





Preparation Guide

Level 3 Module 2

SURVIVAL AND CHANGE

Materials: This section lists the quantity of each material necessary for the lesson. Lesson materials may be from a *PhD Science® Texas* materials kit, or the materials may be school-supplied items. In addition to having the listed materials, teachers should have access to the following common classroom items: sticky notes, chart paper, pencils, a whiteboard, and markers.

Resources: This section lists module resources (from the Module Resources section in the Teacher Edition) and core texts used in the lesson. Classrooms also need daily access to the module's Teacher Edition, Science Logbooks, and, if applicable, digital slides. A symbol () identifies resources that appear in the digital slides. Additional supports and Spanish resources are available in the Implementation Resources and Level Overview sections of the digital platform.

Preparation: This section identifies preparation teachers should complete before the lesson, including media teachers must cue before the lesson and activities that require setup. This section also describes advance preparation for upcoming lessons. For example, if teachers need to prepare 1 day in advance for an activity in Lesson 11, an advance preparation note appears in the Preparation section for Lesson 10. A symbol () identifies lessons with advance preparation notes.



Survival and Change | Advance Preparation

Several activities in this module require advance preparation. A version of this list appears in the Module Overview of the Teacher Edition. The expanded version in this guide identifies all lessons for which preparation may take longer than a planning period. A symbol (†) identifies preparation that can be done earlier than the suggested time.



Lesson	Time in Advance	Investigation	Description
3	1 day†	Compare Fossil with Clay Fossil Model	Prepare clay fossil models for students to observe. (See Lesson 3 Resource A.)
6	1 day	Review Weather Tools and Collect Data	Build rain gauge and place it outdoors. (See Lesson 6 Resource C.)
12	2–3 weeks	Determine Needs of Caterpillars in an Artificial Habitat	Select, prepare for, and order live animals. (See Lesson 12 Resource A.)
14	5–7 days	Analyze Characteristics of Caterpillars and Plants	Prepare radish plants. (See Lesson 14 Resource A.)
23	6–7 days	Observe Plants	Prepare radish plants. (See Lesson 23 Resource A.)

Survival and Change | Lesson Preparation



Lesson 1

Materials	Kit Items None School-Supplied Items <input type="checkbox"/> Pencils, colored (6 sets, optional) <input type="checkbox"/> Scissors (1)
Resources	<input type="checkbox"/> Lesson 1 Resource A: Rhinoceros Woodcut and Photograph  <input type="checkbox"/> Lesson 1 Resource B: Organism Cards <input type="checkbox"/> <i>A Butterfly Is Patient</i> (Aston and Long 2015)
Preparation 	<input type="checkbox"/> Prepare organism cards. (See Lesson 1 Resource B.) Advance Preparation for Lesson 12 <input type="checkbox"/> 2–3 Weeks Before: Prepare for and order selected live animals. (See Lesson 12 Resource A.) Use the voucher in the Module 2 kit to order painted lady butterfly larvae. If not using the kit, consult Lesson 12 Resource A for guidance selecting and ordering live animals.



Lesson 2

Materials	Kit Items None Module 1 Kit <input type="checkbox"/> Clothespins (10) <input type="checkbox"/> String (3 m) <input type="checkbox"/> Tape measure, metric (1) School-Supplied Items <input type="checkbox"/> Index cards (10) <input type="checkbox"/> Paper, printer, 8.5" × 11" (24) or whiteboards, personal (24) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape, masking (partial roll, optional)
Resources	<input type="checkbox"/> Lesson 2 Resource A: Timeline Instructions <input type="checkbox"/> Lesson 2 Resource B: Butterfly Fossil Photograph  <input type="checkbox"/> Lesson 2 Resource C: Event Cards
Preparation 	<input type="checkbox"/> Prepare string for class timeline. (See Lesson 2 Resource A.) <input type="checkbox"/> Prepare event cards. (See Lesson 2 Resource C.) Advance Preparation for Lesson 3 <input type="checkbox"/> 1 Day Before: Prepare clay fossil models for students to observe. (See Lesson 3 Resource A.)



Lesson 3

Materials	Kit Items <ul style="list-style-type: none"> <input type="checkbox"/> Butterflies, plastic (6) <input type="checkbox"/> Clay, modeling, air-drying (1½ lb) <input type="checkbox"/> Clay, modeling, nonhardening (1½ lb) <input type="checkbox"/> Rulers, metric (6) Module 1 Kit <ul style="list-style-type: none"> <input type="checkbox"/> Bags, resealable plastic, 1 qt (6) School-Supplied Items <ul style="list-style-type: none"> <input type="checkbox"/> Books or other heavy objects (6) <input type="checkbox"/> Scissors (1)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 2 Resource B: Butterfly Fossil Photograph  <input type="checkbox"/> Lesson 3 Resource A: Clay Fossil Model Instructions <input type="checkbox"/> Lesson 3 Resource B: Butterfly Fossil Measurements 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare bags of modeling clay and select plastic butterflies for students to use to make clay fossil models. (See Lesson 3 Resource A.) <input type="checkbox"/> Prepare regional fossil cards. (See Lesson 4 Resource B.) Use Lesson 4 Resource A to determine the region where students live. Then choose a relevant regional fossil from Lesson 4 Resource B to show during Land. Students will sort the cards in Lesson 4.



Lesson 4

Materials	Kit Items None School-Supplied Items <ul style="list-style-type: none"> <input type="checkbox"/> Scissors (1)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: United States Regional Map  <input type="checkbox"/> Lesson 4 Resource B: Regional Fossil Cards <input type="checkbox"/> Lesson 4 Resource C: Fossil Guide <input type="checkbox"/> Lesson 4 Resource D: Paleozoic Era Illustration 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Find a photograph that shows a location in the region where students live. <input type="checkbox"/> Prepare regional fossil cards. (See Lesson 4 Resource B.)



Lesson 5

Materials	<p>Kit Items None</p> <p>School-Supplied Items None</p>
Resources	<p><input type="checkbox"/> Lesson 5 Resource: Pedersen Glacier Photographs </p>
Preparation 	<p>None</p> <p>Advance Preparation for Lesson 6</p> <p><input type="checkbox"/> 1 Day Before: Build the rain gauge. (See Lesson 6 Resource C.) Place the rain gauge in an uncovered, level area outside.</p>





Lesson 6

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bottle, clear plastic, 2L (1) <input type="checkbox"/> Rubber bands, large (2) <input type="checkbox"/> Ruler, metric (1) <input type="checkbox"/> Thermometer, indoor–outdoor (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gravel (1 cup) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Marker, permanent (1) <input type="checkbox"/> Paper clips (4) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Water (access) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 7 requires the prepared rain gauge.
Resources	<p><input type="checkbox"/> Lesson 6 Resource A: Monarch Butterfly Photograph </p> <p><input type="checkbox"/> Lesson 6 Resource B: Monarch Butterfly Sightings Map, April 2017 </p> <p><input type="checkbox"/> Lesson 6 Resource C: Rain Gauge Setup Instructions</p>
Preparation	<p>None</p>




Lesson 7

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cardstock, 8.5" × 11" (2 sheets) <input type="checkbox"/> Compasses, mini (12) <input type="checkbox"/> Pins, sewing (6) <input type="checkbox"/> Straws, plastic (6) <input type="checkbox"/> Thermometer, indoor-outdoor (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Safety goggles, students (24) <input type="checkbox"/> Safety goggles, teacher (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Pencils with erasers, unused (6) <input type="checkbox"/> Scissors (6) <input type="checkbox"/> Water (access) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rain gauge from Lesson 6 (1)
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 7 Resource A: Wind Vane Photograph  <input type="checkbox"/> Lesson 7 Resource B: Wind Vane Arrow and Tail Cutouts <input type="checkbox"/> Lesson 7 Resource C: Wind Vane Procedure Sheet
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Cue wind vane video (http://phdsci.link/2427).  <input type="checkbox"/> Prepare wind vane arrow and tail cutouts. (See Lesson 7 Resource B.) <input type="checkbox"/> To prepare the straws, make matching 1" cuts at both ends of each straw. <input type="checkbox"/> Prepare to distribute a wind vane procedure sheet to each group. (See Lesson 7 Resource C.) <input type="checkbox"/> Choose a location outside where students can test their wind vane. The location must be free from anything that can block the wind.



Lesson 8

Materials	Kit Items None School-Supplied Items None
Resources	<input type="checkbox"/> Lesson 6 Resource B: Monarch Butterfly Sightings Map, April 2017  <input type="checkbox"/> Lesson 8 Resource A: Houston and Atlanta Weather Data Tables  <input type="checkbox"/> Lesson 8 Resource B: Average Monthly Temperature and Precipitation Graphs for Houston 
Preparation 	<input type="checkbox"/> Prepare to distribute a copy of the Houston and Atlanta weather data tables to each student pair. (See Lesson 8 Resource A.) Advance Preparation for Lesson 14 <input type="checkbox"/> 5–7 Days Before: Prepare radish plants for observation. (See Lesson 14 Resource A.)






Lesson 9

Materials	Kit Items None School-Supplied Items <input type="checkbox"/> US map (1)
Resources	<input type="checkbox"/> Lesson 2 Resource B: Butterfly Fossil Photograph  <input type="checkbox"/> Lesson 9 Resource A: Florissant Fossil Photographs  <input type="checkbox"/> Lesson 9 Resource B: Past Environment of the Florissant Area Illustration 
Preparation	<input type="checkbox"/> Print photographs of Florissant fossils. (See Lesson 9 Resource A.)


Lesson 10

Materials	Kit Items None School-Supplied Items None
Resources	<input type="checkbox"/> Lesson 9 Resource B: Past Environment of the Florissant Area Illustration  <input type="checkbox"/> Lesson 10 Resource A: Present-Day Florissant Area Photograph  <input type="checkbox"/> Lesson 10 Resource B: Florissant Organism Photographs
Preparation	<input type="checkbox"/> Print photographs of Florissant organisms. (See Lesson 10 Resource B.)


Lesson 11

<p>Materials</p>	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Paper, scrap (24)</p>
<p>Resources</p>	<p><input type="checkbox"/> Lesson 11 Resource A: Tooth Fossil Photograph </p> <p><input type="checkbox"/> Lesson 11 Resource B: Mammoth Drawings </p> <p><input type="checkbox"/> Lesson 11 Resource C: Mammoth Distribution Maps </p> <p><input type="checkbox"/> Lesson 11 Resource D: Redwood Photographs and Past and Present-Day Redwood Forest Locations Map </p> <p><input type="checkbox"/> Lesson 11 Resource E: Conceptual Checkpoint </p>
<p>Preparation</p>	<p><input type="checkbox"/> Prepare to distribute a color copy of the redwood forest locations map to each student. (See Lesson 11 Resource D.)</p> <p><input type="checkbox"/> Prepare to distribute a color copy of Lesson 11 Resource E to each student.</p>


Lesson 12

<p>Materials</p>	<p>Kit Items <input type="checkbox"/> Butterfly enclosure, netted (1, optional) <input type="checkbox"/> Painted lady butterfly 5-larvae culture (1)</p> <p>School-Supplied Items <input type="checkbox"/> Animal in artificial habitat (alternative to butterflies) (1, optional) <input type="checkbox"/> Equity sticks (class set) <input type="checkbox"/> Scissors (1)</p> <p>Item Reuse <input type="checkbox"/> Lesson 14 requires the painted lady butterfly 5-larvae culture.</p>
<p>Resources</p>	<p><input type="checkbox"/> Lesson 12 Resource A: Using Live Animals in the Classroom</p> <p><input type="checkbox"/> Lesson 12 Resource B: Caterpillars and Plants Photograph </p> <p><input type="checkbox"/> <i>A Butterfly Is Patient</i> (Aston and Long 2015)</p>
<p>Preparation</p>	<p>None</p>




Lesson 13

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p>
Resources	<input type="checkbox"/> Lesson 13 Resource: Food Chain Cards
Preparation	<input type="checkbox"/> Cue coyote video (http://phdsci.link/1802).  <input type="checkbox"/> Prepare food chain cards. (See Lesson 13 Resource.)





Lesson 14

Materials	<p>Kit Items <input type="checkbox"/> Butterfly enclosure, netted (1, optional) <input type="checkbox"/> Painted lady butterfly 5-larvae cultures (2) <input type="checkbox"/> Radish seed packet ($\frac{1}{2}$)</p> <p>Module 1 Kit <input type="checkbox"/> Cups, plastic, 9 oz (2) <input type="checkbox"/> Magnifiers, handheld, plastic (4, optional)</p> <p>School-Supplied Items <input type="checkbox"/> Animal in artificial habitat (alternative to butterflies) (2, optional) <input type="checkbox"/> Construction paper, white, 11" x 17" (5 sheets) <input type="checkbox"/> Glue stick (1) <input type="checkbox"/> Potting soil (2 cups) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Water (access)</p> <p>Item Reuse <input type="checkbox"/> Lesson 15 requires the prepared organism posters. <input type="checkbox"/> Lesson 23 requires the radish seed packet.</p>
Resources	<input type="checkbox"/> Lesson 14 Resource A: Radish Seed Planting Instructions and Classroom Procedure <input type="checkbox"/> Lesson 14 Resource B: Organism Posters Setup Instructions <input type="checkbox"/> Lesson 14 Resource C: Painted Lady Butterfly Photograph  <input type="checkbox"/> <i>A Butterfly Is Patient</i> (Aston and Long 2015)
Preparation	<input type="checkbox"/> Prepare organism posters. (See Lesson 14 Resource B.)



Lesson 15

Materials	<p>Kit Items None</p> <p>School-Supplied Items None</p> <p>Prepared Items from Previous Lessons <input type="checkbox"/> Organism posters from Lesson 14 (5)</p>
Resources	<p><input type="checkbox"/> Lesson 14 Resource B: Organism Posters Setup Instructions</p> <p><input type="checkbox"/> Lesson 15 Resource: Mountain Environment Photograph </p> <p><input type="checkbox"/> <i>Amos and Boris</i> (Steig 2009)</p>
Preparation	<p><input type="checkbox"/> Cue mouse video (http://phdsci.link/1204)  and whale video (http://phdsci.link/1205). </p>







Lesson 16

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Construction paper, white, 11" x 17" (3 sheets)</p>
Resources	<p><input type="checkbox"/> Lesson 16 Resource A: Ocean Photograph </p> <p><input type="checkbox"/> Lesson 16 Resource B: Organism List </p> <p><input type="checkbox"/> Lesson 16 Resource C: Environment Photographs </p> <p><input type="checkbox"/> <i>Amos and Boris</i> (Steig 2009)</p>
Preparation 	<p>None</p> <p>Advance Preparation for Lesson 23</p> <p><input type="checkbox"/> 6–7 Days Before: Prepare radish plants for plant investigation. (See Lesson 23 Resource A.)</p>







Lesson 17

Materials	<p>Kit Items None</p> <p>School-Supplied Items None</p>
Resources	<p><input type="checkbox"/> Lesson 17 Resource: Animal Groups Text Assignments</p>
Preparation	<p><input type="checkbox"/> Print a copy of each animal group's text. (See Lesson 17 Resource.)</p> <p><input type="checkbox"/> Cue leaf-cutter ant video (http://phdsci.link/1216)  and butterfly video (http://phdsci.link/1219). </p>



Lesson 18

Materials	Kit Items None Module 1 Kit <input type="checkbox"/> Plates, paper, 10" (5) <input type="checkbox"/> Timer, digital (1) School-Supplied Items <input type="checkbox"/> Paper, small pieces (20–25) <input type="checkbox"/> Tissues, hand (7)
Resources	<input type="checkbox"/> Lesson 18 Resource A: Classroom Change Scenarios <input type="checkbox"/> Lesson 18 Resource B: Meerkat Group Photograph  <input type="checkbox"/> Lesson 18 Resource C: Model Meerkat Behavior Setup Instructions and Classroom Procedure <input type="checkbox"/> Lesson 18 Resource D: Coping with Change Scenarios  <input type="checkbox"/> Lesson 18 Resource E: Conceptual Checkpoint 
Preparation	<input type="checkbox"/> Prepare materials to model meerkat behavior. (See Lesson 18 Resource C.) <input type="checkbox"/> Cue <ul style="list-style-type: none"> <input type="checkbox"/> meerkat video (http://phdsci.link/1220),  <input type="checkbox"/> elephant video (http://phdsci.link/2429),  and <input type="checkbox"/> the butterfly video (http://phdsci.link/1219)  from Lesson 17. <input type="checkbox"/> Prepare to distribute a color copy of Lesson 18 Resource E to each student.


Lesson 19

Materials	Kit Items None School-Supplied Items <input type="checkbox"/> Pencils, colored (12 sets) <input type="checkbox"/> Scissors (1) Item Reuse <input type="checkbox"/> Lesson 26 requires the prepared monarch migration flipbooks.
Resources	<input type="checkbox"/> Lesson 19 Resource A: Monarch Butterfly Range Map  <input type="checkbox"/> Lesson 19 Resource B: North America Climate Zone Map  <input type="checkbox"/> Lesson 19 Resource C: Using the Journey North Website  <input type="checkbox"/> Lesson 19 Resource D: Flipbook Maps <input type="checkbox"/> Lesson 19 Resource E: Monarch Migration Map  <input type="checkbox"/> Lesson 19 Resource F: Migration Wall Labels <input type="checkbox"/> <i>A Butterfly Is Patient</i> (Aston and Long 2015)
Preparation	<input type="checkbox"/> Prepare flipbook maps. (See Lesson 19 Resource D.) <input type="checkbox"/> Prepare migration wall labels. (See Lesson 19 Resource F.) <input type="checkbox"/> Cue clustering butterflies video (http://phdsci.link/1219) from Lesson 17  and the monarch butterfly migration video (http://phdsci.link/2433). 


Lesson 20

<p>Materials</p>	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p>
<p>Resources</p>	<p><input type="checkbox"/> Lesson 20 Resource A: Butterfly in Snow Photograph </p> <p><input type="checkbox"/> Lesson 20 Resource B: Butterfly Life Cycle Cards</p> <p><input type="checkbox"/> Lesson 20 Resource C: Monarch Butterfly Life Cycle Illustration </p> <p><input type="checkbox"/> Lesson 20 Resource D: Organism Life Cycle Cards</p>
<p>Preparation</p>	<p><input type="checkbox"/> Prepare butterfly life cycle cards. (See Lesson 20 Resource B.)</p> <p><input type="checkbox"/> Prepare organism life cycle cards. (See Lesson 20 Resource D.)</p>



Lesson 21

<p>Materials</p>	<p>Kit Items None</p> <p>School-Supplied Items None</p>
<p>Resources</p>	<p><input type="checkbox"/> Lesson 21 Resource A: Monarch Butterfly Life Cycle Diagram </p> <p><input type="checkbox"/> Lesson 21 Resource B: Butterfly Life Cycle Stations Setup Instructions</p>
<p>Preparation</p>	<p><input type="checkbox"/> Prepare butterfly life cycle stations. (See Lesson 21 Resource B.)</p>



Lesson 22

<p>Materials</p>	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p>
<p>Resources</p>	<p><input type="checkbox"/> Lesson 22 Resource A: Forest Environment Photograph </p> <p><input type="checkbox"/> Lesson 22 Resource B: Category Headings and Animal Cards</p>
<p>Preparation</p>	<p><input type="checkbox"/> Prepare category headings and animal cards. (See Lesson 22 Resource B.)</p>





Lesson 23

Materials	Kit Items <ul style="list-style-type: none"> <input type="checkbox"/> Radish seed packet ($\frac{1}{2}$) <input type="checkbox"/> Rulers, metric (6) Module 1 Kit <ul style="list-style-type: none"> <input type="checkbox"/> Cups, plastic, 9 oz (12) School-Supplied Items <ul style="list-style-type: none"> <input type="checkbox"/> Box, cardboard (1, optional) <input type="checkbox"/> Marker, permanent (1) <input type="checkbox"/> Potting soil (12 cups) <input type="checkbox"/> Water (access)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 23 Resource A: Radish Seed Planting and Growing Instructions for Plant Investigation <input type="checkbox"/> Lesson 23 Resource B: Birch Forest in Summer and Winter Photographs  <input type="checkbox"/> Lesson 23 Resource C: “Moss Mystery” (Bramley-Alves and Robinson 2013) 
Preparation	None




Lesson 24

Materials	Kit Items <ul style="list-style-type: none"> <input type="checkbox"/> Ruler, metric (1) School-Supplied Items <ul style="list-style-type: none"> <input type="checkbox"/> Construction paper, black, 4" × 5" (24 sheets) <input type="checkbox"/> Glue sticks (24) <input type="checkbox"/> Crayons or pencils, at least 3 colors (12 sets) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape, clear (1 roll)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 22 Resource A: Forest Environment Photograph  <input type="checkbox"/> Lesson 24 Resource A: Forest Animal Photographs <input type="checkbox"/> Lesson 24 Resource B: Parking Lot Photograph  <input type="checkbox"/> Lesson 24 Resource C: Parking Lot Animal Information
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare forest animal photographs. (See Lesson 24 Resource A.) <input type="checkbox"/> Cut 4" × 5" pieces of black construction paper. <input type="checkbox"/> Print parking lot animal information for each student pair. (See Lesson 24 Resource C.)

Lesson 25

Materials	<p>Kit Items None</p> <p>School-Supplied Items None</p>
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 9 Resource B: Past Environment of the Florissant Area Illustration <input type="checkbox"/> Lesson 10 Resource A: Present-Day Florissant Area Photograph <input type="checkbox"/> Lesson 25 Resource A: Proposed Solution Photographs  <input type="checkbox"/> Lesson 25 Resource B: Proposed Solution Comparison Chart  <input type="checkbox"/> Lesson 25 Resource C: Volcano Photographs  <input type="checkbox"/> Lesson 25 Resource D: Environment and Organism Information <input type="checkbox"/> Lesson 25 Resource E: Conceptual Checkpoint 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare to distribute a color copy of Lesson 25 Resource D and a copy of the Conceptual Checkpoint (Lesson 25 Resource E) to each student.


Lesson 26

Materials	<p>Kit Items None</p> <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construction paper, white, 11" x 17" (12 sheets) <input type="checkbox"/> Whiteboards, personal (12, optional) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Flipbook monarch migration maps from Lesson 19 (24)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 19 Resource C: Using the Journey North Website  <input type="checkbox"/> Lesson 26 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 26 Resource B: Monarchs Graph  <input type="checkbox"/> Lesson 26 Resource C: Engineering Design Process  <input type="checkbox"/> Lesson 26 Resource D: "Winged Mysteries" (Adams 2003)
Preparation	None

Lesson 27

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rulers, metric (19) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rulers, metric (5) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayons, markers, or pencils, 6–12 colors (6 sets) <input type="checkbox"/> Paper, grid or lined (24 sheets, optional) <input type="checkbox"/> Local or regional map (1, optional)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 26 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 27 Resource A: Monarch Butterfly Research <input type="checkbox"/> Lesson 27 Resource B: Plants That Attract Monarch Butterflies <input type="checkbox"/> <i>A Butterfly Is Patient</i> (Aston and Long 2015)
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Print or open web pages or identify library books for students to use to research threats to monarch butterflies. (See Lesson 27 Resource A.) <input type="checkbox"/> Print or open web pages and print plant photographs for students to research plants that attract monarch butterflies. (See Lesson 27 Resource B.)

Lesson 28

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rulers, metric (19) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rulers, metric (5) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayons, markers, or pencils, 6–12 colors (6 sets) <input type="checkbox"/> Paper, grid or lined (24 sheets, optional)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 26 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 28 Resource: Monarch Butterfly Waystation Photograph 
Preparation	None



Lesson 29

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rulers, metric (19) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rulers, metric (5) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayons, markers, or pencils, 6–12 colors (6 sets) <input type="checkbox"/> Paper, grid or lined (24 sheets, optional)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 26 Resource A: Engineering Challenge Rubric
Preparation	None

Lesson 30

Materials	<p>Kit Items</p> <p>None</p> <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue sticks (24) <input type="checkbox"/> Scissors (24)
Resources	None
Preparation	None

Lesson 31

Materials	<p>Kit Items</p> <p>None</p> <p>School-Supplied Items</p> <p>None</p>
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 1 Resource A: Rhinoceros Woodcut and Photograph 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare to distribute End-of-Module Assessment to each student. <input type="checkbox"/> Cue photographs from the USGS website (http://phdsci.link/2586) to introduce students to the Florida Everglades. 

Lesson 32

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Pencils, 6–12 colors (6 sets)</p>
Resources	<p><input type="checkbox"/> Lesson 32 Resource A: Module Concept Statements</p> <p><input type="checkbox"/> Lesson 32 Resource B: Recurring Themes and Concepts</p>
Preparation	<p><input type="checkbox"/> Score End-of-Module Assessments and write individual feedback.</p> <p><input type="checkbox"/> Select End-of-Module Assessment responses to share with students for additional support. When selecting student responses, remember to remove identifying information and to choose diverse student responses.</p> <p><input type="checkbox"/> Prepare visuals for student connections between module learning and content standards. (See Lesson 32 Resources A and B.)</p>

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Adams, Jacqueline. 2003. "Winged Mysteries." *Odyssey*. October 2003, 32–36. Adapted with permission.

Aston, Dianna Hutts, and Sylvia Long (illustrator). 2015. *A Butterfly Is Patient*. San Francisco: Chronicle Books LLC. [All references to *A Butterfly Is Patient* are from this source.]

Bramley-Alves, Jessica, and Sharon Robinson. 2013. "Moss Mystery: Poop Is the Clue Here." *Dig*. November–December 2013.

Steig, William. 2009. *Amos & Boris*. New York: Square Fish. [All references to *Amos & Boris* are from this source.]