

Grade 5

Unit 1—Nature of Science (FOSS® Variables)**How do scientists gather and share information?**

Note: The FOSS® Variables unit provides an introduction to the key process skills of science that students will use and refine through the Middle School curriculum culminating in the 8th Grade independent Unit 2 Exit Projects. The standards correlation is provided at the level of FOSS® “Investigation & Part.” All “Steps” of an investigation must be completed to approach the standard.

Teachers will recognize many opportunities to add questions in the language of the NYC Core Curriculum Standards to the FOSS® Investigations and student notebooks that will focus the student’s attention on the process of science.

For example, to approach Standard 2.1d:

“What scientific tools did we use in this investigation?” (meter tape, etc.)

“What science techniques did we use in this investigation?” (measuring, etc.)

Expanded Process Skills: *quoted from NYS Core Curriculum***Standard 1 – Analysis, Inquiry and Design – Mathematical Analysis**

Key Idea 1 – *Abstraction and symbolic representation are used to communicate mathematically.*

M1.1a Identify independent and dependent variables

Key Idea 3 – *Critical thinking skills are used in the solution of mathematical problems.*

M3.1a Use appropriate scientific tools to solve problems about the natural world.

Standard 1 – Analysis, Inquiry and Design – Scientific Inquiry

Key Idea 1 – *The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.*

S1.1a Formulate questions about natural phenomena.

S1.1b Identify appropriate references to investigate a question.

S1.1c Refine and clarify questions so that they are subject to scientific investigation.

S1.2a Independently formulate a hypothesis.

S1.3 Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.

Grade 5

Key Idea 2 – *Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.*

- S2.1b Conduct an experiment designed by others.
- S2.1c Design and conduct an experiment to test a hypothesis.
- S2.1d Use appropriate tools and conventional techniques to solve problems about the natural world, including:
 - Measuring
 - Observing
 - Describing
 - Classifying
 - Sequencing
- S2.2b Design scientific investigations (e.g., observing, describing and comparing; collecting samples; seeking more information, conducting a controlled experiment; discovering new objects or phenomena; making models)
- S2.2c Design a simple controlled experiment.
- S2.2d Identify independent variables (manipulated), dependent variables (responding), and constants in a simple controlled experiment.
- S2.2e Choose appropriate sample size and number of trials.
- S2.3b Conduct a scientific investigation.
- S2.3c Collect quantitative and qualitative data.

Key Idea 3 – *The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.*

- S3.1a Organize results, using appropriate graphs, diagrams, data tables, and other models to show relationships.
- S3.1b Generate and use scales, create legends, and appropriately label axis.
- S3.2a Accurately describe the procedures used and the data gathered.
- S3.2b Identify sources of error and the limitations of data collected.
- S3.2c Evaluate the original hypothesis in light of the data.
- S3.2d Formulate and defend explanations and conclusions as they relate to scientific phenomena.
- S3.2e Form and defend a logical argument about cause and effect relationships in an investigation.

General Skills: quoted from the NYS Core Curriculum (Note: Correlation is provided at the “Investigation & Part” level.)

1. Follow safety procedures in the classroom and laboratory.
2. Safely and accurately use the following measurement tools: metric ruler, balance, stopwatch, graduated cylinder, thermometer, spring scale, voltmeter.
3. Use appropriate units for measured or calculated values.
4. Recognize and analyze patterns and trends.
7. Sequence events.
8. Identify cause-and-effect relationships.

Grade 5

WEEK 1	<p>Lesson 1 (45 min) Objective(s): Survey/Pre-assessment</p> <ul style="list-style-type: none"> • A system is a set of objects that is working together. • The basic unmodified system being investigated in an experiment is called the standard. • A variable is anything that you can change in an experiment that might affect the outcome. • In a controlled experiment only one variable is changed, and the results are compared to a standard. • In a controlled experiment the experimental variable is changed incrementally to see how it affects the outcome. • Conducting multiple trials of the same experiment provides greater accuracy. • A two-coordinate graph displays the relationship between an experimental variable and an outcome. • Graphs can expose relationships, which in turn can be used to make predictions. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c, 1.2a, 1.3; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e • General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/Notes to Teachers</p> <ul style="list-style-type: none"> – Read the Introduction and Overview sections of your FOSS Variables Teacher Guide. – Note: Administration of the Survey should be a few days BEFORE the start of the unit. – Teacher Guide, Benchmark Assessment Folio, pp. 1-23, 68 – Download optional tool: Benchmark and I-Check Assessment coding sheets at www.fossweb.com/NYC – Kit preparation: see Teacher Guide, Materials, pp. 1-7 and Teacher Preparation Video or DVD (or view at www.fossweb.com/NYC) – Note: see Teacher Guide, Materials, p. 3 for Materials Supplied by the Teacher and Materials from the Variables Tool Kit. Collect Pennies. – Note: see Teacher Guide, Materials, pp. 4-5. Follow the directions for Preparing a New Kit. – Refer to Teacher Guide, Materials, pp. 6-7 if using a kit that has been used in another class. 	<p>Investigation/Activity</p> <ul style="list-style-type: none"> – Benchmark Assessment Packet, Survey/Posttest pages 1-6 – Letter to Parents, Teacher Sheet No.1 	<p>Homework/Extra Practice</p>

Grade 5

WEEK 1 (continued)	<p>Lesson 2 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • A pendulum is a mass, suspended on a pivot point, free to swing. • A variable is anything that you can change in an experiment that might affect the outcome. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: S1.1a, 1.1c; S 2.1b, 2.1d; • General Skills: 1, 2, 3, 4 	
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 1: Swingers, pp. 1-7. – Teacher Guide Inv. 1: Swingers, Part 1: Exploring Swingers, Materials and Getting Ready, pp. 8-11. – Teacher Guide Science Stories folio, pp. 1-3. – Teacher Guide Assessment folio, pp 1-4 and pp. 27-28. – Note: The Benchmark Assessment replaces the <i>Summative Assessment</i>. – www.fossweb.com/NYC – Check website for interactive simulations, to write questions to a scientist, for teaching tips, and other websites to support teaching Variables. 	<p>Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 1: <i>Swingers</i> Part 1: <i>Exploring Swingers</i>, # 1-16 – Teacher Guide pages 12-15 – Investigation Duplication Master: Teacher Sheet No. 1 – Investigation Duplication Master: Student Sheet No. 2, 3 – Assessment - Assessment Chart No. 1: Assessment for Investigation 1, Part 1 – Teacher Observation – informal notes <p><i>Prepare to read FOSS Science Stories: What Scientists Do, pages 1-7.</i> <i>The estimated time for this reading is 30 minutes.</i></p>		<p>Homework/Extra Practice</p>

Grade 5

WEEK 1 (continued)	<p>Lesson 3 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • A pendulum is a mass, suspended on a pivot point, free to swing. • A variable is anything that you can change in an experiment that might affect the outcome. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: S1.1a, 1.1c; S 2.1b, 2.1d; • General Skills: 1, 2, 3, 4
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 1: Swingers, pp. 1-7. – Teacher Guide Inv. 1: Swingers, Part 1: Exploring Swingers, Materials and Getting Ready, pp. 8-11. – Teacher Guide Science Stories folio, pp. 1-3. – Note: Prepare the Swingers Number Line for Part 2. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 1: <i>Swingers</i> Part 1: <i>Exploring Swingers</i>, # 17 – Teacher Guide page15 <p><i>FOSS Science Stories: What Scientists Do</i>, pages 1-7. <i>The estimated time for this reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Home/School Connection, Student Sheet No. 28</p>

Grade 5

WEEK 1 (continued)	<p>Lesson 4 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> In a controlled experiment only one variable is changed, and the results are compared to a standard. As the length of a pendulum increases, the number of swings in a unit of time decreases. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M3.1a; S1.1a; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2e General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 1: Swingers, pp. 1-7. Teacher Guide Inv. 1: Swingers, Part 2: Testing Variables, Materials and Getting Ready, pp. 16-17. 	<p>Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 1: Swingers Part 2: Testing Variables, # 1- 9 Teacher Guide pages 18-22 Investigation Duplication Master: Student Sheet No. 5, 6 Assessment - Assessment Chart No. 1 for Investigation 1, Part 2 – Response Sheet – Swingers Assessment folio, page 6, Response Sheet Scoring Guide 	<p>Homework/Extra Practice</p>

Grade 5

WEEK 2	<p>Lesson 5 (45 min) Objective(s):</p> <ul style="list-style-type: none"> In a controlled experiment only one variable is changed, and the results are compared to a standard. As the length of a pendulum increases, the number of swings in a unit of time decreases. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M3.1a; S1.1a; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2e General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 1: Swingers, pp. 1-7. Teacher Guide Inv. 1: Swingers, Part 2: Testing Variables, Materials and Getting Ready, pp. 16-17. Note: The Project Folder, prepared in Getting Ready, Part 1, Step 6, is introduced to students in Step 17 of this lesson. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 1: <i>Swingers</i> Part 2: <i>Testing Variables</i>, # 9-17 Teacher Guide pages 18-22 Investigation Duplication Master: Student Sheet No. 5 Assessment - Assessment Chart No. 1 for Investigation 1, Part 2 – Response Sheet – Swingers Assessment folio, page 6, Response Sheet Scoring Guide 	<p style="text-align: center;">Homework/Extra Practice</p> <p>Be a good “Observer!” Find an example of a pendulum that is not your “swinger.” (Answers: a playground swing, a grandfather clock, “executive desk” toys, etc.)</p>

Grade 5

WEEK 2 (continued)	Lesson 6 (45 min) Objective(s): <ul style="list-style-type: none"> Two-coordinate graphs can display the outcome of a controlled experiment. Graphs can expose relationships, which in turn can be used to make predictions. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S 2.1b, 2.1d, 2.2d, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c General Skills: 1, 2, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> Teacher Guide Inv. 1: Swingers, pp. 1-7. Teacher Guide Inv. 1: Swingers, Part 3: Predicting Swings, Materials and Getting Ready, pp. 23-24. Teacher Guide Science Stories folio, pp. 4-5. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 1: <i>Swingers</i> Part 3: <i>Predicting Swings</i>, # 1-6 Teacher Guide pages 25-27 Investigation Duplication Master: Student Sheet No. 7 Assessment - Assessment Chart No. 1 for Investigation 1, Part 3 – Teacher Observation Assessment folio, page 7, Teacher Observation Scoring Guide <p><i>Prepare to read FOSS Science Stories: Swinging Through History, pages 8-9. The estimated time for this reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p>

Grade 5

WEEK 2 (continued)	<p>Lesson 7 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Two-coordinate graphs can display the outcome of a controlled experiment. Graphs can expose relationships, which in turn can be used to make predictions. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S 2.1b, 2.1d, 2.2d, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 1: Swingers, pp. 1-7. Teacher Guide Inv. 1: Swingers, Part 3: Predicting Swings, Materials and Getting Ready, pp. 23-24. Teacher Guide Science Stories folio, pp. 4-5 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 1: <i>Swingers Part 3: Predicting Swings, # 5-11</i> Teacher Guide pages 25-27 Investigation Duplication Master: Student Sheet No. 7 Assessment - Assessment Chart No. 1 for Investigation 1, Part 3 – Teacher Observation Assessment folio, page 7, Teacher Observation Scoring Guide <p><i>FOSS Science Stories: Swinging Through History, pages 8-9. The estimated time for this reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Math Extension, Student Sheet No. 24</p>

Grade 5

WEEK 2 (continued)	Lesson 8 (45 min) Objective(s): <ul style="list-style-type: none"> • A variable is anything that you can change in an experiment that might affect the outcome. • In a controlled experiment all variables are controlled except one, allowing the experimenter to observe the effect of that one variable on the outcome. • Two-coordinate graphs can display the outcome of a controlled experiment. • Graphs can expose relationships, which in turn can be used to make predictions. • Graphs can be used to display results, look for experimental errors, and make predictions. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2e • General Skills: 1, 2, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> – Teacher Guide, Benchmark Assessment Folio, pp. 24-31, 68. – Plan Assessment Review time with class after teacher assessment coding. 	Investigation/Activity Benchmark Assessment Packet, Investigation 1 I-Check, pages 1-4	Homework/Extra Practice

Grade 5

WEEK 3	Lesson 9 (45 min) Objective(s): <ul style="list-style-type: none"> Capacity is the maximum volume of fluid a container can hold. Variables are things you can change that might affect the outcome of an experiment. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> Expanded Process Skills: M1.1a; S1.1a; S 2.1b, 2.1d; General Skills: 1, 2, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> Teacher Guide Inv. 2: Lifeboats, pp. 1-7. Teacher Guide Inv. 2: Lifeboats, Part 1: Exploring Boats, Materials and Getting Ready pp. 8-10. www.fossweb.com/NYC – Be sure to visit the website to practice the interactive simulations, for teaching tips, and other links to support teaching Variables. 	Investigation/Activity <ul style="list-style-type: none"> Investigation 2: <i>Lifeboats</i> Part 1: <i>Exploring Boats</i>, # 1-8 Teacher Guide pages 11-13 Investigation Duplication Master: Student Sheet No. 8, 9 Assessment - Assessment Chart No. 2: Assessment Chart for Investigation 2, Part 1 – Teacher Observation – informal notes 	Homework/Extra Practice <i>Prepare for National Metric Week — the week of the 10th day of the 10th month: October 6-10, 2008. Visit the National Council of Teachers of Mathematics website at www.nctm.org/metric-week.aspx and the U.S. Metric Association at www.metric.org/metric-week.html</i>

Grade 5

WEEK 3 (continued)	<p>Lesson 10 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Capacity is the maximum volume of fluid a container can hold. Variables are things you can change that might affect the outcome of an experiment. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a; S1.1a; S 2.1b, 2.1d; General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 2: Lifeboats, pp. 1-7. Teacher Guide Inv. 2: Lifeboats, Part 1: Exploring Boats, Materials and Getting Ready pp. 8-10. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 2: <i>Lifeboats</i> Part 1: <i>Exploring Boats</i>, # 8-13 Teacher Guide page 13 Investigation Duplication Master: Student Sheet No. 8, 9 Assessment - Assessment Chart No. 2: Assessment Chart for Investigation 2, Part 1 – Teacher Observation – informal notes 	<p style="text-align: center;">Homework/Extra Practice</p>

Grade 5

WEEK 3 (continued)	Lesson 11 (45 min) Objective(s): <ul style="list-style-type: none"> In a controlled experiment, only one variable is changed, and the results are compared to a standard. The larger the capacity of a boat, the greater the number of passengers it can hold. Two-coordinate graphs can display results of experiments and show relationships between variables. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a General Skills: 1, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> Teacher Guide Inv. 2: Lifeboats, pp. 1-7. Teacher Guide Inv. 2: Lifeboats, Part 2: Lifeboat Inspection, Materials and Getting Ready, pp. 14-15. Teacher Guide Science Stories folio, pp. 6-7. 	Investigation/Activity <ul style="list-style-type: none"> Investigation 2: <i>Lifeboats</i> Part 2: <i>Lifeboat Inspection</i>, # 1-9 Teacher Guide pages 16-18 Investigation Duplication Master: Student Sheet No. 10, 11 Assessment - Assessment Chart for Investigation 2, Part 2 – Response Sheet – Lifeboats Assessment folio, page 8, Response Sheet Scoring Guide <p><i>Prepare to read FOSS Science Stories: Sink or Swim? pages 10-11. The estimated time for this reading is 30 minutes.</i></p>	Homework/Extra Practice <p>Make a list / draw or find pictures of as many kinds of boats that you can think of, starting with a “lifeboat.”</p>

Grade 5

WEEK 3 (continued)	Lesson 12 (45 min) Objective(s): <ul style="list-style-type: none"> In a controlled experiment, only one variable is changed, and the results are compared to a standard. The larger the capacity of a boat, the greater the number of passengers it can hold. Two-coordinate graphs can display results of experiments and show relationships between variables. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a General Skills: 1, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> Teacher Guide Inv. 2: Lifeboats, pp. 1-7. Teacher Guide Inv. 2: Lifeboats, Part 2: Lifeboat Inspection, Materials and Getting Ready, pp. 14-15. Teacher Guide Science Stories folio, pp. 6-7. 	Investigation/Activity <ul style="list-style-type: none"> Investigation 2: <i>Lifeboats</i> Part 2: <i>Lifeboat Inspection</i>, # 10-13 Teacher Guide page 18 Investigation Duplication Master: Student Sheet No. 10 Assessment - Assessment Chart for Investigation 2, Part 2 – Response Sheet – Lifeboats Assessment folio, page 8, Response Sheet Scoring Guide <p><i>FOSS Science Stories: Sink or Swim?</i> pages 10-11. <i>The estimated time for this reading is 30 minutes.</i></p>	Homework/Extra Practice Math Extension, Student Sheet No. 25

Grade 5

	<p>Lesson 13 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • Graphs can be used to make predictions. • Apply the content and processes developed in Parts 1 and 2. 	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a S 2.1b, 2.1c, 2.1d, 2.3c; S3.1a, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e • General Skills: 1, 3, 4, 7, 8 	
WEEK 4	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 2: Lifeboats, pp. 1-7. – Teacher Guide Inv. 2: Lifeboats, Part 3: Inspecting Other Boats, Materials and Getting Ready, pp. 19-20. – Teacher Guide Science Stories folio, pp. 8-9. – www.fossweb.com/NYC – Check website for interactive simulations, to write questions to a scientist, for teaching tips, and other websites to support teaching Variables. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 2: <i>Lifeboats</i> Part 3: <i>Inspecting Other Boats</i>, # 1-8 – Teacher Guide page 21-23 – Investigation Duplication Master: Student Sheet No. 10 – Assessment - Assessment Chart for Investigation 2, Part 3 – Teacher Observations Assessment folio, page 9, Teacher Observation Scoring Guide <p><i>Prepare to read FOSS Science Stories: Science in the Bathtub? pages 12-14. The estimated time for this reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Look up a famous boat — prepare a short report on it. See page 24 of the Teacher Guide for suggestions.</p>

Grade 5

WEEK 4 (continued)	Lesson 14 (45 min) Objective(s): <ul style="list-style-type: none"> Graphs can be used to make predictions. Apply the content and processes developed in Parts 1 and 2. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.1a S 2.1b, 2.1c, 2.1d, 2.3c; S3.1a, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e General Skills: 1, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> Teacher Guide Inv. 2: Lifeboats, pp. 1-7. Teacher Guide Inv. 2: Lifeboats, Part 3: Inspecting Other Boats, Materials and Getting Ready, pp. 19-20. Teacher Guide Science Stories folio, pp. 8-9. 	Investigation/Activity <ul style="list-style-type: none"> Investigation 2: <i>Lifeboats</i> Part 3: <i>Inspecting Other Boats</i>, # 9-11 Teacher Guide page 21-23 Investigation Duplication Master: Student Sheet No. 10 Assessment - Assessment Chart for Investigation 2, Part 3 – Teacher Observations Assessment folio, page 9, Teacher Observation Scoring Guide <p><i>FOSS Science Stories: Science in the Bathtub?</i> pages 12-14. <i>The estimated time for this reading is 30 minutes.</i></p>	Homework/Extra Practice Home/School Connection, Student Sheet No. 29

Grade 5

WEEK 4 (continued)	Lesson 15 (45 min) Objective(s): <ul style="list-style-type: none"> • Variables are things you can change that might affect the outcome of an experiment. • In a controlled experiment, only one variable is changed, and the results are compared to a standard. • Two-coordinate graphs can display results of experiments and show relationships between variables. • Graphs can be used to make predictions. • Apply the content and processes developed in Investigation 2, Parts 1 and 2. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e • General Skills: 1, 3, 4, 7, 8
	Advanced Planning/Notes to Teachers <ul style="list-style-type: none"> – Teacher Guide, Benchmark Assessment Folio, pp. 32-43, 68. – Plan Assessment Review time with class after teacher assessment coding. 	Investigation/Activity Benchmark Assessment Packet, Investigation 2 I-Check, pages 1-6	Homework/Extra Practice

Grade 5

WEEK 4 (continued)	Lesson 16 (45 min) Objective(s): A system is a set of objects that is working together.		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: S 2.1b, 2.1d, 2.2c, 2.3c; • General Skills: 1, 2, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 1: Exploring Flight, Materials and Getting Ready, pp. 8-10. – Teacher Guide Science Stories folio, pp. 10-11. – www.fossweb.com/NYC – Check website “Media” link for images, movies and websites about planes. 	Investigation/Activity <ul style="list-style-type: none"> – Investigation 3: <i>Plane Sense</i> Part 1: <i>Exploring Flight</i>, # 1-5 – Teacher Guide pages 11-12 – Investigation Duplication Master: Student Sheet No. 12 – Assessment - Assessment Chart No. 3: Assessment Chart for Investigation 3, Part 1 – Teacher Observations – informal notes <p><i>Prepare to read FOSS Science Stories: Airplane Basics and Experimental Design, pages 15-20. The estimated time for this reading is 50 minutes. Consider assigning parts of this reading as homework.</i></p>	Homework/Extra Practice

Grade 5

	<p>Lesson 17 (45 min)</p> <p>Objective(s): A system is a set of objects that is working together.</p>	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: S 2.1b, 2.1d, 2.2c, 2.3c; General Skills: 1, 2, 3, 4, 7, 8 	
WEEK 5	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 3: Plane Sense, pp. 1-7. Teacher Guide Inv. 3: Plane Sense, Part 1: Exploring Flight, Materials and Getting Ready, pp. 8-10. Teacher Guide Science Stories folio, pp. 10-11. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 3: <i>Plane Sense</i> Part 1: <i>Exploring Flight</i>, # 5-10 Teacher Guide pages 11-12 Investigation Duplication Master: Student Sheet No. 12 Assessment - Assessment Chart for Investigation 3, Part 1 – Teacher Observation – informal notes <p><i>FOSS Science Stories: Airplane Basics and Experimental Design, pages 15-20.</i> <i>The estimated time for this reading is 50 minutes.</i> <i>Consider assigning parts of this reading as homework.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Math Extension, Student Sheet No. 26</p> <p><i>Note: The questions on this sheet may be divided over a few night's work. Have students work collaboratively to identify the variables and 'knowns' in the data table.</i></p>

Grade 5

WEEK 5 (continued)	<p>Lesson 18 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • A variable is anything that you can change in an experiment that might affect the outcome. • The basic unmodified system being investigated in an experiment is called the standard. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3c; S3.1a, 3.1b, 3.2a • General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 2: Investigating Variables, Materials and Getting Ready, pp. 14-15. – Teacher Guide Science Stories folio, pp. 12-13. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 3: <i>Go With the Flow</i> Part 3: <i>Designing an Investigation</i>, # 9-12 – Teacher Guide pages 23-24 – Investigation Duplication Master: Student Sheet No. 10, 12, 13 – Assessment - Assessment Chart No. 2: Assessment for Investigation 3, Part 3 – Teacher Observation and Student Sheet – Stream-Table Plan <p><i>Prepare to read FOSS Science Stories: Shapes of the Earth, pages 22-29. The estimated time for the reading is 50 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p>

Grade 5

WEEK 5 (continued)	<p>Lesson 19 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • A variable is anything that you can change in an experiment that might affect the outcome. • The basic unmodified system being investigated in an experiment is called the standard. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3c; S3.1a, 3.1b, 3.2a • General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 2: Investigating Variables, Materials and Getting Ready, pp. 14-15. – Teacher Guide Science Stories folio, pp. 12-13. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 3: <i>Plane Sense</i> Part 2: <i>Investigating Variables</i>, # 9-13 – Teacher Guide pages 18-19 – Investigation Duplication Master: Teacher Sheet No. – Investigation Duplication Master: Student Sheet No. 13, 14 – Assessment - Assessment Chart for Investigation 3, Part 2 – Response Sheet Assessment folio, page 10, Response Sheet Scoring Guide <p><i>Prepare to read FOSS Science Stories: Great Names in Aviation History, pages 21-28.</i> <i>The estimated time for this reading is 50 minutes.</i> <i>Consider assigning parts of this reading as homework.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p>

Grade 5

WEEK 5 (continued)	<p>Lesson 20 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • A variable is anything that you can change in an experiment that might affect the outcome. • The basic unmodified system being investigated in an experiment is called the standard. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3c; S3.1a, 3.1b, 3.2a • General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 2: Investigating Variables, Materials and Getting Ready, pp. 14-15. – Teacher Guide Science Stories folio, pp. 12-13. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 3: <i>Plane Sense</i> Part 2: <i>Investigating Variables</i>, # 14-17 – Teacher Guide, page 19 – Investigation Duplication Master: Student Sheet No. 13, 14 – Assessment - Assessment Chart for Investigation 3, Part 2 – Response Sheet Assessment folio, page 10, Response Sheet Scoring Guide <p><i>FOSS Science Stories: Great Names in Aviation History</i>, pages 21-28. <i>The estimated time for this reading is 50 minutes.</i> <i>Consider assigning parts of this reading as homework.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p>

Grade 5

	<p>Lesson 21 (45 min)</p> <p>Objective(s): In a controlled experiment the experimental variable is changed incrementally to see how it affects the outcome.</p>	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.2a, 3.2e General Skills: 1, 2, 3, 4, 7, 8 	
WEEK 6	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 3: Flights of Fancy, Materials and Getting Ready. pp. 20-21. – Teacher Guide Science Stories folio, pp 14-15. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 3: <i>Plane Sense</i> Part 3: <i>Flights of Fancy</i>, # 1-4 – Teacher Guide page 22 – Investigation Duplication Master: Student Sheet No. 15 – Assessment - Assessment Chart for Investigation 3, Part 3 – Teacher Observation Assessment folio, page 11, Teacher Observation Scoring Guide <p><i>Prepare to read FOSS Science Stories: Build Your Own Paper Airplane? pages 29-31. The estimated time for this reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p>

Grade 5

WEEK 6 (continued)	<p>Lesson 22 (45 min)</p> <p>Objective(s): In a controlled experiment the experimental variable is changed incrementally to see how it affects the outcome.</p>		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.2a, 3.2e General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 3: Flights of Fancy, Materials and Getting Ready, pp. 20-21. – Teacher Guide Science Stories folio, pp. 14-15. 	<p>Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 3: <i>Plane Sense</i> Part 3: <i>Flights of Fancy</i>, # 5-11 – Teacher Guide page 23 – Investigation Duplication Master: Student Sheet No. 15 – Assessment - Assessment Chart for Investigation 3, Part 3 – Teacher Observation Assessment folio, page 11, Teacher Observation Scoring Guide <p><i>FOSS Science Stories: Build Your Own Paper Airplane?</i> pages 29-31. <i>The estimated time for this reading is 30 minutes.</i></p>	<p>Homework/Extra Practice</p> <p>Home/School Connection, Student Sheet No. 30</p>

Grade 5

WEEK 6 (continued)	Lesson 23 (45 min) Objective(s): A two-coordinate graph displays the relationship between an experimental variable and an outcome.		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.3; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e • General Skills: 1, 2, 3, 4, 7, 8
	Advanced Planning/ Notes to Teachers – Teacher Guide Inv. 3: Plane Sense, pp. 1-7. – Teacher Guide Inv. 3: Plane Sense, Part 4: Graphing the Results, Materials and Getting Ready, p. 24.	Investigation/Activity – Investigation 3: <i>Plane Sense</i> Part 4: <i>Graphing the Results</i> , # 1-7 – Teacher Guide page 23 – Investigation Duplication Master: Student Sheet No. 15, 16 – Assessment - Assessment Chart for Investigation 3, Part 3 – Student Sheet No. 16, Teacher Observation Assessment folio, page 12, Student Sheet Scoring Guide	

Grade 5

WEEK 6 (continued)	<p>Lesson 24 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • A system is a set of objects that is working together. • The basic unmodified system being investigated in an experiment is called the standard. • A variable is anything that you can change in an experiment that might affect the outcome. • In a controlled experiment only one variable is changed, and the results are compared to a standard. • In a controlled experiment the experimental variable is changed incrementally to see how it affects the outcome. • A two-coordinate graph displays the relationship between an experimental variable and an outcome. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c, 1.3; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e • General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide, Benchmark Assessment Folio, pp. 44-55, 68. – Plan Assessment Review time with class after teacher assessment coding. 	<p>Investigation/Activity</p> <p>Benchmark Assessment Packet, Investigation 3 I-Check, pages 1-6</p>	<p>Homework/Extra Practice</p>

Grade 5

WEEK 7	Lesson 25 (45 min) Objective(s): A system is a set of objects that is working together.		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: S 2.1b, 2.1d, 2.2b; • General Skills: 1, 2, 3, 7 	
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> – Teacher Guide Inv. 4: Flippers, pp. 1-7. – Teacher Guide Inv. 4: Flippers, Part 1: Flip-Stick Construction, Materials and Getting Ready, pp. 8-9. – www.fossweb.com/NYC – Check website “Media” link for images and websites related to catapults. 	Investigation/Activity <ul style="list-style-type: none"> – Investigation 4: <i>Flippers</i> Part 1: <i>Flip-Stick Construction</i>, # 1-6 – Teacher Guide pages 10-11 – Investigation Duplication Master: Student Sheet No. 17 – Assessment - Assessment Chart No. 4: 		Homework/Extra Practice

Grade 5

WEEK 7 (continued)	<p>Lesson 26 (45 min)</p> <p>Objective(s): A variable is anything that you can change in an experiment that might affect the outcome.</p>	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c, 1.2a; S 2.1b, 2.1c, 2.1d; General Skills: 1, 2, 3, 4, 7, 8 	
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 4: Flippers, pp. 1-7. – Teacher Guide Inv. 4: Flippers, Part 2: Flip-Out, Materials and Getting Ready, pp. 12-13. – Teacher Guide Science Stories folio, pp. 16-17. 	<p>Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 4: <i>Flippers</i> Part 2: <i>Flip-Out</i>, # 1-13 – Teacher Guide pages 14-17 – Investigation Duplication Master: Student Sheet Nos. 18, 19 – Assessment - Assessment Chart for Investigation 4, Part 2 – Response Sheet – Flippers Assessment folio, page 13, Response Sheet Scoring Guide <p><i>Prepare to read FOSS Science Stories: Flingers, pages 32-33. The estimated time for this reading is 30 minutes.</i></p>	<p>Homework/Extra Practice</p> <p>Research catapults and the role they played in ancient civilizations.</p>

Grade 5

WEEK 7 (continued)	<p>Lesson 27 (45 min)</p> <p>Objective(s): A variable is anything that you can change in an experiment that might affect the outcome.</p>		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: M1.1a, M3.1a; S1.1a, 1.1b, 1.1c, 1.2a; S 2.1b, 2.1c, 2.1d; • General Skills: 1, 2, 3, 4, 7, 8 	
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 4: Flippers, pp. 1-7. – Teacher Guide Inv. 4: Flippers, Part 2: Flip-Out, Materials and Getting Ready pp. 12-13. – Teacher Guide Science Stories folio, pp 16-17. – www.fossweb.com/NYC – Check website for the interactive simulation: <i>Blasto, the Subhuman Canonball</i>, to support teaching Variables. 		<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 4: <i>Flippers</i> Part 2: <i>Flip-Out</i>, # 14-17 – Teacher Guide page 17 – Investigation Duplication Master: Student Sheet Nos. 18, 19 – Assessment - Assessment Chart for Investigation 4, Part 2 – Response Sheet – Flippers Assessment folio, page 13, Response Sheet Scoring Guide <p><i>FOSS Science Stories: Flingers</i>, pages 32-33. <i>The estimated time for this reading is 30 minutes.</i></p>	

Grade 5

WEEK 7 (continued)	<p>Lesson 28 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> In a controlled experiment all the variables are controlled except one, allowing the experimenter to observe the effect of that one variable on the outcome. Conducting multiple trials of the same experiment provides greater accuracy. Graphs can be used to look for errors, make predictions, and understand the relationship between a variable and an outcome. 		<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.2a, 1.3; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e General Skills: 1, 2, 3, 4, 7, 8
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 4: Flippers, pp. 1-7. Teacher Guide Inv. 4: Flippers, Part 3: Controlled Experiments, Materials and Getting Ready, pp. 18-19. Teacher Guide Science Stories folio, pp. 18-19 	<p>Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 4: <i>Flippers</i> Part 3: <i>Controlled Experiments</i>, # 1-7 Teacher Guide pages 20-21 Investigation Duplication Master: Student Sheet Nos. 20, 16 Assessment - Assessment Chart for Investigation 4, Part 3 – Student Sheet and Teacher Observation Assessment folio, page 14, Student Sheet and Teacher Observation Scoring Guide <p><i>Prepare to read FOSS Science Stories: Prove It? pages 34-37. The estimated time for this reading is 30 minutes.</i></p>	<p>Homework/Extra Practice</p>

Grade 5

NOTE	<p>Prepare for Investigation 4, Part 4: Choosing Your Own Investigation. THIS PART IS <u>NOT OPTIONAL</u> for Grade 5, Unit 1. (Teachers may be aware of similar sections of other FOSS® units in grades 3, 4 & 6 that may have been noted as “Optional” Lessons.)</p> <p>Students develop investigation plans, do systematic work to complete investigations and support conclusions with evidence.</p> <p>Examine the Project Ideas (Student Sheet No. 21) and entries in the Project Folder prepared in Investigation 1, Part 2, Step 17 for ideas for individual, group or class projects. Interdisciplinary Extensions—such as variations on pendulums, planes, toys (cars, balls, parachutes, etc.)—are appropriate research projects.</p> <p>In FOSS® Variables FOUR LESSONS (<u>Lesson 31, 32, 33, 34</u>) include work to complete Investigation 4: Flippers, Part 4: Choosing Your Own Investigation.</p>		
	<p>Lesson 29 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> In a controlled experiment all the variables are controlled except one, allowing the experimenter to observe the effect of that one variable on the outcome. Conducting multiple trials of the same experiment provides greater accuracy. Graphs can be used to look for errors, make predictions, and understand the relationship between a variable and an outcome. 	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.2a, 1.3; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e General Skills: 1, 2, 3, 4, 7, 8 	
WEEK 8	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 4: Flippers, pp. 1-7. Teacher Guide Inv. 4: Flippers, Part 3: Controlled Experiments, Materials and Getting Ready, pp. 18-19. Teacher Guide Science Stories folio, pp. 18-19. www.fossweb.com/NYC – Check website for the interactive simulation: <i>Blasto, the Subhuman Canonball</i>, to support teaching Variables. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 4: <i>Flippers</i> Part 3: <i>Controlled Experiments</i>, # 8-11 Teacher Guide pages 20-21 Investigation Duplication Master: Student Sheet Nos. 20, 16 Assessment - Assessment Chart for Investigation 4, Part 3 – Student Sheet and Teacher Observation Assessment folio, page 14, Student Sheet and Teacher Observation Scoring Guide <p><i>Prepare to read FOSS Science Stories: Prove It? pages 34-37. The estimated time for this reading is 30 minutes.</i></p> <p style="text-align: center;">Homework/Extra Practice</p>	

Grade 5

WEEK 8 (continued)	<p>Lesson 30 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> In a controlled experiment all the variables are controlled except one, allowing the experimenter to observe the effect of that one variable on the outcome. Conducting multiple trials of the same experiment provides greater accuracy. Graphs can be used to look for errors, make predictions, and understand the relationship between a variable and an outcome. 	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: M1.1a, M3.1a; S1.2a, 1.3; S 2.1b, 2.1c, 2.1d, 2.2b, 2.2c, 2.2d, 2.2e, 2.3b, 2.3c; S3.1a, 3.1b, 3.2a, 3.2b, 3.2c, 3.2d, 3.2e General Skills: 1, 2, 3, 4, 7, 8 	
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 4: Flippers, pp. 1-7. Teacher Guide Inv. 4: Flippers, Part 3: Controlled Experiments, Materials and Getting Ready, pp. 18-19. Teacher Guide Science Stories folio, pp. 18-19. 	<p style="text-align: center;">Investigation/Activity</p> <p>Investigation 4: <i>Flippers</i> Part 3: <i>Controlled Experiments</i>, # 12-15 Teacher Guide pages 20-21 Investigation Duplication Master: Student Sheet Nos. 20, 16 Assessment - Assessment Chart for Investigation 4, Part 3 – Student Sheet and Teacher Observation Assessment folio, page 14, Student Sheet and Teacher Observation Scoring Guide</p> <p><i>FOSS Science Stories: Prove It</i>, pages 34-37. <i>The estimated time for this reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Math Connection, Student Sheet No. 27</p>

Grade 5

WEEK 8 (continued)	<p>Lesson 31 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> Photographs and topographic maps are two ways to represent a real place. Photographs and topographic maps provide information about the area they represent. 	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> Expanded Process Skills: S1.2b General Skills: 1, 3, 4, 7 Physical Setting Skills: 1, 7 	
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> Teacher Guide Inv. 5: Bird's Eye View, pp. 1-7. Teacher Guide Inv. 5: Bird's Eye View, Part 2: Mt. Shasta Aerial Photos, Materials and Getting Ready, pp. 16-17. Teacher Guide Science Stories folio, pp 16-17. Teacher Guide Assessment folio, p. 14. www.fossweb.com/NYC – Check website for interactive simulation: Jigsaw Puzzle. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> Investigation 5: <i>Bird's Eye View</i> Part 2: <i>Mt. Shasta Aerial Photos, # 6-9</i> Teacher Guide pages 19-20 Investigation Duplication Master: Student Sheet No. 21, 22 Assessment - Assessment Chart No. 4: Assessment for Investigation 5, Part 2 – Response Sheet – Bird's Eye View <p>READ FOSS Science Stories: National Parks, pages 37-42. <i>The estimated time for the reading is 30 minutes.</i></p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Math Extension, Student Sheet No. 33</p>

Grade 5

WEEK 8 (continued)	Lesson 32 (45 min) Objective(s): <ul style="list-style-type: none"> • Maps can be drawn from aerial photographs. • A photograph does not give enough information to make a complete topographic map. 		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: S1.2b • General Skills: 1, 3, 4, 7 • Physical Setting Skills: 1, 7
	Advanced Planning/ Notes to Teachers <ul style="list-style-type: none"> – Teacher Guide Inv. 5: Bird’s Eye View, pp. 1-7. – Teacher Guide Inv. 5: Bird’s Eye View, Part 3: Death Valley and Grand Canyon Maps, Materials and Getting Ready, pp. 21-23. – Teacher Guide Science Stories folio, pp. 18-19. – Teacher Guide Assessment folio, p. 15-17. 	Investigation/Activity <ul style="list-style-type: none"> – Investigation 5: <i>Bird’s Eye View</i> Part 3: <i>Death Valley and Grand Canyon Maps</i>, # 1-8 – Teacher Guide pages 24-26 – Investigation Duplication Master: Teacher Sheet No. 3 – Transparency Overlay Grid – Investigation Duplication Master: Student Sheet No. 5, Map Grid – Investigation Duplication Master: Student Sheet No. 23, 24 – Assessment - Assessment Chart No. 4: Assessment for Investigation 5, Part 3 – Student Sheet – Death Valley Questions and Grand Canyon Questions <p><i>Prepare to read FOSS Science Stories: Eye of the Needle, pages 43-44.</i> <i>The estimated time for the reading is 30 minutes.</i></p>	Homework/Extra Practice

Grade 5

	<p>Lesson 33 (45 min)</p> <p>Objective(s):</p> <ul style="list-style-type: none"> • Maps can be drawn from aerial photographs. • A photograph does not give enough information to make a complete topographic map. 	<p>Alignment with NYS Core Curriculum:</p> <ul style="list-style-type: none"> • Expanded Process Skills: S1.2b • General Skills: 1, 3, 4, 7 • Physical Setting Skills: 1, 7 	
WEEK 9	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 5: Bird’s Eye View, pp. 1-7. – Teacher Guide Inv. 5: Bird’s Eye View, Part 3: Death Valley and Grand Canyon Maps, Materials and Getting Ready, pp. 21-23. – Teacher Guide Science Stories folio, pp. 18-19. – Teacher Guide Assessment folio, p. 15-17. – www.fossweb.com/NYC – Check website: Landforms/media/images for photos of Death Valley and the Grand Canyon. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 5: <i>Bird’s Eye View</i> Part 3: <i>Death Valley and Grand Canyon Maps</i>, # 9-11 – Teacher Guide page 26 – Investigation Duplication Master: Teacher Sheet No. 3 – Transparency Overlay Grid – Investigation Duplication Master: Student Sheet No. 5, Map Grid – Investigation Duplication Master: Student Sheet No. 23, 24 – Assessment - Assessment Chart No. 4: Assessment for Investigation 5, Part 3 – Student Sheet – Death Valley Questions and Grand Canyon Questions <p>READ FOSS Science Stories: <i>Eye of the Needle</i>, pages 43-44. The estimated time for the reading is 30 minutes.</p>	<p style="text-align: center;">Homework/Extra Practice</p> <p>Study a U.S. Landforms Orthophoto: See “Science Extensions” Teacher Guide, Inv. 5, page 34 and Investigation Duplication Master No. 28</p> <p><i>If your copier does not make a good quality image, download this master as a PDF file from www.fossweb.com/NYC/masters.html and print them from your computer.</i></p>

Grade 5

WEEK 9 (continued)	<p>Lesson 34 (45 min) <i>FOSS® encourages the use of student projects in Choosing Your Own Investigation. Students develop investigation plans, do systematic work to complete investigations and support conclusions with evidence. While it may not be possible to complete projects in every FOSS® unit, creative management and interdisciplinary opportunities will allow students to gain experience in manageable independent projects. In Landforms FOUR to SIX SESSIONS may be incorporated to complete Investigation 5: Bird’s Eye View, Part 4: Choosing Your Own Investigation. If time is not available for Lessons 34, proceed to Lesson 35.</i></p> <p>Objective(s): Apply concepts concerning landforms and topographic maps.</p>		<p>Alignment with NYS Core Curriculum: <i>(In addition to the content standards aligned with Landforms, this lesson rehearses many of the process skills introduced in Unit 1: FOSS® Variables.)</i></p> <ul style="list-style-type: none"> • Expanded Process Skills: S1.2b • PS 2.1c, 2.1g, 2.1h, 2.1i • PS 2.2a, 2.2c, 2.2f, • General Skills: 1, 2, 3, 4, 7, 8 • Physical Setting Skills: 1, 7
	<p>Advanced Planning/ Notes to Teachers</p> <ul style="list-style-type: none"> – Teacher Guide Inv. 5: Bird’s Eye View, pp. 1-7 – Teacher Guide Inv. 5: Bird’s Eye View, Part 4: Choosing Your Own Investigation, Materials and Getting Ready, pp. 27-29. – Teacher Guide Assessment folio, p. 18-19. – www.fossweb.com/NYC – Check website for interactive simulations, to write questions to a scientist, for teaching tips, and other websites to support teaching Landforms. 	<p style="text-align: center;">Investigation/Activity</p> <ul style="list-style-type: none"> – Investigation 5: <i>Bird’s Eye View</i> Part 4: <i>Choosing Your Own Investigation</i>, # 1-6 – Teacher Guide pages 30-31 – Investigation Duplication Master: Student Sheet No. 25, 26, 27 – Assessment - Assessment Chart No. 4: Assessment for Investigation 5, Part 4 – Student Sheet – Project Proposal and Teacher Observation 	<p style="text-align: center;">Homework/Extra Practice</p> <p>Home School Connection, Student Sheet No. 27</p>

Grade 5

WEEK 9 (continued)	Lesson 35 REQUIRED (45 min) Objective(s): Apply concepts concerning landforms and topographic maps.		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: S1.2b • PS 2.1g, 2.1i • General Skills: 4, 7, 8 • Physical Setting Skills: 7
	Advanced Planning/ Notes to Teachers – Teacher Guide, Benchmark Assessment Folio, pp. 1-21, 56 – Download optional tool: Benchmark and I-Check Assessment coding sheets at www.fossweb.com/NYC	Investigation/Activity Benchmark Assessment Packet, Survey/Posttest, pages 1-5	Homework/Extra Practice
	Lesson 36 REQUIRED (45 min) Objective(s): Apply concepts concerning landforms and topographic maps.		Alignment with NYS Core Curriculum: <ul style="list-style-type: none"> • Expanded Process Skills: S1.2b • PS 2.1g, 2.1i • General Skills: 4, 7, 8 • Physical Setting Skills: 7
	Advanced Planning/ Notes to Teachers – Teacher Guide, Benchmark Assessment Folio, pp. 1-21, 56. – Download optional tool: Benchmark and I-Check Assessment coding sheets at www.fossweb.com/NYC .	Investigation/Activity Benchmark Assessment Review (selected items)	Homework/Extra Practice