



**FOSS Full Option Science System
(FOSS™)
Grades K-8**

Correlation With

**North Dakota
Science Standards**



NORTH DAKOTA STANDARDS FOR SCIENCE

CORRELATED WITH

FOSS (Full Option Science System)

GRADES K-8

This correlation shows representative examples of investigations and activities from the FOSS program that address the Science Content Standards. A citation does not reflect all of the investigations or activities that might address a particular standard or benchmark.

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Kindergarten

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models K.1.1. Identify models (e.g., dolls, stuffed animals, toy vehicles) that are not real	<u>Animals Two by Two</u>	Investigation 1, Part 3, Pages 22-25
	<u>Wood and Paper</u>	Investigation 1, Part 3, Pages 22-23
Constancy and Change K.1.2. Identify things that can change (e.g. weather, people, water)	<u>Animals Two by Two</u>	Investigation 5, Part 1-2, Pages 11-19
	<u>Trees</u>	Investigation 1, Part 3, Pages 17-18
	<u>Wood and Paper</u>	Investigation 4, Part 2, Pages 16-18

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Abilities Necessary To Do Scientific Inquiry K.2.1. Use senses (i.e., sight, hearing, touch, smell, taste) to make observations about the world around them	<u>Animals Two by Two</u>	Investigation 1, Parts 1-2, Pages 15-21 Investigation 2, Parts 1,3, Pages 11-13 & 20-21 Investigation 3, Part 3, Pages 19-20 Investigation 5, Parts 2-4, Pages 18-27
	<u>Fabric</u>	Investigation 1, Part 1, Pages 10-11
	<u>Trees</u>	Investigation 2, Part 1, Pages 8-9 Investigation 3, Parts 2-3, Pages 14-17
	<u>Wood and Paper</u>	Investigation 1, Part 1, Pages 12-13
K.2.2. Use simple tools (e.g. hand lens, balance, funnel, strainer) to extend the senses	<u>Fabric</u>	Investigation 1, Part 5, Pages 26-28
	<u>Wood and Paper</u>	Investigation 2, Part 2, Pages 14-15

	<u>Animals Two by Two</u>	Investigation 4, Part 1, Pages 8-11
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Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Properties Of Matter K.3.1. Identify the materials that make up an object. (e.g., desk is made up of wood and metal, bike is made up of metal, rubber, and plastic)	<u>Fabric</u>	FOSS Stories “What is Fabric Made From?” Pages 3-15
	<u>Trees</u>	Investigation 1, Parts 5,6, Pages 27-30
	<u>Wood and Paper</u>	FOSS Stories “The Story of a Chair” Pages 3-8 “The Story of a Box” Pages 13-18

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Characteristics Of Organisms K.4.1. Identify animals eat plants or other animals for food	<u>Animals Two by Two</u>	Investigation 1, Part 2, Pages 19-20 Investigation 4, Part 4, Pages 22-23 Investigation 5, Part 4, Pages 26-27

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Weather, Seasons, and Climate K.5.1. Describe day-to-day weather changes (e.g., sunny, rainy, cloudy, snowy)	<u>Trees</u>	Weather observation folio and tools.
Earth’s Surface <i>No benchmark expectations at this level</i>		

Objects In The Sky K.5.2. Identify objects (e.g., sun, birds, airplanes, moon) in the sky	<u>Trees</u>	Investigation 1, Parts 1,7-8 Pages 7-14, 31-37
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Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology K.6.1. Identify natural objects that differ from those made by humans (e.g., rock-brick, sun-light bulb) K.6.2. Identify tools (e.g., scissors, pencil, hammer) that can be helpful or harmful	<u>Wood and Paper</u>	FOSS Stories “Story of a Chair” Pages 3-7
	<u>Wood and Paper</u>	Investigation 1, Parts1-2 Pages 8-19 Investigation 3, Part 1, Pages 8-12
	<u>Fabric</u>	Investigation 1, Part 1, Pages18-19
	<u>Wood and Paper</u>	Investigation 2, Part 2, Pages 12-15

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science and Personal Health K.7.1. Identify safety rules for school and home	<i>All FOSS modules are designed to include safe practices. See the Overview Section for safety guidelines.</i>	A safety poster is included in each FOSS kit.

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology K.8.1. Explain why anyone can be a scientist	FOSS Web Site <u>www.fossweb.com</u>	“Ask a Scientist”
	<u>Wood and Paper</u>	FOSS Stories “Are You A Scientist?” Pages 9-12

First Grade

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models 1.1.1. Identify models that represent real objects (e.g., globe represents Earth, doll represents a real baby)	<u>Balance and Motion</u>	Investigation 1, Part 1, Pages 8-13
	<u>Air and Weather</u>	Investigation 1, Part 3, Pages 17-20
Systems 1.1.2. Identify objects (e.g., toy vehicles, dolls, human body, plants) that are made of parts	<u>Insects</u>	Investigation 1, Part 1, Pages 16-21 Investigation 2, Part 2, Pages 14-19 Investigation 5, Part 1, Pages 10-15
	<u>New Plants</u>	Investigation 1, Part 3, Pages 23-30
	<u>Air and Weather</u>	Investigation 3, Parts 3 & 5, Pages 17-21, 28-32
Constancy and Change 1.1.3. Describe different ways that things can change (e.g., size, mass, color, movement)	<u>Air and Weather</u>	Investigation 4, Parts 1-3, Pages 10-24
	<u>Balance and Motion</u>	Investigation 3, Parts 1-3, Pages 9-25
	<u>Insects</u>	Investigation 1, Part 2, Pages 16-21 Investigation 2, Part 2, Pages 14-19 Investigation 3, Part 3, Pages 21-26 Investigation 4, Part 5, Pages 28-31 FOSS Stories "Insect Life Cycles" Pages 16-21
	<u>Pebbles, Sand and Silt</u>	Investigation 1, Parts 1-2, Pages 8-17 Investigation 3, Parts 4-5, Pages 20-29
	<u>Plants and Animals</u>	Investigation 1, Parts 1-3, Pages 47-62

	<u>Insects and Plants</u>	Investigation 4, Parts 1-2, Pages 157-163 Investigation 1, Parts 1-3, Pages 52-75 Investigation 2, Part 3, Pages 105-115 Investigation 5, Parts 1-3, Pages 206-225 FOSS Science Resources, pages 37-55
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Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Abilities Necessary To Do Scientific Inquiry 1.2.1. Record and describe observations with pictures, numbers, or words	Students record and describe observations with pictures, numbers and words in ALL FOSS modules. See for example:	
	<u>Air and Weather</u>	Investigation 2, Part 1, Pages 8-19 Investigation 3, Part 4, Pages 22-27 Investigation 4, Part 1-2, Pages 8-18
	<u>Insects</u>	Investigation 1, Part 2-3, Pages 16-25 Investigation 2, Part 2, Pages 14-19 Investigation 3, Part 2-3, Pages 12-20 Investigation 5, Part 3, Pages 20-25
	<u>New Plants</u>	Investigation 1, Part 3, Pages 23-30 Investigation 3, Part 1, Pages 8-13
	<u>Solids and Liquids</u>	Investigation 1, Part 1-2, Pages 8-20 Investigation 4, Part 1, Pages 7-16
	<u>Insects and Plants</u>	Investigation 1, Parts 1-3,

	<u>Plants and Animals</u>	Pages 52-75 Investigation 3, Parts 1-3, Pages 129-151 Investigation 1, Parts 2-3, Pages 58-62 Investigation 4, Parts 1-2, Pages 157-163
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Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Properties Of Matter 1.3.1. Identify matter that can be a liquid or solid (e.g., water) 1.3.2. Identify observable properties (e.g., size, weight, shape, color, movement) of objects	<u>Solids and Liquids</u> ALL, such as	Investigation 1, Part 1, Pages 8-16 Investigation 3, Part 1, Pages 8-13 FOSS Stories “Solids and Liquids” Pages 8-13
	<u>Balance and Motion</u>	Investigation 1, Part 1-2, Pages 8-18 Investigation 2, Part 1-2, Pages 8-19 Investigation 3, Part 1-3, Pages 6-25
	<u>Pebbles, Sand and Silt</u>	Investigation 1, Part 4, Page 22-25 Investigation 2, Part 3, Pages 18-23
	<u>Solids and Liquids</u>	Investigation 1, Part 2-3, Pages 8-30 Investigation 2, Part 1, Pages 10-14
Force And Motion 1.3.3. Identify different kinds of motion (e.g., straight, circular, back-and-forth) that objects can have	<u>Balance and Motion</u> ALL, such as	Investigation 2, Part 2, Pages 14-19 Investigation 3, Part 3, Pages 6-25 FOSS Stories “Things that Spin” Page 22-25 “Rolling, Rolling, Rolling” Pages 26-31
	<u>Air and Weather</u>	Investigation 1, Part 6, Pages 34-38

	<u>New Plants</u>	Investigation 1, Parts 2-3, Pages 13-30 FOSS Stories “What Do Plants Need “ Pages 3-15
	<u>Insects and Plants</u>	Investigations 1-5, all parts FOSS Science Resources, Pages 37-55
	<u>Plants and Animals</u>	Investigation 1-4, all parts FOSS Science Resources, Pages 3-12

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Weather, Seasons, and Climate 1.5.1. Explain that short-term weather conditions can change daily, and how weather affects people’s daily activities	<u>Air and Weather</u>	Investigation 4, Part 1-2, Pages 8-18 Investigation 2, Part 1, Pages 8-13 FOSS Stories “What’s the Weather Today?” Pages 7-13
Earth’s Surface <i>No benchmark expectations at this level</i>		
Objects In The Sky 1.5.2. Explain why the sun can only be seen in the daytime, but the moon can be seen sometimes during the day and sometimes at night	<u>Air and Weather</u>	Investigation 4, Part 2-3, Pages 12-24

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology 1.6.1. Identify tool/inventions (e.g., computer, car, cell phone) that impact the	<u>Air and Weather</u>	Investigation 2, Part 2, Page 14-19 Investigation 3, Part 4, Page 22-27

way we live	<u>Balance and Motion</u>	FOSS Stories "Tools and Machines" Page 14-17
Technological Design 1.6.2. Use several steps to complete a task (e.g., building blocks, art project, group investigation)	<u>Solids and Liquids</u>	Investigation 1, Part 3 Pages 21-24
	<u>Air and Weather</u>	Investigation 2, Part 1, Pages 8-13 Investigation 4, Part 1, Pages 8-11 Investigation 4, Part 3, Pages 19-24
	<u>Balance and Motion</u>	Investigation 1, Part 4, Pages 24-28 Investigation 2, Part 1-3, Pages 8-25 Investigation 3, Part 1-3, Pages 6-25
	<u>Insects</u>	Investigation 6, Part 1-3, Pages 8-22

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science and Personal Health 1.7.1. Identify personal care practices (e.g., dental care, hand washing, exercise, nutrition) that contribute to a healthy life	<u>Insects</u>	Overview folio, Page 16
Science And Environmental Issues 1.7.2. Describe ways that humans influence their environment (e.g., littering, recycling, car pooling)	Responsible use of resources is stressed in ALL FOSS modules. Plastic cups, paper plates and even soil are re-used to conserve money and resources. See for example: <u>New Plants</u> <u>Pebbles, Sand and Silt</u>	Investigation 1, Part 3, Page 29 FOSS Stories "Making Things with

	<u>Insects and Plants</u>	Rocks” Pages 16-18 Investigation 2, Part 3, Page 113
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Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology 1.8.1. Identify ways (e.g., create things, ask questions, make observations, figure things out) that everybody can do science	<u>Air and Weather</u>	Investigation 1, Part 5-6, Pages 27-38 Investigation 3, Part 1, Pages 8-11 Investigation 3, Part 3, Pages 17-21 Investigation 3, Part 5, Pages 28-33
	<u>Pebbles, Sand and Silt</u>	Investigation 1, Part 1, Pages 8-12
	<u>Solids and Liquids</u>	Investigation 1, Part 3, Pages 21-24
	<u>Plants and Animals</u>	Investigation 3, Parts 1-3, Pages 87-108

Second Grade

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models 2.1.1. Explain ways models are like (e.g., globe and Earth are both round) and unlike (e.g., different sizes, missing details and functions) real things	<u>Air and Weather</u>	Investigation 1, Part 6, Pages 34-38 Investigation 2, Part 2, Pages 17-19
	<u>Balance and Motion</u>	Investigation 1, Part 1, Pages 8-13
Systems 2.1.2. Identify some things that may not work if some of their parts are missing, broken, or assembled incorrectly (e.g., batteries are necessary for some toys to operate, wheels are necessary for a car to function)	<u>Balance and Motion</u>	Investigation 1, Part 4, Pages 24-29
	<u>Air and Weather</u>	Investigation 1, Part 6, Pages 34-38 Investigation 3, Parts 3 & 5, Pages 17-21, 28-33
Constancy and Change 2.1.3. Identify changes that are slow (e.g., plant growth)	<u>New Plants</u>	Investigation 1, Part 1, Pages 9-12 Investigation 1, Part 3, Pages 23-30 Investigation 2, Part 1, Pages 8-14 Investigation 3, Part 1-3, Pages 8-26 Investigation 4, Part 1-2, Pages 7-19
	<u>Insects</u>	Investigation 1, Part 1-3, Pages 8-25 Investigation 2, Part 1-3, Pages 8-24
	<u>Insects and Plants</u>	Investigation 1-5, all parts
	<u>Plants and Animals</u>	Investigation 1-4, all parts

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Abilities Necessary To Do Scientific Inquiry 2.2.1. Ask questions and seek answers about the world (e.g., Why do we have seasons?) 2.2.2. Communicate (e.g., verbal, written, graphic) observations to others</p>	<p><i>All FOSS Modules are inquiry based and guided by questions. Students communicate their questions and observations verbally and in written and graphic forms while doing investigations and also in the end of lesson wrap-up at the “Word Bank” and “What We Learned” chart. See for example</i></p> <p><u>Air and Weather</u></p> <p><u>Insects</u></p> <p><u>New Plants</u></p> <p><u>Pebbles, Sand and Silt</u></p> <p><u>Insects and Plants</u></p> <p><u>Plants and Animals</u></p>	<p>Investigation 2, Part 1-2, Pages 11-19 Investigation 4, Part 1-3, Pages 8-24</p> <p>Investigation 1 Part 2, Pages 16-21 Investigation 2, Part 2, Pages 14-19</p> <p>Investigation 1, Part 3, Pages 23-30 Investigation 2, Part 3, Pages 20-28</p> <p>Investigation 2, Parts 1-4, Pages 8-29</p> <p>Investigation 1, Parts 1-3, Pages 52-75 Investigation 5, Parts 1-3, Pages 206-225</p> <p>Investigation 1, Part 3, Pages 63-72</p>

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Properties Of Matter 2.3.1. Identify ways (e.g., mixing, heating, cooling, cutting) to make changes in matter</p> <p>2.3.2. Explain why water left in an open container disappears, but water in a closed container does not disappear</p> <p>2.3.3. Sort matter by observable properties (e.g., size, shape, texture, color)</p>	<u>Solids and Liquids</u>	Investigation 4, Part 1-3, Pages 7-27 FOSS Web “Change It” FOSS Stories “Solid to Liquids and Back Again” Pages 14-17
	<u>Pebbles, Sand and Silt</u>	Investigation 2, Parts 3-4 Pages 18-29 Investigation 3, Parts 2-5 Pages 12-29
	<u>Pebbles, Sand and Silt</u>	Investigation 3, Parts 4, 5 Pages 20-29
	<u>Pebbles, Sand, and Silt</u>	Investigation 1, Part 3-4, Pages 18-26 Investigation 2, Part 1-3, Pages 8-23 Investigation 4, Part 1, Pages 8-14
	<u>Solids and Liquids</u>	Investigation 1, Part 2, Pages 17-20 Investigation 3, Part 2, Pages 14-18
	<u>Air and Weather</u>	Investigation 2, Part 3 Pages 20-23
<p>Force And Motion 2.3.4. Describe an object’s location (e.g., further than, beside, under, over) relative to another object</p> <p>2.3.5. Describe how objects fall unless something holds them up</p>	<u>Balance and Motion</u>	Investigation 1, Part 1-4, Pages 8-28
	<u>Air and Weather</u>	Investigation 1, Part 2, Pages 13-16
	<u>Solids and Liquids</u>	Investigation 1, Part 3, Pages 21-24
	<u>Balance and Motion</u>	Investigation 1, Part 1-3, Pages 8-23

(e.g., apple on a tree, coat on a hook, pencil rolling off a desk)	<u>Air and Weather</u>	Investigation 1, Part 3, Pages 17-20 Investigation 3, Part 5, Pages 28-33
Forms Of Energy 2.3.6. Identify whether sources of heat and light are natural or human-made (e.g., sunlight, light bulb)	<u>New Plants</u> <u>Air and Weather</u>	Investigation 1, Part 2, Pages 13-22 Investigation 4, Parts 1-3, Pages 8-24

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Characteristics Of Organisms 2.4.1. Identify how plants and animals are alike and different (e.g., in the way they look, in their behaviors) COMPARE THE SIMILARITIES AND DIFFERENCES	<u>Insects</u> ALL, such as <u>New Plants</u> ALL, such as <u>Insects and Plants</u> <u>Plants and Animals</u>	Investigation 2, Part 2, Pages 14-19 Investigation 2, Parts 1-2, Pages 8-19 FOSS Stories “Animal Teeth” Pages 40-43 Investigation 1-5, all parts FOSS Science Resources, Pages 37-55 Investigation 1-4, all parts FOSS Science Resources, Pages 3-7, 21-23, 47-50
Life Cycles <i>No benchmark expectations at this level</i>		
Organisms And Their Environments 2.4.2. Identify various things that are found in different environments (e.g., cactus, lizard-desert; shark, coral-ocean)	<u>New Plants</u> <u>Insects</u>	FOSS Stories “Plants and Animals around the World” Pages 22-39 FOSS Stories “Life Goes Around” Pages 22-33 “Environment” Pages 36-41

	<u>Plants and Animals</u>	Investigation 3, Parts 1-2, Pages 120-134 FOSS Science Resources, Pages 28-45 Video: How Plants Grow in Different Places
	<u>Insects and Plants</u>	FOSS Science Resources, Pages 1-7, 37-55

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Weather, Seasons, and Climate 2.5.1. Describe the patterns and characteristics of the four seasons, and how these changes in weather influence plant, animal, and human activities	<u>Air and Weather</u>	Investigation 4, Part 2, Pages 12-18 FOSS Stories “Seasons” Pages 18-23
Earth’s Surface 2.5.2. Identify different physical properties (e.g., size, shape, texture) of earth materials (e.g., rocks, sand, water) 2.5.3. Explain how fossils provide evidence about plants and animals and their environment that lived long ago (e.g., woolly mammoth, fern, ice age)	<u>Pebbles, Sand, and, Silt ALL, such as</u> <u>Pebbles, Sand and Silt</u>	Investigation 2, Part 1-4, Pages 8-29 Investigation 3, Part 1-5, Pages 8-29 Investigation 4, Part 1-3, Pages 8-25 FOSS Stories “Fossils” Pages 26-31
Objects In The Sky 2.5.4. Describe how the sun provides light and heat to warm the earth (e.g., land, air, and water) 2.5.5. Explain how the moon appears slightly different every day, but looks nearly the same	<u>Air and Weather</u> <u>Air and Weather</u>	FOSS Stories “Seasons” Page 21 Investigation 4, Part 3, Pages 22-24

every four weeks		
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Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology 2.6.1. Identify tools (e.g., ruler, hand lens, thermometer, balance) that are used to observe measure, and investigate things they could not otherwise see, measure and do	<u>Air and Weather</u>	Investigation 2, Part 2, Pages 17-19 Investigation 2, Part 4, Pages 26-27 Investigation 3, Part 2-4, Pages 12-27
	<u>Insects</u>	Investigation 1, Part 1-3, Pages 8-25 Investigation 2, Part 1-3, Pages 8-24
	<u>Pebbles, Sand, and Silt</u>	Investigation 1, Part 1-3, Pages 8-21 Investigation 2, Part 1, Pages 8-13 Investigation 2, Part 3, Pages 18-23
	<u>Insects and Plants</u>	Investigation 1, Parts 1-3, Pages 52-75 Investigation 5, Parts 1-3, Pages 206-225
Technological Design 2.6.2. Explain how models (e.g., plastic animal figures, skeletal models) can be used to understand science	<u>Solids and Liquids</u>	Investigation 3, Part 4, Pages 24-27
	<u>Air and Weather</u>	Investigation 1, Part 3, Pages 17-20 Investigation 3, Part 5, Pages 28-33

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science and Personal Health 2.7.1. Identify personal care choices (e.g., personal hygiene, nutrition, fitness, safety) that contribute to individual wellness	Safety is stressed in the FOSS program. The kits use materials and investigations that students can handle with minimum risk. A safety poster is included in each kit, and guidelines for	

2.7.2 Describe some things (e.g., UV Rays, second-hand smoke, pollution) from our environment that are harmful to people	ensuring student safety are featured in the Overview section of each manual. See for example: <u>Insects</u>	Overview Folio p. 16
Science And Environmental Issues <i>No benchmark expectations at this level.</i>		

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology 2.8.1. Identify ways scientists work together to solve problems (e.g., share results, teamwork, investigate)	<i>All 2nd Grade FOSS Modules direct students to work in close proximity to one another to encourage teamwork and sharing. The philosophy of “working alone together” ensures that all students have their hands on materials most of the time, yet they are learning to share materials and communicate in small groups.</i>	

Third Grade

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models <i>No benchmark expectations at this level</i>		
Systems <i>No benchmark expectations at this level</i>		
Constancy and Change 3.1.1. Identify changes that are repetitive (e.g., seasons, day and night, water cycle)	<u>Water</u>	Investigation 3, Parts 1-4, Pages 10-26 FOSS Stories "The Water Cycle" Pages 14-16
	<u>Structures of Life</u>	Investigation 2, Part 3, Pages 18-22 FOSS Stories "Life Cycle of a Crayfish" Pages 20-22
	<u>Ideas and Inventions</u>	FOSS Stories "The Moon" Pages 34-36
	<u>Sun, Moon and Stars</u>	Investigation 1, Parts 1-2, Pages 42-64 Investigation 2, Parts 1-2, Pages 79-100

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Abilities Necessary To Do Scientific Inquiry 3.2.1. Select appropriate scientific tools (e.g., magnifiers, thermometers, rulers, balances) for investigations	<i>This benchmark is addressed in ALL FOSS investigations. See for example:</i> <u>Earth Materials</u>	Investigation 1, Part 1-2, Pages 11-23 Investigation 2, Part 2, Pages 14-21
	<u>Magnetism and Electricity</u>	Investigation 5, Part 1, Pages 8-14
	<u>Measurement</u>	Investigation 1, Part 1-3, Pages 8-24

<p>3.2.2. Ask questions directly related to a scientific investigation</p>	<p><u>Sun, Moon and Stars</u></p> <p><u>Matter and Energy</u></p> <p><i>This benchmark is addressed in ALL FOSS investigations. See for example:</i> <u>Physics of Sound</u></p> <p><u>Magnetism and Electricity</u></p> <p><u>Sun, Moon and Stars</u></p> <p><u>Matter and Energy</u></p>	<p>Investigation 2, Part 1-3, Pages 8-21 Investigation 3, Part 1-3, Pages 8-21 Investigation 4, Part 1-3, Pages 8-21</p> <p>Investigation 1, Part 1, Pages 42-55</p> <p>Investigation 3, Parts 2-3, Pages 139-160 Investigation 4, Part 1, Pages 174-180</p> <p>Investigation 4, Parts 1-2, Pages 6-20</p> <p>Investigation 3, Part 1-3, Pages 8-20</p> <p>Investigation 1, Part 2, Pages 56-64</p> <p>Investigation 2, Parts 1-2, Pages 93-114</p>
<p>3.2.3. Record observations (e.g., journals, drawings, charts) based on simple investigations</p>	<p><i>This benchmark is addressed in ALL FOSS investigations. See for example:</i> <u>Earth Materials</u></p> <p><u>Ideas and Inventions</u></p> <p><u>Sun, Moon and Stars</u></p> <p><u>Matter and Energy</u></p>	<p>Investigation 1, Part 1-3, Pages 11-29 Investigation 3, Part 1, Pages 8-13</p> <p>Investigation 2, Part 2, Pages 16-19 Investigation 2, Part 2, Pages 89-100</p> <p>Investigation 3, Parts 2-3, Pages 139-160</p>

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Properties Of Matter 3.3.1. Identify the physical properties of solids and liquids</p>	<p><u>Physics of Sound</u></p> <p><u>Water</u></p> <p><u>Earth Materials</u></p> <p><u>Matter and Energy</u></p>	<p>Investigation 3, Part 1-2, Pages 8-19</p> <p>Investigation 1, Part 1-2, Pages 8-18</p> <p>Investigation 2, Part 1-2, Pages 8-21</p> <p>Investigation 3, Part 1, Pages 129-139 FOSS Science Resources, Pages 39-42</p>
<p>Force And Motion 3.3.2. Identify a force as push or pull</p> <p>3.3.3. Describe how magnets attract iron and repel or attract other magnets</p>	<p><u>Water</u></p> <p><u>Magnetism and Electricity</u></p> <p><u>Magnetism and Electricity</u></p>	<p>Investigation 4, Part 2, Pages 14-18</p> <p>Investigation 1, Parts 1-3 Pages 8-29</p> <p>Investigation 1, Part 1-2, Pages 8-22 FOSS Stories “Magnus Gets Stuck” Pages 1-4 “Magnificent Magnetic Models” Page 5 “How Magnets Interact” Page 6</p>
<p>Forms Of Energy 3.3.4. Explain how sound is produced by vibration</p> <p>3.3.5. Describe how the path of light tends to maintain its direction and motion until it encounters an object</p>	<p><u>Physics of Sound</u></p> <p><u>Ideas and Inventions</u></p> <p><u>Matter and Energy</u></p>	<p>Investigation 1, Part 3, Pages 21-29 Investigation 2, Part 1-3, Pages 8-24</p> <p>Investigation 4, Part 2-3, Pages 14-21 FOSS Stories “Light and Reflection” Pages 28-31</p> <p>Investigation 2, Part 1, Pages 93-102 FOSS Science Resources, Pages 24-28</p>

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Characteristics Of Organisms <i>No benchmark expectations at this level</i>		
Structure and Function 3.4.1. Identify parts of an organism that have specific functions (e.g., roots absorb water, heart pumps blood)	<u>Human Body</u> <u>Structures of Life</u>	Investigation 1, Part 1-2, Pages 8-20 Investigation 1, Part 1-2, Pages 18-33 Investigation 1, Part 1, Pages 8-13 Investigation 5, Part 1, Pages 8-12 FOSS Stories "Life on Earth" Pages 22-34
Life Cycles 3.4.2. Describe the life cycles of plants and animals (e.g., birds, mammals, grasses, trees, insects, flowers)	<u>Structures of Life</u>	Investigation 1, Part 3, Pages 18-22 FOSS Web "Life Cycles" FOSS Stories "Life Cycle of a Crayfish" Pages 20-21
Organisms And Their Environments 3.4.3. Identify the needs of living things (e.g., food, shelter, soil, space, water)	<u>Structures of Life</u>	Investigation 1, Part 3, Pages 28-33 Investigation 2, Part 2, Pages 14-17 Investigation 3, Part 2, Pages 16-19 Investigation 5, Part 1, Pages 8-12

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Weather, Seasons, and Climate 3.5.1. Identify weather conditions that can be measured (e.g., temperature, wind direction and speed, and precipitation)	<i>This standard is addressed in depth in the FOSS Module <u>Air and Weather</u>, designed for Grades 1-2.</i>	

<p>Earth's Surface 3.5.2. Identify different uses (e.g., building materials, sources of fuel) of Earth's materials based on their properties</p> <p>3.5.3. Identify ways (e.g., wind, rain, people) that larger rocks break down into smaller rocks</p> <p>3.5.4. Identify the properties of soil (e.g., color, texture, ability to support plant growth, capacity to retain water)</p>	<p><u>Earth Materials</u></p> <p><u>Physics of Sound</u></p> <p><u>Earth Materials</u></p> <p><u>Water</u></p> <p><i>Note that this standard is also addressed in <u>Pebbles, Sand and Silt</u>, designed for Grades 1-2.</i></p>	<p>FOSS Stories "Treasure Underfoot" Pages 8-9 "Rock of Ages" Pages 24-29</p> <p>FOSS Stories "Energy" Pages 22-28</p> <p>Investigation 3, Part 2, Pages 16-19 Investigation 3, Science Extensions, Page 24</p> <p>Investigation 4, Part 1, Pages 8-13</p>
<p>Objects In The Sky 3.5.5. Explain how stars are like the Sun, but because they are at a great distance, they look like small points of light</p>	<p><u>Ideas and Inventions</u></p> <p><u>Sun, Moon and Stars</u></p>	<p>FOSS Stories "Looking at the Sky" Pages 33-38</p> <p>Investigation 3, Part 2, Pages 114-125 FOSS Science Resources, Pages 35-39, 47</p>

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Forms Of Technology <i>No benchmark expectations at this level</i></p>		
<p>Technological Design 3.6.1. Identify ways technology (e.g., zippers, Velcro, measuring instruments, computers) can be used to solve problems at home and school</p>	<p><u>Ideas and Inventions</u> ALL, such as</p>	<p>Investigation 2, Part 2, Pages 16-19 Investigation 3, Part 2, Pages 14-17 FOSS Stories "Creative Solutions" Pages 1-3 "A Close Look at the World" Page 9 "A Self-Made Inventor" Page 10 "Covering Up Her</p>

	<u>Physics of Sound</u> <u>Measurement</u> ALL, such as <u>Matter and Energy</u>	Mistakes” Page 17 FOSS Stories “Grandmother’s Hearing Test” Pages 32-35 Investigation 2, Parts 1-3 Pages 8-21 FOSS Stories “Thermometers” Pages 22-23 FOSS Science Resources, Pages 6-7
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Standard 7: Students understand relations between science and personal, social, and environmental issues.

<i>Benchmark Expectations</i>	<i>FOSS Module</i>	<i>Investigation/Activity Page Number</i>
Science and Personal Health 3.7.1. Identify ways to prevent the spread of germs	<u>Human Body</u> <u>Water</u>	Overview folio Page 17 Investigation 1, Part 3, Pages 21-24, 25 FOSS Stories “Ellen Swallow Richards” Pages 24-26
Science And Environmental Issues 3.7.2. Identify the benefits of recycling, reusing, and reducing	Responsible use of resources is stressed in ALL FOSS modules. Plastic cups, paper plates and even soil are re-used to conserve money and resources. See for example: <u>Water</u> <u>Measurement</u>	FOSS Stories “Water: A Vital Resource” Pages 17-21 FOSS Stories “Water Everywhere” Pages 16-17

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Forms Of Technology 3.8.1. Identify ways people of all ages, genders, and backgrounds use science in their careers and daily life (e.g., children check temperature conditions to decide what to wear, farmer uses genetic grains, hikers use GPS, depth-finder in boat, hearing-aides for disabilities).	<u>Ideas and Inventions</u>	FOSS Stories ALL, such as "A Self-Made Inventor" Page 10 "Kid Inventors" Pages 39-40
	<u>Magnetism and Electricity</u>	FOSS Stories "Magnets and Electricity in Your Life" Pages 28-33
	<u>Physics of Sound</u>	FOSS Stories "Lights! Camera! Action!" Pages 29-31
	<u>Matter and Energy</u>	FOSS Science Resources, Pages 2-7

Fourth Grade

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Models 4.1.1. Explain changes in the real world using a model (e.g., erosion, volcano, stream table, wing designs for airplanes)</p>	<p><u>Earth Materials</u></p> <p><u>Water</u></p> <p><u>Sun, Moon and Stars</u></p> <p><i>Note that stream tables are used in <u>Landforms</u>, a FOSS module designed for Grades 5-6.</i></p>	<p>Investigation 1, Part 3, Pages 24-29</p> <p>Investigation 4, Part 2 Pages 14-18</p> <p>Investigation 1, Part 2, Pages 56-64 Investigation 3, Part 1, Pages 114-125</p>
<p>Systems <i>No benchmark expectations at this level</i></p>		
<p>Constancy and Change 4.1.2. Identify changes <u>that</u> can be steady or irregular (e.g., floods, earthquakes, erosion, tooth decay)</p>	<p><u>Water</u></p> <p><u>Structures of Life</u></p> <p><u>Matter and Energy</u></p> <p><i>Note that changes to the earth's surface are addressed in more depth in <u>Landforms</u>, a FOSS module designed for Grades 5-6.</i></p>	<p>Investigation 1, Part 3, Pages 19-23 Investigation 2, Part 3, Pages 19-24 Investigation 4, Part 1, Pages 8-13 FOSS Stories "The Power of Water" Pages 22-23</p> <p>Investigation 1, Part 2-3, Pages 18-33</p> <p>Investigation 4, Part 2, Pages 181-192</p>

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number	
<p>Abilities Necessary To Do Scientific Inquiry 4.2.1. Review and ask questions about the scientific investigations of others</p>	<p><i>ALL of the benchmarks addressed in Standard 2 are addressed throughout ALL FOSS investigations. See for example:</i> <u>Earth Materials</u></p>	<p>Investigation 1, Part 1, Pages 11-15</p>	
	<p><u>Physics of Sound</u></p>	<p>Investigation 4, Part 1-2, Pages 10-20</p>	
	<p><u>Earth Materials</u></p>	<p>Investigation 1, Part 2, Pages 16-23 Investigation 3, Part 1, Pages 8-13 Investigation 4, Part 1-2, Pages 10-18</p>	
	<p><u>Sun, Moon and Stars</u></p>	<p>Investigation 1, Parts 1-2, Pages 42-64</p>	
	<p><u>Matter and Energy</u></p>	<p>Investigation 3, Part 2, Pages 139-150</p>	
	<p>4.2.2. Conduct simple investigations to answer questions based on observations</p>	<p><u>Magnetism and Electricity</u></p>	<p>Investigation 4, Part 2-3, Pages 14-22</p>
		<p><u>Earth Materials</u></p>	<p>Investigation 1, Part 1, Pages 11-15 Investigation 2, Part 2, Pages 14-21</p>
		<p><u>Sun, Moon and Stars</u></p>	<p>Investigation 1, Part 2, Pages 56-64</p>
		<p><u>Matter and Energy</u></p>	<p>Investigation 3, Part 2, Pages 139-150</p>
	<p>4.2.3. Use scientific tools (e.g., thermometers, rulers, balances) during simple investigations</p>	<p><u>Measurement</u></p>	<p>Investigation 1, Part 1-3, Pages 8-23 Investigation 2, Part 1-3, Pages 8-21 Investigation 3, Part 1-3, Pages 8-21</p>

	<u>Water</u>	Investigation 4, Part 1-3, Pages 8-21 Investigation 2, Part 3, Pages 19-24 Investigation 4, Part 1, Pages 8-13
	<u>Sun, Moon and Stars</u>	Investigation 1, Part 1, Pages 42-55
	<u>Matter and Energy</u>	Investigation 3, Parts 2-3, Pages 139-160 Investigation 4, Part 1, Pages 174-180

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Properties Of Matter 4.3.1. Identify the forms in which water appears when heated and cooled (i.e., water vapor, liquid, solid) 4.3.2. Explain the relationship between the mass of an object and the sum of its parts 4.3.3. Explain that matter is made up of parts that are too small to see without magnification	<u>Water</u>	Investigation 2, Part 3, Pages 19-24 Investigation 3, Part 1-4, Pages 8-26 FOSS Stories “A Report from the Blue Planet” Pages 1-2
	<u>Matter and Energy</u>	Investigation 4, Part 2, Pages 181-192 FOSS Science Resources, Pages 54-56
	<u>Measurement</u>	Investigation 2, Parts 1-3 Pages 8-21 FOSS Stories “Everything is Made of Atoms” Pages 30-33
	<u>Measurement</u>	FOSS Stories “Everything is Made of Atoms” Pages 30-33
	<u>Matter and Energy</u>	Investigation 4, Part 2, Pages 181-192 FOSS Science Resources, Pages 57-59

<p>Force And Motion 4.3.4. Identify the effects forces may have when applied to objects (i.e., start, stop, change direction)</p>	<p><u>Water</u></p> <p><u>Magnetism and Electricity</u></p>	<p>Investigation 4, Part 2, Pages 14-18</p> <p>Investigation 1, Part 3, Pages 23-30</p>
<p>Forms Of Energy 4.3.5. Describe how the path of light changes (i.e., reflected, absorbed, or allowed to pass through) when it encounters a variety of objects</p> <p>4.3.6. Explain how the pitch of a sound is related to the rate of vibrations</p> <p>4.3.7. Identify ways friction or burning produces heat (e.g., magnifying glass, carpet burn, sunburn)</p>	<p><u>Ideas and Inventions</u></p> <p><u>Matter and Energy</u></p> <p><u>Physics of Sound</u></p> <p><u>Physics of Sound</u></p>	<p>Investigation 4, Part 2-3, Pages 14-21</p> <p>Investigation 2, Parts 1-2, Pages 93-114 FOSS Science Resources, Pages 24-36</p> <p>Investigation 2, Part 1-3, Pages 10-24 Investigation 4, Part 1, Pages 6-15</p> <p>FOSS Stories “Energy” Pages 22-24</p>

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Structure and Function 4.4.1. Classify plants and animals according to common physical characteristics</p> <p>4.4.2. Identify adaptations that help plants and animals survive and grow in their environment</p>	<p><u>Structures of Life</u></p> <p><u>Structures of Life</u></p>	<p>Investigation 1, Part 1, Pages 8-14 Investigation 4, Part 2, Pages 14-19 Investigation 5, Part 2, Pages 13-18</p> <p>Investigation 3, Part 1, Pages 8-15 Investigation 4, Part 1, Pages 8-13 FOSS Stories “Life on Earth” Pages 22-34 “A Change in the Environment” Pages 35-36</p>
<p>Life Cycles <i>No benchmark</i></p>		

<i>expectations at this level</i>		
Organisms And Their Environments 4.4.4. Identify ways that an organism’s pattern of behavior is related to the nature of the organism’s environment (e.g., the availability of food, space, and resources)	<u>Structures of Life</u>	Investigation 3, Part 3-4, Pages 20-30 Investigation 5, Part 3, Pages 19-24 FOSS Stories “A Snail’s Journey” Pages 37-40

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Weather, Seasons, and Climate 4.5.1. Describe how as water condenses small droplets of water form clouds and fog	<u>Water</u>	FOSS Stories “The Water Cycle” Pages 14-16
Earth’s Surface 4.5.2. Identify slow and rapid processes (e.g., wind, water, waves, ice, volcano, earthquake) that are constantly changing Earth’s surface	<u>Earth Materials</u> <u>Water</u> <i>Note that this benchmark is also addressed in <u>Landforms</u>, designed for Grades 5-6.</i>	FOSS Stories “Postcards from the Edge” Pages 5-7 FOSS Stories “The Power of Water” Pages 22-23
4.5.3. Use characteristics to classify Earth’s materials	<u>Earth Materials</u> ALL, such as	Investigation 2, Part 2, Pages 14-21 Investigation 3, Part 1-2, Pages 14-19 FOSS Stories Pages 1-15, 24-33
4.5.4. Compare fossil evidence to existing organisms	<u>Earth Materials</u> <u>Structures of Life</u>	FOSS Stories “Written in Stone” Pages 1-4 FOSS Stories “Life in Los Angeles” Pages 45-48

<p>Solar System 4.5.5. Identify components of our solar system (e.g., planets, moon, sun)</p>	<p><u>Ideas and Inventions</u></p> <p><u>Sun, Moon and Stars</u></p>	<p>FOSS Stories “Looking at the Sky” Pages 33-37</p> <p>Investigation 1, Parts 1-2, Pages 42-64 Investigation 2, Parts 1-2, Pages 79-100 FOSS Science Resources, Pages 1-32</p>
<p>The Universe 4.5.6. Identify tools that are used to study the universe (e.g., telescope, space probes, satellites, space craft)</p>	<p><u>Ideas and Inventions</u></p> <p><u>Sun, Moon and Stars</u></p>	<p>FOSS Stories “Looking at the Sky” Pages 33-38</p> <p>Investigation 3, Part 2, Pages 126-130 FOSS Science Resources, Pages 40-43</p>

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Technological Design 4.6.1. Evaluate the effects of technology on people and the environment (e.g., new construction, oil drilling, electric cars)</p> <p>4.6.2. Explain how an invention may lead to other inventions</p>	<p><u>Magnetism and Electricity</u></p> <p><u>Water</u></p> <p><u>Physics of Sound</u></p> <p><u>Matter and Energy</u></p> <p><u>Ideas and Inventions</u> ALL, such as</p>	<p>Investigation 5, Part 1, Pages 8-14 FOSS Stories “Morse Gets Clicking” Pages 34-37</p> <p>FOSS Stories “Water: a Vital Resource” Pages 18-19</p> <p>FOSS Stories “Grandmother’s Hearing Test” Pages 32-35</p> <p>FOSS Science Resources, Pages 2-11</p> <p>Investigation 1, Part 3, Pages 18-21 Investigation 2, Part 3, Pages 20-22 Investigation 4, Part 3, Pages 18-21 FOSS Web “Posters”</p>

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science and Personal Health <i>No benchmark expectations at this level</i>		
Science And Environmental Issues 4.7.1. Identify consequences of natural and human-induced environmental changes (e.g., erosion, tsunami, deforestation)	<u>Structures of Life</u> <u>Water</u> <u>Earth Materials</u>	FOSS Stories “A Change in the Environment” Pages 35-36 FOSS Stories “The Power of Water” Pages 22-23 FOSS Stories “Rock of Ages” Pages 24-26
Science and Social Issues 4.7.2. Identify ways in which science and technology have greatly improved human lives (e.g., food quality, and quantity, transportation, health, sanitation, communication)	<u>Magnetism and Electricity</u> <u>Human Body</u> <u>Physics of Sound</u> <u>Water</u> <u>Matter and Energy</u>	Investigation 5, Part 1-3, Pages 8-25 FOSS Stories “Morse Gets Clicking” Pages 34-37 “Magnets and Electricity in Your Life” Pages 28-33 FOSS Stories “The Broken Radius” Pages 5-7 FOSS Stories “Grandmother’s Hearing Test” Pages 32-35 Investigation 4, Part 2 Pages 14-18 FOSS Stories Pages FOSS Science Resources, Pages 2-11

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
People in Science 4.8.1. Identify a variety of careers in the field of science	<u>Earth Materials</u>	Investigation 1, Part 1, Pages 8-15
	<u>Ideas and Inventions</u>	FOSS Stories ALL, such as Pages 1-3, 9-14,18, 21-22 FOSS Web “Pictures” and “Movies”
	<u>Magnetism and Electricity</u>	FOSS Stories “Illuminating Teamwork: A Story of the Edison Pioneers” Pages 16-19
	<u>Measurement</u>	FOSS Stories Pages 14-15
	<u>Sun, Moon and Stars</u>	FOSS Science Resources, Pages 45-46
Scientific Knowledge 4.8.2. Identify scientific advances that changed popular beliefs (e.g., earth was center of universe, world was flat, man was incapable of flight)	<u>Magnetism and Electricity</u>	FOSS Stories “A Fictional Interview with Benjamin Franklin” Pages 12-13
	<u>Sun, Moon and Stars</u>	FOSS Science Resources, Pages 40, 44

Fifth Grade

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Models 5.1.1. Uses an appropriate model (e.g., drawing, equation, computer program, diagram, or 3-D device) to convey scientific information</p>	<p><i>This benchmark is addressed in data sheets and class sharing in ALL FOSS modules for Grades 3-6. See for example:</i> <u>Environments</u></p> <p><u>Landforms</u></p> <p><u>Models and Designs</u> ALL, such as</p> <p><u>Variables</u> ALL, such as</p> <p><u>Water Planet</u></p>	<p>Investigation 1, Part 1, Pages 8-15</p> <p>Investigation 1, Part 1-3, Pages 8-24 Investigation 3, Part 1-3, Pages 8-24</p> <p>Investigation 1, Part 1-3, Pages 8-25 FOSS Stories Pages 1-10</p> <p>Investigation 1, Part 3, Pages 23-27</p> <p>Investigation 1, Part 1, Pages 50-58 Investigation 4, Part 3, Pages 204-211</p>
<p>Systems <i>No benchmark expectations at this level</i></p>		
<p>Constancy and Change 5.1.2. Explain how changes alter the balance within a system (e.g., the effects of limited resources on populations, global climate change, flood, drought)</p>	<p><u>Environments</u></p> <p><u>Landforms</u></p> <p><u>Models and Designs</u></p>	<p>Investigation 6, Part 1-2, Pages 8-17 FOSS Stories “The Mono Lake Story” Pages 43-45</p> <p>Investigation 3, Part 1-3, Pages 8-24</p> <p>Investigation 1, Part 3, Pages 22-25 Investigation 3, Parts 1-3 Pages 8-24</p>

	<u>Water Planet</u>	Investigation 2, Part 1, Pages 80-85
Form And Function 5.1.3. Identify details of an object's form which determine its function (e.g., webbed feet for use in water, human feet for walking, shovel for scooping dirt, a rake for collecting leaves, tape measure and ruler to measure distance)	<u>Environments</u>	Investigation 5, Parts 1-3, Pages 8-22 FOSS Stories Pages 1-26, 42,47-48
	<u>Models and Designs</u>	Investigation 4, Part 1-2, Pages 6-15
	<u>Levers and Pulleys</u>	Investigation 3, Part 1-2, Pages 8-15
	<u>Variables</u>	Investigation 3, Part 1, Pages 8-13 Investigation 4, Part 1, Pages 8-11
	<u>Living Systems</u>	Investigation 1, Parts 1-3, Pages 51-70 FOSS Science Resources, Pages 4-5, 8-9
	<i>Note that this benchmark is a major focus of the <u>Human Body kit</u>, designed for Grades 3-4.</i>	

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Abilities Necessary To Do Scientific Inquiry 5.2.1. Communicate scientific procedures (e.g., visual display, graph, journal, oral presentation) that enable others to repeat the investigation	<i>This benchmark is addressed in data sheets and class sharing in ALL FOSS modules for Grades 3-6. See for example:</i>	
	<u>Environments</u>	Investigation 6, Part 3, Pages 18-22
	<u>Landforms</u>	Investigation 3, Part 3, Pages 20-24 Investigation 5, Part 1, Pages 8-15
	<u>Water Planet</u>	Investigation 3, Part 1, Pages 125-135
	<u>Living Systems</u>	Investigation 2, Part 1,

5.2.2. Formulate an explanation supported by data	<u>Variables</u>	Pages 85-98 Investigation 2, Part 3, Pages 19-23 Investigation 3, Part 4, Pages 24-27
	<u>Environments</u>	Investigation 5, Part 3, Pages 19-22
	<u>Landforms</u>	Investigation 2, Part 2, Pages 16-22 Investigation 3, Part 3, Pages 20-24
	<u>Models and Designs</u>	Investigation 1, Part 3, Pages 22-25
	<u>Water Planet</u>	Investigation 3, Part 1, Pages 125-135
	<u>Living Systems</u>	Investigation 2, Part 1, Pages 85-98

Standard 3: Students understand the basic concepts and principles of physical science.

<i>Benchmark Expectations</i>	<i>FOSS Module</i>	<i>Investigation/Activity Page Number</i>
Properties Of Matter 5.3.1. Identify physical properties of substances before and after they are combined 5.3.2. Identify new substances formed in a chemical change (i.e., rusting, burning)	<u>Mixtures and Solutions</u>	Investigation 1, Part 1-4, Pages 8-29 Investigation 2, Part 1-4, Pages 8-28
	<u>Mixtures and Solutions</u>	Investigation 4, Part 1-4, Pages 8-28 FOSS Stories "What is a Reaction?" Pages 23-24
5.3.3. Compare and contrast properties of solids, liquids, and gases	<u>Food and Nutrition</u>	Investigation 3, Part 1, Pages 8-15
	<u>Mixtures and Solutions</u>	Investigation 4, Part 1-4, Pages 8-28 FOSS Stories "The Air You Breathe" Pages 20-22

	<u>Solar Energy</u>	Investigation 2, Part 2, Pages 16-4
Force And Motion 5.3.4. Identify the effects force and mass have on the motion of an object	<u>Levers and Pulleys</u> ALL, such as	Investigation 1, Part 3, Pages 24-28 Investigation 3, parts 1-3 Pages 8-24
	<u>Models and Designs</u>	Investigation 3, Parts 1-3 Pages 8-23 FOSS Stories “Inertia and Momentum” Pages 48-50
5.3.5. Explain why gravity is called an attracting force	<u>Solar Energy</u>	FOSS Stories “Living with a Star” Pages 43-44
	<u>Water Planet</u>	Investigation 1, Part 2, Pages 59-66 FOSS Science Resources, Pages 16-17
Forms Of Energy 5.3.6. Demonstrate a simple electrical circuit by completing a continuous loop (i.e., battery, light, wire)	<u>Models and Designs</u>	Investigation 2, Parts 1-2 Pages 8-24
5.3.7. Identify materials that are good conductors of heat	<i>Note that this standard is addressed in depth in <u>Magnetism and Electricity</u>, designed for Grades 3-4.</i>	

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Structure and Function 5.4.1. Identify components of a human organ system (e.g., digestive system, muscular system, skeletal system)	<u>Food and Nutrition</u>	FOSS Stories “The Digestive System” Pages 6-9 “Blood: The Fluid That Connects” Pages 44-47 “Feeding Your Cells” Pages 48-50
	<u>Living Systems</u>	Investigation 1, Parts 1-3, Pages 51-70 FOSS Science Resources, Pages 2-13

of soil (e.g., texture, fertility, capacity to hold water)		
<p>The Universe</p> <p>5.5.4. Identify the characteristics of the Earth (i.e., spherical in shape, orbits the Sun, rotates on tilted axis)</p> <p>5.5.5. Identify the objects in the sky that have predictable patterns of movement (e.g., sun, planets, moons, stars)</p>	<u>Solar Energy</u>	FOSS Stories “Living with a Star” Pages 40-44
	<u>Water Planet</u>	Investigation 1, Part 1, Pages 50-58 FOSS Science Resources, Page 6
	<u>Solar Energy</u>	Investigation 1, Parts 1-2, Pages 8-21 FOSS Stories “Living with a Star” Pages 40-44
	<u>Water Planet</u>	Investigation 1, Part 1, Pages 50-58 FOSS Science Resources, Pages 1-13

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Technological Design</p> <p>5.6.1. Use technology to design a solution to a problem</p> <p>5.6.2. Evaluate a product or design using established criteria</p>	<u>Levers and Pulleys</u>	FOSS Web “Build a Rube Goldberg Machine!”
	<u>Models and Designs</u>	Investigation 4, Part 1-3, Pages 6-21
	<u>Food and Nutrition</u>	Investigation 2, Part 2, Pages 18-21
	<u>Variables</u>	FOSS Stories “Prove It” Pages 34-37

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Science and Personal Health</p> <p>5.7.1 Identify risks or benefits of personal</p>	<u>Food and Nutrition</u>	Investigation 4, Parts 1-2 Pages 8-23 FOSS Stories Pages 27-33, 37-40

health choices (e.g., tobacco, alcohol, prescription and illegal drugs, fast foods)		
Science And Environmental Issues 5.7.2. Explain ways humans benefit from Earth's resources (e.g., air, water, soil, food, fuel, building materials)	<u>Solar Energy</u> <u>Environments</u> <u>Food and Nutrition</u> ALL, such as <u>Water Planet</u>	FOSS Stories “Solar Technology” Pages 29-31 Solar Power from the Wind” Pages 29-38 Investigation 1, Parts 1-2 Pages 8-19 FOSS Stories Pages 8,28,46-48 Investigation 2, Parts 1-3 Pages 8-25 FOSS Stories Pages 1-5,10-15, 21-33 Investigation 4, Part 4, Pages 212-216 FOSS Science Resources, Pages 64-66
Science and Social Issues <i>No benchmark expectations at this level</i>		

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
People in Science <i>No benchmark expectations at this level</i>		
Scientific Knowledge 5.8.1. Explain why results of similar scientific investigations may turn out differently (i.e., inconsistency in methods, materials, and observations)	<u>Landforms</u> <u>Models and Designs</u> <u>Variables</u> ALL, such as <u>Water Planet</u>	Investigation 2, Part 2, Pages 16-22 Investigation 2, Part 2, Pages 17-21 Investigation 3, Part 1-3, Pages 8-23 Investigation 1, Part 1-3, Pages 8-27 Investigation 3, Part 1, Pages 125-135

	<i>Note that this benchmark is a major focus of the Variables module.</i>	
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Sixth Grade

Note that the 6th grade citations include examples from the Grades 5-6 modules of the K-6 FOSS program, as well as the FOSS Middle School modules, designed for Grades 6-8. It is hoped that this will provide maximum flexibility to school districts using FOSS modules. Note that the FOSS Middle School modules each have a specially designed CD-ROM included; the information on the CD-ROM is now also available on the FOSS Middle School section of the FOSS web site, www.fossweb.com. The CD-ROM is not an add-on, but an integral part of the FOSS Middle School courses, so it is cited in this correlation (as “CD-ROM/ Web Site”) under each kit title.

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models 6.1.1. Construct a model to represent concepts, features, or phenomena in the real world (e.g., solar system, earth’s interior)	<u>Landforms</u>	Investigation 2, Part 1-2, Pages 8-22 Investigation 3, Part 1-3, Pages 8-24
	<u>Models and Designs</u> ALL, such as	Investigation 1, Part 1-2, Pages 8-21 Investigation 4, Part 3, Pages 16-20 FOSS Stories “Scientists and Models” Pages 5-10
	<u>Water Planet</u>	Investigation 1, Part 1, Pages 50-58 Investigation 4, Part 3, Pages 204- 211
	<u>Planetary Science</u>	Investigation 3, Part 2, Pages 94-98
	<u>Weather and Water</u>	Investigation 3, Part 2, Pages 97-102
Systems 6.1.2. Identify systems that are composed of subsystems (e.g., solar system, cell, ecosystems.)	<u>Environments (ecosystems)</u>	Investigation 1, Parts 1-2 Pages 8-19 FOSS Stories “What is an Ecosystem?” Pages 38-41
	<u>Models and Designs</u> ALL, such as	Investigation 2, Part 1-2, Pages 8-21
	<u>Water Planet</u>	Investigation 1, Part 1, Pages 50-58

	<p><u>Living Systems</u></p> <p><u>Force and Motion</u> ALL, such as</p> <p><u>Diversity of Life</u> (cells)</p> <p><u>Chemical Interactions</u></p> <p><u>Populations and Ecosystems</u> (ecosystems)</p>	<p>Investigation 1, Parts 1-3, Pages 51-70 FOSS Science Resources, Pages 2-13</p> <p>Investigation 1, Part 1, Pages 47-56</p> <p>Investigation 2, Part 1, Pages 72-78 Resources, Pages 8-9</p> <p>Investigation 9, Parts 1-4 Pages 282-312 Resources Book, Pages 63-72</p> <p>Investigation 3, Parts 1-3, Pages 90-107 Investigation 4, Parts 1-2 Pages 119-129 Investigation 7 Pages 210-218 Resources Book, Pages 8-41</p>
<p>Constancy and Change 6.1.3. Explain the connection between cause and effect in a system</p>	<p><u>Landforms</u></p> <p><u>Models and Designs</u></p> <p><u>Water Planet</u></p> <p><u>Populations and Ecosystems</u> (ecosystems)</p> <p><u>Earth History</u></p>	<p>Investigation 2, Part 2, Pages 8-22 Investigation 3, Part 1-3, Pages 8-24</p> <p>Investigation 2, Part 1-3, Pages 8-24 Investigation 3, Part 2, Pages 13-19</p> <p>Investigation 2, Parts 2-3, Pages 80-100</p> <p>Investigation 3, Parts 1-3, Pages 90-107 Investigation 4, Parts 1-2 Pages 119-129 Investigation 7 Pages 210-218 Resources Book, Pages 8-41</p> <p>Investigation 4, Part 3, Pages 138-140</p>

	<u>Force and Motion</u> entire kit, such as	Investigation 1, Part 1, Pages 47-56 Investigation 8, Parts 1-2 Pages 284-301
Form And Function <i>No benchmark expectations at this level</i>		

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Understandings About Scientific Inquiry 6.2.1. Explain the components of a scientific investigation (e.g., hypothesis, observation, data collection, data interpretation, communication or results, replicable)</p> <p>6.2.2. Select alternative methods of scientific investigation (e.g., library, internet, field work) to address different kinds of questions.</p>	<p><i>FOSS provides the opportunity to address this benchmark in ALL FOSS Modules because of the inquiry approach. See for example:</i></p> <p><u>Water Planet</u></p> <p><u>Living Systems</u></p> <p><u>Diversity of Life</u></p> <p><u>Planetary Science</u></p>	<p>Investigation 3, Part 1, Pages 125-135</p> <p>Investigation 3, part 3, Pages 136-141</p> <p>Investigation 6, Parts 1-2 Pages 186-197</p> <p>Investigation 5, Parts 1-4 Pages 154-173</p>
	<p><i>This benchmark is addressed in all FOSS modules in suggested end of module projects, as well as the CD-ROMS/ web sites designed specifically for each FOSS module used in class and out of class. See for example:</i></p> <p><u>Landforms</u></p> <p><u>Solar Energy</u></p>	<p>Investigation 5, Part 4, Pages 27-31 and www.fossweb.com</p> <p>Investigation 4, Part 4, Pages 32-33 and www.fossweb.com</p>

	<i>modules. See for example:</i> <u>Environments</u>	Investigation 5, Part 3, Pages 19-22
	<u>Levers and Pulleys</u>	Investigation 4, Part 1-2, Pages 8-20
	<u>Living Systems</u>	Investigation 2, Part 1, Pages 85-98
	<u>Variables</u>	Investigation 1, Part 1-3, Pages 8-27
	<u>Chemical Interactions</u>	Investigation 2, Parts 1-2 Pages 72-81
	<u>Force and Motion</u>	Investigation 1, Part 1-2, Pages 47-62 CD-ROM/Web Site
	<u>Planetary Science</u>	Investigation 5, Part 2-4, Pages 158-173

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Properties Of Matter 6.3.1. Organize materials according to similar properties (e.g., physical, chemical)	<u>Levers and Pulleys</u>	Investigation 2, Part 1, Pages 8-13
	<u>Mixtures and Solutions</u>	Investigation 1, Part 1, Pages 8-15
	<u>Food and Nutrition</u> ALL, such as	Investigation 1, Part 1-2, Pages 8-20
	<u>Chemical Interactions</u> ALL, such as	Investigation 2, Parts 1-2 Pages 72-81 Investigation 9, Parts 1-4 Pages 282-312 Resources Book Pages 3-13, 90-91 CD-ROM/Web Site
	<u>Earth History</u>	Investigation 8, Part 1, Pages 254-258 CD-ROM/Web Site

		FOSS Resource Book “Microorganism guide” Pages 4-7 “Bestiary of Insects” Pages 10-14
Organisms And Their Environments <i>No benchmark expectations at this level</i>		
Genetics And Reproduction 6.4.2. Explain why reproduction is necessary for the continuation of the species (e.g., asexual, sexual)	<u>Diversity of Life</u>	FOSS Resource Book “Life on Earth” Page 23 “The Lowly Paramecium” Page 26

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Weather, Seasons, and Climate 6.5.1. Identify adverse weather conditions and how humans prepare for them	<u>Water Planet</u>	Investigation 4, Part 2, Pages 198-203 FOSS Science Resources, Pages 71-79
	<u>Weather and Water</u>	Investigation 1, Parts 1-2 Pages 43-56 FOSS Resources Book “Severe Weather” Pages 69-76
Characteristics Of The Earth 6.5.2. Explain how rocks are formed (e.g., melting, cooling, metamorphism, combinations of minerals) 6.5.3. Describe the characteristics of the layers of the Earth (i.e., crust, mantle, core)	<u>Earth History</u>	Investigation 4, Part 5-6, Pages 150-162 Investigation 5, Part 3, Pages 183-187 Investigation 8, Part 1-2, Pages 254-265 FOSS Resource Book “The Story of Wrightwood Marble” Pages 93-94
	<u>Landforms</u>	FOSS Stories “Shapes of the Earth” Pages 22-30
	<u>Earth History</u>	FOSS Resource Book “Destroying and

		Reconstructing the Earth” Pages 100-102
The Solar System 6.5.4. Identify the basic characteristics (e.g., composition, rings) of objects (e.g., planets, sun, small bodies) in the solar system	<u>Solar Energy</u>	FOSS Stories “The Sun” Pages 1-7 “Living with a Star” Pages 40-44
	<u>Water Planet</u>	Investigation 1, Part 1, Pages 50-58 FOSS Science Resources, Pages 1-13
	<u>Planetary Science</u>	Investigation 10, Part 2-3 Pages 318-324 FOSS Resource Book “The Solar System in a Nutshell” Pages 84-89

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Technological Design 6.6.1. Identify examples of how technologies have evolved 6.6.2. Design a product or solution to a problem given constraints (e.g., limits of time, costs, materials and environmental factors)	<u>Models and Designs</u>	FOSS Science Stories “Early Autos” Pages 25-28
	<u>Variables</u>	FOSS Science Stories “Experimental Design” Pages 18-20 “Flingers” Pages 32-33
	<u>Electronics</u>	FOSS Resource Book “Transistor: An Electronic Landmark” Pages 34-36
	<u>Models and Designs</u>	Investigation 3, Part 1-3, Pages 8-23 Investigation 4, Parts 1-3 Pages 6-20
	<u>Force and Motion</u>	Investigation 8, Part 2, Pages 294-301
	<u>Planetary Science</u>	Investigation 7, Parts 1-5 Pages 218-237

6.6.3. Explain the relationship between science and technology	<u>Models and Designs</u>	Investigation 4, Part 1, Pages 6-10
	<u>Variables</u>	FOSS Stories “Airplane Basics” Pages 15-17 “Experimental Design” Pages 18-20
	<u>Electronics</u>	FOSS Resource Book “Transistor: An Electronic Landmark” Pages 34-36

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science And Environmental Issues 6.7.1. Explain how natural hazards affect populations, resources, and the environment (e.g., floods, storms, hurricanes, volcanoes, earthquakes)	<u>Landforms</u>	Investigation 2, Part 1-2, Pages 8-22 Investigation 3, Part 1-3, Pages 8-24
	<u>Solar Energy</u>	FOSS Stories “The Sun, the Ocean and the Weather” Pages 22-28
6.7.2. Explain how recycling and conservation affect populations, resources, and the environment	<u>Water Planet</u>	Investigation 4, Part 2, Pages 198-203 FOSS Science Resources, Pages 70, 74, 77-78
	<u>Weather and Water</u>	Investigation 1, Parts 1-2 Pages 43-56 FOSS Resources Book “Severe Weather” Pages 69-76
	<u>Electronics</u>	FOSS Resource Book “Say Greeeeen” Pages 18-21
	<u>Populations and Ecosystems</u>	Investigation 4, Parts 1-2 Pages 119-129 Investigation 7 Pages 210-218 FOSS Resources Pages 8-13, 25-41

		CD-ROM/Web Site
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Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
People in Science 6.8.1. Identify various settings in which scientists may work alone or in a team (e.g., industries, laboratories, field work)	<u>Models and Designs</u>	Investigation 1, Part 1, Pages 8-17
	<u>Water Planet</u>	FOSS Science Resources, Pages 15, 18-19
	<u>Planetary Science</u>	Investigation 5, Part 1 Pages 154-157 FOSS Resource Book “The Controversy about Lunar Crater Formation” Pages 59-62 CD-ROM/Web Site
Scientific Knowledge 6.8.2. Identify scientific advances that have resulted in new ideas and further-advances	<u>Populations and Ecosystems</u>	Investigation 2, Part 2 Pages 76-79 FOSS Resources Pages 8-13
	<u>Models and Designs</u>	FOSS Stories “Scientists and Models” Pages 5-10 “On the Line” Pages 33-36 “Smart Cars and Space Planes” Pages 44-47
	<u>Variables</u>	FOSS Stories “Swinging through History” Pages 8-9
	<u>Mixtures and Solutions</u>	FOSS Stories “What is Matter Made Of” Pages 25-28
	<u>Chemical Interactions</u>	Investigation 2, Parts 1-2 Pages 72-81 FOSS Resources Pages 3-8 CD-ROM/ Web Site
	<u>Electronics</u>	FOSS Resources Book

		"Transistor: An Electronic Landmark" Pages 34-36
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Seventh Grade

Note that the FOSS Middle School modules each have a specially designed CD-ROM included; the information on the CD-ROM is now also available on the FOSS Middle School section of the FOSS web site, www.fossweb.com. The CD-ROM is not an add-on, but an integral part of the FOSS Middle School courses, so it is cited in this correlation (as “CD-ROM/ Web Site”) under each kit title.

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models 7.1.1. Explain how models can be used to illustrate scientific principles (e.g., osmosis, cell division)	<u>Human Brain and Senses</u> <u>Weather and Water</u> <u>Planetary Science</u> <u>Diversity of Life</u> <u>Populations and Ecosystems</u>	Investigation 3, Part 3, Pages 106-110 Investigation 5, Part 2, Pages 161-164 Investigation 3, Part 2, Pages 97-102 Investigation 3, Part 2, Pages 94-98 Investigation 6, Part 3 Guard cells/stomates Page 203 Investigation 3, Parts 1-3 Pages 90-107 Resources Book “Biosphere 2” Pages 8-13
Systems 7.1.2. Identify the components subsystems (e.g., tissues, organs, living and nonliving things) within a system (e.g., body systems, ecosystems)	<u>Human Brain and Senses</u> <u>Populations and Ecosystems</u> <u>Diversity of Life</u> <u>Electronics</u>	Investigation 2, Parts 1-3, Pages 67-83 Investigation 2, Parts 1-2, Pages 70-79 Investigation 3, Parts 1-3, Pages 90-107 CD-ROM/Web Site Investigation 4, Part 2 Pages 137-141 CD-ROM/Web Site Investigation 1, Parts 1-3, Pages 55-65
Constancy and Change 7.1.3. Identify examples	<u>Human Brain and Senses</u>	Investigation 7, Part 1-3, Pages 210-225

	<u>Ecosystems</u>	Pages 210-217
	<u>Force and Motion</u>	Investigation 8, Part 2, Pages 294-301

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Properties Of Matter <i>No benchmark expectations at this level</i>		
Force And Motion <i>No benchmark expectations at this level</i>		
Forms Of Energy <i>No benchmark expectations at this level</i>		
Energy Transfer and Transformation 7.3.1. Explain how forms of energy can be transferred. (e.g., photosynthesis, metabolism, battery)	<u>Populations and Ecosystems</u> <u>Chemical Interactions</u> <u>Electronics</u>	Investigation 5, Parts 1-4, "Finding the Energy" Pages 12-169 Investigation 5, "Energy Transfer" Parts 1-3 Pages 155-171 CD-ROM/Web Site Investigation 1, Part 1-3, Pages 56-79
Vibrations and Waves <i>No benchmark expectations at this level</i>		

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Structure and Function 7.4.1. Explain the functions of the cell (e.g., growth, metabolism, reproduction, photosynthesis, response)	<u>Diversity of Life</u>	Investigation 4, Part 1-2, Pages 133-141 FOSS Resource Book "Cell: The Basic Unit of Life" Pages 27-30 CD-ROM/Web Site
7.4.2. Identify levels of organization in living	<u>Populations and Ecosystems</u> <u>Diversity of Life</u>	Investigation 9, Part 1-2, Pages 262-291 Investigation 3, Part 1-3, Pages 103-122

systems (e.g., cells, tissues, organs, organ systems, organisms, ecosystems)	<u>Populations and Ecosystems</u>	Investigation 4, Part 1-2, Pages 133-141 Investigation 2, Part 1-2, Pages 70-79
Genetics And Reproduction 7.4.3. Identify the characteristics of reproduction (e.g., sexual, asexual)	<u>Diversity of Life</u> <u>Populations and Ecosystems</u>	Investigation 7, Part 1-2, Pages 219-229 FOSS Resource Book “The Lowly Paramecium” Page 26 “Flower to Seeds” Pages 40-44 Investigation 1, Part 1-3, Pages 41-59
Interdependence Among Organisms 7.4.4. Identify interactions among organisms and their environment (e.g., competition, mutualism, predator/prey, consumers, producers)	<u>Populations and Ecosystems</u>	Investigation 4, Part 1-2, Pages 119-129 Investigation 5, Part 1-4, Pages 142-169 Investigation 7, Part 1, Pages 210-217 FOSS Resource Book “Tropic Levels” Pages 17-21 CD-ROM/Web Site
Diversity and Unity Among Organisms 7.4.5. classify organisms (e.g., taxonomic groups) 7.4.6. Explain how different adaptations help organisms survive	<u>Diversity of Life</u> <u>Populations and Ecosystems</u> <u>Human Brain and Senses</u> <u>Diversity of Life</u>	Investigation 1, Part 1-2, Pages 43-63 FOSS Resource Book “Taxonomic Description of Life” Page 16 “Taxonomy” Page 17 “Kingdoms of Life” Pages 65-70 Investigation 8, Part 1-2, Pages 228-243 Resources Book “Adaptations” Pages 42-45 CD-ROM/Web Site Investigation 2, Part 2-3, Pages 74-83 Investigation 8, Part 1, Pages 239-243 Investigation 9, Part 2, Pages 278-285

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Weather, Seasons, and Climate 7.5.1. Identify the factors (e.g., latitude, altitude, mountains, bodies of water) that affect the Earth’s climate</p> <p>7.5.2. Explain how seasons affect organisms (e.g., hibernation, photoperiodism, migration)</p>	<p><u>Weather and Water</u> Throughout, such as</p> <p><u>Planetary Science</u></p> <p><u>Populations and Ecosystems</u></p> <p><u>Diversity of Life</u></p>	<p>Investigation 9, Part 1-4, Pages 296-318 Resources Book Pages 12-19 CD-ROM/Web Site</p> <p>Investigation 2, Parts 1-2 Pages 64-77</p> <p>Resources Book “Seasons” Page 23</p> <p>Resources Book Page 53</p>
<p>Characteristics Of The Earth 7.5.3. Identify the Earth’s renewable and nonrenewable resources (e.g., solar wind, fossil fuels, water, soil, metals)</p>	<p><u>Electronics</u></p> <p><u>Weather and Water</u></p> <p><u>Chemical Interactions</u></p>	<p>FOSS Resource Book “ Electricity Sources and Safety” Pages 12-13</p> <p>Investigation 7, Parts 1-2 Pages 232-244 Investigation 9, Parts 1-4 Pages 296-320 Resources Book Pages 45-47, 63-66 CD-ROM/Web Site</p> <p>Resources Book Pages 3-13, 73-75</p>
<p>The Solar System 6.5.4. Identify the basic characteristics (e.g., composition, rings) of objects (e.g., planets, sun, small bodies) in the solar system</p>	<p><u>Planetary Science</u> ALL, such as</p>	<p>Investigation 4, Part 1-4, Pages 120-140 Investigation 5, Part 1-7, Pages 154-182 Investigation 8, Part 1-4, Pages 250-270 FOSS Resource Book “The Solar System in a Nutshell” Pages 84-89 CD-ROM/Web Site</p>

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Technological Design <i>No benchmark expectations at this level</i>		
Technology and Society 7.6.1. Identify ways in which technology has influenced the course of history and improved the quality of life 7.6.2. Identify technologies (e.g., communication, agriculture, information processing, transportation) that are influenced by societies 7.6.3. Identify intended benefits and unintended consequences that result from the development and use of technologies	<u>Electronics</u>	Investigation 4, Part 1-2, Pages 143-152
	<u>Planetary Science</u>	Investigation 2, Part 1-2, Pages 64-77
	<u>Planetary Science</u>	Investigation 3, Part 4, Pages 1-4-109
	<u>Electronics</u>	Investigation 4, Part 2, Pages 149-151
	<u>Weather and Water</u>	Investigation 9, Part 4, Pages 315-318 FOSS Resource Book "Is the Earth Getting Warmer?" Pages 63-66
	<u>Planetary Science</u>	Investigation 7, Parts 1-5 "Landing on the Moon" Pages 219-237 Resources Book Pages 74-79, 90-96 CD-ROM/Web Site

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science and Personal Health 7.7.1. Explain how science affects personal health (e.g., injury prevention, immunization, organ transplant, medical scanning devices)	<u>Force and Motion</u>	Investigation 8, Part 2, Pages 294-301
	<u>Human Brain and Senses</u>	Investigation 5, Parts 1-4 Pages 152-175 Resources Book Pages 3-20 CD-ROM/Web Site

<p>7.7.2. Identify the factors (e.g., pollution, heredity, diet, virus, bacteria, parasite) that may result in disease</p>	<p><u>Chemical Interactions</u></p> <p><u>Populations and Ecosystems</u></p> <p><u>Diversity of Life</u></p> <p><u>Chemical Interactions</u></p>	<p>Resources Book Pages 7-8</p> <p>Investigation 9, Part 2, Pages 270-275</p> <p>Investigation 7, Part 1, Pages 210-217 FOSS Resources Book "Kingdoms of Life" Pages 65-69</p> <p>Resources Book Pages 7-8</p>
<p>Science And Environmental Issues 7.7.3. Explain how overpopulation affects organisms, resources, and environments (e.g., depletion of food resources, habitat availability, increased loss due to disease, parasites and predators)</p>	<p><u>Populations and Ecosystems</u></p>	<p>Investigation 6, Part 1-3, Pages 179-197 Resources Book Pages 22-24 CD-ROM/Web Site</p>
<p>Science and Social Issues Explain the impact of science on food technology (e.g., preservatives, packaging, genetically modified organisms)</p>	<p><u>Diversity of Life</u></p> <p><i>Note that there are also nice readings on this topic in <u>Environments</u>, and <u>Food and Nutrition</u>, designed for Grades 5-6.</i></p>	<p>FOSS Resource Book "Kingdoms of Life" Pages 65-69</p>

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>People in Science 7.8.1. Explain how science is influenced by human qualities (e.g., reasoning, insightfulness, creativity, life-long learning)</p>	<p><i>This benchmark is addressed in information and readings about people who do science THROUGHOUT all of the FOSS modules. See for example:</i> <u>Planetary Science</u></p>	<p>FOSS Resource Book "Eratosthenes: The First Person to Measure Earth" Pages 52-53 "The Controversy about</p>

	<p><u>Chemical Interactions</u></p> <p><u>Earth History</u></p>	<p>Lunar Crater Formation” Pages 59-62</p> <p>Investigation 2, Parts 1-2 Pages 72-74 Resources Book Pages 3-8, 69-72,78-85 CD-ROM/Web Site</p> <p>Investigation 1, Part 1, Pages 40-48 Resources Book Pages 98-99</p>
<p>Scientific Knowledge 7.8.2. Explain the importance of keeping clear and accurate records of scientific investigations (e.g., Darwin’s research, DaVinci’s notebooks, Galileo’s notes, Goodall’s observations)</p>	<p><u>Earth History</u></p> <p><u>Force and Motion</u></p> <p><u>Populations and Ecosystems</u></p> <p><u>Chemical Interactions</u></p>	<p>Investigation 2, Part 1, Pages 60-63 Resources Book Pages 50-54</p> <p>Investigation 7, Part 3, Pages 268-272</p> <p>Investigation 2, Part 2 Pages 76-79 Resources Book Pages 46-55</p> <p>Resources Book Pages 3-8, 69-72,78-85 CD-ROM/Web Site</p>

Eighth Grade

Note that the FOSS Middle School modules each have a specially designed CD-ROM included; the information on the CD-ROM is now also available on the FOSS Middle School section of the FOSS web site, www.fossweb.com. The CD-ROM is not an add-on, but an integral part of the FOSS Middle School courses, so it is cited in this correlation (as “CD-ROM/ Web Site”) under each kit title.

Standard 1: Students understand the unifying concepts and processes of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Models <i>No benchmark expectations at this level</i>		
Systems 8.1.1. Organize changes (e.g., patterns, cycles) that occur sequentially in systems	<u>Planetary Science</u> <u>Weather and Water</u>	Investigation 3, Parts 1-2 Pages 89-109 Investigation 9, Part 1-4, Pages. 283-301 Investigation 3, Part 2, Pages 97-102 Investigation 7, Parts 1-2 Pages 232-244 CD-ROM/Web Site
Constancy and Change <i>No benchmark expectations at this level</i>		
Form And Function <i>No benchmark expectations at this level</i>		

Standard 2: Students use the process of science and inquiry.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Understandings About Scientific Inquiry 8.2.1. Explain how science advances through legitimate skepticism	<u>Planetary Science</u> <u>Populations and Ecosystems</u>	Investigation 2, Part 1-2, Pages 64-77 Investigation 5, Part 1-7, Pages 154-182 Resources Book Pages 47-53, 59-62 FOSS Resources Book “From Mendel to Human Genome’ Pages 46-51
Abilities Necessary To Do Scientific Inquiry 8.2.2 Use evidence to	<i>This benchmark is addressed throughout ALL FOSS Middle School</i>	

<p>generate descriptions, explanations, predictions, and models</p>	<p><i>Modules. See for example:</i> <u>Force and Motion</u></p> <p><u>Planetary Science</u></p> <p><u>Electronics</u></p> <p><u>Human Brain and Senses</u></p>	<p>Investigation 1, Part 1-2. Pages 47-62</p> <p>Investigation 5, Part 2-4, Pages 158-173</p> <p>Investigation 2, Part 3, Pages 101-103</p> <p>Investigation 7, Part 1-2, Pages 211-226</p>
<p>8.2.3. Use basic mathematics and statistics (e.g., operations, mean, median, mode, range, and estimation) to interpret quantitative data</p>	<p><i>This benchmark is addressed throughout ALL FOSS Middle School modules, and is especially evident in <u>Force and Motion</u>. See for example:</i> <u>Force and Motion</u></p> <p><u>Planetary Science</u></p>	<p>Investigation 1, Parts 1-3, Pages 47-66</p> <p>Investigation 2, Parts 1-3, Pages 78-99</p> <p>Investigation 3, Parts 1-3, Pages 111, 127</p> <p>Investigation 5, Parts 2-4 Pages 158-173</p> <p>Investigation 7, Part 4, Pages 232-235</p>
<p>8.2.4. Design and conduct a scientific investigation (e.g., making systematic observations, making accurate measurements, identifying and controlling variables)</p>	<p><i>This benchmark is addressed throughout ALL FOSS Middle School modules. See for example:</i> <u>Planetary Science</u></p> <p><u>Weather and Water</u></p> <p><u>Force and Motion</u></p> <p><u>Diversity of Life</u></p>	<p>Investigation 5, Parts 2-3, Pages 158-167</p> <p>Investigation 4, Part 1 Pages 121-130</p> <p>Investigation 1, Parts 1-2 Pages 47-62</p> <p>Investigation 8, Part 2 Pages 244-252</p>

Standard 3: Students understand the basic concepts and principles of physical science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Properties Of Matter 8.3.1. Identify elements and compounds</p>	<u>Chemical Interactions</u>	Investigation 2, Parts 1-2 Pages 72-81 Investigation 9, Parts 1-4 Pages 282-312 Resources Book Pages 3-15, 73-77, 90-101 CD-ROM/Web Site
8.3.2. Explain the relationship between phases of matter and temperature	<u>Chemical Interactions</u>	Investigation 7, Parts 1-5 Pages 206-234 Resources Book Pages 16-48 CD-ROM/Web Site
<p>Force And Motion 8.3.3 Interpret the effect of balanced and unbalanced forces on the motion of an object (e.g., convection currents, orbital motion, tides)</p>	<u>Force and Motion</u> throughout, such as <u>Weather and Water</u>	Investigation 6, Part 1-2, Pages 218-245 Investigation 5, Parts 1-3 “Convection” Pages 152-175 Resources Book Pages 32-33 CD-ROM/Web Site
8.3.4. Explain how all objects exert gravitational force and this force is affected by the distance between the masses of the objects	<u>Force and Motion</u> <u>Planetary Science</u>	Investigation 7, Part 1-3, “Gravity” Pages 256-272 Resources Book Pages 62-69 CD-ROM/Web Site Investigation 7, Parts 1-5 Pages 218-237 Investigation 9, Part 2 Pages 69-70, 97-100 CD-ROM/Web Site
<p>Energy Transfer and Transformation 8.3.5. Identify when heat can be transferred by conduction, convection, or radiation.</p>	<u>Weather and Water</u> throughout, such as	Investigation 4, Part 2 Pages 131-139 Investigation 5, Part 2-3, Pages 163-174 FOSS Resource Book “Heating the Atmosphere” Pages 22-26

	<u>Chemical Interactions</u>	Investigation 5, Parts 1-3 “Energy Transfer” Pages 155-171 Resources Book Pages 32-37 CD-ROM/Web Site
Vibrations and Waves 8.3.6. Explain the characteristic properties (e.g., wavelength, frequency) and behaviors (e.g., reflection, refraction) of waves	<u>Human Brain and Senses</u>	Investigation 3, Parts 1-3 Pages 92-110 Resources Book Pages 31-38 CD-ROM/Web Site

Standard 4: Students understand the basic concepts and principles of life science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Structure and Function <i>No benchmark expectations at this level</i>		
Genetics And Reproduction <i>No benchmark expectations at this level</i>		
Interdependence Among Organisms <i>No benchmark expectations at this level</i>		
Diversity and Unity Among Organisms <i>No benchmark expectations at this level</i>		
Diversity and Unity Among Organisms <i>No benchmark expectations at this level</i>		
Natural Selection and Biological Evolution 8.4.1. Identify the evidence of biological evolution. (e.g., adaptation, radiation, extinction) as found in the fossil record		

Standard 5: Students understand the basic concepts and principles of earth and space science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Weather, Seasons, and Climate 8.5.1. Explain how factors (i.e., fronts, winds, air masses, air pressure, humidity, temperature, location) affect weather</p>	<u>Weather and Water</u>	Investigation 8, Part 1-4, Pages 258-279 Investigation 9, Part 1-2, Pages 296-310 FOSS Resource Book ‘Where the Wild Wind Blows’ Pages 53-55
<p>Geologic Processes 8.5.2. Understand the rock cycle</p>	<u>Earth History</u>	Investigation 8, Part 1-4, Pages 254-275 Resources Book Pages 93-97 CD-ROM/Web Site
8.5.3. Explain the water cycle	<u>Weather and Water</u> throughout, such as	Investigation 7, Part 1-2, Pages 232-243 Investigation 9, Parts 3-4 Pages 311-320 CD-Rom/Web Site: “Cycles: Water Cycle”
8.5.4. Explain how landforms are changed (e.g., crustal deformation, volcanic eruption, deposition, weathering, erosion)	<u>Earth History</u> throughout, such as	Investigation 3, Part 4, Pages 110-112 Investigation 4, Part 1-3, Pages 127-162 FOSS Resource Book “Destroying and Reconstructing Earth” Pages 100-105
8.5.5 Identify evidence for plate tectonics theory (e.g., fit of continents, location of earthquakes, volcanoes, mid-ocean ridge, plate boundaries)	<u>Earth History</u>	FOSS Resources Book “Destroying and Reconstructing Earth” Pages 101-102 CD-ROM/Web Site
8.5.6 <u>Identify</u> a variety of methods (e.g., rock sequences, fossil correlation, radiometric dating) used to determine geologic time	<u>Earth History</u> throughout, such as	Investigation 5, Part 4, Pages 188-193 Investigation 6, Part 1-4, Pages 205-224 Investigation 7, Part 1-2, Pages 234-244 FOSS Resource Book “A Fossil Primer”

<p>8.5.7. Explain the changes Earth has undergone over geologic time (e.g., fossil record, plate tectonics, climate change, glaciation)</p>	<p><u>Earth History</u> throughout, such as</p> <p><u>Weather and Water</u></p>	<p>Pages 83-88</p> <p>Investigation 5, Part 4, Pages 188-193 Investigation 6, Part 3, Pages 215-219 Investigation 7, Part 2, Pages 241-243 Resources Book Pages 33, 37-41, 73-88</p> <p>Investigation 9, Parts 3-4 Pages 311-320 Resources Book Pages 63-66 CD-ROM/Web Site</p>
<p>Characteristics Of The Earth 8.5.8. Explain how phenomena on Earth (i.e., day, year, seasons, lunar phases, eclipses, tides) are related to the position and motion of the Sun, Moon, and Earth</p>	<p><u>Weather and Water</u></p> <p><u>Planetary Science</u></p>	<p>Investigation 3, Part 2, “Seasons and Sun” Pages 97-102 Resources Book Pages 17-19 CD-ROM/Web Site</p> <p>Investigation 3, Part 2, Pages 94-98 Investigation 9, Part 1-4, Pages 283-301 Resources Book Pages 32, 38 CD-ROM/Web Site</p>
<p>The Universe 8.5.9. Identify characteristics of stars (e.g., color, size, temperature, life cycle)</p> <p>8.5.10. Identify the composition (e.g., stars, galaxies) and scale of the universe</p>	<p><u>Planetary Science</u></p> <p><u>Planetary Science</u></p>	<p>Investigation 10, part 2 Pages 312-317</p> <p>FOSS Resource Book “Finding Planets Outside the Solar System” Pages 97-100</p>

Standard 6: Students understand the relations between science and technology.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
<p>Technology and Society <i>No benchmark expectations at this level</i></p>		

Standard 7: Students understand relations between science and personal, social, and environmental issues.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
Science and Social Issues 8.7.1. Explain the interaction of science and technology with social issues (e.g., mining, natural disasters)	<u>Weather and Water</u>	Investigation 1, Part 1 Pages 43-47 Investigation 7, Part 2 Pages 240-244 FOSS Resources Book Pages 3-4, 63-66, 67-76 CD-ROM/Web Site
	<u>Planetary Science</u>	Investigation 7, Part 1 Pages 218-221
	<u>Populations and Ecosystems</u>	Investigation 7, Part 1, Pages 210-217

Standard 8: Students understand the history and nature of science.

Benchmark Expectations	FOSS Module	Investigation/Activity Page Number
People in Science <i>No benchmark expectations at this level</i>		
Scientific Knowledge 8.8.1. Explain how many people from various cultures have made important contributions to the advancement of science and technology	<i>This standard is carefully addressed through class presentations and readings about people from a variety of backgrounds who have made important contributions. See for example:</i> <u>Force and Motion</u>	FOSS Resources Book "Aristotle, Galileo and Newton" Pages 50-51
	<u>Planetary Science</u>	FOSS Resources Book "The Accidental Discovery of America" Pages 47-51 "Eratosthenes: the First Person to Measure the Earth" Pages 52-53 "Gene Shoemaker" Pages 71-73
	<u>Weather and Water</u>	FOSS Resources Book Pages 20-21

	<u>Populations and Ecosystems</u>	FOSS Resources Book "From Mendel to Human Genome" Pages 46-55
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