

Kindergarten

Forces and Motion

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.P.1 Understand the positions and motions of objects and organisms observed in the environment. | | |
| <p>K.P.1.1. Compare the relative position of various objects observed in the classroom and outside using position words such as: in front of, behind, between, on top of, under, above, below and beside.</p> | <p>FOSS Next Generation Animals Two by Two Investigation 1: Goldfish and Guppies Part 2: Caring for Goldfish pp. 84-88 See procedures 3, 5, 6, and 7 Part 3: Goldfish Behavior pp. 89-93 See procedures 2, 4, 5, 6, and 8 Part 5: Comparing Schoolyard Birds pp. 102-112 See procedure 14</p> | <p>PA: During procedure 4, students model fish behavior by acting out what they observe with the model aquarium and paper fish. They use language to describe the position and motions of the goldfish in relationship to the features of the aquarium.</p> |
| <p>K.P.1.2. Give examples of different ways objects and organisms move (to include falling to the ground when dropped):</p> <ul style="list-style-type: none"> • Straight • Zigzag • Round and round • Back and forth • Fast and slow | <p>FOSS Next Generation Animals Two by Two Investigation 1: Goldfish and Guppies Part 2: Caring for Goldfish pp. 84-88 See procedure 6</p> | |
| | <p>FOSS Next Generation Animals Two by Two Investigation 2: Water and Land Snails Part 3: Land Snails pp. 140-150</p> <p>As students observe the land snail they should describe how it moves. See procedure 8 for discussion questions.</p> | <p>FQA: Students describe how land snails move.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 3: Big and Little Worms Part 2: Redworm Behavior pp. 172-179</p> <p>As students observe the redworms they should describe how it moves. See procedure 4 for discussion questions.</p> | <p>FQA: Students describe how redworms move.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 4: Pill bugs and Sow Bugs Part 3: Isopod Movement pp. 213-221</p> <p>As students observe the isopods they should describe how it moves. See procedure 7 for discussion questions.</p> | <p>FQA: Students describe how isopods move.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 4: Getting Things to Move Part 1: Pushes and Pulls pp. 270-278</p> <p><i>FOSS Science Resources:</i> "Pushes and Pulls" pp. 47-59</p> | <p>FQA: Students describe what causes objects to move.</p> |



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Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| K.P.1 Understand the positions and motions of objects and organisms observed in the environment. | | |
| <p>K.P.1.2. Give examples of different ways objects and organisms move (to include falling to the ground when dropped):</p> <ul style="list-style-type: none"> • Straight • Zigzag • Round and round • Back and forth • Fast and slow | <p>FOSS Next Generation Materials and Motion Investigation 4: Getting Things to Move Part 2: Colliding Objects pp. 279-288</p> <p><i>FOSS Science Resources:</i> "Collisions" pp. 60-68</p> | <p>FQA: Students describe what happens when objects collide.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 4: Getting Things to Move Part 3: Rolling Outdoors pp. 289-295</p> <p><i>FOSSWEB Multimedia:</i> "Build a Roller Coaster"</p> | <p>FQA: Students describe where and how balls roll in the schoolyard.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 4: Getting Things to Move Part 4: Balloon Rockets pp. 296-301</p> | <p>FQA: Students describe ways to change the distance a balloon rocket travels.</p> |

Kindergarten

Matter: Properties and Change

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.P.2 Understand how objects are described based on their physical properties and how they are used. | | |
| K.P.2.1. Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility). | FOSS Next Generation Animals Two by Two Investigation 2: Water and Land Snails Part 2: Shells pp. 135-139 See procedures 5-9, 11 | PA: Students describe how they sorted shells in procedures 6 and 7. FQA: Students describe with pictures and words how shells can be sorted. |
| | FOSS Next Generation Materials and Motion Investigation 1: Getting to Know Wood Part 1: Observing Wood pp. 86-101 <i>FOSS Science Resources:</i> "The Story of a Chair" pp. 3-8 | FQA: Students describe where wood comes from. Students can compare wood samples based properties. |
| | FOSS Next Generation Materials and Motion Investigation 2: Getting to Know Paper Part 1: Paper Hunt pp. 162-171 <i>FOSS Science Resources:</i> "The Story of a Box" pp. 13-18 | FQA: Students describe objects made of paper. |
| | FOSS Next Generation Materials and Motion Investigation 2: Getting to Know Paper Part 2: Using Paper pp. 172-178 | FQA: Students describe what properties make paper easy to fold. |
| | FOSS Next Generation Materials and Motion Investigation 3: Getting to Know Fabric Part 1: Feely Boxes and Fabric Hunt pp. 218-224 | FQA: Students describe how fabrics are different using property words. |
| K.P.2.2 Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc.) from which objects are made and how they are used. | FOSS Next Generation Materials and Motion Investigation 1: Getting to Know Wood Part 1: Observing Wood pp. 86-101 Part 6: Making Particleboard pp. 133-139 Part 7: Making Plywood pp. 140-145 <i>FOSS Science Resources:</i> "The Story of a Chair" pp. 3-8 | FQA: Students describe where wood comes from. |
| | FOSS Next Generation Materials and Motion Investigation 2: Getting to Know Paper Part 1: Paper Hunt pp. 162-171 <i>FOSSWEB Multimedia:</i> "Where Is Wood?" | FQA: Students describe objects made of paper. |
| | FOSS Next Generation Materials and Motion Investigation 2: Getting to Know Paper Part 2: Using Paper pp. 172-178 | FQA: Students describe what properties make paper good for writing. |
| | FOSS Next Generation Materials and Motion Investigation 2: Getting to Know Paper Part 4: Paper Recycling pp. 186-193 | FQA: Students describe how new paper can be made from old paper. |



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Matter: Properties and Change (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| K.P.2 Understand how objects are described based on their physical properties and how they are used. | | |
| <p>K.P.2.2 Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc.) from which objects are made and how they are used.</p> | <p>FOSS Next Generation Materials and Motion Investigation 2: Getting to Know Paper Part 5: Paper Mache pp. 194-200</p> | <p>FQA: Students describe how paper can be made strong to form a bowl.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 3: Getting to Know Fabric Part 1: Feely Boxes and Fabric Hunt pp. 218-224</p> | <p>FQA: Students describe items that are made of fabric.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 3: Getting to Know Fabric Part 2: Taking Fabric Apart pp. 225-231</p> <p><i>FOSS Science Resources:</i> "What Is Fabric Made From?" pp. 19-31</p> <p><i>FOSSWEB Streaming Video:</i> "What Is Agriculture?"</p> <p><i>FOSSWEB Multimedia:</i> "Weave a Pattern"</p> | <p>FQA: Students describe how fabric is made.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 3: Getting to Know Fabric Part 3: Water and Fabric pp. 232-235</p> | <p>FQA: Students describe how water interacts with fabric.</p> |
| | <p>FOSS Next Generation Materials and Motion Investigation 3: Getting to Know Fabric Part 4: Graphing Fabric Uses pp. 236-241</p> <p><i>FOSS Science Resources:</i> "How Are Fabrics Used?" pp. 32-40</p> | <p>FQA: Students describe how different fabrics are used.</p> |



Kindergarten

Earth Systems, Structures and Processes

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.E.1 Understand change and observable patterns of weather that occur from day to day and throughout the year. | | |
| <p>K.E.1.1 Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.</p> | <p>FOSS Next Generation Trees and Weather Investigation 1: Observing Trees Part 1: Observing School Yard Trees pp. 78-88 Part 5: Adopt School Year Trees pp. 103-111</p> <p><i>FOSSWEB Multimedia:</i> "Leaf Sorting Game"</p> <p><i>FOSSWEB Streaming Video:</i> "Once There Was a Tree"</p> | <p>FQA: Students describe through words and drawings what they observed about different schoolyard trees.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather Part 1: Weather Calendar pp. 174-180</p> | <p>FQA: Students close their eyes and feel the wind, look up in the sky and watch clouds move. They describe the weather with words discussed in class. Students agree on an appropriate picture that describes the day's weather and tape it on the weather calendar in the appropriate date. They predict tomorrow's weather.</p> |
| | <p>FOSS Next Generation Trees and Weather <i>FOSS Science Resources:</i> "Up in the Sky"</p> | <p>FQA: Students look in the sky for the sun, and in the sky at night for the moon. They feel temperature change from day to night. They learn that water and land get warm in the sunshine and infer what happens to the land and water at night.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather Part 2: Recording Temperature pp. 181-187</p> | <p>FQA: Students explain how a thermometer measures air temperature and record changes in temperature over a period of time with drawings and words. Prior, they have been experimenting with a thermometer by recognizing room temperature, putting the thermometer in cold water, and experiencing outdoor temperature and explaining if an outdoor area is sunny or shady, warm or cold, using the thermometer readings as evidence.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather Part 3: Wind Direction pp. 188-198</p> | <p>FQA: Students build a wind sock, observe the effect of wind on the wind sock, and explain through words and pictures how it can help tell what way the wind is blowing.</p> |
| | <p>FOSS Next Generation Trees and Weather <i>FOSS Science Resources:</i> "Weather"</p> | <p>ELA Connections: Students answer questions about how they may feel when the weather changes, and identify tools used to predict weather.</p> |



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Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.E.1 Understand change and observable patterns of weather that occur from day to day and throughout the year. | | |
| <p>K.E.1.1 Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.</p> | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 1: Fall: What Comes from Trees? pp. 212-214</p> | |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 2: Fall: Food from Trees pp. 215-219</p> <p><i>FOSS Science Resources:</i> "My Apple Tree"</p> | <p>FQA/ELA Connections: Students identify the seasons and identify the current season. They identify the fruit that apple trees produce in the fall and discuss other fruit that grows on trees. They discuss how winter weather will be different from fall weather and what an apple tree will look like during the winter. They talk about winter ice melting in Spring.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 3: Fall: Visiting Adopted Trees pp. 220-224</p> | <p>FQA: Students make observations to collect data about how the adopted tree(s) look.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 4: Winter: Evergreen Hunt pp. 225-230</p> <p><i>FOSS Science Resources:</i> "Orange Trees"</p> | <p>FQA: Students read about orange trees and how they change over seasons. They look at Evergreen trees among their adopted trees and talk about changes they observe in winter trees.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 6: Winter: Visiting Adopted Trees pp. 235-239</p> <p><i>FOSSWEB Streaming Video:</i> "Once There Was a Tree"</p> | <p>FQA: Students observe how their adopted trees appear in winter compared to the information they collected when they initially observed the tree, and the data they collected during their winter observation. They continue to log the weather in their weather calendar and compare temperatures, etc. to current conditions and observe the correlations (e.g. In the coldest weather, trees are bare (no leaves)). Evergreen trees still have their needles.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 9: Spring: Visiting Adopted Trees pp. 248-253</p> <p><i>FOSS Science Resources:</i> "Maple Trees"</p> | <p>FQA: Students have collected data through the seasons and use this to describe changes in writing and labelling pictures, and sharing their notebook entries with others.</p> |



Kindergarten

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.E.1 Understand change and observable patterns of weather that occur from day to day and throughout the year. | | |
| <p>K.E.1.1 Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.</p> | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons <i>FOSSWEB Streaming Video:</i> "Summer"</p> | <p>FQA: Students explain the repeating patterns of changing seasons. They provide evidence from what they have observed in their adopted trees, what they have read about seasonal changes in trees, and what they have viewed in videos about seasons.</p> |
| <p>K.E.1.2 Summarize daily weather conditions noting changes that occur from day to day and throughout the year.</p> | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather Part 1: Weather Calendar pp. 174 - 180</p> | <p>FQA: Students close their eyes and feel the wind, look up in the sky and watch clouds move. They describe the weather with words discussed in class. Students agree on an appropriate picture that describes the day's weather and tape it on the weather calendar in the appropriate date. They predict tomorrow's weather.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather <i>FOSS Science Resources:</i> "Up in the Sky"</p> | <p>FQA: Students look in the sky for the sun, and in the sky at night for the moon. They feel temperature change from day to night. They learn that water and land get warm in the sunshine and infer what happens to the land and water at nights.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather Part 2: Recording Temperature pp. 181-187</p> | <p>FQA: Students explain how a thermometer measures air temperature and record changes in temperature over a period of time with drawings and words. Prior, they have been experimenting with a thermometer by recognizing room temperature, putting the thermometer in cold water, and experiencing outdoor temperature and explaining if an outdoor area is sunny or shady, warm or cold, using the thermometer readings as evidence.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather Part 3: Wind Direction pp. 188-198</p> | <p>FQA: Students build a wind sock, observe the effect of wind on the wind sock, and explain through words and pictures how it can help tell what way the wind is blowing.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 3: Observing Weather <i>FOSS Science Resources:</i> "Weather"</p> | <p>ELA Connections: Students answer questions about how they may feel when the weather changes, and identify tools used to predict weather.</p> |



Kindergarten

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.E.1 Understand change and observable patterns of weather that occur from day to day and throughout the year. | | |
| <p>K.E.1.3 Compare weather patterns that occur from season to season.</p> | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 2: Fall: Food from Trees pp. 215-219</p> <p><i>FOSS Science Resources:</i> "My Apple Tree"</p> | <p>FQA/ELA Connections: Students identify the seasons and identify the current season. They identify the fruit that apple trees produce in the fall and discuss other fruit that grow on trees. They discuss how winter weather will be different from fall weather and what an apple tree will look like during the winter. They talk about winter ice melting in Spring.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 3: Fall: Visiting Adopted Trees pp. 220-224</p> | <p>FQA: Students make observations to collect data about how the adopted tree(s) look.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 4: Winter: Evergreen Hunt pp. 225-230</p> <p><i>FOSS Science Resources:</i> "Orange Trees"</p> | <p>FQA: Students read about orange trees and how they change over seasons. They look at Evergreen trees among their adopted trees and talk about changes they observe in winter trees.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 6: Winter: Visiting Adopted Trees pp. 235-239</p> <p><i>FOSSWEB Streaming Video:</i> "Once There Was a Tree"</p> | <p>FQA: Students observe how their adopted trees appear in winter compared to the information they collected when they initially observed the tree, and the data they collected during their winter observation. They continue to log the weather in their weather calendar and compare temperatures, etc., to current conditions and observe the correlations (e.g. In the coldest weather, trees are bare (no leaves)). Evergreen trees still have their needles.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons Part 9: Spring: Visiting Adopted Trees pp. 248-253</p> <p><i>FOSS Science Resources:</i> "Maple Trees"</p> | <p>FQA: Students have collected data through the seasons and use this to describe changes in writing and labelling pictures, and sharing their notebook entries with others.</p> |
| | <p>FOSS Next Generation Trees and Weather Investigation 4: Trees Through the Seasons <i>FOSSWEB Streaming Video:</i> "Summer"</p> | <p>FQA: Students explain the repeating patterns of changing seasons. They provide evidence from what they have observed in their adopted trees, what they have read about seasonal changes in trees, and what they have viewed in videos about seasons.</p> |



Kindergarten

Structures and Functions of Living Organisms

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.L.1 Compare characteristics of animals that make them alike and different from other animals and nonliving things. | | |
| <p>K.L.1.1 Compare different types of the same animal (i.e. different types of dogs, different types of cats, etc.) to determine individual differences within a particular type of animal.</p> | <p>FOSS Next Generation Animals Two by Two Investigation 3: Big and Little Worms Part 3: Comparing Redworms to Night Crawlers pp. 180-187</p> <p><i>FOSS Science Resources:</i> "Worms in Soil" pp. 47</p> | <p>FQA: Students describe with pictures and words how redworms and night crawlers are same and different. See procedures 7 and 13.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 4: Pill Bugs and Sow Bugs Part 2: Identifying Isopods pp. 206-212</p> <p><i>FOSS Science Resources:</i> "Isopods" pp. 54</p> | <p>FQA: Students describe with pictures and words how pill bugs and sow bugs are same and different. See procedures 6 and 12.</p> |
| <p>K.L.1.2 Compare characteristics of living and nonliving things in terms of their:</p> <ul style="list-style-type: none"> • Structure • Growth • Changes • Movement • Basic needs | <p>FOSS Next Generation Animals Two by Two Investigation 1: Goldfish and Guppies Part 1: The Structure of Goldfish pp. 76-83 See procedures 2, 3, 4, and 6</p> | <p>FQA: On Teacher Master 4, students label the structures of the goldfish. See procedures 4 and 6.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 1: Goldfish and Guppies Part 2: Caring for Goldfish pp. 84-88</p> | <p>FQA: Students draw pictures and/or write about what goldfish need to live.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 1: Goldfish and Guppies Part 4: Comparing Guppies to Goldfish pp. 94-101</p> <p><i>FOSS Science Resources:</i> "Fish Live in Many Places" pp. 10-19</p> | |
| | <p>FOSS Next Generation Animals Two by Two Investigation 1: Goldfish and Guppies Part 5: Comparing Schoolyard Birds pp. 102-112</p> <p><i>Animals Two by Two Science Resources:</i> "Birds Outdoors" pp. 20-28</p> | <p>FQA: On Teacher Master 10, students draw pictures and/or write about birds in the schoolyard. Their answer includes structures and basic needs. See procedure 13.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 2: Water and Land Snails Part 1: Observing Water Snails pp. 128-134 See procedures 1, 3, 4, and 6</p> | <p>FQA: On Teacher Master 13, students label the structures of the water snail.</p> |



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Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| K.L.1 Compare characteristics of animals that make them alike and different from other animals and nonliving things. | | |
| <p>K.L.1.2 Compare characteristics of living and nonliving things in terms of their:</p> <ul style="list-style-type: none"> • Structure • Growth • Changes • Movement • Basic needs | <p>FOSS Next Generation Animals Two by Two Investigation 2: Water and Land Snails Part 3: Land Snails pp. 140-150 See procedures 8 and 10</p> <p><i>FOSS Science Resources:</i> "Water and Land Snails" pp. 29-36</p> | <p>FQA: On Teacher Master 16, students label the structures of the land snail. See procedure 13.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 3: Big and Little Worms Part 1: The Structure of Redworms pp. 166-171</p> | <p>FQA: On Teacher Master 20, students identify the structures of redworms. See procedure 8.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 3: Big and Little Worms Part 2: Redworm Behavior pp. 172-179</p> | <p>FQA: On Teacher Master 21, students identify the basic needs of redworms. See procedure 16. Weeks later, on Teacher Master 21, students record observations and identify changes in the redworm habitat that clarifies basic needs of redworms.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 3, Big and Little Worms Part 3: Comparing Redworms to Night Crawlers pp. 180-187</p> <p><i>FOSS Science Resources:</i> "Worms in Soil" pp. 37-47</p> | <p>FQA: Students draw pictures and/or write about how redworms and night crawlers are same and different.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 4: Pill Bugs and Sow Bugs Part 1: Isopod Observations pp. 200-205</p> | <p>FQA: Students draw pictures and/or write about structures of isopods.</p> |
| | <p>FOSS Next Generation Animals Two by Two Investigation 4: Pill Bugs and Sow Bugs Part 2: Identifying Isopods pp. 206-212</p> <p><i>FOSS Science Resources:</i> "Isopods" pp. 48-54</p> | |
| | <p>FOSS Next Generation Animals Two by Two Investigation 4: Pill Bugs and Sow Bugs Part 3: Movement pp. 213-221</p> <p><i>FOSS Science Resources:</i> "Animals All around Us" pp. 55-66</p> | <p>FQA: Students draw pictures and/or write about the movement of isopods.</p> |



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Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| K.L.1 Compare characteristics of animals that make them alike and different from other animals and nonliving things. | | |
| <p>K.L.1.2 Compare characteristics of living and nonliving things in terms of their:</p> <ul style="list-style-type: none"> • Structure • Growth • Changes • Movement • Basic needs | <p>FOSS Next Generation Animals Two by Two Investigation 4: Pill Bugs and Sow Bugs Part 4: Animals Living Together pp. 222-228</p> <p><i>FOSS Science Resources:</i> "Living and Nonliving" pp. 67-86</p> <p><i>FOSSWEB Multimedia:</i> "Find the Parent" See pp. 55 and 228 for guidance</p> | <p>FQA: Students draw pictures and/or write about what animals need to live. See procedure 8.</p> |

Grade 1

Forces and Motion

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.P.1 Understand how forces (pushes or pulls) affect the motion of an object. | | |
| 1.P.1.1. Explain the importance of a push or pull to changing the motion of an object. | FOSS Third Edition Balance and Motion Investigation 2: Spinners Part 1: Tops pp. 90-97 | FQA: Students identify push or pull as two ways a force can make things move, and describe the force to move a ball, spin a pinwheel, and the pull force of gravity. |
| | FOSS Third Edition Balance and Motion Investigation 2: Spinners Part 2: Zoomers, pp. 98-104 | FQA: Students plan, construct, and test a way to use string to keep a disk in motion. They analyze and explain the outcome. |
| | FOSS Third Edition Balance and Motion Investigation 2: Spinners Part 3: Twirlers pp. 105-114 <i>FOSS Science Resource Book:</i> "Push and Pull" "Things that Spin" | Investigation 2 I-Check |
| | FOSS Third Edition Balance and Motion Investigation 5: Magnets and Tools Part 1: Magnets pp. 200-208 | FQA: To demonstrate that magnets can both push and pull, students plan and carry out several investigations and explain from their evidence that magnets can only push other magnets, and pull magnets and some metals. |
| | FOSS Third Edition Balance and Motion Investigation 5: Magnets and Tools Part 2: Tools and Machines pp. 209-215 <i>FOSS Science Resource Book:</i> "Move It But Don't Touch It " | Investigation 5 I-Check |
| 1.P.1.2. Explain how some forces (pushes and pulls) can be used to make things move without touching them, such as magnets. | FOSS Third Edition Balance and Motion Investigation 5: Magnets and Tools Part 1: Magnets pp. 200-208 | FQA: To demonstrate that magnets can both push and pull, students plan and carry out several investigations and explain from their evidence that magnets can only push other magnets, and pull magnets and some metals. |
| | FOSS Third Edition Balance and Motion Investigation 5: Magnets and Tools Part 2: Tools and Machines pp. 209-215 <i>FOSS Science Resource Book:</i> "Move It But Don't Touch It " | Investigation 5 I-Check |



Grade 1

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.P.1 Understand how forces (pushes or pulls) affect the motion of an object. | | |
| <p>1.P.1.3. Predict the effect of a given force on the motion of an object, including balanced forces.</p> | <p>FOSS Third Edition Balance and Motion Investigation 1: Balance Part 1: Balancing a Crayfish pp. 50-59 Part 2: Triangle and Arch pp. 60-64</p> | <p>FQA: Students predict which figures in drawings will be stable positions after balancing a cardboard crayfish on its nose using clothespins as counter weights.</p> |
| | <p>FOSS Third Edition Balance and Motion Investigation 1: Balance Part 3: Pencils Challenge pp. 65-72 Part 4: Mobiles pp. 73-81</p> <p><i>FOSS Science Resource Book:</i> "Make It Balance" "Mirette on the High Wire"</p> | <p>Investigation 1 I-Check</p> |
| | <p>FOSS Third Edition Balance and Motion Investigation 2: Spinners Part 1: Tops pp. 90-97</p> | <p>FQA: Students identify push or pull as two ways a force can make things move, and describe the force to move a ball, spin a pinwheel, and the pull force of gravity.</p> |
| | <p>FOSS Third Edition Balance and Motion Investigation 2: Spinners Part 2: Zoomers pp. 98-104</p> | <p>FQA: Students plan, construct, and test a way to use string to keep a disk in motion. They analyze and explain the outcome.</p> |
| | <p>FOSS Third Edition Balance and Motion Investigation 2: Spinners Part 3: Twirlers pp. 105-114</p> <p><i>FOSS Science Resource Book:</i> "Push and Pull" "Things that Spin"</p> | <p>Investigation 2 I-Check</p> |
| | <p>FOSS Third Edition Balance and Motion Investigation 5: Magnets and Tools Part 1: Magnets pp. 200-208</p> | <p>FQA: To demonstrate that magnets can both push and pull, students plan and carry out several investigations and explain from their evidence that magnets can only push other magnets, and pull magnets and some metals.</p> |
| | <p>FOSS Third Edition Balance and Motion Investigation 5: Magnets and Tools Part 2: Tools and Machines pp. 209-215</p> <p><i>FOSS Science Resource Book:</i> "Move It But Don't Touch It " "Things that Spin"</p> | <p>Investigation 5 I-Check</p> |



Grade 1

Earth in the Universe

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|------------|
| 1.E.1 Recognize the features and patterns of the earth/moon/sun system as observed from Earth. | | |
| 1.E.1.1. Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth. | Delta Science First Reader "Sky" | |
| 1.E.1.2. Recognize the patterns of observable changes in the Moon's appearance from day to day. | Delta Science First Reader "Sky" | |



Grade 1

Earth Systems, Structures and Processes

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.E.2 Understand the physical properties of Earth materials that make them useful in different ways. | | |
| 1.E.2.1. Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways. | FOSS Next Generation Pebbles, Sand, and Silt Investigation 1: First Rocks Part 1: Three Rocks pp. 78-87 | FQA: Students rub rocks together and observe and compare the resulting rock dust/sand. |
| | FOSS Next Generation Pebbles, Sand, and Silt Investigation 1: First Rocks Part 2: Washing Three Rocks pp. 88-93 | FQA: Students place a rock in water and compare it to a dry rock. Students draw the two rocks and add a word to describe each. They suggest what may happen to the sand particles that are washed off the rock. |
| | FOSS Next Generation Pebbles, Sand, and Silt Investigation 1: First Rocks Part 3: First Sorting pp. 94-99 | FQA: Students sort river rocks by properties and explain why they grouped them the way they did and how they are different and the same. |
| | FOSS Next Generation Pebbles, Sand, and Silt Investigation 1: First Rocks Part 4: Start a Rock Collection pp. 100-107 Part 5: Sorting Activities pp. 108-117 <i>FOSS Digital Resources:</i> "All About Volcanos" "Rock Sorting" "Property Chain" <i>FOSS Science Resources:</i> "Exploring Rocks" "Colorful Rocks" | Investigation 1 I-Check |
| | FOSS Next Generation Pebbles, Sand, and Silt Investigation 2: River Rocks Part 1: Screening River Rocks pp. 128-135 Part 2: River Rocks by Size pp. 136-143 | FQA: Students sort rocks by size with different size mesh screens. Students weigh rocks as a further method of sorting. After reading "The Story of Sand" students describe how boulders change to sand. |
| | FOSS Next Generation Pebbles, Sand, and Silt Investigation 2: River Rocks Part 3: Sand and Silt pp. 144-150 Part 4: Exploring Clay and Landforms pp. 151-162 <i>FOSS Digital Resources:</i> "All About Landforms" "Property Chain" <i>FOSS Science Resources:</i> "The Story of Sand" "Landforms" "Rocks Move" | FQA: Students learn about weathering and erosion, and demonstrate their knowledge of landforms created. Investigation 2 I-Check |



Grade 1

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.E.2 Understand the physical properties of Earth materials that make them useful in different ways. | | |
| <p>1.E.2.1. Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways.</p> | <p>FOSS Next Generation Pebbles, Sand, and Silt Investigation 3: Using Rocks Part 1: Rocks in Use pp. 178-184</p> | <p>FQA: After a classroom discussion of what may use earth materials in their construction, students read "<i>Making Things with Rocks</i>" and observe things around them, looking for what might be made of earth materials and how the materials are used. They support their responses with evidence from the text and their observations.</p> |
| | <p>FOSS Next Generation Pebbles, Sand, and Silt Investigation 3: Using Rocks Part 2: Observing Sandpaper pp. 185-189 Part 3: Sand Sculptures pp. 190-195 Part 4: Clay Beads pp. 196-201 Part 5: Making Bricks pp. 202 – 208</p> <p><i>FOSS Science Resources:</i> "<i>Making Things with Rocks</i>" "<i>What Are Natural Resources?</i>"</p> <p><i>FOSS Digital Resources:</i> "<i>All About Landforms</i>" "<i>Property Chain</i>"</p> | <p>Investigation 3 I-Check</p> |
| <p>1.E.2.2. Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.</p> | <p>FOSS Next Generation Pebbles, Sand, and Silt Investigation 4: Soil and Water Part 1: Homemade Soil pp. 224-230</p> | <p>FQA: Students make their own soil from sand, gravel, pebbles, and decaying plant materials and then separate soil using screens of various sizes. Students draw what they see in their vials of soil they made.</p> |
| | <p>FOSS Next Generation Pebbles, Sand, and Silt Investigation 4: Soil and Water Part 2: Local Soil pp. 231-241</p> | <p>FQA: Students compare their homemade soil to soil collected from the school yard. They receive three screens and a vial with water to help them separate their two soil samples and compare and contrast, then draw what they observe in the two vials and verbally or written make their comparisons.</p> |
| | <p>FOSS Next Generation Pebbles, Sand, and Silt Investigation 4: Soil and Water Part 3: Natural Sources of Water pp. 242-247 Part 4: Land and Water pp. 248-254</p> | <p>Investigation 4 I-Check</p> |



Grade 1

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1.E.2 Understand the physical properties of Earth materials that make them useful in different ways. | | |
| <p>1.E.2.2. Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.</p> | <p>FOSS Next Generation Pebbles, Sand, and Silt <i>FOSS Science Resources:</i> "What is Soil?" "Testing Soil" "Where is Water Found?" "States of Water" "Erosion"</p> <p><i>FOSS Digital Resources:</i> "All About Soil"</p> | <p>FQA: Students plant seeds in soil and in sand to see if there is a difference in the resulting plant growth.</p> |



Grade 1

Ecosystems

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive. | | |
| <p>1.L.1.1. Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.</p> | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 1: Lawns pp. 76-83</p> | <p>FQA: Students plant seeds in moist soil and, after reading about what plants need to grow, predict what will happen to their seeds.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 2: Mowing the Lawn pp. 92</p> | <p>FQA: Students cut the alfalfa and rye grass that they planted and observe what happens. They determine based on evidence that the alfalfa died because it cannot make food without leaves, and the rye grass produces leaves that make food when the plant has light.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 3: Wheat pp. 79-112 Part 4: Variations in Plants and Animals pp. 113-128</p> <p><i>FOSS Science Resource Book:</i> "What do Plants Need?" "The Story of Wheat" "Variation" "What Do Animals Need?" "Plants and Animals Around the World" "Learning From Nature"</p> <p><i>FOSS Digital Resources:</i> "How Plants Grow" "Animal Growth" "Sorting Animals by Structures"</p> | <p>Investigation 1 I-Check</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 4: Growth and Change Part 3: Plant and Animal Growth pp. 242-250</p> <p><i>FOSS Science Resource Book:</i> "Animals and Their Young"</p> <p><i>FOSS Digital Resources:</i> "Animal Offspring and Caring for Animals"</p> | |
| <p>1.L.1.2. Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.</p> | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 1: Lawns pp. 76-91</p> | <p>FQA: Students plant seeds in moist soil and, after reading about what plants need to grow, predict what will happen to their seeds.</p> |



Grade 1

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive. | | |
| <p>1.L.1.2. Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.</p> | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 2: Mowing the Lawn pp. 92</p> | <p>FQA: Students cut the alfalfa and rye grass that they planted and observe what happens. They determine based on evidence that the alfalfa died because it cannot make food without leaves, and the rye grass produces leaves that make food when the plant has light.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 3: Terrariums Part 1: Setting Up Terrariums pp. 172-180 Part 2: Animals in the Terrarium pp. 181-192</p> | <p>FQA: Students share with the class what animals need to live in their terrarium.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 3: Terrariums Part 3: Habitat Match pp. 193-200 Part 4: Squirrel Behavior pp. 201-211</p> <p><i>FOSS Science Resource Book:</i> "What Do Animals Need?" "Plants and Animals Around the World" "How Plants Live in Different Places" "Learning from Nature" "What do Plants Need?"</p> | <p>FQA: Students learn about habitats around the world, and answer the questions about what animals' structures and behaviors help them survive in specific habitats. They choose one animal and record one structure and how it helps them survive (e.g. ear, which helps them hear and avoid predators).</p> |
| <p>1.L.1.3. Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there (e.g. reuse or recycle products to avoid littering).</p> | <p>FOSS Next Generation Pebbles, Sand, and Silt Investigation 4: Soil and Water Part 4: Land and Water pp. 248-254</p> | <p>FQA: Students draw or describe one way engineers prevent erosion.</p> |



Grade 1

Molecular Biology

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.L.2 Summarize the needs of living organisms for energy and growth. | | |
| <p>1.L.2.1. Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth.</p> | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 1: Lawns pp. 76-83</p> | <p>FQA: Students plant seeds in moist soil and, after reading about what plants need to grow, predict what will happen to their seeds.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 2: Mowing the Lawn pp. 92-98</p> | <p>FQA: Students cut the alfalfa and rye grass that they planted, and observe what happens. They determine based on evidence that the alfalfa died because it cannot make food without leaves, and the rye grass produces leaves that make food when the plant has light.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 1: Grass and Grain Seeds Part 3: Wheat pp. 99-112 Part 4: Variations in Plants and Animals pp. 113-128</p> <p><i>FOSS Science Resource Book:</i> "What do Plants Need?" "The Story of Wheat" "Variation" "What Do Animals Need?" "Plants and Animals Around the World" "Learning From Nature"</p> <p><i>FOSS Digital Resources:</i> "How Plants Grow" "Animal Growth" "Sorting Animals by Structures"</p> | <p>Investigation 3 I-Check</p> |
| <p>1.L.2.2. Summarize the basic needs of a variety of different animals (including air, water, and food) for energy and growth.</p> | <p>FOSS Next Generation Plants and Animals Investigation 3: Terrariums Part 1: Setting Up Terrariums pp. 172-180 Part 2: Animals in the Terrarium pp. 181-192</p> <p><i>FOSS Science Resource Book:</i> "What do Plants Need?"</p> | <p>FQA: Students share with the class what animals need to live in their terrarium and share their description of one of the habitats they read about.</p> |
| | <p>FOSS Next Generation Plants and Animals Investigation 3: Terrariums Part 3: Habitat Match pp. 193-200</p> | <p>FQA: Students chose one animal and answer the question "What structures or behaviors do the animal have that helps them live in their habitat?"</p> |



Grade 1

Molecular Biology (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1.L.2 Summarize the needs of living organisms for energy and growth. | | |
| <p>1.L.2.1. Summarize the basic needs of a variety of different plants (including air, water, nutrients, and light) for energy and growth.</p> | <p>FOSS Next Generation Plants and Animals Investigation 3: Terrariums Part 4: Squirrel Behavior pp. 201-211</p> <p><i>FOSS Science Resource Book:</i> "What Do Animals Need?" "Plants and Animals Around the World" "How Plants Live in Different Places" "Learning from Nature"</p> | <p>Investigation 3 I-Check</p> |



Grade 2

Forces and Motion

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| 2.P.1 Understand the relationship between sound and vibrating objects. | | |
| 2.P.1.1. Illustrate how sound is produced by vibrating objects and columns of air. | FOSS Next Generation Science Resources: Sound and Light “Vibrations and Sound” pp. 3-7 “Listen to This” pp. 8-14 “Strings in Motion” pp. 24-32 “More Musical Instruments” pp. 33-37 | |
| 2.P.1.2. Summarize the relationship between sound and objects of the body that vibrate – eardrum and vocal cords. | FOSS Next Generation Science Resources: Sound and Light “Animals Ears and Hearing” pp. 15-23 | |



Grade 2

Matter: Properties and Change

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.P.2 Understand properties of solids and liquids and the changes they undergo. | | |
| 2.P.2.1. Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling. | FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 1: Solids and Water pp. 232-242 | FQA: Students mix various solids with water and describe their observations of the solid before and the changes after they were mixed with the water. After, they develop procedures to see if the solids can be separated, including evaporation. Students draw the results and discuss the cause-effect relationships. |
| | FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 2: Liquids and Water pp. 243-250 | FQA: Water is added to the contents of the seven bottles of liquid used in Investigation 2. Students draw a representation of the liquids and describe the mixture prior to shaking the bottle. They draw and record their observations after they shake the bottle and again after they have let the mixture settle. |
| | FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 3: Toothpaste Investigation pp. 251-256 | PA: Students determine if toothpaste is a solid or liquid by initially observing toothpaste, adding water, shaking and recording additional observations; making claims from their evidence and communicating way they believe toothpaste is a solid or a liquid. |
| | FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 4: Changing Properties pp. 257-268 | FQA: After investigations of heating and cooling solids and liquids, students identify the phase changes; whether the processes are caused by heating or cooling, and whether the changes are reversible or irreversible. |
| | FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 5: Tea Time pp. 269 - 273 <i>FOSS Digital Resources:</i> "Mix It Up" "Heating and Cooling" "Is Change Reversible?" <i>FOSS Science Resources:</i> "Solids and Liquids" "Change It!" | Investigation 4 I-Check |
| 2.P.2.2 Compare the amount (volume and weight) of water in a container before and after freezing. | FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 4: Changing Properties pp. 257-268 | FQA: After investigations of heating and cooling solids and liquids, students identify the phase changes; whether the processes are caused by heating or cooling, and whether the changes are reversible or irreversible. |



Grade 2

Matter: Properties and Change (cont.)

| Standards | FOSS Alignment | Assessment |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.P.2 Understand properties of solids and liquids and the changes they undergo. | | |
| <p>2.P.2.3 Compare what happens to water left in an open container over time as to water left in a closed container.</p> | <p>FOSS Next Generation Solids and Liquids Investigation 4: Solids, Liquids and Water Part 1: Solids and Water pp. 232-242</p> | <p>FQA: Students mix various solids with water and describe their observations of the solid before and the changes after they were mixed with the water. After, they develop procedures to see if the solids can be separated, including evaporation. Students draw the results and discuss the cause-effect relationships.</p> |

Grade 2

Earth Systems, Structures and Processes

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.E.1 Understand patterns of weather and factors that affect weather. | | |
| 2.E.1.1. Summarize how energy from the sun serves as a source of light that warms the land, air and water. | FOSS Next Generation Air and Weather Investigation 2: Observing the Sky Part 2: Measuring Temperature and Daylight pp. 147-158 | FQA: After students have collected enough temperature data, they analyze the data and make a claim of what time of the day is warmest based on their evidence. |
| | FOSS Next Generation Air and Weather Investigation 3: Wind Explorations <i>FOSS Science Resources:</i> "Resources" | Students learn the sun is a natural resource that heats air, land and water and impacts our weather. |
| | FOSS Next Generation Air and Weather Investigation 4: Looking for Change Part 2: Daylight through the Year pp. 244-249 | FQA: Students collaborate to create a graph of daily sunlight over 12 months and identify the pattern of change over the year. |
| | FOSS Next Generation Air and Weather Investigation 4: Looking for Change Part 3: Comparing the Seasons pp. 250-259 | FQA: Students gather temperature and weather data over the course of the school year and graph the results. Students log, using pictures and words, how the temperature and weather change over the seasons. |
| | FOSS Next Generation Air and Weather <i>FOSS Digital Science Resources:</i> "What's the Weather?" <i>FOSS Science Resources:</i> "Changes in the Sky" "Seasons" "Getting through the Winter" | ELA: After reading "Seasons", students organize their understanding into a content grid. Students practice their inference skills and consider what type of weather conditions can be present in each season i.e. effect of sunlight on temperature, amount of precipitation. |
| 2.E.1.2. Summarize weather conditions using qualitative and quantitative measures to describe: <ul style="list-style-type: none"> • Temperature • Wind direction • Wind speed • Precipitation | FOSS Next Generation Air and Weather Investigation 2: Observing the Sky Part 1: Weather Calendars pp. 140-146 | 1.1, 1.2, 1.3 |
| | FOSS Next Generation Air and Weather Investigation 2: Observing the Sky Part 2: Measuring Temperature and Daylight pp. 147-158 | PA: Students are asked to predict whether it is warmer or colder outside than in their classroom, and then go outside to take the temperature and evaluate their prediction. They locate and record the position of the sun in the sky. |
| | FOSS Next Generation Air and Weather Investigation 2: Observing the Sky Part 3: Watching Clouds pp. 159-169 | FQA: Students describe the clouds and the weather conditions by completing a weather chart comparing different elements of weather conditions. They provide constructive feedback to each other to make their entries stronger. |



Grade 2

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.E.1 Understand patterns of weather and factors that affect weather. | | |
| <p>2.E.1.2. Summarize weather conditions using qualitative and quantitative measures to describe:</p> <ul style="list-style-type: none"> • Temperature • Wind direction • Wind speed • Precipitation | <p>FOSS Next Generation Air and Weather Investigation 2: Observing the Sky Part 4: Observing the Moon pp. 170-178 <i>FOSS Digital Resources:</i> "Cloud Catcher"</p> <p><i>FOSS Science Resources:</i> "What is the Weather Today?" "Clouds" "Water in the Air" "Changes in the Sky"</p> | Investigation 2 I-Check |
| | <p>FOSS Next Generation Air and Weather Investigation 3: Wind Explorations Part 1: Bubbles in the Wind pp. 194-198</p> | PA: Students strategically use bubbles to see how air moves and then explain the relationship between bubble and air movement. |
| | <p>FOSS Next Generation Air and Weather Investigation 3: Wind Explorations Part 2: Wind Speed pp. 199-204 Part 3: Pinwheels pp. 205-209</p> | FQA: Using a class-constructed anemometer, students describe how strong the wind is blowing through drawings and, with emphasis on wind scale, through conversation. |
| | <p>FOSS Next Generation Air and Weather Investigation 3: Wind Explorations Part 4: Wind Vanes pp. 210-217</p> | FQA: Students construct a weather vane and, using their weather vane outside, describe which way the wind is coming from and what other patterns, such as cloud movement with the wind, they observe. |
| | <p>FOSS Next Generation Air and Weather Investigation 3: Wind Explorations Part 5: Kites pp. 218 -224</p> <p><i>FOSS Digital Resources:</i> "Wind Speed"</p> | Investigation 3 I-Check |
| | <p>FOSS Next Generation Air and Weather <i>FOSS Science Resources:</i> "Understanding the Weather" "Resources"</p> | FQA: After reading "What is the Weather Today?" student's record a meteorologist is a person who studies weather, using instruments to get information about the weather such as temperature, wind speed, wind direction, and uses the information to predict what the weather will be. |
| <p>2.E.1.3. Compare weather patterns that occur over time and relate observable patterns to time of day and time of year.</p> | <p>FOSS Next Generation Air and Weather Investigation 4: Looking for Change Part 1: Changes over a Month pp. 238-243</p> | PA: Students independently record weather for a month period, graph the different weather using symbols, and interpret the graph to describe the weather over the period of time. |



Grade 2

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.E.1 Understand patterns of weather and factors that affect weather. | | |
| 2.E.1.3. Compare weather patterns that occur over time and relate observable patterns to time of day and time of year. | FOSS Next Generation Air and Weather Investigation 4: Looking for Change Part 2: Daylight through the Year pp. 244-249 | FQA: Students collaborate to create a graph of daily sunlight over 12 months and identify the pattern of change over the year. |
| | FOSS Next Generation Air and Weather Investigation 4: Looking for Change Part 3: Comparing the Seasons pp. 250-259 | FQA: Students gather temperature and weather data over the course of the school year and graph the results. Students log, using pictures and words, how the temperature and weather change over the seasons. |
| | FOSS Next Generation Air and Weather <i>FOSS Digital Resources:</i> "What's the Weather?" <i>FOSS Science Resources:</i> "Changes in the Sky" "Seasons" "Getting through the Winter" | After reading "Seasons" students organize their understanding into a content grid. Students practice their inference skills and consider what type of weather conditions can be present in each season (e.g. effect of sunlight on temperature, amount of precipitation.) |
| 2.E.1.4. Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons. | FOSS Next Generation Air and Weather <i>FOSS Science Resources:</i> "Understanding the Weather" "Resources" | FQA: After reading "What is the Weather Today?" students record a meteorologist is a person who studies weather, using instruments to get information about the weather such as temperature, wind speed, wind direction, and uses the information to predict what the weather will be. |

Grade 2

Structures and Functions of Living Organisms

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.L.1 Understand animal life cycles. | | |
| <p>2.L.1.1. Summarize the life cycle of animals:</p> <ul style="list-style-type: none"> • Birth • Developing into an adult • Reproducing • Aging and death | <p>FOSS Next Generation Insects and Plants Investigation 1: Mealworms Part 1: Mealworms pp. 78-92</p> | <p>FQA: Students record, in their mealworm calendar, the date of the mealworm arrival and make predictions of what they will observe happening to the mealworms in the next several weeks.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 1: Mealworms Part 2: Larva, Pupa, Adult pp. 93-103</p> | <p>PA: Students make continual observations of their mealworm and log changes on the mealworm observation chart and class calendar. The teacher conducts 30-second interviews to see how students are analyzing and interpreting the changes from a larvae to the pupa stage.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 1: Mealworms Part 3: Life Cycle pp. 104</p> | <p>FQA: Students complete a summary chart of the structures and behaviors for the larva, pupa, and adult beetle. The egg state is added at the bottom of the chart</p> |
| | <p>FOSS Next Generation Insects and Plants <i>FOSS Science Resources:</i> "Animals and Plants in their Habitat"</p> | <p>Investigation 1 I-Check</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 3: Milkweed Bugs Part 1: Eggs pp. 180-184</p> | <p>FQA: Students observe a vial with a yellow object and describe the changes they observe as the object changes from yellow, to orange, to red and hatch into insects.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 3: Milkweed Bugs Part 2: Habitats pp. 185-194 Part 3: Growing Milkweed Bugs pp. 195-201</p> | <p>FQA: Students observe the changes in their milkweed bugs and share their drawings, made over the course of their observations. They sequence pictures of a factious Triangle Bug and write appropriate captions for each picture.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 3: Milkweed Bugs Part 4: Insect Search pp. 202</p> <p><i>FOSS Digital Resources:</i> "Insect Hunt"</p> <p><i>FOSS Science Resources:</i> "So Many Kinds, So Many Places"</p> | <p>Investigation 3 I-Check</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 4: Plant Eaters Part 1: Eggs and Larvae pp. 228-234 Part 2: Silkworm Structures pp. 235-245</p> | <p>FQA: After observing and recording the changes to this point in the silkworms, students compare and contrasts the silkworm compared to the mealworm with words and drawings.</p> |

Grade 2

Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.L.1 Understand animal life cycles. | | |
| <p>2.L.1.1. Summarize the life cycle of animals:</p> <ul style="list-style-type: none"> • Birth • Developing into an adult • Reproducing • Aging and death | <p>FOSS Next Generation Insects and Plants Investigation 4: Plant Eaters Part 3: Pupae and Adults pp. 246-252</p> | <p>FQA: Students sequence pictures of the silkworm life cycle. They tell about the life cycle of a bee and a milkweed bug.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 4: Plant Eaters Part 4: Plant Eaters pp. 253</p> <p><i>FOSS Digital Resources:</i> "Insect Hunt"</p> <p><i>FOSS Science Resources:</i> "Insect Shapes and Colors" "Insect Life Cycles"</p> | <p>Investigation 4 I-Check</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 5: Butterflies Part 1: Caterpillars pp. 274-279</p> | <p>PA: Students predict through drawings what will happen at each stage in the life cycle of the painted larvae. They construct their explanations during teacher/student interviews.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 5: Butterflies Part 2: Chrysalises pp. 280-284</p> | <p>FQA: Students construct their explanation of how a painted lady pupa is different from a silkworm pupa and share their observational evidence with their partner and revise their entries based on the feedback.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 5: Butterflies Part 3: Adult Butterflies pp. 285-293</p> | <p>FQA: Students sequence cut-outs of the butterfly life cycle and write appropriate captions for each cutout.</p> |
| | <p>FOSS Next Generation Insects and Plants <i>FOSS Science Resources:</i> "Life Goes Around"</p> | <p>Review questions: Students respond to questions based on their reading of "Life Goes Around." Does a ladybug larva look like its parent; what is the life cycle of a ladybug; tell about the life cycle of a different animal; name five animals hatch from egg; name three animals that are born alive.</p> |
| <p>2.L.1.2. Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.</p> | <p>FOSS Next Generation Insects and Plants Investigation 1: Mealworms Part 1: Mealworms pp. 78-92</p> | <p>FQA: Students record, in their mealworm calendar, the date of the mealworms arrival and make predictions of what they will observe happening to the mealworms in the next several weeks.</p> |



Grade 2

Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.L.1 Understand animal life cycles. | | |
| <p>2.L.1.2. Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.</p> | <p>FOSS Next Generation Insects and Plants Investigation 1: Mealworms Part 2: Larva, Pupa, Adult pp. 93-103</p> | <p>PA: Students make continual observations of their mealworm and log changes on the mealworm observation chart and class calendar. Teachers conducts 30-second interviews to see how students are analyzing and interpreting the changes from a larvae to the pupa stage.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 1: Mealworms Part 3: Life Cycle pp. 104</p> <p><i>FOSS Science Resources:</i> "Animals and Plants in their Habitat"</p> | <p>FQA: Students complete a summary chart of the structures and behaviors for the larva, pupa, and adult beetle. The egg state is added at the bottom of the chart</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 3: Milkweed Bugs Part 1: Eggs pp. 180-184</p> | <p>FQA: Students observe a vial with an yellow object and describe the changes they observe as the object changes from yellow, to orange, to red and hatch into insects.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 3: Milkweed Bugs Part 2: Habitats pp. 185-194 Part 3: Growing Milkweed Bugs pp. 195-201</p> | <p>FQA: Students observe the changes in their milkweed bugs and share their drawings, made over the course of their observations. They sequence pictures of a factious Triangle Bug and write appropriate captions for each picture.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 3: Milkweed Bugs Part 4: Insect Search pp. 202</p> <p><i>FOSS Digital Resources:</i> "Insect Hunt"</p> <p><i>FOSS Science Resources:</i> "So Many Kinds, So Many Places"</p> | <p>Investigation 3 I-Check</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 4: Plant Eaters Part 1: Eggs and Larvae pp. 228-234 Part 2: Silkworm Structures pp. 235-245</p> | <p>FQA: After observing and recording the changes to this point in the silkworms, students compare and contrasts the silkworm compared to the mealworm with words and drawings.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 4: Plant Eaters Part 3: Pupae and Adults pp. 246-252</p> | <p>FQA: Students sequence pictures of the silkworm life cycle. They tell about the life cycle of a bee and a milkweed bug.</p> |

Grade 2

Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.L.1 Understand animal life cycles. | | |
| <p>2.L.1.2. Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.</p> | <p>FOSS Next Generation Insects and Plants Investigation 4: Plant Eaters Part 4: Plant Eaters pp. 253</p> <p><i>FOSS Digital Resources:</i> "Insect Hunt"</p> <p><i>FOSS Science Resources:</i> "Insect Shapes and Colors" "Insect Life Cycles"</p> | <p>Investigation 4 I-Check</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 5: Butterflies Part 1: Caterpillars pp. 274-279</p> | <p>PA: Students predict through drawings what will happen at each stage in the life cycle of the painted larvae. They construct their explanations during teacher/student interviews.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 5: Butterflies Part 2: Chrysalises pp. 280-284</p> | <p>FQA: Students construct their explanation of how a painted lady pupa is different from a silkworm pupa and share their observational evidence with their partner and revise their entries based on the feedback.</p> |
| | <p>FOSS Next Generation Insects and Plants Investigation 5: Butterflies Part 3: Adult Butterflies pp. 285-293</p> | <p>FQA Students sequence cut-outs of the butterfly life cycle and write appropriate captions for each cutout.</p> |
| | <p>FOSS Next Generation Insects and Plants <i>FOSS Science Resources:</i> "Life Goes Around"</p> | <p>Review questions: Students respond to questions based on their reading of "Life Goes Around." Does a ladybug larva look like its parent; what is the life cycle of a ladybug; tell about the life cycle of a different animal; name five animals hatch from egg; name three animals that are born alive.</p> |



Grade 2

Evolution and Genetics

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------|
| 2.L.2 Remember that organisms differ from or are similar to their parents based on the characteristics of the organism. | | |
| 2.L.2.1. Identify ways in which many plants and animals closely resemble their parents in observed appearance and ways they are different. | FOSS Next Generation Insects and Plants <i>FOSS Science Resources:</i> "Life Goes Around" | |
| 2.L.2.2. Recognize that there is variation among individuals that are related. | FOSS Next Generation Plants and Animals <i>FOSS Science Resources:</i> "Variation" | |

Grade 3

Forces and Motion

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.P.1 Understand motion and factors that affect motion. | | |
| <p>3.P.1.1. Infer changes in speed or direction resulting from forces acting on an object.</p> | <p>FOSS Next Generation Motion and Matter Investigation 1: Motion and Matter Part 1: Two Forces pp. 82-95</p> <p><i>FOSS Digital Resources:</i> "Magnetic Poles"</p> <p><i>FOSS Science Resources:</i> "Magnetism and Gravity"</p> | <p>FQA: Students draw a model that shows the two forces at work, interacting with the paper clip on a string and the magnets. They add words that explain the force of magnetism and gravity as the pulling forces, including the pulling force of the string. Students have summary discussions describing the push and pull forces of magnets, the difference between the pull of magnetism and gravity (magnetism is both push and pull, but only acts on some objects, while gravity only pulls but acts on all objects).</p> |
| | <p>FOSS Next Generation Motion and Matter Investigation 1: Motion and Matter Part 2: Magnetic Force Investigations pp. 96-103</p> <p><i>FOSS Science Resources:</i> "What Scientist Do"</p> | <p>PA: After investigating the distance at which 1 and 3 magnets will attract a paperclip, students analyze the data collected and predict the snap district for 2 magnets. They collaborate and carry out the investigation using two magnets. They communicate their findings and note the pattern they found in their data which they used to make the prediction.</p> |
| | <p>FOSS Next Generation Motion and Matter Investigation 1: Motion and Matter Part 3: More About Forces pp. 104-116</p> <p><i>FOSS Digital Resources:</i> "All About Motion and Balance" "All About Magnets"</p> | <p>FQA: Students address the question of what causes a change in motion by explaining balanced forces cause no change of motion, unbalanced forces cause a change of motion. They give evidence from their investigations of books falling, chairs moving when pushed, throwing up a baseball to support their conclusions.</p> |
| | <p>FOSS Next Generation Motion and Matter <i>FOSS Science Resources:</i> "Change of Motion"</p> | <p>FQA: Students experiment with making a spinner and make connections to the text "What Goes Around." They observe and record that they begin the top rotation by pushing it between their palms causing the force applied by hand, that a smooth surface minimizes the friction that would slow down and stop a top, and a heavier mass near the bottom of the shaft helps a top spinning faster and longer.</p> |

Grade 3

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.P.1 Understand motion and factors that affect motion. | | |
| <p>3.P.1.1. Infer changes in speed or direction resulting from forces acting on an object.</p> | <p>FOSS Next Generation Motion and Matter Investigation 2: Patterns of Motion Part 3: Twirly Birds pp. 142-151</p> | <p>PA: Students make a twirly bird and test the rate of fall. Using this first test as their standards, students change 1 variable at a time, such as length of the wings, length of the body, using paper clips, and communicate their findings. The teacher should observe their descriptions of the forces at work and their cause-and-effect relationships observed.</p> |
| | <p>FOSS Next Generation Motion and Matter Investigation 2: Patterns of Motion Part 4: Tops pp. 152-161</p> | <p>FQA: Students experiment with making a spinner and make connections to the text "What Goes Around." They observe and record that they begin the top rotation by pushing it between their palms causing the force applied by hand, that a smooth surface minimizes the friction that would slow down and stop a top, and a heavier mass near the bottom of the shaft helps a top spinning faster and longer.</p> |
| <p>3.P.1.2. Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time.</p> | <p>FOSS Next Generation Motion and Matter Investigation 1: Motion and Matter Part 3: Twirly Birds pp. 142-151</p> | <p>PA: Students make a twirly bird and test the rate of fall. Using this first test as their standards, students change 1 variable at a time, such as length of the wings, length of the body, using paper clips, and communicate their findings. The teacher should observe their descriptions of the forces at work and their cause-and-effect relationships observed.</p> |
| | <p>FOSS Next Generation Motion and Matter Investigation 3: Engineering Part 1: From Here to There pp. 174-180 Part 2: Distance Challenge pp. 181-189</p> <p><i>FOSS Science Resources:</i> "What Engineers Do" "Science Practices" "Engineering Practices" "Soap Box Derby" "The Metric System"</p> | <p>PA: Students are challenged to design a cart that best moves from "here to there" using only the materials provided by the teachers. Successful teams share their designs. Student groups get a second chance to improve their designs. They create design diagrams and write about their successes and failures. They identify problems and create test solutions.</p> |



Grade 3

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.P.1 Understand motion and factors that affect motion. | | |
| <p>3.P.1.2. Compare the relative speeds (faster or slower) of objects that travel the same distance in different amounts of time.</p> | <p>FOSS Next Generation Motion and Matter Investigation 3: Engineering Part 4: Cart Tricks pp. 198-204</p> <p><i>FOSS Science Resources:</i> "Magnets at Work"</p> | <p>PA: Students are challenged to use magnets to do cart tricks and they are each given one of three tricks using magnets are carts travel down a ramp. They are provided the specific materials and given the criterion. They present their design solutions to their classmates and discuss problems and possible solutions. They then design a cart trick with magnets of their own. Students should note that the patterns of an object's motion in various situations can be observed and measured and provide evidence.</p> |
| <p>3.P.1.3. Explain the effects of earth's gravity on the motion of any object on or near the earth.</p> | <p>FOSS Next Generation Motion and Matter Investigation 1: Motion and Matter Part 1: Two Forces pp. 82-95</p> <p><i>FOSS Digital Resources:</i> "Magnetic Poles"</p> <p><i>FOSS Science Resources:</i> "Magnetism and Gravity"</p> | <p>FQA: Students draw a model that shows the two forces at work interacting with the paper clip on a string and the magnets. They add words that explain the force of magnetism and gravity as the pulling forces, include the pulling force of the string. Students have a summary discussion describing the push and pull forces of magnets, the difference between the pull of magnetism and gravity (magnetism both pushes and pulls, but only acts on some objects, while gravity only pulls but acts on all objects).</p> |
| | <p>FOSS Next Generation Motion and Matter Investigation 1: Motion and Matter Part 3: More About Forces pp. 104-116</p> <p><i>FOSS Digital Resources:</i> "All About Motion and Balance" "All About Magnets"</p> | <p>FQA: Students address the question of what causes a change in motion by explaining balanced forces cause no change of motion, unbalanced forces cause a change of motion. They give evidence from their investigations of books falling, chairs moving when pushed, throwing up a baseball to support their conclusions.</p> |
| | <p>FOSS Next Generation Motion and Matter <i>FOSS Science Resources:</i> "Change of Motion"</p> | <p>Investigation 1 I-Check</p> |
| | <p>FOSS Next Generation Motion and Matter Investigation 2: Patterns of Motion Part 3: Twirly Birds pp. 142-151</p> | <p>PA: Students make a twirly bird and test the rate of fall. Using this first test as their standards, students change 1 variable at a time, such as length of the wings, length of the body, using paper clips, and communicate their findings. The teacher should observe their descriptions of the forces at work and their cause-and-effect relationships observed.</p> |

Grade 3

Matter: Properties and Change

| Standards | FOSS Alignment | Assessment |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.P.2 Understand the structure and properties of matter before and after they undergo a change. | | |
| <p>3.P.2.1. Recognize that air is a substance that surrounds us, takes up space and has mass.</p> | <p>Delta Science Reader States of Matter <i>"What Is Matter?" pp. 2-3</i> <i>"What Are Solids, Liquids, and Gases?" pp. 4-6</i></p> | |
| <p>3.P.2.2. Compare solids, liquids, and gases based on their basic properties.</p> | <p>Delta Science Reader States of Matter <i>"What Are Solids, Liquids, and Gases?" pp. 4-6</i></p> | |
| <p>3.P.2.3. Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.</p> | <p>FOSS Next Generation Motion and Matter Investigation 4: Mixtures Part 1: Mixing Solids and Liquids <i>FOSS Science Resources:</i> <i>"Mixtures"</i></p> | <p>Students should be able to express their understanding from the reading that mass is never destroyed, but that it can change. When wood burns, it produces light and heat, which are energy. The fire changed most of the mass of the wood into gas, tiny particles that drifted off into the air, and ashes - all three which have mass.</p> |
| | <p>Delta Science Reader States of Matter <i>"What Are Physical Changes?" pp. 7-11</i></p> | |



Grade 3

Energy: Conservation and Transfer

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------|
| 2.P.3 Recognize how energy can be transferred from one object to another. | | |
| 3.P.3.1. Recognize that energy can be transferred from one object to another by rubbing them against each other. | Delta Science Content Reader: Heat and Light Energy <i>"What Is Heat?" pp. 2-9</i> <i>"How Thermal Energy Moves"</i> | |
| 3.P.3.2. Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer. | Delta Science Content Reader: Heat and Light Energy <i>"What Is Heat?" pp. 2-9</i> <i>"How Thermal Energy Moves"</i> | |

Grade 3

Earth in the Universe

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.E.1 Recognize the major components and patterns observed in the earth/moon/sun system. | | |
| <p>3.E.1.1. Recognize that the earth is part of a system called the solar system that includes the sun (a star), planets, and many moons and the earth is the third planet from the sun in our solar system.</p> | <p>Delta Science Reader Solar System <i>"Our Solar Planets" pp. 2</i> <i>"The Inner Planets" pp. 4-8</i> <i>"The Outer Planets" pp. 9-12</i></p> | |
| <p>3.E.1.2. Recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the Sun during the day although the patterns of the stars in the sky, to include the Sun, stay the same.</p> | <p>FOSS Second Edition Sun, Moon, and Stars Investigation 1: The Sun Part 2: Shadow Tracking pp. 56-67</p> <p><i>FOSS Science Resources:</i> <i>"Changing Shadows"</i> <i>"Summary: The Sun"</i></p> | <p>Students experience making shadows first in the classroom. They move outdoors and work in pair, tracing their partner's shadow on the ground, labeling it with their name and time of day. They are asked to note which direction their shadow is facing. They return to the room to model, as a class, earth rotation and the effect of the sun on the earth. They return outdoors in 3 to 4 hours to find their shadow is different because the sun's position in the sky has changed. They read and discuss the two articles and then complete entries on their content chart: A shadow is made outdoors when light from the Sun is blocked by an object, like a person. Shadows change shape and direction over a day because the Sun's position changes in the Sky. The direction and height of the Sun determines what direction the shadow will point and how long it will be.</p> |



Grade 3

Earth Systems, Structures and Processes

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.E.2 Compare the structures of the Earth's surface using models or three-dimensional diagrams. | | |
| <p>3.E.2.1. Compare Earth's saltwater and freshwater features (including oceans, seas, rivers, lakes, ponds, streams, and glaciers).</p> | <p>FOSS Third Edition Water Investigation 1: Water Observations Part 1: Drops of Water pp. 62</p> <p><i>FOSS Science Resources:</i> <i>"A Report from the Blue Planet"</i></p> | <p>Students recall from their reading the description a "space visitor" made of Earth. The find evidence in the reading that he claimed the surface of earth was 75% covered by water which reflected blue. The space visitor described saltwater oceans; fresh water; three states of water being solid (ice), liquid, and gas (water vapor). The ocean is 97% of the Earth's water, with 2% of the Earth's water frozen, leaving only 1% of usable water.</p> |
| <p>3.E.2.2. Compare Earth's land features (including volcanoes, mountains, valleys, canyons, caverns, and islands) by using models, pictures, diagrams, and maps.</p> | <p>Delta Science Reader Earth Movements <i>"What Are Earth's Landforms?" pp. 4-5</i></p> | |



Grade 3

Structures and Functions of Living Organisms

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.L.1 Understand human body systems and how they are essential for life: protection, movement and support. | | |
| <p>3.L.1.1. Compare the different functions of the skeletal and muscular system.</p> | <p>FOSS Next Generation Structures of Life Investigation 4: Human Body Background for the Teacher pp. 270-277 Part 1: Counting Bones, Pages 282-292</p> <p><i>FOSS Digital Resources:</i> "Mr. Bones"</p> <p><i>FOSS Science Resources:</i> "The Human Skeleton"</p> | <p>FQA: Students become familiar with the human skeletal system by first jump rope. They determine bones are inside your body and they did not bend when they were jumping rope. They locate some joints and determine they connected separate bones and could bend. They are introduced to a photograph of a real skeleton. They discuss how the skeleton gives us support - legs support standing, neck supports heard, etc. They identify parts of the skeleton that provides protection - skull pretests the brain, rib cage protects the lungs and heart. They put together a puzzle of the skeleton and describe characters of bones - the femur needs to support a lot of weight to it needs to be large and strong. The Human Skeleton reading further reinforces their knowledge and understanding of the functions of the skeletal system - the pelvic girdle cradles and shields the intestines and the bladder, and they along with the skull and ribs are considered "superprotectors." The spine, shoulder, and hip are considered "flexible" bones because of the connecting joints.</p> |



Grade 3

Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.L.1 Understand human body systems and how they are essential for life: protection, movement and support. | | |
| <p>3.L.1.1. Compare the different functions of the skeletal and muscular system.</p> | <p>FOSS Next Generation Structures of Life Investigation 4: Human Body Part 3: Joints and Muscles pp. 303-317 Part 4: Fingerprints pp. 318-329</p> <p><i>FOSS Science Resources:</i> "Your Amazing Opposable Thumbs" "Joints and Muscles"</p> | <p>FQA: Students learn that the rigid, hard skeleton bends because it is articulated, meaning jointed. The initial focus is on their opposable thumbs. Students are given some "tasks" with the catch that they will have their thumbs taped to the side of their index fingers. They discuss how they felt and how they solved the problem of not being able to grasp with their thumbs. They list the advantages of an opposable thumb. They read and discuss <i>Joints and Muscles</i> and build a model of a leg and arm with rubber bands and paper clips simulating the muscles and tendons. They answer the question about what makes our skeletal system flexible. Joints and muscles allow us to move and make our skeletal system flexible. Joints are where two bones meet and they can be hinge, gliding, or ball-and-socket joints. Muscles go across joints and connect bones and when they contract (or shorten), they pull on the bones, causing them to move. Muscles attach to bones with a tissue called tendon.</p> |
| <p>3.L.1.2. Explain why skin is necessary for protection and for the body to remain healthy.</p> | <p>Delta Science Content Reader Human Body Systems pp. 21</p> | |

Grade 3

Ecosystems

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.L.1 Understand how plants survive in their environments. | | |
| <p>3.L.2.1. Remember the function of the following structures as it relates to the survival of plants in their environments:</p> <ul style="list-style-type: none"> • Roots – absorb nutrients • Stems – provide support • Leaves – synthesize food • Flowers – attract pollinators and produce seeds for reproduction | <p>FOSS Next Generation Structures of Life Investigation 2: Growing Further Part 1: Germination and Growth pp. 144-152</p> | <p>FQA: Students compare properties of germinated see and compare one structure. They discuss the function of this structure and answer what structures a seedling has to help it grow and survive: Students write that a root is growing, not a stem and that that it is usually for the root to grow first. They write that the root's function is to take in water and nutrients.</p> |
| | <p>FOSS Next Generation Structures of Life <i>FOSS Science Resources:</i> "Germination"</p> | <p>ELA: Students gather information from the article <i>Germination</i>. They discuss the seed coat being broken, and the seed is swollen, with a root coming out one side and a leaf and stem coming out the other side. The seed needed to soak up water before it could germinate. If a seed does germinate in a good environment, it will grow and survive. If it falls in somewhere that does not provide what it needs, the seed may die.</p> |
| | <p>FOSS Next Generation Structures of Life Investigation 2: Growing Further Part 2: Life Cycle of the Bean pp. 153-163 <i>FOSS Digital Resources:</i> "How Plants Get Food"</p> | <p>Students discuss plants' basic need and begin a bean growth chart. A video shows <i>How Plants Get Food</i> and students discuss the functions of root hairs - to take in water and nutrients; the stem brings water and nutrients to the leaves; the leaves use energy from sunlight to make food from water and carbon dioxide. After the 6-week observation of the bean plant, noting the development of flowers, the discussions following the video, students demonstrate their understanding of the bean plant's life cycle by sequencing pictures from seed to mature plant.</p> |
| <p>3.L.2.2. Explain how environmental conditions determine how well plants survive and grow.</p> | <p>FOSS Next Generation Structures of Life Investigation 1: Origin of Seeds Part 2: The Sprouting Seed</p> | <p>PA: Students investigate what happens to seeds when they are just watered and not planted in soil. Students need to understand the cause and effect of adding the water to the seed containers. They learn through observation that water does have an effect. Seeds swell up, lose the seed coat, possibly change color, smell, become slippery, and have structures grow from them.</p> |

Grade 3

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.L.1 Understand how plants survive in their environments. | | |
| <p>3.L.2.2. Explain how environmental conditions determine how well plants survive and grow.</p> | <p>FOSS Next Generation Structures of Life FOSS Science Resources: "The Most Important Seed"</p> | <p>ELA: Students discuss the issue that environments are changed by humans when they create rice paddies. Terrestrial (dry land) environments are changed into aquatic (water) environments.</p> |
| | <p>FOSS Next Generation Structures of Life Investigation 2: Growing Further Part 1: Germination and Growth pp. 144-152</p> | <p>FQA: Students compare properties of germinated see and compare one structure. They discuss the function of this structure and answer what structures a seedling has to help it grow and survive: Students write that a root is growing, not a stem and that that it is usually for the root to grow first. They write that the root's function is to take in water and nutrients.</p> |
| | <p>FOSS Next Generation Structures of Life FOSS Science Resources: "Germination"</p> | <p>ELA: Students gather information from the article <i>Germination</i>. They discuss the seed coat being broken, and the seed is swollen, with a root coming out one side and a leaf and stem coming out the other side. The seed needed to soak up water before it could germinate. If a seed does germinate in a good environment, it will grow and survive. If it falls in somewhere that does not provide what it needs, the seed may die.</p> |
| <p>3.L.2.3. Summarize the distinct stages of the life cycle of seed plants.</p> | <p>FOSS Next Generation Structures of Life Investigation 1: Origin of Seeds Part 1: Seed Search pp. 86-99</p> <p>FOSS Science Resources: "The Reason for Fruit"</p> | <p>FAQ: Students explore and compare seeds from different fruits. From the reading, they answer: What is a fruit - the structure on a plant that contains the seeds; How does a plant's fruit help it survive and reproduce - fruit protects seeds and attracts animals to carry the seeds away from the parent plant; What is a seed - a living plant in a dormant or resting state; What function does a plant's seed have - seeds grow up to be new plants and are the structures that allow plants to reproduce.</p> |
| | <p>FOSS Next Generation Structures of Life Investigation 1: Origin of Seeds Part 2: The Sprouting Seed</p> | <p>PA: Students investigate what happens to seeds when they are just watered and not planted in soil. Students need to understand the cause and effect of adding the water to the seed containers. They learn through observation that water does have an effect. Seeds swell up, lose the seed coat, possibly change color, smell, become slippery, and have structures grow from them.</p> |

Grade 3

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.L.1 Understand how plants survive in their environments. | | |
| <p>3.L.2.3. Summarize the distinct stages of the life cycle of seed plants.</p> | <p>FOSS Next Generation Structures of Life <i>FOSS Science Resources:</i> "The Most Important Seed"</p> | <p>ELA: Students discuss the issue that environments are changed by humans when they create rice paddies. Terrestrial (dry land) environments are changed into aquatic (water) environments.</p> |
| | <p>FOSS Next Generation Structures of Life Investigation 1: Origin of Seeds Part 3: Seed Soak pp. 112-123 <i>FOSS Science Resources:</i> "Barbara McClintock"</p> | <p>PA: Students establish a procedure to determine how much water a seed soaks up. They plan to weight the dry seeds and the add water. They observe the changes to the seeds in the sprouter and at the end of the investigation, drain the soaked seeds and weigh them. Students claim after analyzing and interpreting their data is lima beans soak up water and weigh more. They split the seed and identify the seed parts.</p> |
| | <p>FOSS Next Generation Structures of Life Investigation 2: Growing Further Part 1: Germination and Growth pp. 144-152</p> | <p>FQA: Students compare properties of germinated see and compare one structure. They discuss the function of this structure and answer what structures a seedling has to help it grow and survive: Students write that a root is growing, not a stem and that that it is usually for the root to grow first. They write that the root's function is to take in water and nutrients.</p> |
| | <p>FOSS Next Generation Structures of Life <i>FOSS Science Resources:</i> "Germination"</p> | <p>ELA: Students gather information from the article <i>Germination</i>. They discuss the seed coat being broken, and the seed is swollen, with a root coming out one side and a leaf and stem coming out the other side. The seed needed to soak up water before it could germinate. If a seed does germinate in a good environment, it will grow and survive. If it falls in somewhere that does not provide what it needs, the seed may die.</p> |



Grade 3

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.L.1 Understand how plants survive in their environments. | | |
| <p>3.L.2.3. Summarize the distinct stages of the life cycle of seed plants.</p> | <p>FOSS Next Generation Structures of Life Investigation 2: Growing Further Part 2: Life Cycle of the Bean pp. 153-163</p> <p><i>Structures of Life Digital Science Resources:</i> "How Plants Get Food"</p> | <p>Students discuss plants' basic need and begin a bean growth chart. A video shows <i>How Plants Get Food</i> and students discuss the functions of root hairs - to take in water and nutrients; the stem brings water and nutrients to the leaves; the leaves use energy from sunlight to make food from water and carbon dioxide. After the 6-week observation of the bean plant, noting the development of flowers, the discussions following the video, students demonstrate their understanding of the bean plant's life cycle by sequencing pictures from seed to mature plant.</p> |
| <p>3.L.2.4. Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.</p> | <p>Delta Science Content Reader "Soils"</p> | |

Grade 4

Forces and Motion

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.1 Explain how various forces affect the motion of an object. | | |
| <p>4.P.1.1. Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.</p> | <p>FOSS Next Generation Energy Investigation 2: The Force of Magnetism Background for the Teacher pp. 174-178 Part 1: Magnets and Materials pp. 182-190</p> <p><i>FOSS Digital Resources:</i> "Virtual Investigation: What Sticks and What Conducts"</p> | <p>PA: Students predict what test objects given to them might stick to the magnet. They then test the objects. Students look over the items and observe closer the items they thought were metal but which didn't stick to the magnet. They learn only one common metal sticks - iron. If a magnet sticks to an object, that object is made of the materials iron or steel (a mixed of iron and other metals). They look at a black rock which does stick to the magnet and infer it must contain iron. The teacher will confirm this and introduce the rock as a mineral called Magnetite which is rich in iron. They test other items in the classroom and out of doors.</p> |
| | <p>FOSS Next Generation Energy Investigation 2: The Force of Magnetism Part 2: Magnetic Fields pp. 191-205</p> | <p>PA: Students explore what happens when magnets interact and discover sometimes the magnets pull and stick together - attract - and sometimes the two magnets push away from each other - repel. This activity, students discover permanent magnets have opposite ends - an "S" and an "N." These two different ends are called poles - a south pole (S) and a north pole (N). They also discover when the bar magnet is free hanging the bar will turn its north pole to the north and the south pole to the south.</p> |
| | <p>FOSS Next Generation Energy <i>FOSS Science Resources:</i> "All About Magnets," "Tutorial: Magnetic Poles" "Magnetic Poles" "Magnetic Poles Quiz"</p> <p><i>FOSS Science Resources:</i> "Energy Sources"</p> | <p>FQA: Students explore permanent magnets' interaction with iron objects when a piece of non-steel is put in between the magnet and the steel object. They continue to investigate the attraction over distance and discover magnets can attract iron from a distance and do not have to touch the object. They discover the invisible magnetic field. The object may appear to float if the magnetic force is greater than the force produced by gravity. They also demonstrate that when an iron object gets close or touches a magnet, it becomes a temporary magnet with a magnetic field of its own and can act on other pieces of iron or steel.</p> |

Grade 4

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.1 Explain how various forces affect the motion of an object. | | |
| <p>4.P.1.1. Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.</p> | <p>FOSS Next Generation Energy Investigation 2: The Force of Magnetism Part 3: Magnetic Forces pp. 206-222</p> <p><i>FOSS Science Resources:</i> "Energy Sources"</p> | <p>PA: Students conduct experiments to determine "What happens to the force of attraction between two magnets as the distance between them changes?" In their group they discuss how to measure the force and develop procedures. They conduct the experiment and record their observations. They graph the number of washers used between the magnet and the iron object and the changes in the space. Through their observations and evidence they determine that the greater the distance between magnets, the weaker the force. Using their graph data, they make predictions as to the number of washers it will take to break the force of attraction. Students test their predictions.</p> |
| <p>4.P.1.2. Explain how electrically charged objects push or pull on other electrically charged objects and produce motion.</p> | <p>FOSS Next Generation Energy Investigation 3: Electromagnets Part 1: Building an Electromagnet pp. 236-245</p> <p><i>FOSS Science Resources:</i> "Electricity Creates Magnetism"</p> | <p>FQA: Students construct an electromagnet. Students label a diagram with all component parts and include the function of each of the components. They address the focus question of turning a steel rivet into a magnet that turns off and on. They note that when electricity flows through a circuit, a magnetic field is produced around the wire. When the circuit is closed, electricity flows from the negative terminal through the wire wrapped around the rivet but does not flow through the rivet.</p> |
| | <p>FOSS Next Generation Energy Investigation 3: Electromagnets Part 2: Changing the Strength pp. 246-252</p> <p><i>FOSS Digital Resources:</i> "Kitchen Magnets " "Tutorial: Electromagnets" "Virtual Electromagnet"</p> <p><i>FOSS Science Resources:</i> "Using Magnetic Fields" "Electromagnets Everywhere"</p> | <p>PA: In their groups, students plan an investigation to try and determine if the number of winds of wire around a core affect the strength of the magnetism. The conduct the investigation using their plan and collect data. They analyze and interpret the data and draw a conclusion. Students explain how the different numbers of winds affected the strength of the electromagnet making sure to give evidence - i.e. How many washers a 20-wind electromagnet lifted; how many a 40-wind electromagnet lifted, etc.</p> |



Grade 4

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 4.P.1 Explain how various forces affect the motion of an object. | | |
| <p>4.P.1.2. Explain how electrically charged objects push or pull on other electrically charged objects and produce motion.</p> | <p>FOSS Next Generation Energy Investigation 3: Electromagnets Part 3: Reinventing the Telegraph pp. 253-263</p> <p><i>FOSS Science Resources:</i> <i>"Morse Gets Clicking"</i></p> | <p>Investigation 3 I-Check</p> |



Grade 4

Matter: Properties and Change

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.2 Understand the composition and properties of matter before and after they undergo a change or interaction. | | |
| <p>4.P.2.1. Compare the physical properties of samples of matter (strength, hardness, flexibility, ability to conduct heat, ability to conduct electricity, ability to be attracted by magnets, reactions to water and fire).</p> | <p>FOSS Next Generation Energy Investigation 1: Energy and Circuits Part 2: Conductors and Circuits pp. 123-141</p> <p><i>FOSS Digital Resources:</i> "Tutorial: Simple Circuits" "Tutorial: Conductors and Insulators" "Turn on the Switch" "Conductor Detector" "D-cell Orientation"</p> <p><i>FOSS Science Resources:</i> "Energy Sources"</p> | <p>FQA: Students add a switch to their circuit and are introduced to conductors and insulators. They make a conductor detector and test different physical objects in their classroom to determine if they are conductors or insulators. Students explain what is needed to make a complete pathway for current to flow in a circuit. Pathways need to be made of conductors with no insulators blocking the flow of electricity. Conductors are made of metal. They also explain the function of a switch is to open and close the circuit and control the flow of the electricity.</p> |
| <p>4.P.2.2. Explain how minerals are identified using tests for the physical properties of hardness, color, luster, cleavage and streak.</p> | <p>Delta Science Reader Minerals, Rocks and Fossils "What Are Minerals?" pp. 2-7</p> | |
| <p>4.P.2.3. Classify rocks as metamorphic, sedimentary or igneous based on their composition, how they are formed and the processes that create them.</p> | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 4: Natural Resources Part 3: Earth Materials in Use</p> <p><i>FOSS Science Resources:</i> "Where Do Rocks Come From?" pp. 67-75</p> | |

Grade 4

Energy: Conservation and Transfer

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter. | | |
| <p>4.P.3.1. Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.</p> | <p>FOSS Next Generation Energy Investigation 1: Energy and Circuits Part 1: Lighting a Bulb pp. 108-123</p> <p><i>FOSS Digital Resources:</i> "Lighting a Bulb" "Flow of Electricity"</p> <p><i>FOSS Science Resources:</i> "Edison Sees the Light"</p> | <p>FAQ: Students are introduced to electrical energy through readings, interactive activities, and class discussing. They are challenged to make a bulb light with a D-Cell. The class as a whole reviews the successes and discusses questions on how the successful wires were connected and look at what was not successful. Vocabulary terms are introduced and they use those terms to answer the question "What is needed to light a bulb?" They look at a diagram of a bulb-and-battery circuit and make a claim as to whether the build will light. They construct an agreement using a model to explain the path of the electricity and the energy transfer from the D-Cell to the light.</p> |
| | <p>FOSS Next Generation Energy Investigation 1: Energy and Circuits Part 2: Conductors and Circuits pp. 123-141</p> <p><i>FOSS Digital Resources:</i> "Tutorial: Simple Circuits" "Tutorial: Conductors and Insulators" "Turn on the Switch" "Conductor Detector" "D-cell Orientation"</p> <p><i>FOSS Science Resources:</i> "Energy Sources"</p> | <p>PA: Students build a circuit with the D-cell to turn a motor. Students claim is light and electric current are ways energy moves. Anywhere there is light or electric current, there is energy. Students defend with evidence that the movement of the motor spinning the flag is evidence of energy transfer to the motor.</p> |
| | <p>FOSS Next Generation Energy Investigation 2: The Force of Magnetism Part 2: Magnetic Fields pp. 191-205</p> <p><i>FOSS Digital Resources:</i> "All About Magnets" "Tutorial: Magnetic Poles" "Magnetic Poles" "Magnetic Poles Quiz"</p> <p><i>FOSS Science Resources:</i> "When Magnet Meets Magnet"</p> | <p>FQA: Students explore permanent magnets interaction with iron objects when a piece of non-steel is put in between the magnet and the steel object. They continue to investigate the attraction over distance and discover magnets can attract iron from a distance and do not have to be touch the object. They discover the invisible magnetic field. The object may appear to float if the magnetic force is great than the force produced by gravity. They also demonstrate that when an iron object gets close or touches a magnet, it becomes a temporary magnet with a magnetic field of its own and can act on other pieces of iron or steel.</p> |

Grade 4

Energy: Conservation and Transfer (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter. | | |
| <p>4.P.3.1. Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.</p> | <p>FOSS Next Generation Energy Investigation 2: The Force of Magnetism Part 3: Magnetic Forces pp. 206-222</p> <p><i>FOSS Science Resources:</i> "Magnificent Magnetic Models" "Make a Magnetic Compass"</p> | <p>PA: Students conduct experiments to determine "What happens to the force of attraction between two magnets as the distance between them changes?" In their group they discuss how to measure the force and develop procedures. They conduct the experiment and record their observations. They graph the number of washers used between the magnet and the iron object and the changes in the space. Through their observations and evidence they determine that the greater the distance between magnets, the weaker the force. Using their graph data, they make predictions as to the number of washers it will take to break the force of attraction. Students test their predictions.</p> |
| | <p>FOSS Next Generation Energy Investigation 3: Electromagnets Part 1: Building an Electromagnet pp. 236-245</p> <p><i>FOSS Science Resources:</i> "Electricity Creates Magnetism"</p> | <p>FQA: Students construct an electromagnet. Students label a diagram with all component parts and include the function of each of the components. They address the focus question of turning a steel rivet into a magnet that turns off and on. They note that when electricity flows through a circuit, a magnetic field is produced around the wire. When the circuit is closed, electricity flows from the negative terminal through the wire wrapped around the rivet but does not flow through the rivet.</p> |
| | <p>FOSS Next Generation Energy Investigation 3: Electromagnets Part 2: Changing the Strength pp. 246-252</p> <p><i>FOSS Digital Resources:</i> "Kitchen Magnets " "Tutorial: Electromagnets" "Virtual Electromagnet"</p> <p><i>FOSS Science Resources:</i> "Using Magnetic Fields" "Electromagnets Everywhere"</p> | <p>PA: In their groups, students plan an investigation to try and determine if the number of winds of wire around a core affect the strength of the magnetism. The conduct the investigation using their plan and collect data. They analyze and interpret the data and draw a conclusion. Students explain how the different numbers of winds affected the strength of the electromagnet making sure to give evidence - i.e. How many washers a 20-wind electromagnet lifted; how many a 40-wind electromagnet lifted, etc.</p> |



Grade 4

Energy: Conservation and Transfer (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter. | | |
| <p>4.P.3.1. Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.</p> | <p>FOSS Next Generation Energy Investigation 3: Electromagnets Part 3: Reinventing the Telegraph pp. 253-263</p> <p><i>FOSS Science Resources:</i> "Morse Gets Clicking"</p> | <p>Investigation 3 I-Check</p> |
| | <p>FOSS Next Generation Energy Investigation 5: Waves Background for the Teacher pp. 318-325 Part 1: Forms of Waves pp. 330-345</p> <p><i>FOSS Digital Resources:</i> "Real World Science: Sound"</p> <p><i>FOSS Science Resources:</i> "Waves" "More About Sound"</p> | <p>FQA: Students hear a sound and are asked what evidence of energy is present (Sound) and vibrations from a evidenced by touching the black paper of the speaker. Students are introduced to the three properties of waves: Amplitude, Wavelength and Frequency. They experience waves they can see - moving a rope. From readings and video, they learn that sound waves can't be seen and that they must have a medium to travel through - solid, liquid or gas. Without a medium, sound waves cannot be heard. They learn how sound waves are recorded and recognize a diagram of a sound wave of a high pitch noise compared to a low pitch, etc. Students answer the focus question about how are waves involved in energy transfer by describing, as an example, a musical instrument with a vibrating column of air (energy transfer). They explain a diagram of a bell and the resulting sound waves and note that the curved lines show vibration in a series of compression pulses; and the arrow shows the direction of the transfer of energy.</p> |



Grade 4

Energy: Conservation and Transfer (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter. | | |
| <p>4.P.3.1. Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.</p> | <p>FOSS Next Generation Energy Investigation 5: Waves Part 2: Light Travels pp. 346-360</p> <p><i>FOSS Digital Resources:</i> "All About Light" "Reflecting Light" "Colored Light"</p> <p><i>FOSS Science Resources:</i> "Light Interactions" "Throw a Little Light on Sight" "More Light on the Subject"</p> | <p>FQA: Students read and discuss: Light is energy. It comes from systems that radiate light. Light travels in rays; light rays travel from a light source in straight lines. Light rays don't curve around things until they run into something. In a series of challenges, students discover that mirrors reflect light. The light hits the mirrors and bounce off in different directions, allowing them to use a mirror to see behind themselves. Students need to be able to explain that the light hits the mirror and changes direction so it can be redirected into their eyes, allowing them to see an object behind them. They practice others ways of reflecting light. They then observe light through water and explain that while the pencil appears broken, it actually is the light changing direction, or refracting, when it travels through water. They discuss a video on All About Light and share that light energy can change into heat energy when light is absorbed by matter. They explain that light that is absorbed by matter is converted into another form of energy - heat energy. Finally, they evaluated a line model of how people see which is incorrect. They state the error and the correction.</p> |



Grade 4

Energy: Conservation and Transfer (cont.)

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.P.3 Recognize that energy takes various forms that may be grouped based on their interaction with matter. | | |
| <p>4.P.3.2. Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.</p> | <p>FOSS Next Generation Energy Part 2: Light Travels pp. 346-360</p> <p><i>FOSS Digital Resources:</i> "All About Light" "Reflecting Light" "Colored Light"</p> <p><i>FOSS Science Resources:</i> "Light Interactions" "Throw a Little Light on Sight" "More Light on the Subject"</p> | <p>FQA: Students read and discuss: Light is energy. It comes from systems that radiate light. Light travels in rays; light rays travel from a light source in straight lines, light rays don't curve around things until they run into something. In a series of challenges, students discover that mirrors reflect light. The light hits the mirrors and bounce off in different directions, allowing them to use a mirror to see behind themselves. Students need to be able to explain that the light hits the mirror and changes direction so it can be redirected into their eyes, allowing them to see an object behind them. They practice others ways of reflecting light. They then observe light through water and explain that while the pencil appears broken, it actually is the light changing direction, or refracting, when it travels through water. They discuss a video on All About Light and share that light energy can change into heat energy when light is absorbed by matter. They explain that light that is absorbed by matter is converted into another form of energy - heat energy. Finally, they evaluated a line model of how people see which is incorrect. They state the error and the correction.</p> |

Grade 4

Earth in the Universe

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.E.1 Recognize the major components and patterns observed in the earth/moon/sun system. | | |
| <p>4.E.1.1. Explain the cause of day and night based on the rotation of Earth on its axis.</p> | <p>Delta Science Reader Earth, Moon and Sun System</p> <p>What Are Earth, the Moon, and the Sun? Earth pp. 4</p> <p>How Do Earth, the Moon, and the Sun Interact? Earth and the Sun pp. 14</p> | <p>Students explain a day is 24 hours. Each day the sun, moon and stars seems to rise in the east and then move slowly across the sky and set in the west. Students demonstrate the rotation by using a globe and shining a flashlight on the globe while it spins to illustrate the cause of day and night.</p> |
| <p>4.E.1.2. Explain the monthly changes in the appearance of the moon, based on the moon’s orbit around the Earth.</p> | <p>Delta Science Reader Earth, Moon and Sun System</p> <p>What Are Earth, the Moon, and the Sun? Earth, the Moon, and the Sun pp. 18</p> | <p>Students explain that as the moon rotates, different parts face the Sun. The phases of the Moon happen because the Moon revolves around the Earth. As the Moon moves in its orbit, we see more or less of the side of the Moon that is lighted by the Sun.</p> |

Grade 4

Earth Systems, Structures and Processes

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.E.2 Understand the use of fossils and changes in the surface of the earth as evidence of the history of Earth and its changing life forms. | | |
| <p>4.E.2.1. Compare fossils (including molds, casts, and preserved parts of plants and animals) to one another and to living organisms.</p> | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 1: Soils and Weathering Part 4: Fossil Evidence pp. 182</p> <p><i>FOSS Digital Resources:</i> "Fossils Tell a Story" "Pieces of a Dinosaur Puzzle"</p> <p><i>FOSS Science Resources:</i> "Fossils"</p> | <p>FQA: Students model fossil formation. They view and discuss the video about fossils and answer how fossils get in rocks and what can they tell us about the past. They review aspects learned from the video: They describe types of fossils - petrification, molds, casts, imprints, preserved remains. Most fossils are found in sedimentary rock. Fossils are evidence from the past - e.g. A fish fossil found in a desert is evidence that the land was once covered by water. Comparing fossils to similar plants and animals living today provides evidence of change and adaptation.</p> |
| | <p>Delta Science Reader Minerals, Rocks and Fossils "What Are Fossils?" pp. 18-23</p> | |
| <p>4.E.2.2. Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.</p> | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 1: Soils and Weathering Part 4: Fossil Evidence pp. 182</p> <p><i>FOSS Digital Resources:</i> "Fossils Tell a Story" "Pieces of a Dinosaur Puzzle"</p> <p><i>FOSS Science Resources:</i> "Fossils"</p> | <p>FQA: Students model fossil formation. They view and discuss the video about fossils and answer how fossils get in rocks and what can they tell us about the past. They review aspects learned from the video: They describe types of fossils - petrification, molds, casts, imprints, preserved remains. Most fossils are found in sedimentary rock. Fossils are evidence from the past - e.g. A fish fossil found in a desert is evidence that the land was once covered by water. Comparing fossils to similar plants and animals living today provides evidence of change and adaptation.</p> |



Grade 4

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>4.E.2 Understand the use of fossils and changes in the surface of the earth as evidence of the history of Earth and its changing life forms.</p> | | |
| <p>4.E.2.3. Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.</p> | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 1: Soils and Weathering Part 1: Soil Composition pp. 86-101</p> <p><i>FOSS Science Resources:</i> "What is Soil"</p> | <p>FQA: Students study 4 different soil samples first when the soil is dry, and then when water is added and the vials are allowed to settle. For both, students discuss what different materials were in the 4 samples when the soil was dry. They observe the vials and describe the layers that appear and look for patterns in the layers - e.g. Does each have the same size sand layer; does each have the same amount of humus. They are told each sample came from a different location. They make a claim and present the evidence of where they believe each of the samples came from. They write that soil is composed of different sizes of rock (e.g., sand, gravel, pebbles) and humus (decaying plants and animals).</p> |
| | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 1: Soils and Weathering Part 2: Physical Weathering pp. 102-111</p> | <p>FQA: Students experiment with two different types of rocks and shake (tremble) each in a jar of water, and observe and record the results. One broke into more and bigger pieces, the other had only small, sand-size pieces broken off. They freeze a completely filled glass bottle of water and offer explanations for the fractured glass, e.g. Water freezes and it expands. The water pushes on things around it with a lot of force which was enough to break the bottle. They infer that freezing water can break rocks into smaller pieces. Both are a kind of physical weather. Students draw the conclusion that big rocks break down into smaller pieces and state their evidence.</p> |
| | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 1: Soils and Weathering Part 3: Chemical Weathering pp. 112-125</p> <p><i>FOSS Digital Resources:</i> "Weathering and Erosion"</p> <p><i>FOSS Science Resources:</i> "Weathering"</p> | <p>FQA: Students investigate the effects of acid rain by simulating it by soaking 4 different rocks in vinegar. They discover that in 2 samples (limestone and marble) different crystals are observed after evaporation, an example of chemical weathering.</p> |

Grade 4

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.E.2 Understand the use of fossils and changes in the surface of the earth as evidence of the history of Earth and its changing life forms. | | |
| <p>4.E.2.3. Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.</p> | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 1: Soils and Weathering Part 4: Schoolyard Soils pp. 126-135</p> <p><i>FOSS Digital Resources:</i> "Soils"</p> | <p>Investigation 1 I-Check</p> |
| | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 2: Landforms Part 1: Erosion and Deposition pp. 150-161</p> <p><i>FOSS Science Resources:</i> "Erosion and Deposition"</p> | <p>FQA: Based evidence from their investigations stimulating deposition of materials in moving water (using a stream table), students describe erosion as part of the sediment-moving process: earth materials are carried away by moving water, forming valleys. They describe deposition as part of the process. The eroded earth materials eventually are deposited somewhere downstream with smaller particles usually moving farther than large particles.</p> |
| | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 2: Landforms Part 2: Stream – Table Investigations pp. 162-174</p> <p><i>FOSS Digital Resources:</i> "Geology Lab: Stream Tables" "Tutorial - Stream Tables: Slope and Flood"</p> <p><i>FOSS Science Resources:</i> "Landforms Photo Album"</p> | <p>PA: Students work in groups to design and implement several investigations using stream table to research how slope affects erosion and deposition; how floods affect erosion and deposition; and a focus question that they wrote. Students present their results based on the evidence they have collected. Erosion did occur more in the steeper tray; deposition/erosion happened faster in the slope tray; materials traveled farther in the slope tray. Students claim from the evidence that when the land was steeper, the water flowed faster and faster flowing water has more energy to move sand and clay farther along the stream or river channel.</p> |
| | <p>FOSS Next Generation Soils, Rocks and Landforms Investigation 2: Landforms Part 3: Schoolyard Erosion and Deposition pp. 175-181</p> <p><i>FOSS Digital Science Resources:</i> "Virtual Investigation - Stream Tables"</p> | |

Grade 4

Ecosystems

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.L.1 Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful. | | |
| <p>4.L.1.1. Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful.</p> | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 2: Food Chains and Food Webs pp. 161-171</p> <p><i>FOSS Science Resources:</i> "What Is an Ecosystem?" "Food Chains and Food Webs"</p> | <p>FQA: Students learn the roles of organisms in a food chain from their readings and discussions with their group and class. They explain that food is a source of matter and energy and is needed for animals to grow and reproduce. Plants make their own food with energy from the sun, carbon dioxide, and water and are producers that provide the energy and matter for consumers. Decomposers break down dead plant and animals matter into simple chemicals which are recycled in the environment to the producers. They learn animals compete for a food source and that if an event like a forest fire disrupts the environment, destroying the producers, the consumers would have nothing to eat and would also starve the next level of consumers.</p> |
| | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 3: Population Simulation pp. 172-183</p> <p><i>FOSS Digital Resources:</i> "Virtual Terrarium" "Virtual Aquarium"</p> | <p>FQA: Through a population simulation activity students address how food affects a population in its home range. Their claim that the quantity of the food source in the home range limits the size of the population. If population numbers go over the carrying capacity, the organisms might use up or damage the food source and the area will support fewer animals.</p> |
| <p>4.L.1.2. Explain how animals meet their needs by using behaviors in response to information received from the environment.</p> | <p>FOSS Next Generation Environments Investigation 1: Environmental Factors Part 1: Observing Mealworms pp. 88-108</p> <p><i>FOSS Science Resources:</i> "Two Terrestrial Environments" "Darkling Beetles"</p> | <p>PA: Students set up an environment for mealworms and observe their structures and behaviors.</p> |
| | <p>FOSS Next Generation Environments Investigation 1: Environmental Factors Part 2: Designing an Isopod Environment pp. 109-121</p> <p><i>FOSS Science Resources:</i> "Setting Up a Terrarium" "Isopods"</p> | <p>PA: Students set up an isopod environment. They developed a procedure and test the factor of moisture. Students do a short-run observation (10 - 15 minutes). They record long-run observation requests, the animals moved to the conditions of the environmental factor that was most suitable for their needs.</p> |

Grade 4

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.L.1 Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful. | | |
| <p>4.L.1.2. Explain how animals meet their needs by using behaviors in response to information received from the environment.</p> | <p>FOSS Next Generation Environments Investigation 1: Environmental Factors Part 3: Leaf-Litter Critters pp. 122-132</p> <p><i>FOSS Science Resources:</i> "Amazon Rain Forest Journal"</p> | <p>ELA: Students discuss he reading and record answer in the notebooks; e.g. They learned that ants live in social groups called colonies and that they communicate with each other using chemicals they leave on the trail. Leaf-cutter ants carry leaves to the underground nest where they shew the leaves and make them into pulp to grow fungus, which they eat. Army ants make temporary nests because they need to keep moving to new places to get food. Animals depend on plants for food and shelter.</p> |
| | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 1: Designing an Aquarium pp. 150-160</p> <p><i>FOSS Science Resources:</i> "Freshwater Environments"</p> | <p>FQA: Students set up an aquarium and keep logs of their observations of the fish, their interactions, and of the aquarium environment. They add crustacean and observe the interactions (the crustaceans are a food source for the goldfish). They identify the environmental factors in an aquatic system based on their observations and from reading "Freshwater Environments" - the living factors are the organisms and that nonliving factors include water, things dissolved in the water (gases and solid substances), temperature of the water, light, surfaces, and air temperature on the surface. They look for other environmental interactions such as animals that can live at the lower level deep-water zones because they need little oxygen and light.</p> |
| | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 2: Food Chains and Food Webs pp. 161-171</p> <p><i>FOSS Science Resources:</i> "What Is an Ecosystem?" "Food Chains and Food Webs"</p> | <p>FQA: Students learn the roles of organisms in a food chain from their readings and discussions with their group and class. They explain that food is a source of matter and energy and is needed for animals to grow and reproduce. Plants make their own food with energy from the sun, carbon dioxide, and water and are producers that provide the energy and matter for consumers. Decomposers break down dead plant and animals matter into simple chemicals which are recycled in the environment to the producers. They learn animals compete for a food source and that if an event like a forest fire disrupts the environment, destroying the producers, the consumers would have nothing to eat and would also starve the next level of consumers.</p> |

Grade 4

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.L.1 Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful. | | |
| <p>4.L.1.2. Explain how animals meet their needs by using behaviors in response to information received from the environment.</p> | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 3: Population Simulation pp. 172-183</p> <p><i>FOSS Digital Resources:</i> "Virtual Terrarium" "Virtual Aquarium"</p> | <p>FQA: Through a population simulation activity students address how food affects a population in its home range. Their claim that the quantity of the food source in the home range limits the size of the population. If population numbers go over the carrying capacity, the organisms might use up or damage the food source and the area will support fewer animals.</p> |
| | <p>FOSS Next Generation Environments <i>FOSS Science Resources:</i> "Human Activities and Aquatic Ecosystems" "Comparing Aquatic and Terrestrial Ecosystems"</p> | <p>ELA: Students read and discuss "Human Activities and Aquatic Ecosystems." Using the information from their graphic organizers, the class discussed various questions. After the discussion, students record: The source of most of the pollution of Lake Erie resulted from human activities. The surface temperatures have risen in all of the world's largest lakes and a change of .05 degrees Celsius can change where lakes freeze and when the ice melts. Invasive species can be established and outcompete native species. Pesticides, acid water, oil spills or sediments could destroy some organisms' habitats and they wouldn't survive. Some organisms grow too much because of the pollution. Some steps taken to clean up Lake Erie were: building new and better sewage treatment plants; reducing the use of detergents containing phosphates; manage the use of fertilizers and pesticides on farms; stop industries from dumping waste into the lake.</p> |
| | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 4: Sound Off pp. 184 - 195</p> <p><i>FOSS Digital Resources:</i> "Animal Language and Communication"</p> <p><i>FOSS Science Resources:</i> "Animals Sensory Systems" "Saving Murrelets through Mimicry"</p> | <p>FQA: After a classroom activity predators and prey and viewing and discussing videos, students independently write in the notebook some examples of how animals use their sense of hearing: A sea lion cub makes a specific sounds its mother can recognize among the calls of many pups in a colony; wolves howl to alert the rest of the pack to the presence of prey.</p> |

Grade 4

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.L.1 Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful. | | |
| <p>4.L.1.3. Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion).</p> | <p>FOSS Next Generation Environments Investigation 2: Ecosystems Part 3: Population Simulation pp. 172-183</p> | <p>FQA: Through a population simulation activity students address how food affects a population in its home range. Their claim that the quantity of the food source in the home range limits the size of the population. If population numbers go over the carrying capacity, the organisms might use up or damage the food source and the area will support fewer animals.</p> |
| | <p>FOSS Next Generation Environments <i>FOSS Science Resources:</i> "Human Activities and Aquatic Ecosystems" "Comparing Aquatic and Terrestrial Ecosystems"</p> | <p>ELA: Students read and discuss "Human Activities and Aquatic Ecosystems." Using the information from their graphic organizers, the class discusses various questions. After the discussion, students record: The source of most of the pollution of Lake Erie resulted from human activities. The surface temperatures have risen in all of the world's largest lakes and a change of .05 degrees Celsius can change where lakes freeze and when the ice melts. Invasive species can be established and outcompete native species. Pesticides, acid water, oil spills or sediments could destroy some organisms' habitats and they wouldn't survive. Some organisms grow too much because of the pollution. Some steps taken to clean up Lake Erie were: building new and better sewage treatment plants; reducing the use of detergents containing phosphates; manage the use of fertilizers and pesticides on farms; stop industries from dumping waste into the lake.</p> |
| <p>4.L.1.4. Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats.</p> | <p>FOSS Next Generation Environments Investigation 3: Brine Shrimp Hatching Part 1: Setting Up the Experiment pp. 214-222 Part 2: Determining Range of Tolerance pp. 223-235 Part 3: Determining Viability pp. 236-243</p> | <p>PA: Students conduct a controlled experiment to determine which of four salt concentrations allow brine shrimp eggs to hatch. They determine the range of tolerance and optimum conditions for brine shrimp hatching.</p> |



Grade 4

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.L.1 Give examples of changes in an organism’s environment that are beneficial to it and some that are harmful. | | |
| <p>4.L.1.4. Explain how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats.</p> | <p>FOSS Next Generation Environments Investigation 3: Brine Shrimp Hatching Part 4: Variation in a Population pp. 244-254</p> | <p>FQA: Students participate in a simulation that introduces variations (color and size) in a population, They note that some variation may make it harder to be found by a predator and if those variations were passed on from the parents to the offspring, it may improve the survival of the next generation.</p> |
| | <p>FOSS Next Generation Environments <i>FOSS Science Resources:</i> <i>"Variation and Selection"</i></p> | <p>ELA: Students summarize the article which includes selective breeding, natural selection. Organisms with the ability to adapt to environmental changes and withstand the changes will reproduce and pass along the traits as inherited traits.</p> |



Grade 4

Molecular Biology

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.L.2 Understand food and the benefits of vitamins, minerals and exercise. | | |
| <p>4.L.2.1. Classify substances as food or non-food items based on their ability to provide energy and materials for survival, growth and repair of the body.</p> | <p>FOSS Next Generation Environments <i>FOSS Science Resources:</i> "Two Terrestrial Environments" pp. 2-12 "What is an Ecosystem" pp. 32-34</p> | |
| <p>4.L.2.2. Explain the role of vitamins, minerals and exercise in maintaining a healthy body.</p> | <p>FOSS Science Stories Food and Nutrition Food and Nutrition Vitamins pp. 21-23 The Scourge of Seafarers pp. 24-25</p> | <p>FQA: Scurvy, hundreds of years ago, afflicted many seamen. Doctors now know it is caused by a lack of ascorbic acid, also known as vitamin C. We know now limes and other citrus fruit cure scurvy.</p> |
| | <p>FOSS Science Stories Food and Nutrition Food and Nutrition Finding a Cure for Rickets pp. 35-36</p> | <p>FQA: Rickets was found to be caused by a lack of sunlight and vitamin D. Sunlight causes us to produce vitamin D. Making sure children get enough sunlight is important.</p> |

Grade 5

Forces and Motion

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.1 Understand force, motion and the relationship between them. | | |
| <p>5.P.1.1. Explain how factors such as gravity, friction, and change in mass affect the motion of objects.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 1: Motion and Variables Part 1: Exploring Motion pp. 58-71</p> <p><i>FOSS Digital Resources:</i> "Soccer Video" "Ball on a Table" "Wagon" "Pendulum"</p> <p><i>FOSS Science Resources:</i> "What Causes Change of Motion"</p> | <p>ELA: Students understand from the reading that starting and stopping are two changes of motion. Unbalance forces (a push or pull) makes an object start to move. Applying a force in the opposite direction will stop movement. All changes require a force.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 1: Motion and Variables Part 2: Testing Variables pp. 72-80</p> | <p>FQA: Students set up a controlled experiment to determine if changing variables affect the number of swings the pendulum completes in a unit of time. After setting up a test to establish a standard pendulum swing for comparison, they test bob mass, release position and length of string and record the data. Students state the relationship of the number of swings to the variable and create picture graphs.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 1: Motion and Variables Part 3: Predicting Swings pp. 81-90</p> <p><i>FOSS Science Resources:</i> "Galileo and Pendulums"</p> | <p>FQA: Using the data gathers in their tests in Part 2, student construct a two-coordinate graph and compare it to the concrete and pictorial they created in Part 2. They realize they use the same data and provide the same information in different ways. Using the two-coordinate graph, they estimate how many swings an 80cm pendulum will make in 15 seconds. They test their prediction.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 1: Rolling Balls Down Slopes pp. 104-111</p> | <p>FQA: Students set up a two-ramp runway system with only one ball rolling down a ramp at a time. Students design and conduct the test run and multiple runs of rolling the ball down the ramp at various starting positions, and various sized balls. They are introduced to potential energy and kinetic energy. Students record their speeds of the ball for each test and draw conclusions based on their evidence: i.e. Balls rolling from higher positions on ramps have more potential energy, which the force of gravity converts into kinetic energy; lower positioned balls have less potential energy - higher-positioned balls roll faster and farther. Ball size does not affect speed, but starting position on the ramp does affect speed.</p> |

Grade 5

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.1 Understand force, motion and the relationship between them. | | |
| <p>5.P.1.1. Explain how factors such as gravity, friction, and change in mass affect the motion of objects.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 2: Transferring Energy pp. 112-119</p> <p><i>FOSS Science Resources:</i> "Bowling"</p> | <p>FQA: After conducting several controlled collision experiments where student roll a steel ball down a ramp and it collides with a obstacle placed on the runway, students are introduced to work, friction, and energy and apply those concepts to their experiments and in their analysis of the data they have collected. They conclude that when a rolling ball collides with an object, the rolling ball transfers energy to the stationary object, causing it to move. Kinetic energy transfers from the ball to the object and puts the obstacle/object in motion.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 3: Energy and Force pp. 120-129</p> <p><i>FOSS Science Resources:</i> "Force and Energy" "Potential and Kinetic Energy at Work"</p> | <p>FQA: Students measure the strength of the collision force of a large ball rolling down the ramp from different starting positions. They then test a smaller ball rolling down the ramp from different starting positions. From the data gathered from their tests, students discover that there is a relationship between the starting position on the ramp and the amount of force a ball can apply and that a small ball can move the cork as far as a larger ball if the small ball starts from a much higher position. They conclude an object in motion has kinetic energy. When a moving object collides with a stationary object, the moving object applies a force to the stationary object. This collision involves a transfer of energy from the moving object to the stationary object.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 4: Momentum pp. 130-142</p> <p><i>FOSS Digital Resources:</i> "All About Motion and Balance"</p> <p><i>FOSS Science Resources:</i> "Coming to a Stop" "Concussion Discussion"</p> | <p>FQA: Adding a hill in the middle of their ramp, students test the hypothesis that balls that hit with more force are also the ones that do more work when they collide with objects in their paths. Students design investigations where they test a large ball, a middle size ball, and a small ball released from 3 different starting positions. They conclude from their evidence that the large ball, starting from the highest position had the most momentum as it pushed the cork the farthest. The collision between ball and cork transferred kinetic energy from the ball to the cork. At the moment of collision, the ball applied a force to the cork, putting it into motion. As the cork and ball rubbed along the runway, the rubbing or friction acted to slow the cork and ball system.</p> |

Grade 5

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.1 Understand force, motion and the relationship between them. | | |
| <p>5.P.1.1. Explain how factors such as gravity, friction, and change in mass affect the motion of objects.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 3: Springs and Energy Part 1: Flipper System Introduction pp. 152-158</p> <p><i>FOSS Digital Resources:</i> "Springs"</p> | <p>FQA: Students identify a system as parts that work together to do something or perform a function. They experiment with a flipper system and explain how they applied a force to compress the flip stick, which is held in place by the flipper base. The rubber stopper, placed on the flip stick, is launched into the air with the potential energy stored in the flip stick is released. In a controlled experiment, they launch both a cock and a stopper and discover the stopper goes further due to its larger mass.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 3: Springs and Energy Part 2: Controlled Experiments pp. 159-166</p> <p><i>FOSS Science Resources:</i> "Springs in Action"</p> | <p>FQA: Students design a controlled experiment to determine if the flipper lengths have an effect on the distance the mass moved. Students discuss what variables remained the same and which were changed. They graph the results and communicate their findings that the shortest flip stick produced the most force and gave the stopper the greatest motion.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 3: Springs and Energy Part 3: Flip Out pp. 167 - 174</p> | <p>FQA: Students design a controlled experiment that shows the relationship between the distance that the flip stick is depressed and the distance the cork travels (the amount of energy transferred to an object). They graph the data and use the graph to illustrate their conclusion that the more compression (the more the spring is depressed), the more potential energy, the farther the stopper went.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models <i>FOSS Science Resources:</i> "Graphing Data"</p> | <p>Investigation 3 I-Check</p> |

Grade 5

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.1 Understand force, motion and the relationship between them. | | |
| <p>5.P.1.2. Infer the motion of objects in terms of how far they travel in a certain amount of time and the direction in which they travel.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 1: Rolling Balls Down Slopes pp. 104-111</p> | <p>FQA: Students, using a two ramp and runway systems with only one ball rolling down a ramp at a time. Students design and conduct the test run and multiple runs of rolling the ball down the ramp at various starting positions, and various sized balls. They are introduced to potential energy and kinetic energy. Students record their speeds of the ball for each test and draw conclusions based on their evidence: i.e. Balls rolling from higher positions on ramps have more potential energy, which the force of gravity converts into kinetic energy; lower positioned balls have less potential energy, making higher-positioned balls roll faster and farther. Ball size does not affect speed, but starting position on the ramp does affect speed.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 2: Transferring Energy pp. 112-119</p> <p><i>FOSS Science Resources:</i> "Bowling"</p> | <p>FQA: After conducting several controlled collision experiments where student roll a steel ball down a ramp and it collides with an obstacle placed on the runway, students are introduced to work, friction, and energy and apply those concepts to their experiments and in their analysis of the data they have collected. They conclude that when a rolling ball collides with an object, the rolling ball transfers energy to the stationary object, causing it to move. Kinetic energy transfers from the ball to the object and puts the obstacle/object in motion.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 3: Energy and Force pp. 120-129</p> <p><i>FOSS Science Resources:</i> "Force and Energy" "Potential and Kinetic Energy at Work"</p> | <p>FQA: Students measure the strength of the collision force of a large ball rolling down the ramp from different starting positions. They then test a smaller ball rolling down the ramp from different starting positions. From the data gathered from their tests, students discover that there is a relationship between the starting position on the ramp and the amount of force a ball can apply and that a small ball can move the cork as far as a larger ball if the small ball starts from a much higher position. They conclude an object in motion has kinetic energy. When a moving object collides with a stationary object, the moving object applies a force to the stationary object. This collision involves a transfer of energy from the moving object to the stationary object.</p> |

Grade 5

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.1 Understand force, motion and the relationship between them. | | |
| <p>5.P.1.3. Illustrate the motion of an object using a graph to show a change in position over a period of time.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 1: Motion and Variables Part 3: Predicting Swings pp. 81-90</p> <p><i>FOSS Science Resources:</i> "Galileo and Pendulums"</p> | <p>FQA: Using the data gathered in their tests in Part 2, student construct a two-coordinate graph and compare it to the concrete and pictorial they created in Part 2. They realize they use the same data and provide the same information in different ways. Using the two-coordinate graph, they estimate how many swings an 80cm pendulum will make in 15 seconds. They test their prediction.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 3: Springs and Energy Part 2: Controlled Experiments pp. 159-166</p> <p><i>FOSS Science Resources:</i> "Springs in Action"</p> | <p>FQA: Students design a controlled experiment to determine if the flipper lengths have an effect on the distance the mass moved. Students discuss what variables remained the same and which were changed. They graph the results and communicate their findings that the shortest flip stick produced the most force and gave the stopper the greatest motion.</p> |
| <p>5.P.1.4. Predict the effect of a given force or a change in mass on the motion of an object.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 2: Balls, Ramps and Energy Part 3: Energy and Force pp. 120-129</p> <p><i>FOSS Science Resources:</i> "Force and Energy" "Potential and Kinetic Energy at Work"</p> | <p>FQA: Students measure the strength of the collision force of a large ball rolling down the ramp from different starting positions. They then test a smaller ball rolling down the ramp from different starting positions. From the data gathered from their tests, students discover that there is a relationship between the starting position on the ramp and the amount of force a ball can apply and that a small ball can move the cork as far as a larger ball if the small ball starts from a much higher position. They conclude an object in motion has kinetic energy. When a moving object collides with a stationary object, the moving object applies a force to the stationary object. This collision involves a transfer of energy from the moving object to the stationary object.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 4: Momentum Part 4: Momentum pp. 130-142</p> <p><i>FOSS Digital Resources:</i> "All About Motion and Balance"</p> <p><i>FOSS Science Resources:</i> "Coming to a Stop" "Concussion Discussion"</p> | <p>PA: Students are challenged to develop a method for demonstrating that two balls have equal momentum. They run two equivalent mass balls into one another. They conclude the amount of force needed to bring two balls with the same momentum to a stop is the same. If the momentum of the more massive ball is the same as the less massive ball, both balls will stop moving forward when they collide.</p> |

Grade 5

Forces and Motion (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.1 Understand force, motion and the relationship between them. | | |
| <p>5.P.1.4. Predict the effect of a given force or a change in mass on the motion of an object.</p> | <p>FOSS Third Edition Motion, Force, and Models Investigation 3: Springs and Energy Part 2: Controlled Experiments pp. 159-166</p> <p><i>FOSS Science Resources:</i> "Springs in Action"</p> | <p>FQA: Students design a controlled experiment to determine if the flipper lengths have an effect on the distance the mass moved. Students discuss what variables remained the same and which were changed. They graph the results and communicate their findings that the shortest flip stick produced the most force and gave the stopper the greatest motion.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models Investigation 3: Springs and Energy Part 3: Flip Out pp. 167-174</p> | <p>FQA: Students design a controlled experiment that shows the relationship between the distance that the flip stick is depressed and the distance the cork travels (the amount of energy transferred to an object). They graph the data and use the graph to illustrate their conclusion that the more compression (the more the spring is depressed), the more potential energy, the farther the stopper went.</p> |
| | <p>FOSS Third Edition Motion, Force, and Models <i>FOSS Science Resources:</i> "Graphing Data"</p> | <p>Investigation 3 I-Check</p> |

Grade 5

Matter: Properties and Change

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.2 Understand the interactions of matter and energy and the changes that occur. | | |
| <p>5.P.2.1. Explain how the sun’s energy impacts the processes of the water cycle (including evaporation, transpiration, condensation, precipitation and runoff).</p> | <p>FOSS Third Edition Weather on Earth Investigation 3: Water Planet Part 3: Water Cycle pp. 192-204</p> <p><i>FOSS Digital Resources:</i> "Water Cycle"</p> <p><i>FOSS Science Resource:</i> "The Water Cycle"</p> | <p>FQA: After classroom discussions with the teacher, viewing video on the water cycle and reading about the water cycle, students summarize their understanding of the water cycle as water in motion. The Sun drives the water cycle and involves water leaving Earth’s surface, moving to a new location as vapor and clouds, and returning to Earth’s surface as rain or snow (precipitation).</p> |
| <p>5.P.2.2. Compare the weight of an object to the sum of the weight of its parts before and after an interaction.</p> | <p>FOSS Next Generation Mixtures and Solutions Investigation 1: Separating Mixtures Part 2: Separating a Salt Solution pp. 106-116</p> | <p>PA: Students address the claim/hypothesis that when salt dissolves in water, the salt is gone. They develop procedures for conducting an inquiry to produce evidence to support or refute the claim. They compare the mass of both the salt and the water and log the results of the mass separately and then combined. They conclude, with their evidence, that the mass, when the solid and liquid are combined is the same as the combined weight of each separately. They demonstrate their understanding of the conversion of mass.</p> |
| | <p>FOSS Next Generation Mixtures and Solutions Investigation 2: Developing Models Part 3: Models for Change in Properties</p> <p><i>FOSS Digital Resources:</i> "Changes in the Properties of Matter"</p> <p><i>FOSS Science Resources:</i> "Solid to Liquid" "Liquid and Gas Changes" "Celsius and Fahrenheit"</p> | <p>PA: Students demonstrate that the same amount of water in a liquid state and a solid state (ice) have the same mass.</p> |
| <p>5.P.2.3. Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.</p> | <p>FOSS Next Generation Mixtures and Solutions Investigation 1: Separating Mixtures Part 1: Making and Separating Mixtures pp. 94-105</p> <p><i>FOSS Digital Resources:</i> "Tutorial: Mixtures"</p> | <p>FQA: Students discover that if a solid material is mixed with water and the solid material disappears in the water and cannot be separated out, the mixture is a solution. Students further define mixture, solution, solvent and solute and provide evidence that mixtures can be separated back into the original materials using screens and filters.</p> |

Grade 5

Matter: Properties and Change (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.2 Understand the interactions of matter and energy and the changes that occur. | | |
| <p>5.P.2.3. Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.</p> | <p>FOSS Next Generation Mixtures and Solutions Investigation 1: Separating Mixtures Part 2: Separating a Salt Solution pp. 106-116</p> <p><i>FOSS Digital Resources:</i> "Tutorial: Solutions"</p> <p><i>FOSS Science Resources:</i> "Mixtures"</p> | <p>PA: Students leave their salt solution out and the water evaporates leaving salt. The students describe the salt crystals remaining and how they differ from the original salt use in the mixture. They conclude that the water turned from a liquid to a gas and the salt to the crystals but that mass was conserved. Matter can change shape, state, or location, but it can never be lost or destroyed.</p> |
| | <p>FOSS Next Generation Mixtures and Solutions Investigation 1: Separating Mixtures Part 3: Separating a Dry Mixture pp. 117-127</p> <p><i>FOSS Digital Resources:</i> "Separating Mixtures" "Virtual Investigation: Separating Mixtures" "Elements, Compounds, and Mixtures"</p> <p><i>FOSS Science Resources:</i> "Taking Mixtures Apart" "Science Practices" "Engineering Practices"</p> | <p>PA: Students combine a mixture of solid materials and design a plan to separating the resulting mixture. Students share their design plan with the class and discuss the merits of each design. They use the resulting plan to conduct the investigation. They separate the mixture and then discuss the properties of each and what property allowed them to separate each.</p> |
| | <p>FOSS Next Generation Mixtures and Solutions Investigation 1: Separating Mixtures Part 4: Outdoor Solutions pp. 128 - 137</p> <p><i>FOSS Science Resources:</i> "Extracts" "The Story of Salt"</p> | <p>Investigation 1 I-Check</p> |
| | <p>FOSS Next Generation Mixtures and Solutions Investigation 2: Developing Models Part 3: Models for Change in Properties</p> <p><i>FOSS Digital Resources:</i> "Changings in the Properties of Matter"</p> <p><i>FOSS Science Resources:</i> "Solid to Liquid" "Liquid and Gas Changes" "Celsius and Fahrenheit"</p> | <p>PA: From their readings, video and in classroom investigations, students summarize their understanding that matter takes up space and has many physical properties, including smell, texture, taste, mass, volume, and density. Solids have definite shapes; liquids have definite volumes, but don't hold their shape and spread out to fill the space they are in; gases do not have defined shapes and cannot be seen. Evaporation occurs when the surface of a liquid warms up and turns into a gas; sublimation occurs when a solid turns directly into a gas; condensation occurs when water vapor cools down enough to revert to liquid water. Heat energy changes a solid to a liquid and/or gas.</p> |

Grade 5

Energy: Conservation and Transfer

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.3 Explain how the properties of some materials change as a result of heating and cooling. | | |
| <p>5.P.3.1. Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation)</p> | <p>FOSS Third Edition Weather on Earth Investigation 2: Heating Earth Part 1: Heating Earth Materials</p> | <p>FQA: Students are introduced to radiation and energy transfer through investigations and observation of the difference in soil temperature and water temperature when placed in the sunshine (or under heat lamps). Students write that solar energy is transferred to soil and water, explaining that dry soil gets hotter than water and when removed from the light/heat source, cools down more. Water takes more energy to change the temperature than an equal volume of dry soil.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> <i>"Uneven Heating"</i></p> | <p>ELA: Students understand from the reading what causes Earth's surface to heat up and can explain some of the variables that cause uneven heating on the Earth's surface.</p> |
| | <p>FOSS Third Edition Weather on Earth Investigation 2: Heating Earth Part 2: Conduction pp. 129-140</p> | <p>PA: Students are introduced to heat transfer by contact and an energy-transfer challenge. The teacher observes the students describing and setting up an investigation where a temperature strip is attached to an aluminum and a steel bar and both are placed in hot water. Students discuss their results and support their conclusion that metals conduct heat.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> <i>"Heating the Air: Radiation and Conduction"</i></p> | <p>ELA: Students understand from the reading that radiation of solar energy to Earth increases the motion of particles in Earth's surface. The warmed land and water transfer energy to air through conduction at Earth's surface. Radiation from Earth is another way that energy transfers to particles of gases in air.</p> |

Grade 5

Energy: Conservation and Transfer (cont.)

| Standards | FOSS Alignment | Assessment |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.P.3 Explain how the properties of some materials change as a result of heating and cooling. | | |
| <p>5.P.3.1. Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation)</p> | <p>FOSS Next Generation Mixtures and Solutions Investigation 2: Developing Models Part 3: Models for Change in Properties</p> <p><i>FOSS Digital Resources:</i> "Changings in the Properties of Matter"</p> <p><i>Mixtures and Solutions Science Resources:</i> "Solid to Liquid" "Liquid and Gas Changes" "Celsius and Fahrenheit"</p> | <p>FQA: Students describe the changes they observed when they put a plastic cup with various solids into hot water. They discuss the results of heating: Margarine turned to liquid, chocolate and candle wax was softened and changed shape and the rock stayed the same. They share ideas of how they might get the rock to melt - get it hotter. Students make a model in their notebooks to explain heat transfer from evidence they gathered in their investigation, their reading, and from viewing video on changing properties. They write that the difference between dissolving and melting noting that heat energy is needed to change the properties of matter from a solid, to a liquid or gas (phases of matter) and that the differences between solids, liquids, and gases is the amount of energy in each phase. They confirm heat energy transfers in the air melting ice. They demonstrate that the same amount of water in a liquid state and a solid state (ice) have the same mass.</p> |
| <p>5.P.3.2. Explain how heating and cooling affect some materials and how this relates to their purpose and practical applications.</p> | <p>FOSS Third Edition Weather on Earth Investigation 2: Heating Earth Part 4: Color and Energy Transfer pp. 151-162</p> | <p>PA: Students experiment with building a solar water heater. Through trials, they determine that a black container, covered with a black plastic sheet absorbed (soaked up) more of the Sun's energy than the white plastic which reflected much of the Sun's energy.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> "Solar Technology"</p> | <p>ELA: Students discuss the features of solar water heaters, the advantages of solar cookers, and Maria Telkes contribution to solar technology.</p> |
| | <p>FOSS Next Generation Mixtures and Solutions Investigation 2: Developing Models Part 3: Models for Change in Properties</p> <p><i>FOSS Digital Resources:</i> "Changings in the Properties of Matter"</p> <p><i>FOSS Science Resources:</i> "Solid to Liquid" "Liquid and Gas Changes" "Celsius and Fahrenheit"</p> | <p>PA: Students learn from readings and viewing videos that solids melt at different temperatures. They infer that many things they think are always solid, like their rock in their classroom investigation, will melt if enough heat energy is transferred to them. They learn metals melt: jewelers melt gold and silver to make jewelry; bronze is melted to make statues; iron and copper are melted to separate them from ores taken from mines and used commercially; sand is melted to make glass.</p> |

Grade 5

Earth Systems, Structures and Processes

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.E.1 Understand weather patterns and phenomena, making connections to the weather in a particular place and time. | | |
| <p>5.E.1.1. Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns.</p> | <p>FOSS Third Edition Weather on Earth Investigation 1: What Is Weather? Part 1: The Air Around Us pp. 62-74</p> <p><i>FOSS Science Resources:</i> "What is Air?"</p> | <p>FQA: Students do several investigations observing air in connected plungers. They read "What Is Air?" and discuss the question. Students answer this question with statements that air is an invisible gas that fills space everywhere on Earth, air is matter, occupies space, and is compressible.</p> |
| | <p>FOSS Third Edition Weather on Earth Investigation 1: What Is Weather? Part 2: Earth's Atmosphere pp. 75-82</p> <p><i>FOSS Digital Resources:</i> "Earth's Atmosphere"</p> <p><i>FOSS Science Resources:</i> "Earth's Atmosphere"</p> | <p>FQA: From video clips, reading and viewing the Atmosphere poster, students explain that the troposphere layer of the atmosphere is of most interest to meteorologists because that is where clouds, wind, storms, and other types of weather happen.</p> |
| | <p>FOSS Third Edition Weather on Earth Investigation 1: What Is Weather? Part 3: Local Weather pp. 83-103</p> <p><i>FOSS Digital Resources:</i> "All About Meteorology"</p> | <p>FQA: Students log daily detailed weather data gathered with various instruments - thermometer, hygrometer, barometer, anemometer, wind vane. Students demonstrate their understanding by addressing how meteorologists measure and record weather including what variables and instruments they use.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> "Weather Instruments"</p> | <p>The Investigation 1 Interdisciplinary Extensions offer students the opportunity to explore weather topics and weather reports further.</p> |
| <p>5.E.1.2. Predict upcoming weather events from weather data collected through observation and measurements.</p> | <p>FOSS Third Edition Weather on Earth Investigation 1: What Is Weather? Part 1: The Air Around Us pp. 62-74</p> <p><i>FOSS Science Resources:</i> "What is Air?"</p> | <p>FQA: Students do several investigations observing air in connected plungers. They read "What Is Air?" and discuss the question. Students answer this question with statements that air is an invisible gas that fills space everywhere on Earth, air is matter, occupies space, and is compressible.</p> |
| | <p>FOSS Third Edition Weather on Earth Investigation 1: What Is Weather? Part 2: Earth's Atmosphere pp. 75-82</p> <p><i>FOSS Digital Resources:</i> "Earth's Atmosphere"</p> <p><i>FOSS Science Resources:</i> "Earth's Atmosphere"</p> | <p>FQA: From video clips, reading and viewing the Atmosphere poster, students explain that the troposphere layer of the atmosphere is of most interest to meteorologists because that is where clouds, wind, storms, and other types of weather happen.</p> |

Grade 5

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.E.1 Understand weather patterns and phenomena, making connections to the weather in a particular place and time. | | |
| <p>5.E.1.2. Predict upcoming weather events from weather data collected through observation and measurements.</p> | <p>FOSS Third Edition Weather on Earth Investigation 1: What Is Weather? Part 3: Local Weather pp. 83-103</p> <p><i>FOSS Digital Resources:</i> "All About Meteorology"</p> | <p>FQA: Students log daily detailed weather data gathered with various instruments - thermometer, hygrometer, barometer, anemometer, wind vane. Students demonstrate their understanding by addressing how meteorologists measure and record weather including what variables and instruments they use.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> "Weather Instruments"</p> | <p>The Investigation 1 Interdisciplinary Extensions offer students the opportunity to explore weather topics and weather reports further.</p> |
| | <p>FOSS Third Edition Weather on Earth Investigation 4: Weather and Climate Part 2: Weather Maps pp. 228-236</p> <p><i>FOSS Digital Resources:</i> "Meteorology"</p> | <p>FQA: Students review weather maps and conduct the "Weather Map" activity, predicting the 5th day of weather after reviewing the set of four daily weather maps.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> "Weather Maps"</p> | <p>ELA: From their readings, students should be able to: Note weather variables meteorologists measure; describe three kinds of fronts and the weather they produce; determine from a sample weather map where they think it is raining now and where it will be raining tomorrow; look at high-pressure and low-pressure centers on the map and determine where and what direction the wind is blowing.</p> |
| <p>5.E.1.3. Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.</p> | <p>FOSS Third Edition Weather on Earth Investigation 3: Water Planet Part 3: Water Cycle pp. 192-204</p> <p><i>FOSS Digital Resources:</i> "Water Cycle"</p> <p><i>FOSS Science Resources:</i> "The Water Cycle"</p> | <p>FQA: After classroom discussions with the teacher, viewing video on the water cycle and reading about the water cycle, students summarize their understanding of the water cycle as water in motion. The Sun drives the water cycle and involves water leaving Earth's surface, moving to a new location as vapor and clouds, and returning to Earth's surface as rain or snow (precipitation).</p> |

Grade 5

Earth Systems, Structures and Processes (cont.)

| Standards | FOSS Alignment | Assessment |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.E.1 Understand weather patterns and phenomena, making connections to the weather in a particular place and time. | | |
| <p>5.E.1.3. Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.</p> | <p>FOSS Third Edition Weather on Earth Investigation 4: Weather and Climate Background for the Teacher pp. 212-219 Part 1: Severe Weather pp. 222-228</p> <p><i>FOSS Digital Resources:</i> "Hurricanes and Tornadoes"</p> <p><i>FOSS Science Resources:</i> "Severe Weather"</p> | <p>FQA: Classroom discussion of the weather variables - moisture, energy (heat), air movement - precede reading of severe weather and video clips on Hurricanes and Tornadoes. Students then entered into their notebooks what causes severe weather, noting the water cycle affect and the ocean influence on weather along the West Coast as well as masses of warm, moist air meeting cold, dense air and causing moisture to rapidly condense from the warm air. Warm air is pushed up by colder air when these masses meet.</p> |
| | <p>FOSS Third Edition Weather on Earth Investigation 4: Weather and Climate Part 2: Weather Maps pp. 228-236</p> <p><i>FOSS Digital Resources:</i> "Meteorology"</p> | <p>FQA: Students review weather maps and conduct the "Weather Map" activity, predicting the 5th day of weather after reviewing the set of four daily weather maps.</p> |
| | <p>FOSS Third Edition Weather on Earth <i>FOSS Science Resources:</i> "Weather Maps"</p> | <p>ELA: From their readings, students should be able to: Note weather variables meteorologists measure; describe three kinds of fronts and the weather they produce; determine from a sample weather map where they think it is raining now and where it will be raining tomorrow; look at high-pressure and low-pressure centers on the map and determine where and what direction the wind is blowing.</p> |

Grade 5

Structures and Functions of Living Organisms

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.1 Understand how structures and systems of organisms (to include the human body) perform functions necessary for life. | | |
| <p>5.L.1.1. Explain why some organisms are capable of surviving as a single cell while others require many cells that are specialized to survive.</p> | <p>FOSS Next Generation Living Systems Investigation 2: Nutrient Systems Part 1: Yeast Nutrition pp. 150-161</p> <p><i>FOSS Science Resources:</i> "There's Yeast in My Bread"</p> | <p>PA: Students design and conduct an investigation to observe what is needed to activate yeast. They analyze the results of CO₂ build up and conclude, based on evidence, that sugar is the nutrient the yeast cells use to metabolize. Students learn through reading that yeast is a single cell organism that takes its nutrients in through their membrane. They describe how a yeast cells takes in a molecule of sugar, breaks off several carbon atoms and emits them as waste. The carbon combines with oxygen, forming CO₂ gas. Students draw a model of the process.</p> |
| | <p>FOSS Next Generation Living Systems <i>FOSS Science Resources:</i> "Producers"</p> | <p>FQA: Students attempt to answer the question of how plants get the food they need by planting seeds under two different conditions - one in a pot in a sealed clear plastic bag, one in a pot in a sealed black bag. They observe the bags of wheat for 6 days and record their observation. From the reading "Producers" students reason that plants produce their own food - sugar. They use a process called photosynthesis to make sugar from water and carbon dioxide - water from soil through their roots, carbon dioxide from the air. The leaf cells of plants have chlorophyll which absorbs blue and red light (reflects green light). Students used the information gathered from the reading and their observations of their plants to conclude plant cells in sprouting seeds get energy nutrients from food (starch) stored in the seed. Plant cells get their energy nutrients from food produced by the cells containing chlorophyll.</p> |

Grade 5

Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.1 Understand how structures and systems of organisms (to include the human body) perform functions necessary for life. | | |
| <p>5.L.1.2. Compare the major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, and cardiovascular) in terms of their functions necessary for life.</p> | <p>FOSS Next Generation Living Systems Investigation 2: Nutrient Systems Part 3: Animal Nutrition pp. 173-189</p> <p><i>FOSS Digital Resources:</i> "Food Chains" "Digestion and Excretory Systems"</p> <p><i>FOSS Science Resources:</i> "Getting Nutrients" "The Human Digestive System"</p> | <p>FQA: Students read The Human Digestive System. They look at the human body diagram and identify the parts, focusing on the digestive and the interconnection of the excretory system. Students assess a model of how nutrients turn into foods that are used by the cells for energy and how the leftovers (waste) move through the large intestine and colon. Students identify how nutrients are taken through the mouth, move through the esophagus. They demonstrate understanding of role of digestive juices in the stomach. They follow the resulting mush to the small intestines and pass through the walls of the intestine to blood capillaries. They trace how the blood system carries the nutrients to the multi cells of the body and the disposition of the waste/bacteria/water through the large intestine, colon, rectum and anus.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 3: Transport Systems Part 2: Circulatory Systems pp. 226-236</p> <p><i>FOSS Digital Resources:</i> "Circulatory and Respiratory Systems" "Mammalian Circulatory System"</p> <p><i>FOSS Science Resources:</i> "The Human Circulatory System"</p> | <p>PA: After watching a video on the human circulatory and respiratory system, viewing an animation of the circulatory system, reading an article about the human circulatory system, and classroom discussions, students design and construct a model of the circulatory system. Students must label the left and right ventricle bottles and the lung blood and body blood containers. Students must determine which way fluid flows through the "valves." After students have their circulatory system models working, they discuss how the model works, communicating the parts function as a system, demonstrating the blood gets to the lungs from the right side of the heart and blood flows from the lungs to the left side of the heart. They need to communicate the typical path taken by a blood cell as it moves through the human body.</p> |



Grade 5

Structures and Functions of Living Organisms (cont.)

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.1 Understand how structures and systems of organisms (to include the human body) perform functions necessary for life. | | |
| <p>5.L.1.2. Compare the major systems of the human body (digestive, respiratory, circulatory, muscular, skeletal, and cardiovascular) in terms of their functions necessary for life.</p> | <p>FOSS Next Generation Living Systems Investigation 3: Transport Systems Part 3: Respiratory Systems pp. 237 - 250</p> <p><i>FOSS Digital Resources:</i> "The Human Respiratory System" "Other Circulatory and Respiratory Systems"</p> <p><i>FOSS Science Resources:</i> "Circulatory and Respiratory Systems"</p> | <p>PA: Students obtain information from reading the article and from the video and discuss in class what they learned about the respiratory system. They identify the main function of a circulatory system is to transport nutrients to the organism's cells and the main function of a respiratory system is to exchange gases; oxygen into the organism, and carbon dioxide out of the organism.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 4: Sensory Systems Part 1: Stimulus/Response</p> <p><i>FOSS Digital Science Resources:</i> "The Brain and Nervous System" "Response Timer"</p> <p><i>FOSS Science Resources:</i> "Stimulus and Response in Humans"</p> | <p>FQA: Students view a video on the Brain and Nervous System and discuss the reading Stimulus and Response in Humans. They describe the components of the central nervous system and the functions the brain stem controls. They describe sensory neurons and their role. They describe motor neurons and their role. They investigate the response to a falling cup and run the test several times on each hand. They design an investigation to test foot response time and conclude from evidence that the foot responds slower than the hand because the response message must travel a great distance. They address the focus question of "in dodgeball, how are you able to avoid being hit?" with the explanation that a visual stimulus (seeing the moving ball) starts a successful dodge. The stimulus travels to the brain, where a response message travels on neurons to the muscles that produce the coordinated movements to dodge the ball.</p> |

Grade 5

Ecosystems

| Standards | FOSS Alignment | Assessment |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.2 Understand the interdependence of plants and animals with their ecosystem. | | |
| <p>5.L.2.1. Compare the characteristics of several common ecosystems, including estuaries and salt marshes, oceans, lakes and ponds, forests, and grasslands.</p> | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 1: Everyday Systems pp. 82-99</p> <p><i>FOSS Science Resources:</i> "Introduction to Systems"</p> | <p>PA: Students first learn to recognize and identify a system, such as a scissor or piece of rolling luggage, as having interacting parts which may be complex and include subsystems.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 2: The Earth System pp. 100-112</p> <p><i>FOSS Digital Resources:</i> "Physical Systems"</p> <p><i>FOSS Science Resources:</i> "Is Earth a System?" "The Biosphere"</p> | <p>PA: From video, reading and classroom discussions, students are able to make the claim, based on evidence, that Earth is a system with multiple subsystems. Ecosystems are identified as one of the subsystems and from work done on food webs, students infer results of the interconnection between plants and animals to their ecosystem.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 3: Kelp Forest Food Web pp. 113-122</p> <p><i>FOSS Digital Resources:</i> "Web of Life: Life in the Sea"</p> <p><i>FOSS Science Resources:</i> "Monterey Bay National Marine Sanctuary" "Comparing Aquatic and Terrestrial Ecosystems"</p> | <p>FQA: Students study a marine ecosystem in an ocean ecosystem through food web cards, video and readings. They discover different organisms that compete for the same food resource and review the living animal that is hunted and eaten by another animal (prey). Students identify organisms that are both predators and prey in the kelp force ecosystem. They compare aquatic and terrestrial ecosystems based on evidence from readings and video.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 4: Sensory Systems Part 4: Ecosystems</p> <p><i>FOSS Digital Resources:</i> "Marine Ecosystems"</p> <p><i>FOSS Science Resources:</i> "North Atlantic Ocean Ecosystem"</p> | <p>FQA: Students view and discuss a video on Marine Ecosystems. They address, in writing, the parts of a marine ecosystem: saltwater, oxygen, moving water, temperature, light, and organisms. They briefly describe the role of each part.</p> |
| | <p>Delta Science Content Readers Ecosystems What is an Ecosystem? Ecosystems Around the World pp. 6</p> | <p>Students identify and compare the different types of ecosystems.</p> |

Grade 5

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.2 Understand the interdependence of plants and animals with their ecosystem. | | |
| <p>5.L.2.2. Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors).</p> | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 2: The Earth System pp. 100-112</p> <p><i>FOSS Digital Resources:</i> "Physical Systems"</p> <p><i>FOSS Science Resources:</i> "Is Earth a System?" "The Biosphere"</p> | <p>PA: Students discuss the earth system and specifically the biosphere and the ecosystems within. They then investigate and develop a food web after studying organisms presented on food-web cards, classifying each organism within an ecosystem according to the function they serve. They identify and describe producers as organisms that make food using energy from the Sun; consumers, organizations that depend on other organisms for food; and decomposers, organisms that breakdown and consume dead organisms. They are able to correctly organize the cards with food chains.</p> |
| | <p>Delta Science Content Readers Ecosystems How Do Parts of an Ecosystem Interact? Producers, Consumers, and Decomposers pp. 11</p> | <p>Students give three examples of decomposers. They demonstrate understanding that some consumers eat plants and others eat animals that have eaten plants, but that all animals depend on producers for food.</p> |
| <p>5.L.2.3. Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.</p> | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 2: The Earth System pp. 100-112</p> <p><i>FOSS Digital Resources:</i> "Physical Systems"</p> <p><i>FOSS Science Resources:</i> "Is Earth a System?" "The Biosphere"</p> | <p>PA: From video, reading and classroom discussions, students are able to make the claim, based on evidence, that Earth is a system with multiple subsystems. Ecosystems are identified as one of the subsystems and from work done on food webs, students infer results of the interconnection between plants and animals to their ecosystem.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 3: Kelp Forest Food Web pp. 113-122</p> <p><i>FOSS Digital Resources:</i> "Web of Life: Life in the Sea"</p> <p><i>FOSS Science Resources:</i> "Monterey Bay National Marine Sanctuary" "Comparing Aquatic and Terrestrial Ecosystems"</p> | <p>ELA: Students read about an kelp forest and, from the reading, infer what happens to waste and dead animals in marine ecosystems. They identify three ways organisms compete in marine ecosystems and identify the most important producer in both freshwater and marine ecosystems based on their reading.</p> |



Grade 5

Ecosystems (cont.)

| Standards | FOSS Alignment | Assessment |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.2 Understand the interdependence of plants and animals with their ecosystem. | | |
| <p>5.L.2.3. Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.</p> | <p>FOSS Next Generation Living Systems Investigation 1: Systems Part 4: Recycling pp. 123-134</p> <p><i>FOSS Digital Resources:</i> "Simulation: Food Webs"</p> <p><i>FOSS Science Resources:</i> "Nature's Recycling System"</p> | <p>PA: Students plan a redworm habitat to investigate what happens when compost worms interact with organic litter. They predict the interaction of the redworm with the organic litter and organize and record observations. In several weeks they will report, with the evidence gathered, whether their prediction was accurate and draw conclusions.</p> |
| | <p>FOSS Next Generation Living Systems Investigation 4: Sensory Systems Part 4: Ecosystems</p> <p><i>FOSS Digital Science Resources:</i> "Marine Ecosystems"</p> <p><i>FOSS Science Resources:</i> "North Atlantic Ocean Ecosystem"</p> | <p>ELA: Student read "North Atlantic Ocean Ecosystem" and describe a phytoplankton bloom, noting that this is the major producers in the North Atlantic ecosystem. They discuss why the North Atlantic bloom is important to study.</p> |

Grade 5

Evolution and Genetics

| Standards | FOSS Alignment | Assessment |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5.L.3 Understand why organisms differ from or are similar to their parents based on the characteristics of the organism. | | |
| 5.L.3.1. Explain why organisms differ from or are similar to their parents based on the characteristics of the organism. | Delta Science Content Reader Heredity What is Heredity? Heredity and Traits pp. 4 | Students identify a trait that parents pass to their offspring's - Zebra's striped coat. |
| | Delta Science Content Reader Heredity How Are Traits Inherited? Genes pp. 8 Passing On Genes by Reproducing pp. 10 | In sexual reproduction, an offspring receives two full sets of genes and therefore two full sets of chromosomes and therefore is usually not an exact likeness of either parent. A sexual reproduction offspring gets all genes from one parent. |
| | Delta Science Content Reader Heredity What Are Variations? Variations pp. 16 Dominant and Recessive Traits pp. 17 | Variations in offspring from sexual reproduction are due to each offspring getting its own combination of genes from the two parents. |
| | Delta Science Content Reader Heredity What Are Variations? Crossbreeding and Hybrids pp. 19 | The Offspring of a cross of two different species is a crossbreed. |
| 5.L.3.2. Give examples of likenesses that are inherited and some that are not. | Delta Science Content Reader Heredity What is Heredity? Heredity and Traits pp. 4 | Students identify a trait that parents pass to their offspring's - Zebra's striped coat. |
| | Delta Science Content Reader Heredity What is Heredity? The Environment and Traits pp. 5 | |