Excellence
For Everyone

Animals

What Is Living?
What is Nonliving?

What is an Animal?

What Body Coverings
Do Animals Have?

What Do Animals
Need?

How Do Animals
Move?

Where Do Animals
Live?

How Do Animals
Grow?

Plants

What Are Some
Plants?

What Are the Parts
of a Plant?

How Are Leaves the
Same and Different?

Where Are a Plant's
Seeds?

What Do Plants Need
to Grow?

What Is the Life
Cycle of a Plant?

How Do Plants and
Animals Help People?

Earth's Land, Air,
and Water

How Does Earth Look?

What Makes Up the
Earth's Land?

What Changes Earth's
Land?

What Can We Observe
About Soil?

How Can We Sort
Rocks?

Where Do We Find
Water?

How Do We Use
Earth's Resources?

How Can We Care for
Earth's Resources?

Weather and
Seasons

How Can We Keep
Track of Weather?

What Are the
Seasons?

What Is Spring?

What Is Summer?

What Is Fall?

What Is Winter?

How Can I Predict the
Weather?

Objects Around Us

What Can We Find
Out About Objects?

How Can We Sort
Objects?

How Can We Describe
the Position of
Objects?

How Can Objects
Change?

Why Do Objects
Make Shadows?

How Do We Move
Objects?

Which Objects Do
Magnets Move?

Investigating Water

How Does Water
Move?

What Is Water Like?

Which Objects Sink?
Which Objects Float?

How Does Water
Change Objects?

How Does
Water Change?

September

October

November

December

January

February

March

April

May

June