



# Delta Science Modules (DSM III)

Correlation to:

## National Science Education Standards



April 2010

## CONTENT STANDARD: K-12 UNIFYING CONCEPTS AND PROCESSES

**As a result of activities in grades K-12, all students should develop understanding and abilities aligned with the following concepts and processes.**

Note: The unifying concepts and processes are interwoven throughout the activities and investigations in the DSM Modules. Some examples of modules that address the standard are listed below.

<i>UNIFYING CONCEPTS AND PROCESSES</i>	<i>DSM</i>
Systems, order, and organization	<b>Finding the Moon</b> <b>Soil Science</b> <b>Weather Watching</b> <b>Food Chains and Webs</b> <b>Rocks and Minerals</b> <b>Electromagnetism</b> <b>Astronomy</b> <b>DNA—From Genes to Protein</b>
Evidence, models, and explanation	<b>Sunshine and Shadows</b> <b>Sink or Float</b> <b>Sound</b> <b>Dinosaurs and Fossils</b> <b>Flight and Rocketry</b> <b>Color and Light</b> <b>Earth, Moon, and Sun</b> <b>Matter and Change</b>
Change, constancy, and measurement	<b>From Seed to Plant</b> <b>Force and Motion</b> <b>Plant and Animal Life Cycles</b> <b>Solar System</b> <b>Pollution</b> <b>Oceans</b> <b>Electrical Connections</b> <b>Plants in Our World</b>
Evolution and equilibrium	<b>Observing an Aquarium</b> <b>Butterflies and Moths</b> <b>Dinosaurs and Fossils</b> <b>Earth Movements</b> <b>Simple Machines</b> <b>Erosion</b> <b>DNA—From Genes to Protein</b>

Form and function	<b>Earth Processes</b>  <b>From Seed to Plant</b> <b>Plant and Animal Populations</b> <b>Butterflies and Moths</b> <b>Weather Instruments</b> <b>You and Your Body</b> <b>Simple Machines</b> <b>Plants in Our World</b> <b>DNA—From Genes to Protein</b>
-------------------	--

## CONTENT STANDARD A SCIENCE AS INQUIRY

**As a result of activities in grades K-4, all students should develop abilities to do scientific Inquiry.**

NOTE: DSM modules are inquiry-based. The fundamentals of scientific inquiry are imbedded in all modules. Examples of activities for each of the standard’s guidelines are listed.

<b>GUIDELINE</b>	<b>DSM</b>
Ask a question about objects, organisms, and events in the environment	<b>Properties</b> Activity 10, pp. 75-80 <b>Classroom Plants</b> Activity 10, pp. 87-95 <b>Weather Instruments</b> Activity 12, pp. 97-101 <b>Sound</b> Activity 12, pp. 73-98
Plan and conduct a simple investigation	<b>Investigating Water</b> Activity 8, pp. 63-69 <b>Plant and Animal Populations</b> , Activity 9, pp. 85-93 <b>Earth Movements</b> Activity 4, pp. 39-46 <b>Electrical Circuits</b> Activity 6-7, pp. 51-62
Employ simple equipment and tools to gather data and extend the senses	<b>Observing an Aquarium</b> Activity 4-6, pp. 39-67 <b>Soil Science</b> Activity 3, pp. 29-36 <b>Using Your Senses</b> Activity 2-3, pp. 23-36 <b>Electrical Circuits</b> Activity 4, pp. 37-43
Use data to construct a reasonable explanation	<b>Investigating Water</b> Activity 8, pp. 63-69 <b>Force and Motion</b> Activity 4-5, pp. 41-55 <b>Solar System</b> Activity 5-6, pp. 43-58 <b>Dinosaurs and Fossils</b> Activity 6-7, pp. 47-60
Communicate investigations and explanations	<b>Finding the Moon</b> Activity 3, pp. 29-37 <b>Using Your Senses</b> Activity 12, pp. 23-30 <b>Water Cycle</b> Activity 7-8, pp. 61-76 <b>Sound</b> Activity 9-11, pp. 73-98

## CONTENT STANDARD A SCIENCE AS INQUIRY

**As a result of activities in grades K-4, all students should develop understandings about scientific inquiry.**

**NOTE:** Understandings about scientific inquiry are implied in the previous guidelines on developing scientific inquiry. Some other specific examples that provide teachers the opportunity to address these guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Scientific investigations involve asking and answering a question and comparing the answer with what scientists already know about the world.</p> <p>Scientists use different kinds of investigations depending on the questions they are trying to answer. Types of investigations include describing objects, events, and organisms; classifying them; and doing a fair test.</p> <p>Simple instruments, such as magnifiers, thermometers, and rulers, provide more information than scientists obtain using only their senses.</p> <p>Scientists develop explanations using observations (evidence) and what they already know about the world (scientific knowledge). Good explanations are based on evidence from investigations.</p> <p>Scientists make the results of their investigations public; they describe the investigations in ways that enable others to repeat investigations.</p> <p>Scientists review and ask questions about the results of other scientists' work.</p>	<p><b>Investigating Water</b> Activity 10, pp. 81-88  <b>States of Matter</b> Activity 8, p. 65-72  <b>Solar System</b> Activity 10, pp. 83-92  <b>Sound</b> Activity 5, pp. 45-50</p> <p><b>Finding the Moon</b> Activity 4, pp. 39-46  <b>Sunshine and Shadows</b> Activity 5, pp. 43-48  <b>Weather Watching</b> Activity 6, pp. 51-59  <b>Food Chains and Webs</b> Activity 2-3, pp. 23-37</p> <p><b>Observing an Aquarium</b> Activity 4-6, pp. 39-67  <b>Weather Watching</b> Activity 2-3, pp. 21-36  <b>States of Matter</b> Activity 6-7, pp. 51-63  <b>Dinosaurs and Fossils</b> Activity 6-7, pp. 47-60</p> <p><b>Sunshine and Shadows</b> Activity 16-7, pp. 49-63  <b>Butterflies and Moths</b> Activity 2, pp. 31-38  <b>Classroom Plants</b> Activity 5, pp. 47-53  <b>Electrical Circuits</b> Activity 6-7, pp. 51-62</p> <p><b>From Seed to Plant</b> Activity 8, pp. 67-72  <b>Using Your Senses</b> Activity 8-9, pp. 67-80  <b>Dinosaurs and Fossils</b> Activity 6, pp. 47-53  <b>Food Chains and Webs</b> Activity 2-3, pp. 23-37</p> <p><b>Finding the Moon</b> Activity 9, pp. 77-84  <b>How Do We Learn</b> Activity 6-7, pp. 51-64  <b>Classroom Plants</b> Activity 5, pp. 47-53  <b>Magnets</b> Activity 4, pp. 29-34</p>

## CONTENT STANDARD B PHYSICAL SCIENCE

**As a result of the activities in grades K-4, all students should develop an understanding of properties of objects and materials.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Objects have many observable properties, including size, weight, shape, color, temperature, and the ability to react with other substances. Those properties can be measured using tools such as rulers, balances, and thermometers.</p>	<p><b>Properties</b> Activity 1-11, pp. 13-86 Reader, pp. 3-12 <b>How Do We Learn</b> Activity 2-3, pp. 23-35 <b>Investigating Water</b> Activity 1-4, pp. 113-40 Reader, pp. 2-11 <b>Sink or Float</b> Activity 1-3, pp. 13-34 Reader, pp. 5-8 <b>Electric Circuits</b> Activity 6-7, pp. 51-62 <b>Magnets</b> Activity 2, pp. 19-23 Reader, pp. 2-3</p>
<p>Objects are made of one or more materials, such as paper, wood, and metal. Objects can be described by the properties of the materials from which they are made, and those properties can be used to separate or sort a group of objects or materials.</p>	<p><b>Properties</b> Activity 7-13, pp. 53-100 Reader, p. 8 <b>Soil Science</b> Activity 1-4, 7, pp. 15-44, 59-67 Reader, pp. 7-8 <b>Magnets</b> Activity 2-3, pp. 19-28 Reader, pp. 2-3</p>
<p>Materials can exist in different states—solids, liquid, and gas. Some common materials, such as water, can be changed from one state to another by heating or cooling</p>	<p><b>Properties</b> Activity 7-9, pp. 53-73 Reader, pp. 5-13 <b>Investigating Water</b> Activity 9-11, pp. 71-94 Reader, pp. 4-11 <b>States of Matter</b> Activity 1-12, pp. 13-101 Reader, pp. 3-10 <b>Water Cycle</b> Activity 4-6, 8-9, 11-13, pp. 39-60, 69-83, 91-114 Reader, pp. 2-11</p>

## CONTENT STANDARD B PHYSICAL SCIENCE

**As a result of activities in grades K-4, all students should develop an understanding of position and motions of objects.**

Examples of each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>The position of an object can be described by locating it relative to another object or the background.</p>	<p><b>Finding the Moon</b> Activity 1-4, pp. 13-46 <b>Sunshine and Shadows</b> Activity 1-3, 8-9, 11, pp. 13-32, 65-76, 83-85</p>

<p>An object’s motion can be described by tracing and measuring its position over time.</p> <p>The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p> <p>Sound is produced by vibrating objects. The pitch of the sound can be varied by changing the rate of vibration.</p>	<p>Reader, pp. 8-9  <b>Force and Motion</b> Activity 1-10, pp. 13-99  Reader, pp. 6-9  <b>Magnets</b> Activity 1-3, 5, pp. 13-28, 35-40  Reader, pp. 4-5  <b>Electric Circuits</b> Activity 1-4, pp. 13-43</p> <p><b>Finding the Moon</b> Activity 3, 5, pp. 29-37, 47-54  <b>Sunshine and Shadows</b> Activity 4-7, pp. 33-63  <b>Force and Motion</b> Activity 13-7, pp. 31-72  Reader, p. 3  <b>Weather Watching</b> Activity 4, pp. 37-44  <b>Weather Instruments</b> Activity 4-5, pp. 37-50</p> <p><b>Force and Motion</b> Activity 1-12, pp. 13-109  Reader, pp. 2-11  <b>Sink or Float</b> Activity 8-12, pp. 67-107  <b>Magnets</b> Activity 2-4, pp. 19-34</p> <p><b>Using Your Senses</b> Activity 5-6, pp. 45-60  Reader, p. 7  <b>Sound</b> Activity 1-11, pp. 13-98  Reader, pp. 2-7</p>
---	--

## CONTENT STANDARD B PHYSICAL SCIENCE

**As a result of the activities in grades K-4, all students should develop an understanding of light, heat, electricity, and magnetism.**

Examples of each of the standard’s guidelines are listed.

<b>GUIDELINES</b>	<b>DSM</b>
<p>Light travels in a straight line until it strikes an object. Light can be reflected by a mirror, refracted by a lens, or absorbed by the object.</p>	<p><b>Sunshine and Shadows</b> Activity 1-3, pp. 13-37  Reader, pp. 4-6</p>
<p>Heat can be produced in many ways, such as burning, rubbing, or mixing one substance with another. Heat can move from one object to another by conduction.</p>	<p><b>States of Matter</b> Activity 4-5, 7-8, pp. 35-50, 57-72  Reader, pp. 12-13  <b>Earth Movements</b> Activity 4, 10, pp. 39-46, 87-96</p>
<p>Electricity in circuits can produce light, heat sound, and magnetic effects. Electrical circuits require a complete loop through which an electrical current can pass.</p>	<p><b>Electrical Circuits</b> Activity 1-12, pp. 13-101  Reader, pp. 3-7, 10  <b>Magnets</b> Activity 11, pp. 71-76  Reader, p. 10</p>
<p>Magnets attract and repel each other and certain kinds of other materials.</p>	<p><b>Properties</b> Activity 11, pp. 81-86  Reader, p. 8  <b>Magnets</b> Activity 1-12, pp. 13-81  Reader, pp. 2-10</p>

	<b>Electric Circuits</b> Reader, pp. 8-10
--	--

## CONTENT STANDARD C LIFE SCIENCE

### As a result of activities in grades K-4, all students should develop understanding of the characteristics of organisms

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Organisms have basic needs. For example, animals need air, water, and food; plants require air, water, nutrients, and light. Organisms can survive only in environments in which their needs are met. The world has many different environments, and distinct environments support the life of different types of organisms.</p>	<p><b>Observing an Aquarium</b> Activity 1-3, 7, pp. 15-38, 69-78 Reader, pp. 2-9</p> <p><b>From Seed to Plant</b> Activity 2, 4, 6-8, 11, pp. 21-31, 39-44, 53-72, 85-90 Reader, pp. 4-8, 12</p> <p><b>Butterflies and Moths</b> Activity 1, 4, pp. 15-21, 39-45 Reader, p. 2</p> <p><b>Classroom Plants</b> Activity 5, 7, pp. 47-53, 65-71 Reader, pp. 1-3, 7-9</p> <p><b>Food Chains and Webs</b> Activity 2-3, 7-12, pp. 23-37, 59-101 Reader, pp. 6-9</p>
<p>Each plant or animal has different structures that serve different functions in growth, survival, and reproduction. For example, humans have distinct body structures for walking, holding, seeing, and talking.</p>	<p><b>From Seed to Plant</b> Activity 1, 3-5, 9, 10, 12, pp. 15-20, 33-52, 73-96, 105-109 Reader, pp. 2-9</p> <p><b>Observing an Aquarium</b> Activity 3-6, pp. 31-67 Reader, pp. 4-10</p> <p><b>Butterflies and Moths</b> Activity 2, 7-8, pp. 23-30, 61-77 Reader, pp. 4-7</p> <p><b>Classroom Plants</b> Activity 1-2, 6-9 pp. 15-28, 55-86 Reader, pp. 6-12</p> <p><b>Using Your Senses</b> Activity 1, 5, 8, 10-11, pp. 13-21, 45-52, 67-72, 81-95 Reader, pp. 2-12</p> <p><b>Food Chains and Webs</b> Activity 4-6, pp. 39-50</p>
<p>The behavior of individual organisms is influenced by internal cues (such as hunger) and by external cues (such as change in the environment). Humans and other organisms have senses that help them detect internal and external cues.</p>	<p><b>Observing an Aquarium</b> Activity 8-9, 11, pp. 79-95, 109-116</p> <p><b>From Seed to Plant</b> Activity 5-6, 11, pp. 45-58, 85-90</p> <p><b>Using Your Senses</b> Activity 1-12, pp. 13-103 Reader, pp. 2-12</p> <p><b>Butterflies and Moths</b> Activity 7, 10, pp. 61-70,</p>

	89-96 Reader, p. 15 <b>Plant and Animal Populations</b> Activity 9-11, pp. 85-101 <b>Food Chains and Webs</b> Activity 7-8, pp. 59-77 Reader, pp. 4-8
--	---

## CONTENT STANDARD C

### LIFE SCIENCE

**As a result of the activities in grades K-4, all students should develop understanding of life cycles of organisms.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
Plants and animals have life cycles that include being born, developing into adults, reproducing, and eventually dying. The details of this life cycle are different for different organisms.	<b>From Seed to Plant</b> Activity 13, p. 97-103 Reader, pp. 10-11 <b>Observing an Aquarium</b> Activity 10, pp. 97-107 Reader, pp. 10-11 <b>Butterflies and Moths</b> Activity 1-2, 5-6, 9, 11, pp. 15-30, 47-59, 79-87, 97-104 Reader, pp. 8-13 <b>Plant and Animal Life Cycles</b> Activity 2-12, pp. 23-113 Reader, pp. 2-13
Plants and animals closely resemble their parents.	<b>From Seed to Plant</b> Activity 13, pp. 97-103 Reader, pp. 10-11 <b>Observing an Aquarium</b> Activity 10, pp. 97-107 Reader, pp. 10-11 <b>Butterflies and Moths</b> Activity 1-2, 5-6, 9, 11, pp. 15-30, 47-59, 79-87, 97-104 Reader, pp. 8-13 <b>Classroom Plants</b> Activity 10, pp. 87-95 <b>Plant and Animal Life Cycles</b> Activity 2-6, 8-11, pp. 23-63, 75-103 Reader, pp. 2, 7-12
Many characteristics of an organism are inherited from the parents of the organism, but other characteristics result from an individual’s interaction with the environment. Inherited characteristics include the color of flowers, and the number of limbs of an animal. Other features, such as the ability to ride a bicycle, are learned through interactions with the environment and cannot be passed on to the next generation.	DSM provides the opportunity to address this guideline. See examples below: <b>From Seed to Plant</b> Activity 3, 13, pp. 33-38, 97-103 Reader, pp. 10-11 <b>Observing an Aquarium</b> Activity 10, pp. 87-107 Reader, pp. 10-11 <b>Classroom Plants</b> Activity 10, pp. 82-95 <b>Plant and Animal Populations</b> Activity 5, pp. 51-57 <b>Plant and Animal Life Cycles</b> Activity 9-10, pp. 83-98

## CONTENT STANDARD C LIFE SCIENCE

**As a result of the activities in grades K-4, all students should develop understanding of organisms and environments.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>All animals depend on plants. Some animals eat plants for food. Other animals eat animals that eat plants.</p>	<p><b>Observing an Aquarium</b> Activity 1-2, 6-7, pp. 15-30, 57-78 Reader, pp. 2, 8-9, 12</p> <p><b>Plant and Animal Populations</b> Activity 4-7, 9-12, pp. 43-76, 85-117 Reader, pp. 6, 10-13</p> <p><b>Butterflies and Moths</b> Activity 1, 10, pp. 15-21, 89-95 Reader, pp. 10, 12</p> <p><b>Food Chains and Webs</b> Activity 3, 7-12, pp. 31-37, 59-101 Reader, pp. 4-9</p>
<p>An organism’s patterns of behavior are related to the nature of that organism’s environment, including the kinds and numbers of other organisms present, the availability of food and resources, and the physical characteristics of the environment. When the environment changes, some plants and animals survive and reproduce, and others die or move to new locations.</p>	<p><b>Observing an Aquarium</b> Activity 7-9, pp. 69-95 From Seed to Plant Activity 6, 8, 11, pp. 53-58, 67-72, 85-90</p> <p><b>Plant and Animal Populations</b> Activity 4-12, pp. 43-117 Reader, pp. 4-7</p> <p><b>Food Chains and Webs</b> Activity 7-12, pp. 59-101 Reader, pp. 4-7</p>
<p>All organisms cause changes in the environment where they live. Some of these changes are detrimental to the organism or other organisms, whereas others are beneficial.</p>	<p><b>Observing an Aquarium</b> Activity 3, 6-7, 11, pp. 31-38, 57-78, 109, 116 Reader, p. 12</p> <p><b>Plant and Animal Populations</b> Activity 3-7, 9-12, pp. 35-76 Reader, pp. 10, 12-13, 15</p> <p><b>Food Chains and Webs</b> Activity 7-12, 59-101 Reader, pp. 10, 12</p>
<p>Humans depend on their natural and constructed environments. Humans change environments in ways that can be either beneficial or detrimental for themselves and other organisms.</p>	<p><b>Observing an Aquarium</b> Activity 11-12, pp. 109-125</p> <p><b>From Seed to Plant</b> Reader, p. 13</p> <p><b>Classroom Plants</b> Activity 1, 12, pp. 15-21, 105-112 Reader, pp. 14-15</p> <p><b>Soil Science</b> Activity 10-11, pp. 99-105</p> <p><b>Plant and Animal Populations</b> Reader, p. 15</p>

## CONTENT STANDARD D EARTH SCIENCE

**As a result of the activities in grade K-4, all students should develop an understanding of properties of earth materials.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINES</b></i>	<i><b>DSM</b></i>
<p>Earth materials are solid rocks and soils, water, and the gases of the atmosphere. The varied materials have different physical and chemical properties, which make them useful in different ways, for example, as building materials, as sources of fuel, or for growing plants we use as food. Earth materials provide many of the resources that humans use.</p>	<p><b>Investigating Water</b> Activity 1-4, 9-10, pp. 13-40, 71-88 Reader, pp. 2-3</p> <p><b>Soil Science</b> Activity 1-4, 7-8, pp. 15-44, 59-79 Reader, pp. 2-8, 10-12</p> <p><b>Earth Movements</b> Activity 2-3, pp. 21-37 Reader, p. 15</p> <p><b>Water Cycle</b> Activity 1-3, pp. 13-37 Reader, pp. 6-7, 14-15</p>
<p>Soils have properties of color and texture, capacity to retain water, and ability to support the growth of many kinds of plants, including those in our food supply.</p>	<p><b>Soils Science</b> Activity 1-8, pp. 15-79 Reader, pp. 2-3, 7-8</p> <p><b>Food Chains and Webs</b> Activity 1-2, p. 15-29</p>
<p>Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.</p>	<p><b>Earth Movements</b> Activity 3, pp. 29-37</p> <p><b>Dinosaurs and Fossils</b> Activity 1-3, 6-8, 10-12, pp. 13-34, 47-66, 75-95 Reader, pp. 2-15</p>

## CONTENT STANDARD D EARTH SCIENCE

**As a result of the activities in grades K-4, all students should develop an understanding of objects in the sky.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>The sun, moon, stars, clouds, birds, and airplanes all have properties, locations, and movements that can be observed and described.</p>	<p><b>Finding the Moon</b> Activity 1-12, pp. 13-104 Reader, pp. 2-10</p> <p><b>Sunshine and Shadows</b> Activity 1-7, pp. 13-63 Reader, pp. 2-11</p> <p><b>Weather Watching</b> Activity 6, 9-11, pp. 51-59, 77-108 Reader, pp. 4-6, 15</p> <p><b>Solar System</b> Activity 1-2, 9-11, pp. 13-20, 73-100 Reader, pp. 2-3, 7</p> <p><b>Weather Instruments</b> Activity 10, pp. 81-87 Reader, pp. 6, 9, 13</p>
<p>The sun provides the light and heat necessary to maintain the temperature of the earth.</p>	<p><b>Sunshine and Shadows</b> Reader, p. 2</p>

	<p><b>Weather Watching</b> Activity 3, pp. 29-36 Reader, pp. 3-5</p> <p><b>Solar System</b> Activity 1, pp. 13-20 Reader, pp. 2-3</p> <p><b>Weather Instruments</b> Activity 6, pp. 51-57 Reader, pp. 2, 6</p> <p><b>Water Cycle</b> Reader, pp. 10-11</p>
--	--

## CONTENT STANDARD D EARTH SCIENCE

**As a result of the activities in grades K-4, all students should develop an understanding of changes in the earth and sky.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>The surface of the earth changes. Some of the changes are due to slow processes such as erosion and weathering, and some changes are due to rapid processes, such as landslides, volcanic eruptions, and earthquakes.</p>	<p><b>Soil Science</b> Activity 5-6, 12, pp. 45-58, 107-114 Reader, pp. 4-6, 9-11</p> <p><b>Earth Movements</b> Activity 5-7, 9-12, pp. 47-69, 99-110 Reader, pp. 4-13</p>
<p>Weather changes from day to day and over the seasons. Weather can be described by measurable quantities, such as temperature, wind direction and speed, and precipitation.</p>	<p><b>Weather Watching</b> Activity 1-12, pp. 13-116 Reader, pp. 2-12</p> <p><b>Weather Instruments</b> Activity 1-12, pp. 13-101 Reader, pp. 2-9</p>
<p>Objects in the sky have patterns of movement. The sun, for example, appears to move across the sky in the same way every day, but its path changes slowly over the seasons. The moon moves across the sky on a daily basis much like the sun. The observable shape of the moon changes from day to day in a cycle that lasts about a month.</p>	<p><b>Finding the Moon</b> Activity 3-5, 9-10, pp. 29-54, 77-91 Reader, pp. 4-10</p> <p><b>Sunshine and Shadows</b> Activity 4-6, pp. 33-56 Reader, pp. 8-9</p> <p><b>Solar System</b> Activity 2, 9, pp. 21-26, 73-81 Reader, pp. 3, 6-7</p>

## CONTENT STANDARD E SCIENCE AND TECHNOLOGY

**As a result of activities in grades K-4, all students should develop abilities of technological design.**

Examples of activities for each of the guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Identify a simple problem</p>	<p><b>Sunshine and Shadows</b> Activity 12, pp. 89-95</p> <p><b>Sink or Float</b> Activity 12, pp. 97-107</p> <p><b>States of Matter</b> Activity 5, pp. 41-50</p>

Propose a solution	<p><b>Sound</b> Activity 12, pp. 99-105  <b>Force and Motion</b> Activity 12, Science Challenge, p. 117</p> <p><b>Sunshine and Shadows</b> Activity 12, pp. 89-95  <b>Sink or Float</b> Activity 12, pp. 97-107  <b>States of Matter</b> Activity 5, pp. 41-50  <b>Sound</b> Activity 12, pp. 99-105  <b>Force and Motion</b> Activity 12, Science Challenge, p. 117</p>
Implementing proposed solutions	<p><b>Sunshine and Shadows</b> Activity 12, pp. 89-95  <b>Sink or Float</b> Activity 12, pp. 97-107  <b>States of Matter</b> Activity 5, pp. 41-50  <b>Sound</b> Activity 12, pp. 99-105  <b>Force and Motion</b> Activity 12, Science Challenge, p. 117</p>
Evaluate a product or design	<p><b>Sunshine and Shadows</b> Activity 12, pp. 89-95  <b>Sink or Float</b> Activity 12, pp. 97-107  <b>States of Matter</b> Activity 5, pp. 41-50  <b>Sound</b> Activity 12, pp. 99-105  <b>Force and Motion</b> Activity 12, Science Challenge, p. 117</p>
Communicate a problem design and solution	<p><b>Sunshine and Shadows</b> Activity 12, pp. 89-95  <b>Sink or Float</b> Activity 12, pp. 97-107  <b>States of Matter</b> Activity 5, pp. 41-50  <b>Sound</b> Activity 12, pp. 99-105  <b>Force and Motion</b> Activity 12, Science Challenge, p. 117</p>

## CONTENT STANDARD E SCIENCE AND TECHNOLOGY

**As a result of activities in grades K-4, all students should develop understanding about science and technology.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>People have always had questions about their world. Science is one way of answering questions and explaining the natural world.</p>	<p><b>Soil Science</b> Reader, p. 13  <b>Classroom Plants</b> Reader, p. 14  <b>Earth Movements</b> Reader, p. 14  <b>Sound</b> Activity 2,  Science and Social Studies, p. 28</p>
<p>People have always had problems and invented tools and techniques (ways of doing something) to solve problems. Trying to determine the effects of solutions helps people avoid some new problems.</p>	<p><b>Investigating Water</b> Activity 2,  Science, Technology, and Society, p. 26  <b>Sink or Float</b> Reader, pp. 12-13  <b>Solar System</b> Reader, p. 15</p>

<p>Scientists and engineers often work in teams with different individuals doing different things that contribute to the results.</p> <p>Women and men of all ages, backgrounds, and groups engage in a variety of scientific and technological work.</p> <p>Tools help scientists make better observations, measurements, equipment for investigations. They help scientists see, measure, and do things that they could not otherwise do.</p>	<p><b>Magnets</b> Activity 4, Science, Technology, and Society, p. 34  <b>Sound</b> Activity 5, Science, Technology, and Society, p. 50</p> <p><b>Weather Watching</b> Reader, p. 14  <b>Electrical Circuits</b> Reader, p. 13  <b>Dinosaurs and Fossils</b> Reader, pp. 14-15  <b>Weather Instruments</b> Reader, p. 12</p> <p><b>Sunshine and Shadows</b> Reader, p. 12  <b>Classroom Plants</b> Reader, p. 14  <b>Weather Watching</b> Reader, p. 13  <b>Sound</b> Activity 2, Science and Social Studies, p. 28  <b>Electrical Circuits</b> Activity 3, Science and Social Studies, p. 35</p> <p><b>From Seed to Plant</b> Activity 3, pp. 33-39  <b>Observing an Aquarium</b> Activity 3-6, pp. 31-67  <b>Using Your Senses</b> Activity 2, pp. 23-30  <b>Weather Watching</b> Activity 2-5, pp. 21-50 Reader, p. 15  <b>Dinosaurs and Fossils</b> Activity 6-7, pp. 47-60</p>
---	---

## CONTENT STANDARD E SCIENCE AND TECHNOLOGY

**As a result of activities in grades K-4, all students should develop abilities to distinguish between natural objects and objects made by humans.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Some objects occur in nature; others have been designed and made by people to solve human problems and enhance the quality of life.</p> <p>Objects can be categorized into two groups, natural and designed.</p>	<p><b>How Do We Learn</b> Reader, p. 12  <b>From Seed to Plant</b> Activity 1, pp. 15-20  <b>Properties</b> Activity 12, pp. 87-93  <b>Butterflies and Moths</b> Activity 4, pp. 39-45  <b>Classroom Plants</b> Activity 12, pp. 117-125  <b>Force and Motion</b> Reader, pp. 12-14  <b>Soil Science</b> Reader, pp. 14-15</p> <p><b>From Seed to Plant</b> Activity 1, pp. 15-20  <b>Sunshine and Shadows</b> Reader, p. 14  <b>Soil Science</b> Reader, pp. 10-11  <b>Sink or Float</b> Reader, pp. 12-13  <b>Force and Motion</b> Reader, pp. 12-14  <b>Magnets</b> Activity 11, pp. 71-76 Reader, p. 6  <b>Food Chains and Webs</b> Activity 1, pp. 15-22</p>

## CONTENT STANDARD F SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades K-4, all students should develop understanding of personal health.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Safety and security are basic needs of humans. Safety involves freedom from danger, risk, or injury. Security involves feelings of confidence and lack of anxiety and fear.</p>	<p><b>Each module contains safety information in the activities when appropriate.</b> See also: <b>Sunshine and Shadows</b> Activity 1, Science and Health, p. 18 <b>Investigating Water</b> Activity 5, Science and Health, p. 46 <b>Electric Circuits</b> Activity 10, p. 79</p>
<p>Individuals have some responsibility for their own health. Students should engage in personal care—dental hygiene, cleanliness, and exercise—that will maintain and improve health.</p>	<p><b>From Seed to Plant</b> Activity 8, Science and Health, p. 82 <b>Water Cycle</b> Activity 11, Science and Health, p. 98 <b>Sound</b> Reader, p. 14</p>
<p>Nutrition is essential to health. Students should understand how the body uses food and how various food contribute to health.</p>	<p><b>Observing an Aquarium</b> Activity 7, Science and Health, p. 78 <b>Classroom Plants</b> Activity 5, Science and Health, p. 53</p>
<p>Different substances can damage the body and how it functions. Such substances include tobacco, alcohol, over-the-counter medicines, and illicit drugs. Students should understand that some substances, such as prescription drugs, can be beneficial, but that any substance can be harmful if used inappropriately.</p>	

## CONTENT STANDARD F SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades K-4, all students should develop an understanding of characteristics and changes in populations.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Human populations include groups of individuals living in a particular location. One important characteristic of a human population is the population density—the number of individuals of</p>	

<p>a particular population that lives in a given amount of space.</p>	
<p>The size of a human population can increase or decrease. Populations will increase unless other factors such as disease or famine decrease the population.</p>	

## CONTENT STANDARD F

### SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades K-4, all students should develop understanding of types of resources.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Resources are things that we get from the living and nonliving environment to meet the needs and wants of a population.</p>	<p><b>From Seed to Plant</b> Activity 14, pp. 105-109  <b>Soils Science</b> Activity 1,8, pp. 15-20, 69-77  Reader, pp. 10-12  <b>Sink or Float</b> Reader, pp. 12-13  <b>Water Cycle</b> Activity 11,  Science and Health, p. 98  Reader, pp. 14-15  <b>Food Chains and Webs</b> Activity 1, pp. 15-22</p>
<p>Some resources are basic materials, such as air, water, and soil; some are produced from basic resources, such as food, fuel, and building materials; and some resources are nonmaterial, such as quiet places, beauty, security, and safety.</p>	<p><b>Observing an Aquarium</b> Activity 1, pp. 15-21  Activity 8, Science and Health, p. 87  <b>From Seed to Plant</b> Activity 14, pp. 105-109  <b>Soil Science</b> Activity 1, 8, 10, pp. 15-20, 69-79, 91-97  Reader, pp. 10-12  <b>Water Cycle</b> Activity 11,  Science and Health, p. 98  Reader, pp. 14-15  <b>Electrical Circuits</b>  Reader, pp. 14-15</p>
<p>The supply of many resources is limited. If used, resources can be extended through recycling and decreased use.</p>	<p><b>Observing an Aquarium</b> Activity 11, Science, Technology, and Society, p.116  <b>Soil Science</b> Activity 12,  Science, Technology, and Society, p. 114  Reader, pp. 10-12  <b>Water Cycle</b> Activity 5,  Science and Math, p. 51  Reader, p. 15</p>

## CONTENT STANDARD F

### SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades K-4, all students should develop understanding of changes in environment.**

Examples of activities for each of the standard's guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Environments are the space, conditions, and factors that affect an individual's and a population's ability to survive and their quality of life.</p>	<p><b>Observing an Aquarium</b> Activity 2, pp. 23-30 Reader, pp. 14-15 <b>Classroom Plants</b> Activity 12, pp. 105-11 <b>Plant and Animal Populations</b> Activity 4-7, pp. 43-76 Reader, pp. 8-9 <b>Food Chains and Webs</b> Activity 2-7, pp. 23-66 Reader, pp. 2-3</p>
<p>Changes in environments can be natural or influenced by humans. Some changes are good, some bad, and some are neither good nor bad. Pollution is a change in the environment that can influence the health, survival, or activities of organisms, including humans.</p>	<p><b>Observing an Aquarium</b> Activity 11-12, pp. 109-125 <b>Butterflies and Moths</b> Activity 8, Science, Technology, and Society, p. 77 <b>Plant and Animal Populations</b> Activity 4-7, 11, pp. 43-76, 85-110 Reader, p. 15 <b>Soil Science</b> Activity 11-12, pp. 99-114 Reader, pp. 9-11 <b>Food Chains and Webs</b> Reader, p. 12</p>
<p>Some environmental changes occur slowly, and others occur rapidly. Students should understand the different consequences of changing environments in small increments over long periods as compared with changing environments in large increments over short periods.</p>	<p><b>Observing an Aquarium</b> Activity 12, pp. 117-125 <b>Butterflies and Moths</b> Activity 5, Science, Technology, and Society, p. 54 Activity 8, Science, Technology and Society, p. 77 <b>Soil Science</b> Activity 11-12, pp. 99-114 Reader, pp. 9-11 <b>Water Cycle</b> Activity 12, Science, Technology, and Society, p. 106 <b>Dinosaurs and Fossils</b> Activity 1, Science Challenge, p. 19 <b>Food Chains and Webs</b> Activity 11, pp. 89-95 Activity 12, Science, Technology, and Society, p. 101 Reader, p. 12</p>

## CONTENT STANDARD F

### SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades K-4, all students should develop understanding of science and technology in local challenges.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>People continue inventing new ways of doing things, solving problems, and getting work done. New ideas and inventions often affect other people; sometimes the effects are good and sometimes they are bad. It is helpful to try to determine in advance how ideas and inventions will affect other people.</p> <p>Science and technology have greatly improved food quality and quantity, transportation, health, sanitation, and communication. These benefits of science and technology are not available to all of the people in the world.</p>	<p><b>Finding the Moon</b> Activity 10, Science, Technology, and Society, p. 91  <b>Sink or Float</b> Activity 8 Science, Technology, and Society, p. 73  <b>Using Your Senses</b> Reader, pp. 14-15  <b>Classroom Plants</b> Reader, p. 14  <b>Magnets</b> Reader, p. 13  <b>Electrical Circuits</b> Reader, pp. 12-13</p> <p><b>Observing an Aquarium</b> Activity 11, Science, Technology, and Society, p. 116  <b>Weather Watching</b> Activity 6, Science, Technology, and Society, p. 59  <b>Using Your Senses</b> Reader, pp. 14-15  <b>Classroom Plants</b> Reader, p. 15  <b>Magnets</b> Reader, p. 14-15  <b>Water Cycle</b> Reader, pp. 14-15  <b>Electrical Circuits</b> Reader, pp. 12-14</p>

## CONTENT STANDARD G

### HISTORY AND NATURE OF SCIENCE

**As a result of activities in grades K-4, all students should develop understanding of science as a human endeavor.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Science and technology have been practiced by people for a long time.</p> <p>Men and women have made a variety of contributions throughout the history of science and technology.</p>	<p><b>Force and Motion</b> Activity 11, Science and Social Studies, p. 109  <b>Classroom Plants</b> Reader, p. 14  <b>Sink or Float</b> Reader, pp. 12-13  <b>Weather Instruments</b> Reader, pp. 10-11  <b>Electrical Circuits</b> Reader, pp. 12-13  <b>Dinosaurs and Fossils</b> Activity 3, Science and Social Studies, p. 34</p> <p><b>Weather Watching</b> Activity 8, Science and Social Studies, p. 96  <b>Force and Motion</b> Activity 1, Science and Social Studies, p. 22</p>

<p>Although men and women using scientific inquiry have learned much about the objects, events, and phenomena in nature, much more remains to be understood. Science will never be finished.</p> <p>Many people choose science as a career and devote their entire lives to studying it. Many people derive great pleasure from doing science.</p>	<p><b>Classroom Plants</b> Reader, pp. 14-15  <b>Using Your Senses</b> Reader, pp. 12-13  <b>Weather Watching</b> Reader, p. 13  <b>Dinosaurs and Fossils</b> Reader, pp. 14-15</p> <p>DSM modules provide teachers the opportunity to address this guideline. See below:  <b>Weather Watching</b> Activity 8, Science and Social Studies, p. 96  <b>Force and Motion</b> Activity 1, Science and Social Studies, p. 22  <b>Classroom Plants</b> Reader, pp. 14-15  <b>Using Your Senses</b> Reader, pp. 12-13  <b>Weather Watching</b> Reader, p. 13  <b>Dinosaurs and Fossils</b> Reader, pp. 14-15</p> <p><b>From Seed to Plant</b> Activity 14, Science Careers, p. 109  <b>Sunshine and Shadows</b> Reader, p. 12  <b>Weather Watching</b> Activity 12, Science Careers, p. 116  <b>Plant and Animal Populations</b> Activity 4, Science Careers, p. 50  <b>Using Your Senses</b> Reader, pp. 13  <b>Dinosaurs and Fossils</b> Reader, pp. 14-15  <b>Solar System</b> Reader, p. 14</p>
--	--

## CONTENT STANDARD A SCIENCE AS INQUIRY

**As a result of activities in grades 5-8, all students should develop abilities necessary to do scientific inquiry.**

NOTE: DSM modules are inquiry-based. The fundamentals of scientific inquiry are imbedded in all modules. Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Identify questions that can be answered through scientific investigations.</p>	<p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
<p>Design and conduct a scientific investigation.</p>	<p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>

<p>Use appropriate tools and techniques to gather, analyze, and interpret data.</p>	<p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
<p>Develop descriptions, explanations, predictions, and models using evidence.</p>	<p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
<p>Think critically and logically to make the relationships between evidence and data.</p>	<p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
<p>Recognize and analyze alternative explanations and predictions.</p>	<p>DSM modules provide the opportunity to address this guideline. See examples below:  <b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> ,Activity 7-9, pp. 49-65</p>
<p>Communicate scientific procedures and explanations.</p>	<p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
<p>Use mathematics in all aspects of scientific inquiry.</p>	<p><b>You and Your Body</b> Activity 5, pp. 41-48  <b>Simple Machines</b> Activity 1, pp. 13-18  <b>Earth, Moon, and Sun</b> Activity 3-4, pp. 29-44  <b>Matter and Change</b> Activity 1-2, pp. 13-27  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>

## CONTENT STANDARD A SCIENCE AS INQUIRY

**As a result of activities in grades 5-8, all students should develop understandings about scientific inquiry.**

**NOTE:** Understandings about scientific inquiry are implied in the previous guidelines on developing scientific inquiry. Some other specific examples that provide teachers the opportunity to address these guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
Different kinds of questions suggest different kinds of scientific investigations. Some investigations involve observing and describing objects, organisms, or events; some involve collecting specimens; some involve experiments; some involve seeking more information; some involve discovery of new objects and phenomena; and some involve making models.	<p><b>You and Your Body</b> Activity 9-11, pp. 67-84  <b>Weather Forecasting</b> Activity 5-6, pp. 41-54  <b>Color and Light</b> Activity 2-5, pp. 19-52  <b>Erosion</b> Activity 10-12, pp. 83-109  <b>DNA-From Genes to Proteins</b> Activity 3-4, pp. 25-39  <b>Matter and Change</b> Activity 11-13, pp. 93-109  <b>Earth Processes</b> Activity 8-10, pp. 71-95</p>
Current scientific knowledge and understanding guide scientific investigations. Different scientific domains employ different methods, core theories, and standards to advance scientific knowledge and understanding.	<p><b>You and Your Body</b> Activity 12, pp. 85-89  <b>Rocks and Minerals</b> Activity 11, pp. 85-92  <b>Color and Light</b> Activity 11, pp. 93-100  <b>Erosion</b> Activity 10-12, pp. 83-109  <b>DNA-From Genes to Proteins</b> Activity 12, pp. 101-108  <b>Astronomy</b> Activity 12, pp. 109-118  <b>Earth Processes</b> Activity 14, pp. 121-129</p>
Mathematics is important in all aspects of scientific inquiry.	<p><b>You and Your Body</b> Activity 5, pp. 41-48  <b>Simple Machines</b> Activity 1, pp. 13-18  <b>Earth, Moon, and Sun</b> Activity 3-4, pp. 29-44  <b>Matter and Change</b> Activity 1-2, pp. 13-27  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
Technology used to gather data enhances accuracy and allows scientists to analyze and quantify results of investigations.	<p><b>You and Your Body</b> Activity 5, pp. 41-48  <b>Weather Forecasting</b> Activity 3, 5, pp. 25-32. 41-48  <b>Electrical Connections</b> Activity 4-5, pp. 35-49  <b>Matter and Change</b> Activity 1, pp. 13-19  <b>Newton’s Toy Box</b> Activity 7-9, pp. 49-65</p>
Scientific explanations emphasize evidence, have logically consistent arguments, and use scientific principles, models, and theories. The scientific community accepts and uses such explanations until displaced by better scientific ones. When such displacement occurs, science advances.	<p><b>You and Your Body</b> Activity 2, 12, pp. 19-25, 85-89  <b>Pollution</b> Activity 10, pp. 71-76  <b>Oceans</b> Activity 9, pp. 99-111  <b>Earth Processes</b> Activity 14, pp. 121-129  <b>Matter and Change</b> Activity 4, pp. 37-44  <b>Astronomy</b> Activity 10-12, pp. 93-118</p>
Science advances through legitimate skepticism.	<p><b>You and Your Body</b> Activity 5, pp. 41-48</p>

<p>Asking questions and querying other scientists' explanations is part of scientific inquiry. Scientists evaluate the explanations proposed by other scientists by examining evidence, comparing evidence, identifying faulty reasoning, pointing out statements that go beyond evidence, and suggesting alternative explanations for the same observations.</p> <p>Scientific investigations sometimes result in new ideas and phenomena for study, generate new methods or procedures for an investigation, or develop new techniques to improve the collection of data. All of these results can lead to new investigations.</p>	<p><b>Pollution</b> Activity 6, 10, pp. 47-52, 71-76  <b>Simple Machines</b> Activity 6, pp. 49-55  <b>Earth Processes</b> Activity 1, pp. 13-21  <b>Newton's Toy Box</b> Activity 9, pp. 61-65  <b>Plants in Our World</b> Activity 3, pp. 35-40</p> <p><b>You and Your Body</b> Activity 3, 5, pp. 27-31, 41-48  <b>Pollution</b> Activity 10, pp. 71-76  <b>Simple Machines</b> Activity 3, pp. 25-31  <b>Plants in Our World</b> Activity 3, pp. 35-40  <b>Electrical Connections</b> Activity 9-10, pp. 75-87  <b>Newton's Toy Box</b> Activity 7-9, pp. 49-65</p>
--	---

**CONTENT STANDARD B  
PHYSICAL SCIENCE**

**As a result of activities in grades 5-8, all students should develop an understanding of properties and changes of properties in matter.**

Examples of activities for each of the standard's guidelines are listed.

<b>GUIDELINE</b>	<b>DSM</b>
<p>A substance has characteristic properties, such as density, a boiling point, and solubility, all of which are independent of the amount of the sample. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.</p> <p>Substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties. In chemical reactions, the total mass is conserved. Substances often are placed in categories or groups if they react in similar ways; metals is an example of such a group.</p> <p>Chemical elements do not breakdown during normal laboratory reactions involving such treatments as heating, exposure to electric current, or reaction with acids. There are more than 100 known elements that combine in a multitude of ways to produce compounds, which account for the living and nonliving substances we encounter.</p>	<p><b>Rocks and Minerals</b> Activity 3-6, pp. 29-54  Reader, pp. 2-6  <b>Matter and Change</b> Activity 1-3, 6, 9, 10, pp. 13-35, 53-61, 77-92  Reader, pp. 13-14, 20</p> <p><b>Rocks and Minerals</b> Activity 6, pp. 47-54  <b>Matter and Change</b> Activity 5, 7-8, 10-13, pp. 45-51, 63-75, 85-109  Reader, pp. 6-8, 16-20</p> <p><b>Matter and Change</b> Activity 4-5, 7-8, 10, pp. 37-51, 63-75, 85-92  Reader, pp. 4-5</p>

## CONTENT STANDARD B PHYSICAL SCIENCE

**As a result of activities in grades 5-8, all students should develop an understanding of motion and forces.**

Examples of activities for each of the standard's guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.	<p><b>Flight and Rocketry</b> Activity 1-5, 8-12, pp. 13-64, 81-130</p> <p><b>Simple Machines</b> Activity 1-9, pp. 13-76 Reader, p. 2</p> <p><b>Newton's Toy Box</b> Activity 1, 3, 5, 7-13, pp. 13-17, 25-31, 39-43, 49-90 Reader, pp. 2-3</p>
An object that is not being subjected to a force will continue to move at a constant speed and in a straight line.	<p><b>Flight and Rocketry</b> Activity 2, 5, 8-9, 11-12, pp. 23-32, 55-64, 81-97, 111-130 Reader, pp. 7, 10-13</p> <p><b>Simple Machines</b> Activity 3, 5-6, pp. 25-31, 39-55</p> <p><b>Newton's Toy Box</b> Activity 1, 3, 5, 7-10, 13, pp. 13-17, 25-31, 39-43, 49-72, 85-90 Reader, pp. 4-8, 10-11</p>
If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in the speed or direction of an object's motion.	<p><b>Flight and Rocketry</b> Activity 1-5, 8-10, pp. 13-64, 81-109 Reader, pp. 7, 10-13</p> <p><b>Simple Machines</b> Activity 2-3, 5-9, 12, pp. 19-31, 39-76, 91-95 Reader, pp. 3-9</p> <p><b>Newton's Toy Box</b> Activity 1, 3, 7-8, 10-11, 13, pp. 13-17, 25-31, 49-59, 67-77, 85-90 Reader, 4-7, 10-13, 15-20</p>

## CONTENT STANDARD B PHYSICAL SCIENCE

**As a result of activities in grades 5-8, all students should develop an understanding of transfer of energy.**

Examples of activities for each of the standard's guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound, nuclei, and the nature of a chemical. Energy is transferred in many ways.	<p><b>Color and Light</b> Activity 1, pp. 13-18 Reader, pp. 2-3, 8-9</p> <p><b>Electrical Connections</b> Activity 1, 2, 4-13</p> <p><b>Electromagnetism</b> Activity 1-13, pp. 13-106 Reader, pp. 2-13</p> <p><b>Electrical Connections</b> Activity 1-2, 4-13, pp. 13-</p>

<p>Heat moves in predictable ways, flowing from warmer objects to cooler ones, until both reach the same temperature.</p> <p>Light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection). To see an object, light from that object—emitted by or scattered from it—must enter the eye.</p> <p>Electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.</p> <p>In most chemical and nuclear reactions, energy is transferred into or out of a system. Heat, light, mechanical motion, or electricity might all be involved in such transfers.</p> <p>The sun is a major source of energy for changes on the earth’s surface. The sun loses energy by emitting light. A tiny fraction of that light reaches the earth, transferring energy from the sun to the earth. The sun’s energy arrives as light with a range of wavelengths, consisting of visible light, infrared, and ultraviolet radiation.</p>	<p>26, 35-106 Reader, pp. 2-16 <b>Newton’s Toy Box</b> Activity 8-10, pp. 55-72</p> <p><b>Electrical Connections</b> Activity 7, pp. 59-65</p> <p><b>Color and Light</b> Activity 1, 4-7, 12, pp. 13-18, 37-67, 101-107 Reader, pp. 2-7, 10</p> <p><b>Electromagnetism</b> Activity 5-10, pp. 37-76 Reader, pp. 4-5, 8-9 <b>Electrical Connections</b> Activity 2-13, pp. 21-106 Reader, pp. 7-10, 13</p> <p><b>Matter and Change</b> Activity 5-6, 12-13, pp. 45-61, 99-109 Reader, p. 18</p> <p><b>Color and Light</b> Activity 1, pp. 13-18 Reader, p. 2 <b>Weather Forecasting</b> Reader, p. 4 <b>Earth, Moon, and Sun</b> Activity 9, pp. 81-92 Reader, pp. 6-7 <b>Astronomy</b> Activity 5, pp. 51-60 Reader, p. 8</p>
--	---

## CONTENT STANDARD C LIFE SCIENCE

**As a result of activities in grades 5-8, all students should develop understanding of structure and function in living systems.**

Examples of activities for each of the standard’s guidelines are listed.

<b>GUIDELINE</b>	<b>DSM</b>
<p>Living systems at all levels of organization demonstrate the complimentary nature of structure and function. Important levels of organization for structure and function include cells, organs, tissues, organ systems, whole organisms, and ecosystems.</p>	<p><b>You and Your Body</b> Activity 1-2, 5-8, 13-14, pp. 13-25, 41-66, 91-102 Reader, pp. 2-11 <b>Plants in Our World</b> Activity 1, 4, 8-9, 11, pp. 13-25, 41-47, 73-86, 95-102 Reader, pp. 2-20 <b>DNA-From Genes to Proteins</b> Activity 3-4, pp. 25-39 Reader, pp. 2-7</p>

<p>All organisms are composed of cells—the fundamental unit of life. Most organisms are single cells, other organisms, including humans, are multicellular.</p> <p>Cells carry on the many functions needed to sustain life. They grow and divide, thereby producing more cells, This requires that they take in nutrients, which they use to provide energy for the work that cells do and to make the materials that a cell or an organism needs.</p> <p>Specialized cells perform specialized functions in multicellular organisms. Groups of specialized cells cooperate to form a tissue, such as muscle. Different tissues are in turn grouped together to form larger functional units, called organs. Each type of cell, tissue, and organ has a distinct structure, and set of functions that serve the organism as a whole.</p> <p>The human organism has systems for digestion, respiration, reproduction, circulation, excrement, movement, control, and coordination, and for protection from disease. These systems interact with one another.</p> <p>Disease is a breakdown in structures or functions of an organism. Some diseases are the result of intrinsic failures of the system. Others are the result of damage by infection by other organisms.</p>	<p><b>You and Your Body</b> Activity 2, 7 pp. 19-25, 55-60 Reader, p. 2</p> <p><b>Plants in Our World</b> Activity 1, 4, pp. 13-25, 41-47 Reader, p. 2</p> <p><b>DNA-From Genes to Proteins</b> Activity 1, 3-4, 11, pp. 13-17, 25-39, 95-100 Reader, pp. 2-7</p> <p><b>You and Your Body</b> Reader, p. 2</p> <p><b>Plants in Our World</b> Activity 1, 9-11, pp. 13-25, 81-102</p> <p><b>DNA-From Genes to Proteins</b> Activity 3-10 pp. 25-94 Reader, pp. 8-14</p> <p><b>You and Your Body</b> Activity 2, 7, pp. 19-25, 55-60 Reader, pp. 2-10</p> <p><b>Plants in Our World</b> Activity 1, 3-4, pp. 13-25, 35-47 Reader, pp. 14-15</p> <p><b>DNA—From Genes to Protein</b> Reader, p. 3</p> <p><b>You and Your Body</b> Activity 1-2, 4-8, 13-14, pp. 13-25, 33-66, 91-102 Reader, pp. 2-11</p> <p><b>You and Your Body</b> Activity 6, Science and Health, p. 54</p> <p><b>Pollution</b> Activity 11, Science and Health, p. 81</p>
--	---

## CONTENT STANDARD C

### LIFE SCIENCE

**As a result of activities in grades 5-8, all students should develop understanding of reproduction and heredity.**

Examples of activities for each of the standard’s guidelines are listed.

<b>GUIDELINE</b>	<b>DSM</b>
<p>Reproduction is a characteristic of all living systems; because no individual organism lives forever, reproduction is essential to the continuation of every species. Some organisms reproduce asexually. Other organisms reproduce sexually.</p>	<p><b>Plants in Our World</b> Reader, pp. 6-8, 10, 12, 19-20</p> <p><b>DNA—From Genes to Protein</b> Activity 11, Science and Math, p. 100 Reader, pp. 14-18</p>

<p>In many species, including humans, females produce eggs and males produce sperm, Plants also reproduce sexually—the egg and sperm are produced in the flowers of flowering plants. An egg and sperm unite to begin development of a new individual. That new individual receives genetic information from its mother (via the egg) and its father (via the sperm). Sexually produced offspring never are identical to either of their parents.</p> <p>Every organism requires a set of instructions for specifying its traits. Heredity is the passage of these instructions from one generation to another.</p>	<p><b>DNA—From Genes to Protein</b> Reader, pp. 12-19</p> <p><b>Plants in Our World</b> Reader, pp. 6-8, 10, 12, 19-20</p> <p><b>DNA—From Genes to Protein</b> Activity 3, 6-10, pp. 25-29, 51-94 Reader, pp. 12-19</p>
<p>Hereditary information is contained in the genes, located in the chromosomes of each cell. Each gene carries a single unit of information. An inherited trait of an individual can be determined by one or by many genes, and a single gene can influence more than one trait. A human cell contains many thousands of different genes.</p> <p>The characteristics of an organism can be described in terms of a combination of traits. Some traits are inherited and others result from interactions with the environment.</p>	<p><b>DNA—From Genes to Protein</b> Activity 5-10, 12, pp. 41-94, 109-115 Activity 3, Science Challenge, p. 29 Reader, pp. 15-19</p> <p><b>DNA—From Genes to Protein</b> Activity 1-2, pp. 13-24 Reader, pp. 15-19</p>

## CONTENT STANDARD C

### LIFE SCIENCE

**As a result of activities in grades 5-8, all students should develop understanding of regulation and behavior.**

Examples of activities for each of the standard’s guidelines are listed.

<b>GUIDELINE</b>	<b>DSM</b>
<p>All organisms must be able to obtain and use resources, grow, reproduce, and maintain stable internal conditions while living in a constantly changing external environment.</p>	<p><b>Oceans</b> Activity 10-12, pp. 113-142 Reader, pp. 12-13</p> <p><b>Plants in Our World</b> Activity 3, 5-6, 8-11, pp. 35-40, 49-62, 73-102 Reader, pp. 3-20</p>
<p>Regulation of an organism’s internal environment involves sensing the internal environment and changing physiological activities to keep within the range required to survive.</p>	<p><b>Oceans</b> Activity 10, pp. 113-124</p> <p><b>Plants in Our World</b> Activity 9-10, pp. 81-93 Reader, pp. 3-6</p>
<p>Behavior is one kind of response an organism can</p>	<p><b>Oceans</b> Activity 10-12, pp. 113-142</p>

<p>make to an internal or environmental stimulus. A behavioral response requires coordination and communication at many levels, including cells, organs systems, and whole organisms. Behavioral response is a set of actions determined in part by heredity and in part from experience.</p> <p>An organism’s behavior evolves through adaptation to its environment. How a species moves, obtains food, reproduces, and responds to danger are based in the species evolutionary behavior.</p>	<p>Reader, pp. 12-13  <b>Plants in Our World</b> Activity 3, pp. 35-40  Reader, pp. 5-6</p> <p>DSM provides the opportunity to teach this guideline. See below:  <b>Oceans</b> Activity 11, pp. 125-134  Reader, pp. 12-13  <b>Plants in Our World</b> Activity 3, 5-6, 9-10, pp. 35-40, 49-62, 81-93  Reader, pp. 3-8</p>
--	--

## CONTENT STANDARD C LIFE SCIENCE

**As a result of activities in grades 5-8, all students should develop understanding of populations and ecosystems.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>A population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.</p> <p>Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some micro-organisms are producers—they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify relationships among producers, consumers, and decomposers in an ecosystem.</p> <p>For ecosystems, the major source of energy is sunlight. Energy entering ecosystems as sunlight is transferred by producers into chemical energy through photosynthesis. That energy then passes from organism to organism in food webs.</p> <p>The number of organisms an ecosystem can support depends on the resources available and abiotic factors, such as quantity of light and water, range of temperatures, and soil</p>	<p><b>Plants in Our World</b> Activity 11, pp. 95-102  Reader, p. 2</p> <p><b>DNA-From Genes to Proteins</b>  Reader, p. 10  <b>Plants in Our World</b> Activity 3, pp. 35-40  Reader, pp. 3-4</p>

composition. Given adequate biotic and abiotic resources and no disease or predators, populations (including humans) increase at rapid rates. Lack of resources and other factors, such as predation and climate, limit the growth of populations in specific niches in the ecosystem.

## CONTENT STANDARD C LIFE SCIENCE

**As a result of activities in grades 5-8, all students should develop understanding of diversity and adaptations of organisms.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Millions of species of animals, plants, and microorganisms are alive today. Although different species might look dissimilar, the unity among organisms becomes apparent from an analysis of internal structures, the similarity of their chemical processes, and the evidence of common ancestry.</p>	<p>DSM provides the opportunity to teach this guideline. See below:  <b>Plants in Our World</b> Activity 2, 4, pp. 27-33, 41-47            Activity 10, Science and Social Studies, p. 93            Reader, pp. 3-7</p>
<p>Biological evolution accounts for the diversity of species developed through gradual processes over many generations. Species acquire many of their unique characteristics through biological adaptation, which involves the selection of naturally occurring variations in populations. Biological adaptations include changes in structures, behaviors, or physiology that enhance survival and reproductive success in a particular environment.</p>	<p>DSM provides the opportunity to teach this guideline. See below:  <b>Oceans</b> Activity 10-12, pp. 113-142            Reader, pp. 12-13  <b>DNA—From Genes to Protein</b>            Activity 2, Science Challenge, p. 24            Reader, pp. 19-20</p>
<p>Extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival. Fossils indicate that many organisms that lived long ago are extinct. Extinction of species is common; most of the species that have lived on the earth no longer exist.</p>	<p><b>Rocks and Minerals</b>            Reader, p. 15  <b>Earth Processes</b> Activity 4, pp. 39-46            Reader, p. 22</p>

## CONTENT STANDARD D EARTH SCIENCE

**As a result of activities in grades 5-8, all students should develop an understanding of structure of the earth system.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>The solid earth is layered with a lithosphere; hot convecting mantle; and dense, metallic core.</p>	<p><b>Erosion</b> Activity 1, Science and the Arts, p. 19 Reader, p. 2 <b>Earth Processes</b> Activity 2, 11-12, pp. 23-28, 97-110 Reader, pp. 2-3</p>
<p>Lithospheric plates on the scales of continents and oceans constantly move at rates of centimeters per year in response to movements in the mantle. Major geological events, such as earthquakes, volcanic eruptions, and mountain building, result from these plate movements.</p>	<p><b>Erosion</b> Reader, pp. 2-4 <b>Earth Processes</b> Activity 1, 12-14, pp. 13-21, 105-129 Reader, pp. 4-10</p>
<p>Landforms are the result of a combination of constructive and destructive forces. Constructive forces include crustal deformation, volcanic eruption, and deposition of sediment, while destructive forces include weathering and erosion.</p>	<p><b>Oceans</b> Activity 4, pp. 43-54 Reader, pp. 4-6 <b>Erosion</b> Activity 1-2, 9-12, pp. 13-27, 75-104 Reader, pp. 3-13 <b>Earth Processes</b> 3, 5, 7, pp 29-37, 47-54, 63-69 Reader, pp. 6-15</p>
<p>Some changes in the solid earth can be described as the "rock cycle." Old rocks at the earth's surface weather, forming sediments that are buried, then compacted, heated, and often recrystallized into new rock. Eventually, those new rocks may be brought to the surface by the forces that drive plate motions, and the rock cycle continues.</p>	<p><b>Rocks and Minerals</b> Activity 2, 10, pp. 21-28, 77-84 Activity 12 Science Challenge, p. 98 Reader, pp. 9-13 <b>Earth Processes</b> Activity 4-6, pp. 39-62 Reader, pp. 16-18</p>
<p>Soil consists of weathered rocks and decomposed organic material from dead plants, animals, and bacteria. Soils are often found in layers, with each having a different chemical composition and texture.</p>	<p><b>Erosion</b> Activity 7-8, pp. 59-73 Reader, p. 7 <b>Earth Processes</b> Activity 3, pp. 29-37 Reader,, pp. 19-20</p>
<p>Water, which covers the majority of the earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the "water cycle." Water evaporates from the earth's surface, rises and cools as it moves to higher elevations, condenses as rain or snow, and falls to the surface</p>	<p><b>Oceans</b> Activity 5, pp. 55-63 Reader, p. 10 <b>Weather Forecasting</b> Reader, p. 4</p>

<p>where it collects in lakes, ocean, soil, and in rocks underground.</p> <p>Water is a solvent. As it passes through the water cycle it dissolves minerals and gases and carries them to the oceans.</p> <p>The atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor. The atmosphere has different properties at different elevations.</p> <p>Clouds, formed by the condensation of water vapor, affect weather and climate.</p> <p>Global patterns of atmospheric movement influence local weather. Oceans have a major effect on climate, because water in the oceans holds a large amount of heat.</p> <p>Living organisms have played many roles in the earth system, including affecting the composition of the atmosphere, producing some types of rocks, and contributing to the weathering of rocks.</p>	<p><b>Oceans</b> Activity 8, Science Challenge, p. 54 <b>Weather Forecasting</b> Reader, p. 2</p> <p><b>Weather Forecasting</b> Activity 9-10, pp. 69-80 Reader, p. 4</p> <p><b>Weather Forecasting</b> Activity 7, pp. 55-61 Reader, pp. 6-7 <b>Oceans</b> Reader, p. 10</p> <p><b>Erosion</b> Activity 3, pp. 29-35 Reader, p. 5 <b>Rocks and Minerals</b> Reader, p. 11 <b>Earth Processes</b> Activity 4, Science, Technology, and Society, p. 46 Reader, p. 13</p>
--	---

## CONTENT STANDARD D EARTH SCIENCE

**As a result of activities in grades 5-8, all students should develop an understanding of earth history.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>The earth processes we see today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are similar to those that occurred in the past. Earth History is also influenced by occasional catastrophes, such as the impact of an asteroid or comet.</p>	<p><b>Rocks and Minerals</b> Activity 2, 9-10, pp. 21-28, 69-84 Reader, pp. 9-13 <b>Erosion</b> Activity 1, 2, 9-12, pp. 13-27, 75-104 Reader, pp. 2-13 <b>Earth Processes</b> Activity 3-8, 12-14, pp. 29-79, 105-129 Reader, pp. 5-20</p>
<p>Fossils provide important evidence of how life and environmental conditions have changed.</p>	<p><b>Rocks and Minerals</b> Activity 10, pp. 77-84 Reader, p. 15</p>

	Earth Processes Activity 4, pp. 39-46 Reader, p. 22
--	--

## CONTENT STANDARD D EARTH SCIENCE

**As a result of activities in grades 5-8, all students should develop an understanding of earth in the solar system.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>The earth is the third planet from the sun in a system that includes the moon, the sun, eight other planets and their moons, and smaller objects, such as asteroids and comets. The sun, an average star, is the central and largest body in the solar system.</p>	<p><b>Earth, Moon, and Sun</b> Activity 1-5, pp. 13-51 Reader, pp. 1-2, 6-7, 13-14, 21-23 <b>Astronomy</b> Activity 5-6, pp. 51-68 Reader, pp. 2-7</p>
<p>Most objects in the solar system are in regular and predictable motion. Those motions explain such phenomena as the day, the year, phases of the moon, and eclipses.</p>	<p><b>Earth, Moon, and Sun</b> Activity 1-2, 6-12, pp. 13-27, 53-119 Reader, pp. 8-12, 14-19 <b>Astronomy</b> Activity 5, pp. 51-60</p>
<p>Gravity is the force that keeps planets in orbit around the sun and governs the rest of the motion in the solar system. Gravity alone holds us to the earth’s surface and explains the phenomena of the tides.</p>	<p><b>Oceans</b> Activity 9, pp. 99-111 <b>Earth, Moon, and Sun</b> Activity 12, pp. 111-119 Reader, pp. 5, 16-17</p>
<p>The sun is the major source of energy for phenomena on the earth’s surface, such as growth of plants, winds, ocean currents, and the water cycle. Seasons result from variations in the amount of the sun’s energy hitting the surface, due to the tilt of the earth’s rotation on its axis and the length of the day.</p>	<p><b>Weather Forecasting</b> Reader, p. 4 <b>Oceans</b> Activity 5, 7-8, pp. 55-63, 75-98 Reader, p. 10 <b>Earth, Moon, and Sun</b> Activity 9, pp. 81-92 Reader, pp. 6-7, 11-12</p>

## CONTENT STANDARD E SCIENCE AND TECHNOLOGY

**As a result of activities in grades 5-8, all students should develop abilities of technological design.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Identify appropriate problems for technological design.</p>	<p><b>Simple Machines</b> Activity 12, Science Challenge, p. 95</p>

Design a solution or product.	<p><b>Flight and Rocketry</b> Activity 5, Reinforcement, p. 63  <b>Newton’s Toy Box</b> Activity 8, Science Challenge, p. 59  Activity12, Reinforcement, p. 82</p> <p><b>Simple Machines</b> Activity 12, Science Challenge, p. 95  <b>Flight and Rocketry</b> Activity 5, Reinforcement, p. 63  <b>Newton’s Toy Box</b> Activity 8, Science Challenge, p. 59  Activity12, Reinforcement, p. 82</p>
Implement a proposed design.	<p><b>Simple Machines</b> Activity 12, Science Challenge, p. 95  <b>Flight and Rocketry</b> Activity 5, Reinforcement, p. 63  <b>Newton’s Toy Box</b> Activity 8, Science Challenge, p. 59  Activity12, Reinforcement, p. 82</p>
Evaluate completed technological designs or products.	<p><b>Simple Machines</b> Activity 12, Science Challenge, p. 95  <b>Flight and Rocketry</b> Activity 5, Reinforcement, p. 63  <b>Newton’s Toy Box</b> Activity 8, Science Challenge, p. 59  Activity12, Reinforcement, p. 82</p>
Communicate the process of technological design.	<p><b>Simple Machines</b> Activity 12, Science Challenge, p. 95  <b>Flight and Rocketry</b> Activity 5, Reinforcement, p. 63  <b>Newton’s Toy Box</b> Activity 8, Science Challenge, p. 59  Activity12, Reinforcement, p. 82</p>

## CONTENT STANDARD E SCIENCE AND TECHNOLOGY

**As a result of activities in grades 5-8, all students should develop understandings about science and technology.**

Examples of activities for each of the standard’s guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
Scientific inquiry and technological design have similarities and differences. Scientists propose explanations for questions about the natural world, and engineers propose solutions relating to	DSM provides the opportunity to address this guideline. See below: <b>Flight and Rocketry</b> Reader, pp. 2-15

<p>human problems, needs, and aspirations. Technological solutions are temporary; technologies exist within nature and so they cannot contravene physical or biological principles; technological solutions have side effects; and technologies cost, carry risks, and provide benefits.</p> <p>Many different people in different cultures have made and continue to make contributions to science and technology.</p> <p>Science and technology are reciprocal. Science helps drive technology, as it addresses questions that demand more sophisticated instruments and provides principles for better instrumentation and technique. Technology is essential to science, because it provides instruments and techniques that enable observations of objects and phenomena that are otherwise unobservable due to factors such as quantity, distance, location, size, and speed. Technology also provides tools for investigations, inquiry, and analysis.</p> <p>Perfectly designed solutions do not exist. All technological solutions have tradeoffs, such as safety, cost, efficiency, and appearance. Engineers often build in back-up systems to provide safety. Risk is part of living in a highly technological world. Reducing risk often results in new technology.</p>	<p><b>Electromagnetism</b> Reader, pp. 13-15</p> <p><b>Pollution</b> Reader, pp. 14-15</p> <p><b>Electrical Connections</b> Reader, pp. 21-22</p> <p><b>Plants in Our World</b> Reader, p. 21</p> <p><b>DNA-From Genes to Proteins</b> Reader, pp. 21-22</p> <p><b>Flight and Rocketry</b> Activity 12, Science and Social Studies, p. 130 Reader, pp. 14-15</p> <p><b>Simple Machines</b> Reader, pp. 12-13</p> <p><b>Weather Forecasting</b> Reader, p. 10</p> <p><b>Earth, Moon, and Sun</b> Activity 7, Science, Technology, and Society, p. 69</p> <p><b>Newton’s Toy Box</b> Activity 9, Science and Social Studies, p. 65 Reader, p. 22</p> <p><b>Matter and Change</b> Reader, pp. 21-22</p> <p>DSM provides the opportunity to teach this guideline. See below:</p> <p><b>Weather Forecasting</b> Reader, pp. 3, 11-14</p> <p><b>Flight and Rocketry</b> Reader, pp. 2-15</p> <p><b>Color and Light</b> Activity 13, Science, Technology, and Society, p. 115</p> <p><b>Electrical Connections</b> Reader, pp. 21-22</p> <p><b>Astronomy</b> Reader, pp. 16-21</p> <p><b>DNA-From Genes to Proteins</b> Reader, p. 21</p> <p>DSM provides the opportunity to teach this guideline. See below:</p> <p><b>Simple Machines</b> Activity 12, Science, Technology, and Society, p. 95</p> <p><b>Oceans</b> Reader, p. 15</p> <p><b>Pollution</b> Reader, p. 15</p> <p><b>Earth, Moon, and Sun</b> Activity 13, Science, Technology, and Society, p. 129</p> <p><b>DNA—From Genes to Proteins</b> Activity 12, Science, Technology, and Society, p. 108</p>
--	--

<p>Technological designs have constraints. Some constraints are unavoidable, for example, properties of materials, or effects of weather and friction; other constraints limit choices in the design, for example, environmental protection, human safety, and aesthetics.</p> <p>Technological solutions have intended benefits and unintended consequences. Some consequences can be predicted, others cannot.</p>	<p>Reader, p. 22</p> <p><b>Pollution</b> Activity 4, Science, Technology, and Society, p.38 Reader, p. 15</p> <p><b>Electrical Connections</b> Activity 11, Science, Technology, and Society, p. 38 Reader, p. 22</p> <p><b>Earth Processes</b> Activity 11, Science, Technology, and Society, p. 103</p> <p>DSM provides the opportunity to teach this guideline. See below:</p> <p><b>Oceans</b> Reader, p. 15</p> <p><b>You and Your Body</b> Reader, p. 12</p> <p><b>Pollution</b> Reader, p. 15</p> <p><b>Plants in Our World</b> Activity 10, Science, Technology, and Society, p. 93</p>
--	---

## CONTENT STANDARD F SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades 5-8, all students should develop understanding of personal health.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Regular exercise is important to the maintenance and improvement of health. The benefits of physical fitness include maintaining body weight, having energy and strength for routine activities, good muscle tone, bone strength, strong heart/lung systems, and improved mental health. Personal exercise, especially developing cardiovascular endurance, is the foundation of physical fitness.</p> <p>The potential for accidents and the existence of hazards imposes the need for injury prevention. Safe living involves the development and use of safety precautions and the recognition of risk in personal decisions. Injury prevention has personal and social dimensions.</p> <p>The use of tobacco increases the risk of illness. Students should understand the influence of short-term social and psychological factors that</p>	<p><b>You and Your Body</b> Activity 2, Science and Health, p. 25</p> <p>Each module contains safety information in the activities when appropriate.</p> <p><b>You and Your Body</b> Activity 14, Science and Health, p. 102</p> <p><b>Earth Processes</b> Activity 8,</p>

<p>lead to tobacco use, and the possible long-term detrimental effects of smoking and chewing tobacco.</p> <p>Alcohol and other drugs are often abused substances. Such drugs change how the body functions and can lead to addiction.</p> <p>Food provides energy and nutrients for growth and development. Nutrition requirements vary with body weight, age, sex, activity, and body functioning.</p> <p>Sex drive is a natural human function that requires understanding. Sex is also a prominent means of transmitting diseases. The diseases can be prevented through a variety of precautions.</p> <p>Natural environments may contain substances (for example, radon and lead) that are harmful to human beings. Maintaining environmental health involves establishing or monitoring quality standards related to use of soil, water, and air.</p>	<p>Science and Health, p. 79</p> <p><b>You and Your Body</b> Activity 6, Science and Health, p. 54  <b>Pollution</b> Activity 4, Science and Health, p. 38</p> <p><b>You and Your Body</b> Activity 3, Science and Health, Science and Social Studies, p. 31  <b>DNA—From Genes to Protein</b> Activity 1, Science and Health, p. 17</p> <p><b>You and Your Body</b> Activity 9-12, pp. 67-89  <b>Plants in Our World</b> Activity 10, Science and Health, p. 93</p> <p><b>Pollution</b> Activity 6, 9, pp. 47-52, 65-70 Reader, pp. 2-11  <b>Matter and Change</b> Activity 4, Science and Health, p. 44 Reader, p. 21</p>
--	---

## CONTENT STANDARD F

### SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades 5-8, all students should develop understanding of populations, resources, and environments.**

Examples of activities for each of the standard's guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>When an area becomes overpopulated, the environment will become degraded due to the increased use of resources.</p>	<p>DSM provides the opportunity to teach this guideline. See below:  <b>Pollution</b>  Reader, pp. 3-4, 6-7, 1</p>
<p>Causes of environmental degradation and resource depletion vary from region to region and from country to country.</p>	<p>DSM provides the opportunity to address this guideline. See below:  <b>Pollution</b>  Reader, pp. 3, 10, 13</p>

## CONTENT STANDARD F

### SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades 5-8, all students should develop understanding of natural hazards.**

Examples of activities for each of the standard's guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Internal and external processes of the earth system cause natural hazards, events that change or destroy human and wildlife habitats, damage property, and harm or kill humans. Natural hazards include earthquakes, landslides, wildfires, volcanic eruptions, floods, storms, and even possible impacts of asteroids.</p> <p>Human activities also can induce hazards through resource acquisition, urban growth, land-use decisions, and waste disposal. Such activities can accelerate many natural changes.</p> <p>Natural hazards can present personal and societal challenges because misidentifying the change or incorrectly estimating the rate and scale of change may result in either too little attention and significant human costs or too much cost for unneeded preventive measures.</p>	<p><b>Erosion</b> Activity 10-12, pp. 83-97 Reader, pp. 4, 11, 15</p> <p><b>Weather Forecasting</b> Activity 12, pp. 87-93 Activity 12, Science and Social Studies, p. 93</p> <p><b>Earth Processes</b> Activity 8, pp. 71-79 Reader, pp. 9-10, 14-15</p> <p><b>Pollution</b> Activity 4, 6, 9-10, pp. 31-38, 47-52, 65-76 Reader, pp. 3-13</p> <p><b>Weather Forecasting</b> Activity 12, pp. 87-93 Reader, pp. 8, 12-13</p> <p><b>Oceans</b> Activity 1, Science and Social Studies, p. 22</p>

## CONTENT STANDARD F

### SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

**As a result of activities in grades 5-8, all students should develop understanding of risks and benefits.**

Examples of activities for each of the standard's guidelines are listed.

<i>GUIDELINE</i>	<i>DSM</i>
<p>Risk analysis considers the type of hazard and estimates the number of people that might be exposed and the number likely to suffer consequences. The results are used to determine the options for reducing or eliminating risks.</p>	<p>DSM provides the opportunity to teach this guideline. See below:</p> <p><b>Oceans</b> Reader, p. 15</p> <p><b>Weather Forecasting</b> Reader, pp. 8, 12-13</p> <p><b>Pollution</b> Activity 10, Science and Social Studies, p. 76 Reader, p. 14</p> <p><b>Earth Processes</b> Activity 11, Science, Technology, and Society, p. 103</p>



<p>Technology influences society through its products and processes. Technology influences the quality of life and the ways people act and interact. Technological changes are often accompanied by social, political, and economic changes that can be beneficial or detrimental to individuals and to society. Social needs, attitudes, and values influence the direction of technological development.</p> <p>Science and technology have advanced through contributions of many different people, in different cultures, at different times in history. Science and technology have contributed enormously to economic growth and productivity among societies and groups within societies.</p> <p>Scientists and engineers work in many different settings, including colleges and universities, businesses and industries, specific research institutes, and government agencies.</p> <p>Scientists and engineers have ethical codes requiring that human subjects involved with research be fully informed about risks and benefits associated with the research before the individuals choose to participate. This ethic extends to potential risks to communities and property. In short, prior knowledge and consent are required for research involving human subjects or potential damage to property.</p> <p>Science cannot answer all questions and technology cannot solve all human problems or meet all human needs. Students should</p>	<p><b>Electrical Connections</b> Reader, p. 22</p> <p><b>Color and Light</b> Activity 13, Science, Technology, and Society, p. 115</p> <p><b>Flight and Rocketry</b> Activity 9, Science, Technology, and Society, p. 97</p> <p><b>Flight and Rocketry</b> Reader, pp. 15</p> <p><b>Astronomy</b> Reader, pp. 22-23</p> <p><b>DNA-From Genes to Proteins</b> Reader, p. 22</p> <p><b>Simple Machines</b> Activity 1, Science and Social Studies, p. 18 Reader, p. 12</p> <p><b>Flight and Rocketry</b> Reader, pp. 14-15</p> <p><b>Plants in Our World</b> Activity 8, Science and Social Studies, p. 79</p> <p><b>Electrical Connections</b> Activity 12, Science, Technology, and Society, p. 99 Reader, pp. 21-22</p> <p><b>Earth, Moon and Sun</b> Reader, p. 20</p> <p><b>Oceans</b> Activity 12, Science, Technology, and Society, p. 142 Reader, p. 14</p> <p><b>Erosion</b> Reader, p. 12</p> <p><b>You and Your Body</b> Reader, p. 12</p> <p><b>Newton’s Toy Box</b> Reader, p. 22</p> <p><b>Matter and Change</b> Reader, pp. 21</p> <p><b>DNA-From Genes to Proteins</b> Activity 12, Science, Technology and Society, p. 108</p> <p>DSM provides the opportunity to teach this guideline throughout the activities in the modules.</p>
--	---

<p>understand the difference between scientific and other questions. They should appreciate what science and technology can reasonably contribute to society and what they cannot do. For example, new technologies often will decrease some risks and increase others.</p>	
---	--

**CONTENT STANDARD G  
HISTORY AND NATURE OF SCIENCE**

**As a result of activities in grades 5-8, all students should develop understanding of science as a human endeavor.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Women and men of various social and ethnic backgrounds—and with diverse interests, talents, qualities, and motivations—engage in the activities of science, engineering, and related fields such as the health professions. Some scientists work in teams, and some work alone, but all communicate extensively with others.</p> <p>Science requires different abilities, depending on such factors as the field of study and type of inquiry. Science is very much a human endeavor, and the work of science relies on basic human qualities, such as reasoning, insight, energy, skill, and creativity—as well as on scientific habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism, and openness to new ideas.</p>	<p><b>Pollution</b> Reader, p. 14</p> <p><b>You and Your Body</b> Reader, pp. 12-13</p> <p><b>Astronomy</b> Activity 9, Science and Language Arts, p. 91</p> <p><b>Matter and Change</b> Activity 6, Science and Social Studies, p. 61 Reader, p. 19</p> <p><b>Plants in Our World</b> Reader, p. 21</p> <p><b>Pollution</b> Activity 12, Science and Social Studies, p. 88</p> <p><b>Simple Machines</b> Reader, p. 13</p> <p><b>Plants in Our World</b> Activity 8, Science and Social Studies, p. 79 Reader, p. 21</p> <p><b>Earth Processes</b> Activity 7, Science, Technology, and Society, p. 69</p> <p><b>DNA-From Genes to Proteins</b> Reader, p. 22</p>

**CONTENT STANDARD G  
HISTORY AND NATURE OF SCIENCE**

**As a result of activities in grades 5-8, all students should develop understanding of nature of science.**

Examples of activities for each of the standard’s guidelines are listed.

<i><b>GUIDELINE</b></i>	<i><b>DSM</b></i>
<p>Scientists formulate and test their explanations of</p>	<p><b>You and Your Body</b></p>

<p>nature using observation, experiments, and theoretical and mathematical models. Although all scientific ideas are tentative and subject to change and improvement in principle, for most major ideas in science, there is much experimental and observational confirmation. Those ideas are not likely to change greatly in the future. Scientists do and have changed their ideas about nature when they encounter new experimental evidence that does not match their existing explanations.</p> <p>In areas where active research is being pursued and in which there is not a great deal of experimental or observational evidence and understanding, it is normal for scientists to differ with one another about interpretation of the evidence or theory being considered. Different scientists might publish conflicting experimental results or might draw different conclusions from the same data. Ideally, scientists acknowledge such conflict and work towards finding evidence that will resolve their disagreement.</p> <p>It is part of scientific inquiry to evaluate the results of scientific investigations, experiments, observations, theoretical models, and the explanations proposed by other scientists. Evaluation includes reviewing the experimental procedures, examining the evidence, identifying faulty reasoning, pointing out statements that go beyond the evidence, and suggesting alternative explanations for the same observations. Although scientists may disagree about explanations of phenomena, about interpretations of data, or about the value of rival theories, they agree that questioning, response to criticism, and open communication are integral to the process of science. As scientific knowledge evolves, major disagreements are eventually resolved through such interactions between scientists.</p>	<p>Reader, p. 12  <b>Newton’s Toy Box</b> Activity 5, Science and Social Studies, p. 43  <b>DNA—From Genes to Protein</b> Activity 12, Science Challenge, p. 108  Reader, p. 21  <b>Matter and Change</b>  Reader, p. 21</p> <p><b>Astronomy</b> Activity 2, Science and Social Studies, p. 29  <b>DNA—From Genes to Protein</b> Activity 7, Science, Technology, and Society, p. 66  Reader, p. 21</p> <p>DSM activities allow student to share results of experiments throughout the program.  <b>DNA-From Genes to Proteins</b>  Reader, p. 21  <b>Astronomy</b> Activity 1, Science Extension, p. 22  <b>Earth Processes</b> Activity 14, Science Extension, p. 129</p>
--	---

## CONTENT STANDARD G HISTORY AND NATURE OF SCIENCE

**As a result of activities in grades 5-8, all students should develop understanding of history of science.**

Examples of activities for each of the standard’s guidelines are listed.

<b>GUIDELINE</b>	<b>DSM</b>
Many individuals have contributed to the	<b>Simple Machines</b>

<p>traditions of science. Studying some of these individuals provides further understanding of scientific inquiry, science as a human endeavor, the nature of science, and the relationships between science and society.</p> <p>In historical perspective, science has been practiced by different individuals in different cultures. In looking at the history of many peoples, one finds that scientists and engineers of high achievement are considered to be among the most valued contributors to their culture.</p> <p>Tracing the history of science can show how difficult it was for scientific innovators to break through the accepted ideas of their time to reach the conclusions that we currently take for granted.</p>	<p>Reader, p. 12</p> <p><b>Flight and Rocketry</b> Reader, p. 14</p> <p><b>Newton’s toy Box</b> Reader, p. 22</p> <p><b>Earth, Moon and Sun</b> Reader, p. 20</p> <p><b>Matter and Change</b> Activity 2, Science and Social Studies, p. 27 Reader, p. 21</p> <p><b>Color and Light</b> Reader, p. 14</p> <p><b>Flight and Rocketry</b> Activity 12, Science and Social Studies, p. 130</p> <p><b>Newton’s Toy Box</b> Reader, p. 22</p> <p><b>Electrical Connections</b> Reader, p. 21</p> <p><b>Matter and Change</b> Activity 2, Science and Social Studies, pp. 27</p> <p><b>Flight and Rocketry</b> Reader, pp. 14-15</p> <p><b>Simple Machines</b> Reader, p. 12</p> <p><b>Astronomy</b> Reader, pp. 22-23</p> <p><b>Newton’s Toy Box</b> Reader, p. 22</p> <p><b>DNA-From Genes to Proteins</b> Reader, p. 21</p>
--	--