



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

Correlation with

**Indiana Core Standards  
for Science**



# Correlation of the Indiana Core Standards for Science with the **FULL OPTION SCIENCE SYSTEM (FOSS)**

The following correlation of the Indiana Core Standards for Science to the Full Option Science System (FOSS) is to show *representative* examples of investigations and activities that address listed standards and their concepts. A citation does not reflect *all* of the investigations or activities from FOSS that might address a particular standard or concept.

Note: This correlation was updated June-July, 2008 to reflect the current Indiana Core Standards for Science and the newest modules available from FOSS (copyright 2009). The page numbering in the newest modules reflects consecutive pages starting from the beginning of the teacher guide. In the existing FOSS teacher guides, each folio begins again with Page 1. Another change is in the student readers: existing student reading books for each module are called “FOSS Science Stories”, while the student readers developed to go with the 2009 modules are called “FOSS Resources” (just like FOSS Middle School readers developed for the Green, Grades 6-8 modules.) Columns with references to both types of student reading resource will reflect *both* types of numbering system and *both* types of reader titles.

# Grade Kindergarten

## The Nature of Science

### Asking Questions and Making Observations

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Ask open-ended questions about events and processes in the natural world and make careful observations in an effort to answer these questions.	This standard is addressed throughout ALL FOSS Kindergarten modules. See for example: <b>Wood and Paper</b> , Investigation 3, Parts 3-5 <u>Wood and Paper FOSS Science Stories</u> <b>Trees</b> , Investigation 1, Parts 1-8 <b>Animals Two by Two</b> , Investigation 1, Part 3 <b>Fabric</b> , Investigation 2, Parts 1-3	Pages 20-32 Pages 3-18 Pages 7-37 Pages 22-25 Pages 7-21

## The Nature of Technology

### Construction

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Create structures using natural or human-made materials and simple tools. Examine how component parts of the structures can be disassembled and reassembled into new and different structures. Describe the physical properties of these structures in words and pictures.	<b>Wood and Paper</b> , throughout, such as Investigation 2, Parts 1-4 Investigation 4, Part 2 Investigation 5, Parts 1-3 Science Journal Questions <b>Fabric</b> , Investigation 1, Parts 3-6 Investigation 1 Language Extensions Science Journal Questions <b>Animals Two by Two</b> , Investigation 1, Part 3 Language Extensions	Pages 8-23 Pages 14-18 Pages 8-21 Duplication Master 19 Pages 16-33 Page 34 Duplication Master 13 Pages 22-25 Page 30

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Describe objects in terms of the materials that compose them and of their physical properties. Draw pictures that portray the features of each object described.	This standard is addressed throughout ALL FOSS Kindergarten modules. See for example: <b>Wood and Paper</b> , ALL, such as Investigation 1, Parts 1-2 Investigation 3, Parts 1-4 Science Journal Questions <b>Fabric</b> , Investigation 1, Parts 1-3 Science Journal Questions	Pages 8-19 Pages 8-25 Duplication Master 19 Pages 6-19 Duplication Master 13

### Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. Experiment with ways in which objects can be physically changed. Describe and draw pictures to show how changing the object makes it the same or different from a	This standard is addressed throughout ALL FOSS Kindergarten modules. See for example: <b>Wood and Paper</b> , Investigation 2, Parts 1-4 Investigation 4, Parts 1-2 Investigation 5, Parts 1-2 Science Journal Questions	Pages 8-23 Pages 8-18 Pages 8-17 Duplication Master 19

similar unchanged object of the same materials.	<b>Fabric</b> , Investigation 2, Parts 1-3 Science Journal Questions	Pages 7-21 Duplication Master 13
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## Motion

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3C. Experiment with ways in which different objects can move and compare their movement.	<b>Wood and Paper</b> , Investigation 1, Parts 4-5 <b>Animals Two by Two</b> , Investigation 2, Part 2 Investigation 4, Part 3 <b>Trees</b> , Tools for Observing Weather Folio (pinwheel, wind vane)	Pages 24-32  Pages 14-17 Pages 16-19 Pages 18-24

## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Observe that the sun warms the soil, air, and water and raise questions about the differences in their warmth.	<u>Trees FOSS Science Stories</u> Trees, Investigation 3, Parts 8-9 Tools for Observing Weather folio <i>FOSS Web Site: Air and Weather simulation</i>	Pages 14-24 Pages 32-38 Pages 2-13 <a href="http://www.fossweb.com">]www.fossweb.com</a>

## Earth and Space Science

### Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. Observe light and dark in a day-night cycle and identify the changes as a pattern. Observe that weather changes occur from day to day and weather patterns occur from season to season.	<b>Trees</b> , Investigation 3, "Trees Through Seasons" <u>Trees FOSS Science Stories</u> Tools for Observing Weather folio	Pages 10-40 Pages 14-24 Pages 6-17

## Life Science

### Structures and Functions of Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5. Examine and classify living and nonliving organisms in order to compare and contrast their characteristics. Observe plants and animals and describe their similarities and differences.	<b>Trees</b> , throughout, such as Investigation 1, Part 1 Investigation 2, Parts 2-3 Investigation 3, Parts 1-2 <u>Trees FOSS Science Stories</u> Science Journal Questions <b>Wood and Paper</b> Investigation 1, Part 1 Science Journal Questions <u>Wood and Paper FOSS Science Stories</u> <b>Animals Two by Two</b> , throughout, such as Investigation 1, Part 4 Investigation 2, Parts 1-4 Investigation 3, Part 3 <u>Animals Two by Two FOSS Science Stories</u> Science Journal Questions	Pages 7-14 Pages 10-19 Pages 10-14 Pages 3-13 Duplication Master 32  Pages 8-14 Duplication Master 19 Pages 3-8, 13-24  Pages 26-29 Pages 9-24 Pages 17-20 Pages 3-20 Duplication Master 26

# Grade 1

## The Nature of Science

### Making and Recording Observations

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Make observations about the natural world through the use of tools. Draw pictures and write descriptions of the features of the objects or phenomena being studied.	This standard is addressed throughout ALL FOSS modules. See for example: <b>Air and Weather</b> , Investigation 2, Parts 2-4 and Air and Weather Journals <b>Solids and Liquids</b> , Investigation 3, Parts 1-4 <b>Insects and Plants</b> , Investigation 1, Parts 1-3 <b>Insects</b> , Investigation 2, Parts 1-3 <b>Plants and Animals</b> , Investigation 3, Parts 1-3 <b>Pebbles, Sand, and Silt</b> , Investigation 2, Parts 1-3	Pages 14-27  Pages 8-27 Pages 57-76 Pages 8-24 Pages 122-140  Pages 8-23

## The Nature of Technology

### Machines

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Use tools to make a simple machine out of common objects such as paper, cardboard, wood, or plastic. Put together parts and demonstrate that these can be used to do things that could not be done with the individual parts alone. Explain how tools are used to complete specific tasks every day.	<b>Air and Weather</b> , throughout, such as Investigation 1, Parts 3-6 Investigation 3, Parts 1-5 <u>Air and Weather FOSS Science Stories</u> <b>Balance and Motion</b> , Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 <u>Balance and Motion FOSS Science Stories</u> <b>Solids and Liquids</b> Investigation 1, Part 3 Investigation 3, Parts 1-4	Pages 17-38 Pages 8-33 Pages 14-17  Pages 8-25 Pages 6-25 Pages 14-17  Pages 21-24 Pages 8-27

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Identify materials as solids or liquids and describe the observable properties of each. Observe a variety of objects and identify their components. Use magnifiers to show that not all objects can be seen with the naked eye and that variations can exist within objects.	<b>Solids and Liquids</b> , ALL, such as Investigation 1, Parts 1-3 Investigation 2, Parts 1-3 Investigation 3, Parts 1-4 Investigation 4, Part 3 <u>Solids and Liquids FOSS Science Stories</u> <b>Pebbles, Sand, and Silt</b> , Investigation 1, Parts 1-4 <u>Pebbles, Sand and Silt FOSS Science Stories</u> <u>Peter and the Rocks</u> (book in kit)	Pages 8-24 Pages 10-27 Pages 8-27 Pages 23-27 Pages 3-24  Pages 8-25 Pages 8-13

### Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. Observe and describe that	<b>Solids and Liquids</b> ,	

water and other materials can change from liquid to solid and back again. Observe that liquids left in an open container decrease in amount over time, but the amount of liquid in a closed container does not change.	Investigation 4, Parts 1-3 <u>Solids and Liquids FOSS Science Stories</u> <b>Air and Weather</b> Investigation 1, Part 5 Investigation 2, Part 4	Pages 7-27 Pages 14-23  Pages 27-33 Pages 24-27
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## Motion

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3C. Change how an object is moving by giving it a push or a pull. Investigate and explain how objects move at different rates and in different ways. Observe and show that objects near earth fall to the ground unless something holds them up.	<b>Air and Weather</b> Investigation 1, Part 3 Investigation 3, Parts 1-5 <b>Balance and Motion</b> , throughout, such as Investigation 1, Parts 1-4 Investigation 2, Part 1-3 Investigation 3, Parts 1-3 <u>Balance and Motion FOSS Science Stories</u>	Pages 17-20 Pages 8-33  Pages 8-28 Pages 8-25 Pages 6-25 Pages 8-31

## Earth and Space Science

### Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. Observe that the sun and moon are objects in the sky that have patterns of movement. Recognize that the sun and moon appear to rise and set in a regular pattern.	<b>Air and Weather</b> , Investigation 4, Parts 1-3	Pages 8-24

### Earth Structures

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4B. Observe that the sun provides warmth and light to the earth and is necessary for life.	<b>Air and Weather</b> , Investigation 2, Parts 1-2 Investigation 4, Part 2 <u>Air and Weather FOSS Science Stories</u> <b>Insects and Plants</b> , Investigation 2, Parts 1-3	Pages 8-19 Pages 12-18 Pages 7-13, 21 Pages 93-117

## Life Science

### Structures and Functions of Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5. Describe the different resources that living organisms need for survival. Identify natural earth materials, such as rocks, and give examples of how these help to sustain plant and animal life. Explain that animals and plants obtain food in different ways.	<b>Insects and Plants</b> , throughout, such as Investigation 3, Parts 1-3 <u>Insects and Plants Resources</u> <b>Insects</b> , throughout, such as Investigation 1, Part 1 Investigation 3, Part 2 <u>Insects FOSS Science Stories</u> <b>Pebbles, Sand, and Silt</b> , Investigation 3, Parts 1-5	Pages 132-152 Pages 3-7  Pages 8-25 Pages 12-20 Pages 3-7  Pages 8-29

	<p>Investigation 4, Parts 1-3  <u>Pebbles, Sand and Silt FOSS Science Stories</u>  <b>Plants and Animals,</b>  Investigation 1, Parts 1-3  Investigation 3, Parts 1-3  Investigation 4, Part 2  <u>Plants and Animals Resources</u>  <b>New Plants,</b> Investigation 1, Part 2  Investigation 2, Parts 1-3  <u>New Plants FOSS Science Stories</u></p>	<p>Pages 8-25  Pages 16-25    Pages 52-74  Pages 122-140  Pages 160-166  Pages 3-15, 21-53  Pages 13-22  Pages 8-28  Pages 3-7</p>
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# Grade 2

## The Nature of Science

### Comparing Observations

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Observe and measure properties of objects and substances using appropriate tools. Compare observations in terms of shape, size, weight, color, and number.	This standard is addressed throughout ALL FOSS modules. See for example: <b>Pebbles, Sand, and Silt</b> , Investigation 1, Parts 1-3 <b>Plants and Animals</b> , Investigation 3, Parts 1-3 including student Science Notebook <b>Balance and Motion</b> , Investigation 3, Parts 1-3 <b>Air and Weather</b> , Investigation 2, Part 2 <b>Solids and Liquids</b> , Investigation 2, Parts 1-3	Pages 8-21 Pages 122-140  Pages 6-25 Pages 14-19 Pages 10-27

## The Nature of Technology

### Design Process

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Understand that tools, such as paper, pencils, or computer programs, are used to gain more information about objects and/or to design and build things.	<b>Balance and Motion</b> , Investigation 1, Part 4 <b>Pebbles, Sand and Silt</b> , Investigation 2, Parts 1-3 <b>Solids and Liquids</b> , Investigation 1, Part 3  Students use the computer to access <a href="http://www.fossweb.com">www.fossweb.com</a> for simulations and additional information for ALL FOSS modules.	Pages 24-28  Pages 8-23 Pages 21-24

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Describe ways in which materials can change form without being lost. Describe different types of earth materials that are useful, in either natural or modified form, in meeting human needs. Identify some resources that can be used over and over again, and others that have a limited life span.	<b>Pebbles, Sand and Silt</b> , throughout, such as Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 <u>Pebbles, Sand and Silt FOSS Science Stories</u> <b>Solids and Liquids</b> , Investigation 4, Parts 1-3 <b>Plants and Animals</b> , Investigation 1, Parts 1-3 Investigation 3, Parts 1-2 <u>Plants and Animals Resources</u>	Pages 8-23 Pages 7-27 Pages 3-7, 10-25 Pages 7-27 Pages 52-74 Pages 122-134 Pages 3-15

### Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. Observe and describe the ways in which the properties of a sample of water (including amount) change or stay the	<b>Pebbles, Sand and Silt</b> Investigation 2, Parts 3-4 <b>Solids and Liquids</b> Investigation 2, Parts 1-3	Pages 18-29  Pages 10-27

same as it is heated and cooled and enters different states (i.e., liquid, solid, gas). Observe the properties of liquids other than water and describe how the liquids behave in response to changes.	Investigation 4, Parts 1-3 <u>Solids and Liquids FOSS Science Stories</u>	Pages 7-27 Pages 8-24
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## Motion

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3C. Change the motion of objects by applying contact forces and forces that act at a distance. Determine how different types of materials respond to magnetic and electrical forces.	<b>Balance and Motion</b> , ALL, such as Investigation 2, Parts 1-3 And Extensions Investigation 3, Parts 1-3 And Extensions <u>Balance and Motion FOSS Science Stories</u>	Pages 8-25 Pages 26-28 Pages 6-25 Pages 26-28 Pages 10-35

## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Describe ways in which people use different energy sources in daily life and work.	<b>Plants and Animals</b> Investigation 4, Part 2 <u>Plants and Animals Resources</u>	Pages 160-166 Pages 24-25

# Earth and Space Science

## Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. Observe and describe events in nature that have repeating patterns. Chart their occurrences and predict their recurrence.	<b>Plants and Animals</b> , Investigation 1, Parts 1-3 <u>Plants and Animals Resources</u> <b>New Plants</b> , Investigation 1, Parts 1-3 <b>Air and Weather</b> , Investigation 4, Parts 1-3 <u>Air and Weather FOSS Science Stories</u> <b>Insects</b> , Investigation 1, Parts 1-3 <u>Insects FOSS Science Stories</u> <b>Insects and Plants</b> , throughout, such as Investigation 3, Parts 1-3 <u>Insects and Plants Resources</u>	Pages 52-74 Pages 9-15 Pages 8-30 Pages 8-24 Pages 18-23 Pages 8-25 Pages 16-41  Pages 8-26 Pages 15-19, 37-56

## Earth Structures

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4B. Identify ways in which humans depend on their natural and constructed environments. Describe how humans have found ways to make some limited resources last longer or have replaced them with other resources. Classify human-caused changes to environments as	<b>Pebbles, Sand and Silt</b> , Investigation 3, Parts 1-5 Investigation 4, Parts 1-3 <u>Pebbles, Sand and Silt FOSS Science Stories</u> <b>Plants and Animals</b> , Investigation 1, Parts 1-2 Investigation 3, Parts 1-3 <u>Plants and Animals Resources</u> <u>New Plants FOSS Science Stories</u>	Pages 8-29 Pages 8-25 Pages 16-19  Pages 52-62 Pages 122-140 Pages 3-15, 21-46 Pages 3-7, 16-22

either harmful or helpful, depending on the circumstances.		
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## Life Science

### Structures and Functions of Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5. Give examples of adaptations that plants and animals have that allow them to thrive in specific environments. Describe ways in which animals are dependent on plants for shelter, nesting, and food.	<b>Plants and Animals</b> , throughout, such as Investigation 4, Part 2 <u>Plants and Animals Resources</u> <b>New Plants</b> , throughout, such as Investigation 1, Parts 1-3 <u>New Plants FOSS Science Stories</u> <b>Insects and Plants</b> , throughout, such as Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 <u>Insects and Plants Resources</u> <b>Insects</b> , throughout, such as Investigation 1, Parts 1-3 <u>Insects FOSS Science Stories</u>	Pages 160-166 Pages 16-51  Pages 8-30 Pages 12-15, 22-43  Pages 93-115 Pages 132-152 Pages 3-14  Pages 8-25 Pages 3-7, 22-41

# Grade 3

## The Nature of Science

### Reproducibility

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Work cooperatively to identify and investigate questions that can be examined using a fair test. Confirm that if an investigation is repeated, similar results are expected.	This standard is addressed throughout FOSS investigations. See for example: <b>Magnetism and Electricity</b> , Investigation 1, Part 3 Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 <b>Measurement</b> , throughout, such as Investigation 2, Parts 1-2 <b>Water</b> , Investigation 3, Parts 1-3 <b>Structures of Life</b> , Investigation 1, Parts 2-3 <b>Human Body</b> , Investigation 4, Parts 1-3	Pages 23-29 Pages 10-26 Pages 8-22  Pages 8-21 Pages 8-20 Pages 18-33 Pages 8-24

## The Nature of Technology

### Significance of Inventions

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Identify ways in which people use technology and tools in their daily life and work. Describe how recent inventions have significantly changed the way people live.	<b>Structures of Life</b> , Investigation 1, Parts 1-3 <b>Ideas and Inventions</b> , throughout, such as Investigation 2, Parts 1-2 Investigation 4, Part 2 <u>Ideas and Inventions FOSS Science Stories ALL</u> (This standard is the focus of the whole kit.) <b>Magnetism and Electricity</b> Investigation 4, Parts 1-3 <u>Magnetism and Electricity FOSS Science Stories</u> <b>Physics of Sound</b> , Investigation 2, Parts 1-3 <u>Physics of Sound FOSS Science Stories</u> <b>Measurement</b> , throughout, such as Investigation 2, Parts 1-3 Investigation 3, Parts 1-3 Investigation 4, Parts 1-2 <u>Measurement FOSS Science Stories</u>  <i>FOSS web site: <a href="http://www.fossweb.com">www.fossweb.com</a> "Ask a Scientist" and simulations</i>	Pages 8-33  Pages 8-19 Pages 14-17 Pages 1-40  Pages 8-22 Pages 12-33 Pages 8-24 Pages 11-20, 29-36  Pages 8-21 Pages 8-21 Pages 8-17 Pages 1-4,8-18,22-26

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Give examples of solids, liquids, and gases and identify the characteristics of each. Describe ways in which the properties of solids, liquids, and gases can be measured.	<b>Water</b> , throughout, such as Investigation 1, Parts 1-2 Investigation 3, Parts 1-4 <u>Water FOSS Science Stories</u> <b>Structures of Life</b> , Investigation 1, Parts 1-3 <b>Measurement</b> , Investigation 2, Parts 1-3	Pages 8-18 Pages 8-26 Pages 1-2, 8-16 Pages 8-33 Pages 8-21

	Investigation 3, Parts 1-3 Investigation 4, Parts 1-2 <b>Physics of Sound</b> Investigation 3, Parts 1-2 <u>Physics of Sound FOSS Science Stories</u> <b>Matter and Energy,</b> Investigation 3, Parts 1-3 “Matter”	Pages 8-21 Pages 8-17  Pages 8-19 Pages 19-20  Pages 132-160
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## Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. Demonstrate that the properties of materials can change, but not all materials respond in the same way to the same action. Observe and explain that when objects gain heat, evaporation and melting can occur; and that when objects lose heat, condensation and freezing can occur.	<b>Water</b> , Investigation 1, Part 2 Investigation 3, Parts 1-4 <u>Water FOSS Science Stories</u> <b>Measurement</b> , Investigation 4, Parts 1-2 <u>Measurement FOSS Science Stories</u> <b>Physics of Sound</b> Investigation 3, Parts 1-2 <b>Matter and Energy</b> , throughout, such as Investigation 4, Parts 1-2 “Changing Matter”	Pages 14-18 Pages 8-26  Pages 8-17 Pages 22-23  Pages 8-19  Pages 177-192

## Motion

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3C. Explain that an object is in motion when its position is changing. Demonstrate that objects move in different ways. Demonstrate that the earth pulls any object toward it without touching it by means of its gravitational attraction. Observe that wind is air in motion.	<b>Water</b> , Investigation 4, Part 2 (waterwheels) <b>Structures of Life</b> , Investigation 1, Parts 2-3 (balances) <u>Ideas and Inventions FOSS Science Stories</u> (gravity) <b>Physics of Sound</b> Investigation 1, Parts 1-3 Investigation 3, Parts 1-2 <u>Physics of Sound FOSS Science Stories</u> (vibration and movement of sound) <b>Sun, Moon and Stars</b> Investigation 1, Parts 1-2 Investigation 2, Parts 1-2 <u>Sun, Moon and Stars Resources</u>	Pages 14-18 Pages 18-33  Pages 33-38  Pages 8-29 Pages 8-19 Pages 6-31  Pages 47-67 Pages 82-100 Pages 1-11, 14-33, 48-50

## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Identify magnetism, light, and sound as forms of energy. Measure the force of attraction between magnets as the distance between them changes. Demonstrate that light travels in a straight line until it strikes an object, thus making a shadow. Show how a vibrating object makes the surrounding air vibrate and thus produces sound.	<b>Magnetism and Electricity</b> , throughout, such as Investigation 1, Parts 1-4 Investigation 2, Parts 1-4 <u>Magnetism and Electricity FOSS Science Stories</u> <b>Physics of Sound</b> , throughout, such as Investigation 1, Part 3 Investigation 2, Parts 1-3 <u>Physics of Sound FOSS Science Stories</u> <b>Ideas and Inventions</b> Investigation 4, Parts 1-3 <u>Ideas and Inventions FOSS Science Stories</u> <b>Sun, Moon and Stars</b>	Pages 8-34 Pages 8-29 Pages 12-19, 28-33  Pages 21-29 Pages 8-24 Pages 6-21, 22-28  Pages 8-21 Pages 23-32

	Investigation 1, Parts 1-2 Sun, Moon and Stars Resources	Pages 47-67 Pages 4-13
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## Earth and Space Science

### Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. Explain that the earth is part of a larger system that includes the sun, planets, various moons, and other smaller objects. Observe that the sun appears in different locations in the sky during the day. Observe that the moon appears a little different each day, but looks the same again about every four weeks.	<b>Sun, Moon and Stars</b> , throughout, such as Investigation 1, Parts 1-2 Investigation 2, Parts 1-2 <u>Sun, Moon and Stars Resources</u> <b>Ideas and Inventions</b> FOSS Science Stories	Pages 47-67 Pages 82-100 Pages 1-34 Pages 33-38

## Life Science

### Structure and Function in Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5A. Investigate and diagram the life cycle of a plant and an animal. Identify stages that are similar within the life cycles of organisms from the same group. Identify differences in the life cycles of organisms from different subgroups.	<b>Structures of Life</b> , throughout, such as Investigation 2, Parts 1-3 Investigation 3, Parts 1-4 <u>Structures of Life FOSS Science Stories</u>	Pages 8-22 Pages 8-30 Pages 1-5, 10-11, 20-21, 40-42

### Changes in Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5B. Give examples of characteristics in plants and animals that could be advantageous for survival and reproduction. Describe the fossil evidence that shows some kinds of plants and animals that once lived on the earth have disappeared but resemble plants and animals alive today.	<b>Structures of Life</b> , throughout, such as Investigation 1, Parts 1-2 Investigation 2, Parts 1-3 Investigation 3, Parts 1-2 Investigation 5, Parts 1-2 <u>Structures of Life FOSS Science Stories</u>  <b>Human Body</b> , Investigation 1, Part 3 Investigation 2, Parts 1-4 Human Body FOSS Science Stories	Pages 8-27 Pages 8-22 Pages 8-19 Pages 8-18 Pages 1-5, 10-44 (advantageous structures) 45-48 (fossils) Pages 8-25 Pages 8-25 Pages 1-13, 21-24

# Grade 4

## The Nature of Science

### Supporting Evidence

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Recognize that the results of repeated experiments may be different and be able to identify possible reasons for differences. Support findings and conclusions with data from investigations and print resources.	This standard is addressed throughout FOSS investigations. See for example: <b>Human Body</b> , Investigation 4, Parts 1-3 <b>Matter and Energy</b> , Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 <u>Matter and Energy Resources</u> <b>Ideas and Inventions</b> , Investigation 3, Parts 1-2 <b>Measurement</b> , Investigation 2, Parts 1-3 <b>Magnetism and Electricity</b> , Investigation 3, Part 3	Pages 8-24  Pages 132-160 Pages 177-201 Pages 43-46 Pages 8-17 Pages 8-21  Pages 23-29

## The Nature of Technology

### Engineering and Society

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Identify differences between the disciplines of science and engineering, and give reasons why clear communication is essential between scientists and engineers who work together. Describe situations in which engineering designs have failed despite steps having been taken to minimize the chances of failure.	<b>Ideas and Inventions</b> FOSS Science Stories <b>Human Body</b> FOSS Science Stories <b>Earth Materials</b> FOSS Science Stories <b>Matter and Energy</b> Investigation 1, Parts 1-3 <b>Matter and Energy</b> Resources <u>Physics of Sound</u> FOSS Science Stories  FOSS Web Site: <a href="http://www.fossweb.com">www.fossweb.com</a> "Ask a Scientist" section for each module	Pages 1-3,9-22,38-40 Pages 5-7,17-27 Pages 24-29  Pages 56-80 Pages 43-46 Pages 1-4,14,17-20,29-31,32-35

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Identify matter as anything that takes up space and has mass. Identify that all matter is made up of parts too small to be seen without magnification. Demonstrate that regardless of how parts of an object are assembled, the weight of the whole object is identical to the sum of the masses of the parts.	<b>Matter and Energy</b> , Investigation 3, Parts 1-3 "Matter" Matter and Energy Resources <b>Measurement</b> , Investigation 2, Parts 1-3 <b>Structures of Life</b> , Investigation 1, Part 2	Pages 132-160 Pages 39-42, 49-65 Pages 8-21 Pages 18-27

## Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. Identify ways in which the properties of naturally occurring materials may be changed irreversibly. Observe and explain what causes liquid water to enter different states. Compare the freezing and melting properties of other materials to those of water. Use tables and graphs to show changes.	<p><b>Matter and Energy</b>, Investigation 4, Parts 1-3 “Changing Matter” <u>Matter and Energy Resources</u></p> <p><b>Water</b>, Investigation 3, Parts 1-3 <b>Earth Materials</b>, Investigation 3, Parts 1-2 Investigation 4, Part 2 <u>Earth Materials FOSS Science Stories</u></p>	<p>Pages 177-203 Pages 39-42,49-50, 57-65</p> <p>Pages 8-20 Pages 8-19 Pages 14-18 Pages 12-13,24-29, 34-36</p>

## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Identify heat as a form of energy. Describe that heat (thermal) energy can come from different sources and is produced in different ways.	<p><b>Matter and Energy</b>, Investigation 1, Parts 1-3 “Energy on the Move” <u>Matter and Energy Resources</u> <u>Physics of Sound FOSS Science Stories</u></p> <p><b>Water</b>, Investigation 3, Parts 1-4</p>	<p>Pages 56-82 Pages 1-13 Pages 22-28 Pages 8-26</p>

## Earth and Space Science

### Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. Use models and draw diagrams to show the relationship between the earth's day-night cycle and the rotation of the earth on its axis in a 24-hour period.	<p><b>Sun, Moon and Stars</b>, Investigation 1, Parts 1-2 Investigation 2, Parts 1-2 <u>Sun, Moon, and Stars FOSS Science Stories</u> <u>Ideas and Inventions FOSS Science Stories</u></p>	<p>Pages 47-67 Pages 82-100 Pages 1-12, 14-33 Pages 26-27,33-36</p>

### Earth Structures

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4B. Compare and contrast the different ways in which wind, heat, water, and ice constantly reshape the earth's surface. Provide examples of reshaping processes, including events that occur slowly and those that occur quickly. Differentiate among sedimentary, metamorphic, and igneous rocks by their properties and methods of formation.	<p><u>Earth Materials FOSS Science Stories</u></p> <p><u>Water FOSS Science Stories</u></p>	<p>Pages 1-7,24-29, 34-37 Pages 1-2,4,8-11,14-16,20,22-23</p>

# Life Science

## Structure and Function in Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5A. Compare and contrast how plants and animals meet their energy needs. Describe how all animals are directly or indirectly dependent upon plants for their food.	<p><b>Human Body</b> <u>FOSS Science Stories</u></p> <p><b>Structures of Life</b>, Investigation 2, Parts 1-3</p> <p>Investigation 3, Parts 1-3</p> <p>Investigation 5, Parts 1-2</p> <p><u>Structures of Life FOSS Science Stories</u></p> <p><b>Matter and Energy</b>, Investigation 1, Parts 1-2 “Energy Sources”</p> <p><u>Matter and Energy Resources</u></p> <p><b>Water</b> <u>FOSS Science Stories</u></p>	<p>Pages 9,19,25</p> <p>Pages 8-22</p> <p>Pages 8-23</p> <p>Pages 8-18</p> <p>Pages 2-5,10-16, 18,22-34,38,41-43</p> <p>Pages 56-82</p> <p>Pages 1-13</p> <p>Pages 5-7</p>

# Grade 5

## The Nature of Science

### Collecting Data and Making Conclusions

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Make inferences and draw conclusions based on data collected. Examine conclusions from past scientific investigations and determine how and why scientists were able to draw those conclusions. Give examples of how scientists make predictions about the future based on what is known about the past.	This standard is addressed throughout FOSS investigations. See for example: <b>Water Planet</b> , Investigation 2, Parts 1-4 Investigation 4, Parts 1-4 <u>Water Planet Resources</u> <b>Variables</b> , throughout, such as Investigation 1, Parts 1-3 <u>Variables FOSS Science Stories</u> <b>Mixtures and Solutions</b> , Investigation 1, Part 4 Investigation 2, Parts 1-4 <u>Mixtures and Solutions FOSS Science Stories</u> <b>Environments</b> , Investigation 5, Parts 1-3 <u>Environments FOSS Science Stories</u>	Pages 82-110 Pages 187-216 Pages 71-92  Pages 8-27 Pages 1-14,18-37  Pages 25-29 Pages 8-28 Pages 1-6,32-36  Pages 8-22 Pages 33-42

## The Nature of Technology

### Effects of New Technology

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Describe how the interaction between science and technology makes available scientific instruments and materials that are integral to modern science and/or daily life. Give examples of situations in which new technology had unexpected positive and negative effects on the world. Explain how the solution to one problem may create other problems.	<b>Variables</b> Investigation 3, Parts 1-7 <u>Variables FOSS Science Stories</u>  <b>Water Planet</b> , Investigation 4, Parts 1-4 <u>Water Planet Resources</u> <u>Mixtures and Solutions FOSS Science Stories</u>  <b>Levers and Pulleys</b> , throughout, such as Investigation 2, Parts 1-4 <u>Levers and Pulleys FOSS Science Stories</u> FOSS Web Site: <a href="http://www.fossweb.com">www.fossweb.com</a> "Ask a Scientist" and simulations	Pages 8-27 Pages 3-9,15-28,32-33 Pages 187-216 Pages 71-92 Pages 5-6,13-16,26-27,29-45  Pages 8-24 Pages 1-27

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Give examples of chemical changes such that when a new material is made by combining two or more materials, it has properties that are different from the original materials. Describe how physical properties are not	<b>Mixtures and Solutions</b> , Investigation 2, Parts 1-4 Investigation 4, Parts 1-3 <u>Mixtures and Solutions FOSS Science Stories</u> <b>Living Systems</b> , Investigation 1, Part 2 Investigation 3, Parts 1-2 <u>Living Systems Resources</u>	Pages 8-28 Pages 8-24 Pages 23-45 Pages 62-65 Pages 120-135 Pages 7-10, 31-36, 47-48

dependent on size or volume of a material.		
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## Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. Identify heat as the energy of moving particles too small to be seen. Describe how the properties and phases of materials change as the materials gain or lose heat energy.	<b>Water Planet</b> , Investigation 3, Parts 1-2 <u>Water Planet Resources</u> <b>Solar Energy</b> , throughout, such as Investigation 4, Parts 1-3 <u>Solar Energy FOSS Science Stories</u>	Pages 128-158 Pages 42-62  Pages 8-28 Pages 22-25, 29-39

## Motion

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3C. Explain that objects move at different rates, dependent on the distance traveled and the amount of time it took to travel a given distance. Demonstrate that changes in speed are caused by forces: the greater the force exerted on a particular object, the greater the change in speed.	<b>Variables</b> , Investigation 3, Parts 1-4 <u>Variables FOSS Science Stories</u> <b>Models and Designs</b> , Investigation 3, Parts 1-3 Investigation 4, Parts 1-2 <u>Models and Designs FOSS Science Stories</u>  <i>This standard is also addressed in great depth in <b>Force and Motion</b>, designed for Grades 6-8.</i>	Pages 8-27 Pages 15-33 Pages 8-23 Pages 6-20 Pages 25-40

## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Demonstrate how a warmer object transfers heat to a cooler one by contact or by radiation at a distance, so that the cooler object gets warmer and the warmer object gets cooler. Demonstrate that when heat is made to flow into an object by putting it in contact with a hotter object, its temperature increases.	<b>Water Planet</b> , Investigation 3, Parts 1-2 <u>Water Planet Resources</u>  <b>Solar Energy</b> , throughout, such as Investigation 3, Parts 1-2 Investigation 4, Parts 1-4 <u>Solar Energy FOSS Science Stories</u>	Pages 128-158 Pages 42-62  Pages 8-23 Pages 8-33 Pages 22-25, 29-39

# Earth and Space Science

## Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. 1. Observe and describe the pattern of weather changes throughout the year and explain how weather can be forecasted by examining air masses that move across the surface of the earth. Describe how different aspects of	<b>Water Planet</b> , Investigation 4, Parts 1-4 <u>Water Planet Resources</u>  <b>Solar Energy</b> FOSS Science Stories	Pages 187-216 Pages 71-92  Pages 22-28

<p>weather can be measured.</p> <p>2. Describe how the appearance of the sky is affected by the daily rotation of the earth on its axis. Draw diagrams depicting the motion of the earth around the sun in a year's time. Describe the cycle of the moon, including how the shape of the moon changes. Observe and explain the uses of telescopes.</p>	<p><b>Water Planet</b>, Investigation 1, Parts 1-2  <u>Water Planet Resources</u>  <b>Solar Energy</b>, Investigation 1, Parts 1-2  <b>Solar Energy</b> FOSS Science Stories  <b>Models and Designs</b> FOSS Science Stories</p>	<p>Pages 53-66  Pages 1-24  Pages 8-21  Pages 1-5,8-9,40-44  Page 9 (telescopes)</p>
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## Life Science

### Structures and Functions of Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
<p>5A.</p> <p>1. Identify that living organisms are composed of cells and that a single cell is the smallest unit of life. Describe similarities and differences between cells in plants and animals. Observe and explain that cells can come together to form tissues and that tissues can form organs.</p> <p>2. Describe that the features of each organism are inherited from its parents. Explain why small differences in features between parents and offspring can result in descendants generations later who are quite different from their ancestors. Explain why individual organisms may have an advantage in surviving and reproducing in a particular environment due to certain features.</p>	<p><b>Living Systems</b>,  Investigation 1, Parts 1-3 "Living Cells"  Investigation 2, Part 1  <u>Living Systems Resources</u></p> <p><b>Food and Nutrition</b> FOSS Science Stories</p> <p><b>Environments</b>, Investigation 5, Parts 1-3  <u>Environments FOSS Science Stories</u></p> <p><i>Note that this standard could be easily incorporated into the classification lesson in Living Systems:</i></p> <p><b>Living Systems</b>, Investigation 2, Part 2  <u>Living Systems Resources</u></p>	<p>Pages 54-73  Pages 88-98  Pages 1-14, 16-20, 24  Pages 41-50</p> <p>Pages 8-22  Pages 42-45,47-55</p> <p>Pages 101-105  Pages 16-25</p>

# Grade 6

## The Nature of Science

### Formulating Hypotheses

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Formulate a hypothesis that can lead to a fair investigation. Examine different ways in which scientists investigate their hypotheses and draw conclusions from their data.	This standard is addressed throughout FOSS investigations. See for example: <b>Diversity of Life</b> , Investigation 6, Parts 1-3 <b>Models and Designs</b> , Investigation 1, Parts 1-3 <b>Environments</b> , Investigation 5, Parts 1-3 <b>Planetary Science</b> , Investigation 5, Parts 2-3	Pages 186-203 Pages 8-25 Pages 8-22 Pages 158-167

## The Nature of Technology

### Limits

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Describe how technology is used for transportation, data collection and analysis, and communication. Give examples of problems that cannot be solved with technology.	<b>Models and Designs</b> , Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 <b>Force and Motion</b> , throughout, such as Investigation 5, Parts 1-4 Investigation 8, Parts 1-2 <u>Force and Motion Resources</u>  <b>Planetary Science</b> , Investigation 7, Parts 1-5 <u>Planetary Science Resources</u>	Pages 8-23 Pages 6-20  Pages 169-201 Pages 284-301 Pages 1-9, 32-35, 41-49, 70-74 Pages 218-237 Pages 47-53, 74-79

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Explain that all matter is composed of atoms and describe the basic composition and characteristics of an atom. Explain that all forms of matter are composed of one or more of approximately 100 elements and give examples of specific elements.	<b>Chemical Interactions</b> , Investigation 2, Parts 1-2 Investigation 9, Parts 1-4 <u>Chemical Interactions Resources</u> <b>Mixtures and Solutions</b> , Investigation 4, Parts 1-3 <u>Mixtures and Solutions FOSS Science Stories</u> <i>Note that if the above two kits are placed at other grade levels, the periodic table could easily be reviewed in connection with the rocks and minerals in Planetary Science:</i> <b>Planetary Science</b> , Investigation 8, Parts 1-4	Pages 74-81 Pages 282-312 Pages  Pages 8-24 Pages 3-4, 11-12, 32-36  Pages 250-270

### Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Compare and contrast the two different types of mechanical energy: potential and kinetic. Identify the three common forms of potential	<b>Force and Motion, throughout, such as</b> Investigation 1, Parts 1-2 Investigation 7, Parts 1-3 <u>Force and Motion Resources</u> <b>Planetary Science</b> , Investigation 7, Parts 1-5	Pages 47-62 Pages 256-272 Pages 50-52,62-69 Pages 218-237

energy: gravitational, chemical, and elastic.	<a href="#">Planetary Science Resources</a>	Pages 70, 97-100
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## Earth and Space Science

### Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
<p>4A.</p> <p>1. Explain how the sun's gravitational pull keeps objects in our solar system in regular and predictable motion. Use models to demonstrate how earth's gravity pulls all objects near earth toward the center of the earth. Create models of the major bodies in our solar system, showing their relative sizes and their relative distances from the sun.</p> <p>2. Describe with models or drawings how the earth's tilt on its axis relative to the plane of the earth's yearly orbit around the sun is responsible for seasonal weather changes. Explain how global patterns of air movement are caused by differential heating of air, land, and oceans, and how these patterns affect weather and climate patterns.</p>	<p><b>Planetary Science</b>, Investigation 7, Parts 1-5  <a href="#">Planetary Science Resources</a>  <i>Planetary Science CD-ROM/Web Site</i>  <b>Models and Designs</b> FOSS Science Stories  <b>Solar Energy</b> FOSS Science Stories  <b>Water Planet</b>, Investigation 1, Parts 1-2  <a href="#">Water Planet Resources</a></p> <p><b>Weather and Water</b>  Investigation 3, Parts 1-3 "Seasons and Sun"  Investigation 4, Parts 1-2  <a href="#">Weather and Water Resources</a>  <i>Weather and Water CD-ROM/Web Site</i>  <b>Solar Energy</b> FOSS Science Stories</p> <p><b>Water Planet</b>, Investigation 4, Parts 1-4  <a href="#">Water Planet Resources</a></p>	<p>Pages 218-237  Pages 70, 97-100</p> <p>Pages 5-10  Pages 3-5, 40-44  Pages 53-66  Pages 1-24</p> <p>Pages 93-112  Pages 121-140  Pages  Pages 1-4,16-17,  22-28</p> <p>Pages 187-216  Pages 71-92</p>

### Earth Structures

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
<p>4B. Explain and give examples of the way in which soil is formed. Compare and contrast the compositions and textures of the layers of different soils. Explain how the metabolic processes of bacteria and fungi affect soil and how the behaviors of larger organisms, including humans, affect soil composition and fertility.</p>	<p><i>This standard is addressed in the FOSS Module Pebbles, Sand and Silt, Designed for Grades 1-2. Soil bacteria and fungi (though not soil itself) are addressed in the readings in Diversity of Life, recommended for Grade 7 in Indiana; that would be an easy addition to make. Students also plant terrariums in soil in Populations and Ecosystems and a discussion of invisible soil bacteria would also be appropriate there.</i></p> <p><i>This standard could easily be addressed in connection with the planting experiences that students go through in <b>Environments</b>.</i></p>	



# Grade 7

## The Nature of Science

### Formulating Conclusions

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Carry out simple investigations and formulate appropriate conclusions. Give examples of different explanations for the same evidence. Explain why one might wait until an investigation is repeated before accepting the results as correct. Give ideas extending the investigation in order to refine the conclusion.	This standard is addressed throughout FOSS investigations. See for example: <b>Diversity of Life</b> , Investigation 6, Parts 1-3 <b>Weather and Water</b> , Investigation 5, Parts 1-3 <b>Earth History</b> , Investigation 1, Parts 1-2 <b>Planetary Science</b> , Investigation 5, Parts 1-3 <b>Chemical Interactions</b> , Investigation 1, Parts 1-2 <b>Electronics</b> , Investigation 2, Parts 1-3	Pages 186-203 Pages 152-175 Pages 39-49 Pages 154-167  Pages 44-58 Pages 89-103

## The Nature of Technology

### History

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Describe and give examples of how the needs, attitudes, resources, and values of a time period influence the direction of technological development in a variety of cultures and societies.	<b>Earth History</b> , Investigation 2, Parts 1-4 <u>Earth History Resources</u>  <b>Weather and Water</b> , Investigation 1, Parts 1-2 <u>Weather and Water Resources</u>  <b>Planetary Science</b> , Investigation 7, Parts 1-5 <u>Planetary Science Resources</u> <b>Chemical Interactions</b> , Investigation 2, Parts 1-2 <u>Chemical Interactions Resources</u>  <b>Electronics</b> , Investigation 4, Parts 1-2 <u>Electronics Resources</u> <i>FOSS CD-ROMS/Web Site for ALL FOSS Middle School modules: <a href="http://www.fossweb.com">www.fossweb.com</a></i>	Pages 60-75 Pages 50-67, 81-88, 98-99 Pages 43-56 Pages 3-4, 20-21, 63-76 Pages 218-237 Pages 40,43,47-53, 74-77, 90-96 Pages 72-81 Pages 4-8, 65-75, 78-85 Pages 143-152 Pages 1-2, 18-25, 34-36

## Physical Science

### Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Describe how atoms of any given element are mostly alike, but are unlike atoms of other elements. Give examples of how two or more different elements can come together to form a compound.	<b>Chemical Interactions</b> , Investigation 2, Parts 1-2 Investigation 9, Parts 1-4 <u>Chemical Interactions Resources</u>  <b>Earth History</b> , Investigation 5, Parts 1-3 Investigation 8, Part 2	Pages 72-81 Pages 282-312 Pages 3-15, 63-83, 90-91 Pages 175-187 Pages 259-265

	<a href="#">Earth History Resources</a> <i>Earth History CD-ROM/Web Site:</i> <a href="http://www.fossweb.com">www.fossweb.com</a>	Pages 68-69,87-88, 89-92
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## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Describe how energy is transferred from place to place through radiation, convection, and conduction. Identify the mechanism by which energy is transferred from one system to another: thermally, mechanically, electrically, and/or electromagnetically.	This standard is addressed throughout FOSS Middle School modules where appropriate to the type of energy transfer being investigated. See for example: <b>Weather and Water</b> , throughout, such as Investigation 3, Parts 1-3 Investigation 4, Parts 1-2 "Heat Transfer" Investigation 5, Parts 1-3 "Convection" <a href="#">Weather and Water Resources</a>  <b>Force and Motion</b> , throughout, such as Investigation 1, Parts 1-3 Investigation 5, Parts 1-4 <b>Electronics</b> , throughout, such as Investigation 1, Parts 1-5 Investigation 8, Parts 1-4 <i>FOSS Middle School CD-ROMs/Web Site:</i> <a href="http://www.fossweb.com">www.fossweb.com</a>	Pages 93-112 Pages 121-140 Pages 152-175 Pages 22-27, 32-33, 53-66  Pages 47-66 Pages 169-201  Pages 55-80 Pages 250-273

## Earth and Space Science

### Earth and Space Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4A. Describe how water in its different forms cycles through the structures of the earth and its atmosphere. Describe how the oceans' effects on climate are the result of water's high heat capacity, the circulation of water, and the large volume of water in the oceans.	<b>Weather and Water</b> , throughout, such as Investigation 4, Parts 1-2 "Heat Transfer" Investigation 7, Parts 1-2 "The Water Planet" Investigation 9, Parts 1-4 "Weather and Climate" <a href="#">Weather and Water Resources</a> <i>Weather and Water CD-ROM/ Web site:</i> <a href="http://www.fossweb.com">www.fossweb.com</a>	Pages 121-140 Pages 232-244 Pages 296-320 Pages 45-47,63-76

### Earth Structures

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4B. Compare and contrast the features of different rock types and rock formations (including evidence of the minerals, materials, and temperature/pressure conditions that created them). Explain how earth processes going on today have operated over large expanses of geological time to produce the geological record. Explain how fossils and other relative dating methods	This standard is addressed throughout the entire Earth History module. See for example: <b>Earth History</b> , Investigation 3, Parts 1-4 Investigation 5, Parts 1-4 Investigation 7, Parts 1-2 "Fossils and Time" <a href="#">Earth History Resources</a> <i>Earth History CD-ROM/ Web site:</i> <a href="http://www.fossweb.com">www.fossweb.com</a>	Pages 88-111 Pages 175-194 Pages 234-244 Pages 4-21, 27-28, 37-41, 68-90,

can be used to infer the order of geologic events and describe how environmental conditions and life have changed over time.		
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## Life Science

### Structures and Functions in Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
<p>5A.</p> <p>1. Compare and contrast the major organelles within plant and animal cells. Investigate the differences between single-celled and multicellular organisms. Give examples of single-celled and multicellular organisms. Explain that many cells continually divide to make more cells for growth and repair of a multicellular organism. Describe the hierarchical organization of multicellular organisms from cells to tissues to organs to systems within organisms.</p> <p>2. Infer the degree of relatedness among different organisms by analyzing similarities in internal and external structures. Explain why similarity in structural features is a better indicator of relatedness than similarity in behavior.</p>	<p><b>Diversity of Life</b>, throughout, such as Investigation 3, Parts 1-3 "Microscopic Life" Investigation 4, Parts 1-2 "The Cell" Investigation 10, Parts 1-3 "Kingdoms of Life" <u>Diversity of Life Resources</u> <i>Diversity of Life CD-ROM/ Web site:</i> <a href="http://www.fossweb.com">www.fossweb.com</a></p> <p><b>Diversity of Life Resources</b></p> <p><b>Populations and Ecosystems</b> Investigation 8, Parts 1-2 "Adaptations" Investigation 9, Parts 1-2 <u>Populations and Ecosystems Resources</u></p>	<p>Pages 102-124 Pages 133-141 Pages 302-321 Pages 4-9, 21-30, 65-70</p> <p>Pages 16-17, 55-64, 65-70</p> <p>Pages 228-243 Pages 262-273 Pages 56-61</p>

### Changes in Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
<p>5B. Explain why asexual reproduction which usually results in offspring with genes identical (or nearly so) to those of the single parent. Give examples of organisms that undergo asexual reproduction. Compare asexual reproduction with sexual reproduction. Explain how specialized cells are formed as a result of cell division in a fertilized egg.</p>	<p><b>Diversity of Life</b>, Investigation 10, Parts 1-2 <u>Diversity of Life Resources</u></p> <p><u>Populations and Ecosystems Resources</u></p>	<p>Pages 302-316 Pages 65-70</p> <p>Pages 48-55</p>

# Grade 8

## The Nature of Science

### Formulating Conclusions

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
1. Critically evaluate data from a simple experiment and form a logical statement about the cause and effect relationship. Compare this information against prevailing theories. Identify when further studies of the question being investigated may be necessary.	<p>This standard is addressed throughout FOSS investigations. See for example:</p> <p><b>Electronics</b>, throughout, such as Investigation 2, Parts 1-3 Investigation 8, Parts 1-4 <a href="#">Electronics Resources</a></p> <p><b>Chemical Interactions</b>, throughout, such as Investigation 1, Parts 1-2 Investigation 6, Part 1 <a href="#">Chemical Interactions Resources</a></p> <p><b>Populations and Ecosystems</b>, Investigation 4, Parts 1-2 Investigation 7, Part 1 <a href="#">Populations and Ecosystems Resources</a> <i>Populations and Ecosystems CD-ROM/ Web site: <a href="http://www.foosweb.com">www.foosweb.com</a></i></p> <p><b>Planetary Science</b>, Investigation 5, Parts 1-3 <a href="#">Planetary Science Resources</a></p>	<p>Pages 89-103 Pages 250-273 Pages 6-11,16-17, 33</p> <p>Pages 44-58 Pages 181-187 Pages 3-8,38-41, 60-62, 69-72, 80-85</p> <p>Pages 119-129 Pages 210-218 Pages 8-13, 5-29, 30-41</p> <p>Pages 154-167 Pages 59-68</p>

## The Nature of Technology

### Constraints, Values, and the Future

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
2. Analyze how technological developments are constrained by the laws of the physical world and by the values and priorities of diverse groups of people.	<p>This standard is addressed throughout the FOSS Middle School modules. See for example:</p> <p><b>Chemical Interactions</b>, Investigation 2, Parts 1-2 (Including interactive periodic table) <a href="#">Chemical Interactions Resources</a> <i>Chemical Interactions CD-ROM/Web Site</i></p> <p><b>Populations and Ecosystems</b>, Investigation 4, Parts 1-2 Investigation 7, Part 1 <a href="#">Populations and Ecosystems Resources</a> <i>Populations and Ecosystems CD-ROM/ Web site: <a href="http://www.foosweb.com">www.foosweb.com</a></i></p> <p><b>Force and Motion</b>, throughout, such as Investigation 5, Parts 1-4 <a href="#">Force and Motion Resources</a></p> <p><b>Planetary Science</b>, Investigation 7, Parts 1-5 <a href="#">Planetary Science Resources</a></p>	<p>Pages 72-74</p> <p>Pages 7-8, 69-85</p> <p>Pages 119-129 Pages 210-218 Pages 8-13, 5-29, 30-41</p> <p>Pages 169-201 Pages 3-6, 41-52 Pages 218-237 Pages 74-79,90-96</p>

# Physical Science

## Properties of Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3A. Describe how the chemical properties of a substance are defined by the arrangement of atoms and molecules. Draw diagrams to show that atoms may come together as well-defined molecules and also that they may be packed together in large arrays.	<b>Chemical Interactions</b> , throughout, such as Investigation 9, Parts 1-4 Investigation 10, Parts 1-2 <u><a href="#">Chemical Interactions Resources</a></u> <i>Chemical Interactions CD-ROM/Web Site:</i> <i><a href="http://www.fossweb.com">www.fossweb.com</a></i> <b>Earth History Resources</b>	Pages 282-312 Pages 325-336 Pages 63-85  Pages 89-90

## Changes in Matter

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3B. 1. Diagram or describe a simple chemical change that occurs when two substances, elements, or compounds react and produce one or more different substances. Use examples to explain that when a chemical change occurs in a closed system, the total mass of the system remains unchanged. Explain how chemical reactions involve the exchange and sharing of electrons between the atoms of the reactants.  2. Describe the change in movement of atoms and molecules in solids, liquids, and gases that occurs with a change in state. Recognize that although such a change in state may occur, atoms and molecules are in constant motion and do not change their internal structure.	<b>Chemical Interactions</b> , throughout, such as Investigation 9, Parts 1-4 Investigation 10, Parts 1-2 <u><a href="#">Chemical Interactions Resources</a></u> <i>Chemical Interactions CD-ROM/Web Site:</i> <i><a href="http://www.fossweb.com">www.fossweb.com</a></i>  <b>Chemical Interactions</b> , throughout, such as Investigation 3, Parts 1-3 Investigation 4, Parts 1-3 Investigation 7, Parts 1-5 <u><a href="#">Chemical Interactions Resources</a></u> <i>CD-ROM/FOSS Web: <a href="#">Chemical Interactions</a></i> <i><a href="http://www.fossweb.com">www.fossweb.com</a></i>	Pages 282-312 Pages 325-336 Pages 63-85          Pages 95-113 Pages 125-142 Pages 206-234 Pages 14-48

## Energy

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
3D. Use examples to explain that when the transfer of energy occurs from one system to another, the total energy before the transfer equals the total energy after the transfer. Describe the	<b>Chemical Interactions</b> , Investigation 4, Parts 1-3 “Kinetic Energy” Investigation 5, Parts 1-3 “Energy Transfer” Investigation 6, Part 1 “Heat of Fusion” <u><a href="#">Chemical Interactions Resources</a></u> <i>CD-ROM/FOSS Web: <a href="#">Chemical Interactions</a></i> <i><a href="http://www.fossweb.com">www.fossweb.com</a></i>	Pages 125-142 Pages 155-171 Pages 181-187 Pages 23-48

transfer of heat energy across space or through a material, and how it involves the collision of atoms within the material.		
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## Earth and Space Science

### Earth Structures

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
4B. Describe the cause and history of the movement of earth's lithospheric plates and how these movements shape earth's surface. Predict which geologic events and features present will be present at plate boundaries.	<u>Earth History Resources</u> <i>Earth History CD-ROM/FOSS Web site</i>	Pages 100-105

## Life Science

### Change in Living Systems

CORE STANDARD	FOSS INVESTIGATIONS	PAGE NUMBERS
5 1. Identify that instructions specifying the traits of an organism are found in the DNA packaged as chromosomes inside its cells. Recognize that DNA is the same in every cell of an organism. Describe how traits are inherited by the passage of chromosomes from one generation to another.	<b>Populations and Ecosystems</b> Investigation 9, Parts 1-4 Investigation 10, Parts 1-3 <u>Populations and Ecosystems Resources</u> <i>Populations and Ecosystems CD-ROM/FOSS Web site: www.fossweb.com</i>	Pages 262-291 Pages 302-317
2. Differentiate between traits that are acquired and those that are inherited. Explain how a particular environment selects for traits that increase survival and production of off spring by individuals bearing those traits. Explain how not all traits that are selected for are necessarily beneficial for long-term survival of the species.	<b>Populations and Ecosystems</b> Investigation 8, Parts 1-2 Investigation 9, Parts 1-4 Investigation 10, Parts 1-3 <u>Populations and Ecosystems Resources</u> <i>Populations and Ecosystems CD-ROM/FOSS Web site: www.fossweb.com</i>	Pages 228-243 Pages 262-291 Pages 302-317 Pages 42-63