




Preparation Guide


Level 2 Module 2

SOUND

with Spotlight Lessons on Objects in the Sky

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.




Sound | 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
8	1 day†	Recycled Ukulele Demonstration and Investigation	Prepare recycled ukuleles for demonstration and investigation.
11	1 day†	Model Sound in a Concert Hall	Test the classroom to confirm that it is suitable for a model orchestra.
12	2 days†	Sound Outside a Door Investigation	Arrange for an adult to help monitor the class during Lesson 12.
13	1 day†	Sound Outdoors Investigation	Test an available outdoor space to confirm that it is large enough for the outdoor sound investigation.

Sound | Lesson Preparation


Lesson 1

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Knowledge Deck™ poster, Recycled Orchestra (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape (partial roll) <input type="checkbox"/> World map (1, optional) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 2 requires the prepared class musical instruments chart. <input type="checkbox"/> Lesson 3 requires the prepared fork card and the prepared cans card.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 1 Resource A: Strategies for Supporting Students Who Are Deaf or Hard of Hearing (optional) <input type="checkbox"/> Lesson 1 Resource B: Sound Cards <input type="checkbox"/> Lesson 1 Resource C: Sound Card Sorting Charts <input type="checkbox"/> Lesson 1 Resource D: Cateura Photographs 
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Cue <ul style="list-style-type: none"> ○ “Friends for Life” audio (http://phdsci.link/1647),  ○ “Fiesta en Sevilla” audio (http://phdsci.link/1661),  and ○ “Pakkala-Kriti” audio (http://phdsci.link/1662).  <input type="checkbox"/> Prepare sound cards. (See Lesson 1 Resource B.) <input type="checkbox"/> Prepare to distribute a copy of the charts in Lesson 1 Resource C to each group. <input type="checkbox"/> Cue <ul style="list-style-type: none"> ○ pencil audio (http://phdsci.link/1654),  ○ guitar audio (http://phdsci.link/1653),  ○ broom audio (http://phdsci.link/1648),  ○ violin audio (http://phdsci.link/1656),  ○ fork audio (http://phdsci.link/1652),  ○ saxophone audio (http://phdsci.link/1655),  ○ metal cans audio (http://phdsci.link/1649),  ○ drums audio (http://phdsci.link/1651),  ○ cello audio (http://phdsci.link/1650). 

Lesson 2

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Knowledge Deck cards, Recycled Orchestra (24) <input type="checkbox"/> Knowledge Deck poster, Recycled Orchestra (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Magnifiers, handheld, plastic (12) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Tape (partial roll) <input type="checkbox"/> Scissors (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class musical instruments chart from Lesson 1 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 3 requires the prepared class musical instruments chart. <input type="checkbox"/> Lesson 5 requires 6 of the handheld magnifiers. <input type="checkbox"/> Lesson 9 requires the prepared recycled drum card.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 1 Resource A: Strategies for Supporting Students Who Are Deaf or Hard of Hearing (optional) <input type="checkbox"/> Lesson 2 Resource A: Gran Asunción Map  <input type="checkbox"/> Lesson 2 Resource B: Cateura and Gran Asunción Information Sheets  <input type="checkbox"/> Lesson 2 Resource C: Recycled Instrument Cards <input type="checkbox"/> Lesson 2 Resource D: Ordinary Instrument Cards
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Cue <i>Landfill Harmonic</i> trailer video (Allgood, Penaranda-Loftus, and Townsley 2015b) (http://phdsci.link/1741).  <input type="checkbox"/> Prepare to distribute a color copy of Lesson 2 Resource B to each student pair. <input type="checkbox"/> Prepare recycled instrument cards. (See Lesson 2 Resource C.) <input type="checkbox"/> Prepare ordinary instrument cards. (See Lesson 2 Resource D.) <input type="checkbox"/> Cue <i>Eine kleine Nachtmusik</i> audio (http://phdsci.link/1663)  and Recycled Orchestra video (Allgood, Penaranda-Loftus, and Townsley 2015a) (http://phdsci.link/1742). 

Lesson 3

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Acetate sheet (1, optional) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue sticks (24) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape (partial roll) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class musical instruments chart started in Lesson 1 <input type="checkbox"/> Fork card and cans card from Lesson 1 (1 of each) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 requires the prepared class musical instruments chart. <input type="checkbox"/> Lesson 9 requires the prepared x-ray film card.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 1 Resource A: Strategies for Supporting Students Who Are Deaf or Hard of Hearing (optional) <input type="checkbox"/> Lesson 3 Resource A: X-ray Film Card  <input type="checkbox"/> Lesson 3 Resource B: Initial Model Cards
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare x-ray film card. (See Lesson 3 Resource A.) <input type="checkbox"/> Prepare initial model cards. (See Lesson 3 Resource B.)

Lesson 4

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments <ul style="list-style-type: none"> ○ Drum with drumsticks (1) ○ Guiro with scraper (1) ○ Kalimba (1) ○ Lap harp with pick (1) ○ Triangle with wand (1) ○ Ukulele (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Equity sticks (class set, optional) <input type="checkbox"/> Tape (partial roll) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> World map (1, optional) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class musical instruments chart started in Lesson 1 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 5 requires the classroom instruments and 1 set of the prepared classroom instrument illustration cards. <input type="checkbox"/> Lesson 21 requires the prepared class musical instruments chart and the prepared class instrument instructions chart.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: Classroom Instrument Cards <input type="checkbox"/> Lesson 4 Resource B: Classroom Instrument Illustration Cards
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> If the class is not using the Module 2 materials kit, test each classroom instrument to ensure that students will see or feel evidence of vibration. <input type="checkbox"/> Prepare classroom instrument cards. (See Lesson 4 Resource A.) <input type="checkbox"/> Prepare classroom instrument illustration cards. (See Lesson 4 Resource B.)


Lesson 5

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each) <input type="checkbox"/> Cups, plastic, small (12) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Magnifiers, handheld, plastic (6) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue sticks (12) <input type="checkbox"/> Scissors (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instrument illustration cards from Lesson 4 (Lesson 4 Resource B) (1 set) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 requires 1 set of the prepared classroom instrument illustration cards, the 6 prepared plastic cups containing the tactile evidence symbols, classroom instruments, handheld magnifiers, and prepared class claims chart. <input type="checkbox"/> Lesson 14 requires the 6 remaining plastic cups.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 5 Resource A: Instrument Stations Setup Instructions <input type="checkbox"/> Lesson 5 Resource B: Visible Evidence of Vibration Symbols <input type="checkbox"/> Lesson 6 Resource A: Tactile Evidence of Vibration Symbols
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Set up instrument stations. (See Lesson 5 Resource A.)

Lesson 6

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each) <input type="checkbox"/> Measuring spoon, tsp (1) <input type="checkbox"/> Salt, table ($\frac{1}{2}$ tsp) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Magnifiers, handheld, plastic (6) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue sticks (12) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape (partial roll) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class claims chart started in Lesson 5 <input type="checkbox"/> Classroom instrument illustration cards from Lesson 4 (1 set) <input type="checkbox"/> Plastic cups containing the tactile evidence symbols from Lesson 5 (6) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 7 requires the classroom instruments, the prepared class causes of sound chart, and the measuring spoon. <input type="checkbox"/> Lesson 9 requires the plastic cups.
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Lesson 6 *continued*

Resources	<input type="checkbox"/> Lesson 5 Resource A: Instrument Stations Setup Instructions <input type="checkbox"/> Lesson 6 Resource A: Tactile Evidence of Vibration Symbols <input type="checkbox"/> Lesson 6 Resource B: Causes of Sound Instrument Illustration Cards
Preparation	<input type="checkbox"/> Set up instrument stations. (See Lesson 5 Resource A.) <input type="checkbox"/> Cue slow-motion drum video (http://phdsci.link/1684).  <input type="checkbox"/> Prepare causes of sound instrument illustration cards. (See Lesson 6 Resource B.)


Lesson 7

Materials	<p>Kit Items</p> <input type="checkbox"/> Baskets, plastic (6) <input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each) <input type="checkbox"/> Clipboards with metal clips (12) <input type="checkbox"/> Manila folders (12) <input type="checkbox"/> Measuring spoon, tsp (1) <input type="checkbox"/> Salt, table (3 tsp) <p>Module 1 Kit</p> <input type="checkbox"/> Rubber bands (12) <input type="checkbox"/> Rulers, plastic (24) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Sentence strips (3) <p>School-Supplied Items</p> <input type="checkbox"/> Pocket chart (1) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape (partial roll) <p>Prepared Items from Previous Lessons</p> <input type="checkbox"/> Class causes of sound chart started in Lesson 6 <p>Item Reuse</p> <input type="checkbox"/> Lesson 8 requires the classroom instruments, 1 of the clipboards, 1 of the manila folders, the prepared class causes of sound chart, and 9 of the rubber bands. <input type="checkbox"/> Lesson 14 requires the measuring spoon.
Resources	<input type="checkbox"/> Lesson 7 Resource: Causes of Sound Object Illustration Cards
Preparation	<input type="checkbox"/> Prepare causes of sound object illustrations. (See Lesson 7 Resource.) <input type="checkbox"/> Prepare the materials for the common object activity by placing the rubber bands, manila folders, and clipboards for each group in a bin or basket.






Lesson 8

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each) <input type="checkbox"/> Clipboard with metal clip (1) <input type="checkbox"/> Containers, plastic, 4" × 4" × 2" (7) <input type="checkbox"/> Craft sticks, wax, 6" (7) <input type="checkbox"/> Manila folder (1) <input type="checkbox"/> Ribbon, (40") <input type="checkbox"/> Various common objects (cotton ball, plastic water bottle, rubber band, ribbon) (1 set) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chenille stems, 12" (4) <input type="checkbox"/> Rubber bands (9) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Metal soup can (1) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape (partial roll) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class causes of sound chart started in Lesson 6 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 9 requires the classroom drum with drumsticks, 1 of the plastic containers, 4 of the rubber bands, the soup can, the various common objects displayed, and the prepared class ukulele parts diagram. <input type="checkbox"/> Lesson 11 requires the triangle with wand and ukulele. Save all other classroom instruments for Lesson 18. <input type="checkbox"/> Save the 6 remaining plastic containers for Lesson 14.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 8 Resource A: Recycled Violin, Guitar, and Saxophone Photographs  <input type="checkbox"/> Lesson 8 Resource B: Demonstration Recycled Ukulele Setup Instructions <input type="checkbox"/> Lesson 8 Resource C: Recycled Ukulele Station Setup Instructions
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare ineffective recycled ukulele. (See Lesson 8 Resource B.) <input type="checkbox"/> Prepare recycled ukulele stations. (See Lesson 8 Resource C.)




Lesson 9

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Acetate sheets (3) <input type="checkbox"/> Aluminum foil (partial roll) <input type="checkbox"/> Beads, plastic (90) <input type="checkbox"/> Beads, wooden (90) <input type="checkbox"/> Beans, dried (12 tbsp) <input type="checkbox"/> Bottles with caps, plastic (6) <input type="checkbox"/> Classroom drum with drumsticks (1) <input type="checkbox"/> Container, plastic, 4" × 4" × 2" (1) <input type="checkbox"/> Cups, plastic, small (6) <input type="checkbox"/> Felt (1 piece) <input type="checkbox"/> Jewelry boxes with lids, cardboard (6) <input type="checkbox"/> Pom-poms (30) <input type="checkbox"/> Rice, uncooked (12 tbsp) <input type="checkbox"/> Shakers, clear plastic (2) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bags, resealable plastic, 1 qt (6) <input type="checkbox"/> Cotton balls (30) <input type="checkbox"/> Rubber bands (4) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Metal soup cans (6) <input type="checkbox"/> Tape, clear (6 rolls) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class ukulele parts diagram from Lesson 8 <input type="checkbox"/> Recycled drum card from Lesson 2 (1) <input type="checkbox"/> X-ray film card from Lesson 3 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 requires the classroom drum with drumsticks. <input type="checkbox"/> The Engineering Challenge (Lessons 21–25) requires 67 of the wooden beads, 1 of the plastic shakers, the plastic bottles, the cardboard jewelry boxes, the soup cans, and the pom-poms.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Resources Lesson 9 Resource: Workshop Photograph 
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Disassemble a recycled ukulele with rubber band strings by removing the rubber bands from the plastic container. <input type="checkbox"/> Prepare aluminum foil squares for recycled shaker materials by cutting out one 5" square for each group. Consider placing all recycled shaker materials into a bag or box for easy distribution and cleanup. <input type="checkbox"/> Prepare stack of acetate sheets for the drumhead observation. Stack three acetate sheets, and fix them in place with clear tape so the stack is similar in thickness to a sheet of x-ray film.



Lesson 10

Materials	Kit Items <input type="checkbox"/> Music boxes (3) School-Supplied Items None
Resources	<input type="checkbox"/> Lesson 10 Resource A: Music Box Photograph  <input type="checkbox"/> Lesson 10 Resource B: Conceptual Checkpoint  <input type="checkbox"/> Lesson 10 Resource C: Wooden Music Box Photograph 
Preparation 	<input type="checkbox"/> Cue music box video (http://phdsci.link/1701) and music box slow-motion video (http://phdsci.link/1702).  <input type="checkbox"/> Prepare to distribute a copy of Lesson 10 Resource B to each student. Advance Preparation for Lesson 11 <input type="checkbox"/> 1 Day Before: With assistance from volunteers, test the classroom to confirm that it is suitable for a model orchestra. While volunteers play the classroom instruments, move outside of the classroom to a position approximately 12 inches from the open classroom door. Open and close the door, listening to ensure that the instruments are noticeably quieter but still audible when the door is closed. If necessary, adjust the location of the model orchestra or find an alternative location to achieve this result. Advance Preparation for Lesson 12 <input type="checkbox"/> 2 Days Before: Arrange for an adult to help monitor students while the class is divided between the classroom and the area outside the classroom door.



Lesson 11

Materials	Kit Items <input type="checkbox"/> Classroom instruments from Lesson 4 <ul style="list-style-type: none"> <input type="checkbox"/> Drum with drumsticks (1) <input type="checkbox"/> Triangle with wand (1) <input type="checkbox"/> Ukulele (1) School-Supplied Items <input type="checkbox"/> Glue or tape (1) <input type="checkbox"/> Scissors (1) Item Reuse <input type="checkbox"/> Lesson 12 requires the classroom drum with drumsticks, triangle with wand, and ukulele. <input type="checkbox"/> Lesson 12 requires the prepared class concert hall model.
Resources	<input type="checkbox"/> Lesson 11 Resource A: Recycled Orchestra Concert Photographs  <input type="checkbox"/> Lesson 11 Resource B: Concert Hall Photograph  <input type="checkbox"/> Lesson 11 Resource C: Class Concert Hall Model Setup Instructions
Preparation	<input type="checkbox"/> Cue Recycled Orchestra video (http://phdsci.link/1742).  <input type="checkbox"/> Prepare class concert hall model. (See Lesson 11 Resource C.)


Lesson 12

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments from Lesson 4 <ul style="list-style-type: none"> ○ Drum with drumsticks (1) ○ Triangle with wand (1) ○ Ukulele (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strips (4) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue or tape (1) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape, masking (12 ft) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class concert hall model from Lesson 11 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 13 requires the classroom drum with drumsticks, triangle with wand, and ukulele.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 12 Resource: Concert Hall Entrance Photograph 
<p>Preparation</p> 	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare a tape line to indicate where students should stand as they listen to the model orchestra. Place a 12-foot piece of tape on the floor outside the classroom. The tape should be parallel to and about 12 inches away from the classroom door. <p>Advance Preparation for Lesson 13</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Day Before: With assistance from volunteers, test an available outdoor space to confirm that it is large enough for the outdoor sound investigation. While volunteers play the classroom instruments on one end of the outdoor space, walk in the opposite direction until the sound becomes much quieter. Note both the location of the model orchestra and the endpoint. If a quiet outdoor space is not available, use a large, open indoor space such as a cafeteria, gymnasium, or long hallway.


Lesson 13

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments from Lesson 4 <ul style="list-style-type: none"> ○ Drum with drumsticks (1) ○ Triangle with wand (1) ○ Ukulele (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue or tape (1) <input type="checkbox"/> Scissors (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 18 requires the classroom drum with drumsticks, triangle with wand, and ukulele.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 Resource B: Concert Hall Photograph  <input type="checkbox"/> Lesson 13 Resource A: Outdoor Concert Photograph  <input type="checkbox"/> Lesson 13 Resource B: Class Outdoor Concert Model Setup Instructions
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare class outdoor concert model. (See Lesson 13 Resource B.)

Lesson 14

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Containers, plastic, 4" × 4" × 2" (6) <input type="checkbox"/> Cups, plastic, small (6) <input type="checkbox"/> Knowledge Deck cards, Eardrum (24) <input type="checkbox"/> Knowledge Deck poster, Eardrum (1) <input type="checkbox"/> Measuring spoon, tsp (1) <input type="checkbox"/> Pie tins (6) <input type="checkbox"/> Plastic wrap (partial roll) <input type="checkbox"/> Salt, table (7 tsp) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rubber bands (6) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Scissors (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 15 requires the pie tins.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 14 Resource A: Listening to Music Photographs  <input type="checkbox"/> Lesson 14 Resource B: Eardrum Model Setup Instructions
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare eardrum models. (See Lesson 14 Resource B.) <input type="checkbox"/> Prepare 6 cups with salt by placing about 1 tsp of table salt into each small cup.





Lesson 15

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Balloons (12) <input type="checkbox"/> Pie tins (12) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Balloon pump, handheld (1) <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Tape (partial roll) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 16 requires the balloon pump and pie tins.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 15 Resource: Balloon Illustrations <input type="checkbox"/> <i>Moses Goes to a Concert</i> (Millman 1998)
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Cue Recycled Orchestra video (http://phdsci.link/1742).  <input type="checkbox"/> Identify four corners or areas of the classroom to use for a Question Corners routine. Prepare a copy of each balloon illustration in Lesson 15 Resource. Before the lesson, post one balloon illustration in each corner. <input type="checkbox"/> Use a balloon pump to inflate one balloon for each student pair. If it is not possible to reuse balloons from Lesson 15, inflate new balloons before Lesson 16.





Lesson 16

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Balloons (12) <input type="checkbox"/> Pie tins (12) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Balloon pump, handheld (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue or tape (1) <input type="checkbox"/> Scissors (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> The Engineering Challenge (Lessons 21–25) requires the pie tins.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 16 Resource: Vibrating Balloon Illustration <input type="checkbox"/> <i>Moses Goes to a Concert</i> (Millman 1998)
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Use a balloon pump to inflate one balloon for each student pair. If it is not possible to reuse balloons from Lesson 15, inflate new balloons before Lesson 16. <input type="checkbox"/> Prepare vibrating balloon illustration. (See Lesson 16 Resource.)

Lesson 17

Materials	<p>Kit Items</p> <p>None</p> <p>School-Supplied Items</p> <p><input type="checkbox"/> World map (1, optional)</p>
Resources	<p><input type="checkbox"/> Lesson 17 Resource A: London Neighborhood Photograph </p> <p><input type="checkbox"/> Lesson 17 Resource B: Neighborhood Model </p> <p><input type="checkbox"/> Lesson 17 Resource C: Conceptual Checkpoint </p>
Preparation	<p><input type="checkbox"/> Cue London neighborhood video (http://phdsci.link/1703). </p> <p><input type="checkbox"/> Prepare to distribute a copy of Lesson 17 Resource C to each student.</p>




Lesson 18

Materials	<p>Kit Items</p> <p><input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each)</p> <p><input type="checkbox"/> Knowledge Deck cards, Talking Drum (24)</p> <p><input type="checkbox"/> Knowledge Deck poster, Talking Drum (1)</p> <p><input type="checkbox"/> Sticky note arrows (48)</p> <p>School-Supplied Items</p> <p><input type="checkbox"/> World map (1, optional)</p> <p>Item Reuse</p> <p><input type="checkbox"/> Lesson 19 requires the classroom instruments and Talking Drum Knowledge Deck poster.</p>
Resources	<p><input type="checkbox"/> Lesson 18 Resource: Talking Drum Photographs </p>
Preparation	<p><input type="checkbox"/> Cue</p> <ul style="list-style-type: none"> <input type="checkbox"/> “Charleston” (Johnson 1923) audio (http://phdsci.link/1712),  <input type="checkbox"/> doorbell audio (http://phdsci.link/1713),  and <input type="checkbox"/> talking drum video (http://phdsci.link/1714). 






Lesson 19

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each) <input type="checkbox"/> Knowledge Deck poster, Talking Drum (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strips (2) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape, masking (partial roll) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 21 requires the classroom instruments and Talking Drum Knowledge Deck poster.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 19 Resource A: Message Stations Setup Instructions and Classroom Procedure <input type="checkbox"/> Lesson 19 Resource B: Instrument Message Sheets
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare message stations. (See Lesson 19 Resource A.)


Lesson 20

Materials	<p>Kit Items</p> <p>None</p> <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Computers or tablets with internet access (6)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 20 Resource A: Sound Device Photographs  <input type="checkbox"/> Lesson 20 Resource B: Communication Device Photographs <input type="checkbox"/> Lesson 20 Resource C: Communication Scenario Photographs  <input type="checkbox"/> <i>Moses Goes to a Concert</i> (Millman 1998)
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare the communication device stations. Place a copy of one communication device photograph in Lesson 20 Resource B at each station. Cue <ul style="list-style-type: none"> ○ the marshaling wands video (http://phdsci.link/1718), ○ smoke alarm video (http://phdsci.link/1706), ○ traffic signals video (http://phdsci.link/1707), ○ ambulance video (http://phdsci.link/1708), ○ crosswalk signals video (http://phdsci.link/1719), and ○ flags video (http://phdsci.link/1709) at the corresponding stations. <input type="checkbox"/> Cue marshaling wands video (http://phdsci.link/1718). 

Lesson 21

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aluminum foil (partial roll) <input type="checkbox"/> Beads, wooden (3) <input type="checkbox"/> Bottle with cap, plastic (1) <input type="checkbox"/> Classroom instruments from Lesson 4 (1 of each) <input type="checkbox"/> Craft stick, jumbo (1) <input type="checkbox"/> Jewelry box with lid, cardboard (1) <input type="checkbox"/> Knowledge Deck poster, Talking Drum (1) <input type="checkbox"/> Pie tin (1) <input type="checkbox"/> Plastic wrap (partial roll) <input type="checkbox"/> Pom-poms (3) <input type="checkbox"/> Shaker, clear plastic (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chenille stem (1) <input type="checkbox"/> Rubber bands (3) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Metal soup can (1) <input type="checkbox"/> Paper clips (3) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class musical instruments chart started in Lesson 1 <input type="checkbox"/> Class instrument instructions chart started in Lesson 4 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 22 requires the prepared sample Engineering Challenge materials, prepared class problem and solution chart, and prepared class list of ways to make sound.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 9 Resource: Workshop Photograph  <input type="checkbox"/> Lesson 20 Resource A: Sound Device Photographs  <input type="checkbox"/> Lesson 21 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 21 Resource B: Engineering Design Process Visual  <input type="checkbox"/> Lesson 21 Resource C: Accessibility Guidelines (optional) <input type="checkbox"/> Lesson 21 Resource D: Megaphone Photograph  <input type="checkbox"/> <i>The Crayon Man: The True Story of the Invention of Crayola Crayons</i> (Biebow and Salerno 2019)
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Cue recess video (http://phdsci.link/1739). 


Lesson 22

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aluminum foil (partial roll) <input type="checkbox"/> Beads, wooden (64) <input type="checkbox"/> Bottles with caps, plastic (2) <input type="checkbox"/> Craft sticks, jumbo (24) <input type="checkbox"/> Jewelry boxes with lids, cardboard (2) <input type="checkbox"/> Pie tins (4) <input type="checkbox"/> Plastic wrap (partial roll) <input type="checkbox"/> Pom-poms (64) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chenille stems (24) <input type="checkbox"/> Rubber bands (64) <input type="checkbox"/> Ruler (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Metal soup cans (2) <input type="checkbox"/> Paper clips (64) <input type="checkbox"/> Scissors (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Class list of ways to make sound from Lesson 21 <input type="checkbox"/> Class problem and solution chart started in Lesson 21 <input type="checkbox"/> Sample Engineering Challenge materials from Lesson 21 (1 set) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 23 requires the materials from the material testing stations.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 21 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 21 Resource B: Engineering Design Process Visual 
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare the aluminum foil and plastic wrap squares for the material testing stations by cutting out a 5" square of each material for each station. <input type="checkbox"/> Prepare material testing stations by placing station materials at a designated location. If possible, save the materials to reuse in Lessons 23 and 24.


Lesson 23

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aluminum foil (partial roll) <input type="checkbox"/> Beads, wooden (64) <input type="checkbox"/> Bottles with caps, plastic (8) <input type="checkbox"/> Craft sticks, jumbo (24) <input type="checkbox"/> Jewelry boxes with lids, cardboard (8) <input type="checkbox"/> Pie tins (16) <input type="checkbox"/> Plastic wrap (partial roll) <input type="checkbox"/> Pom-poms (64) <input type="checkbox"/> Tape measure (1) <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chenille stems (24) <input type="checkbox"/> Rubber bands (64) <input type="checkbox"/> Ruler (1) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> String (40 ft) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue sticks (8) <input type="checkbox"/> Metal soup cans (8) <input type="checkbox"/> Paper clips (64) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Scissors, blunt tip (8) <input type="checkbox"/> Tape (partial roll) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 24 requires the prepared Engineering Challenge materials, prepared sending and receiving lines, and prepared message cards.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 21 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 23 Resource: Message Card
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Identify and prepare a large outdoor space for groups to test their devices. In this space, use string or tape to create two 20-foot lines that are 80 feet from each other. These are the sending and receiving lines. If an outdoor space is not available, use a large, open indoor space such as a cafeteria, gymnasium, or long hallway. <input type="checkbox"/> If necessary, prepare new 5" squares of aluminum foil and plastic wrap for each group. Consider gathering each group's set of materials in a box or bag for ease of distribution and cleanup. As necessary, replenish materials before Lesson 24. <input type="checkbox"/> Prepare two message cards for each group. (See Lesson 23 Resource.)


Lesson 24

Materials	<p>Kit Items None</p> <p>Module 1 Kit</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ruler (1) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Glue sticks (8) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Scissors, blunt tip (8) <input type="checkbox"/> Tape (partial roll) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Engineering Challenge materials from Lesson 23 (8 sets) <input type="checkbox"/> Message cards from Lesson 23 (1 or 2 per group) <input type="checkbox"/> Sending and receiving lines from Lesson 23 (1 each)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 21 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 21 Resource B: Engineering Design Process Visual 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Identify and prepare a large outdoor space for groups to test their devices. In this space, use string or tape to create two 20-foot lines that are 80 feet from each other. These are the sending and receiving lines. If an outdoor space is not available, use a large, open indoor space such as a cafeteria, gymnasium, or long hallway. <input type="checkbox"/> If necessary, prepare new 5" squares of aluminum foil and plastic wrap for each group. Consider gathering each group's set of materials in a box or bag for ease of distribution and cleanup. As necessary, replenish materials before Lesson 24. <input type="checkbox"/> Prepare two message cards for each group. (See Lesson 23 Resource.)



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 21 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 21 Resource B: Engineering Design Process Visual 
Preparation	None


Lesson 26

Materials	<p>Kit Items</p> <p>None</p> <p>School-Supplied Items</p> <p><input type="checkbox"/> Scissors (1)</p>
Resources	<p><input type="checkbox"/> Lesson 26 Resource: Key Term Cards</p>
Preparation	<p><input type="checkbox"/> Prepare key term cards. (See Lesson 26 Resource.)</p> <p><input type="checkbox"/> Cue Recycled Orchestra video (http://phdsci.link/1742). </p>


Lesson 27

Materials	<p>Kit Items</p> <p><input type="checkbox"/> Cups, insulated, disposable, 9 oz (27)</p> <p>Module 1 Kit</p> <p><input type="checkbox"/> String (108 ft)</p> <p>School-Supplied Items</p> <p><input type="checkbox"/> Paper clips, large (26)</p> <p><input type="checkbox"/> Pencil, sharp (1)</p> <p><input type="checkbox"/> Scissors (1)</p> <p>Item Reuse</p> <p><input type="checkbox"/> Lesson 28 requires the prepared demonstration cup telephone, the prepared student cups with string.</p>
Resources	<p><input type="checkbox"/> Lesson 27 Resource A: Cups with String Setup Instructions and Classroom Procedure</p> <p><input type="checkbox"/> Lesson 27 Resource B: Cup Telephone Diagram </p> <p><input type="checkbox"/> Student End-of-Module Assessment Part A </p>
Preparation	<p><input type="checkbox"/> Cut a 4' piece of 2 mm cotton string to display in the Lesson 27 Launch.</p> <p><input type="checkbox"/> Prepare cups with string. (See Lesson 27 Resource A.)</p> <p><input type="checkbox"/> Prepare to distribute a copy of End-of-Module Assessment Part A to each student.</p>

Lesson 28

Materials	<p>Kit Items None</p> <p>School-Supplied Items None</p> <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Each student's End-of-Module Assessment Part A <input type="checkbox"/> Demonstration cup telephone from Lesson 27 (1) <input type="checkbox"/> Student cups with string from Lesson 27 (24) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 29 requires the prepared demonstration cup telephone.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 27 Resource B: Cup Telephone Diagram  <input type="checkbox"/> Lesson 28 Resource: Cup Telephone Setup Instructions <input type="checkbox"/> Student End-of-Module Assessment Part B
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare cup telephones. (See Lesson 28 Resource.) <input type="checkbox"/> Prepare to distribute a copy of End-of-Module Assessment Part B to each student.

Lesson 29

Materials	<p>Kit Items None</p> <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Scissors (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstration cup telephone from Lesson 27 (1)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 29 Resource: Recurring Themes and Concepts Cards  <input type="checkbox"/> End-of-Module Assessment Sample Responses <input type="checkbox"/> End-of-Module Assessment Rubric
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Score End-of-Module Assessment and write individual feedback. <input type="checkbox"/> Select at least one End-of-Module Assessment item for the class to debrief, and prepare a sample response for that item to share with students. <input type="checkbox"/> Prepare Recurring Themes and Concepts cards. (See Lesson 29 Resource.) <input type="checkbox"/> Select student work products showing that objects are made of parts, and display them in different areas of the classroom. Student work products may include the anchor model, other class charts, selected Science Logbook pages, and Engineering Challenge designs.





Objects in the Sky | Lesson Preparation

Objects in the Sky | Advance Preparation


An activity in this module requires advance preparation. 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
4	1 day†	Light Investigation	Prepare materials for Light Investigation Stations.





Lesson 1

Materials	Kit Items None School-Supplied Items <input type="checkbox"/> Scissors (1)
Resources	<input type="checkbox"/> Lesson 1 Resource A: Beach Sign Photographs  <input type="checkbox"/> Lesson 1 Resource B: Sea Turtle Hatchling Viewpoint Markers  <input type="checkbox"/> Lesson 1 Resource C: Beach Town Photograph  <input type="checkbox"/> <i>One Tiny Turtle</i> (Davies and Chapman 2024)
Preparation	<input type="checkbox"/> Cue green sea turtle hatchlings video (http://phdsci.link/1075).  <input type="checkbox"/> Prepare sea turtle hatchling viewpoint markers. (See Lesson 1 Resource B.)

Lesson 2

Materials	Kit Items <input type="checkbox"/> Telescopes, handheld (6) Module 1 Kit <input type="checkbox"/> Sentence strips (3) School-Supplied Items <input type="checkbox"/> Blanket, opaque, large (1) <input type="checkbox"/> Pocket chart (1) <input type="checkbox"/> Scissors (1)
Resources	<input type="checkbox"/> Lesson 2 Resource A: Beach Cards <input type="checkbox"/> Lesson 2 Resource B: Solar Telescope Photographs  <input type="checkbox"/> <i>One Tiny Turtle</i>
Preparation	<input type="checkbox"/> Prepare beach cards. (See Lesson 2 Resource A.)



Lesson 3

Materials	<p>Kit Items None</p> <p>Module 1 Kit <input type="checkbox"/> Sentence strips (3)</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p>
Resources	<p><input type="checkbox"/> Lesson 3 Resource A: Sun, Moon, and Stars Photographs </p> <p><input type="checkbox"/> Lesson 3 Resource B: Objects in the Sky Cards</p> <p><input type="checkbox"/> Lesson 3 Resource C: Galileo's Drawings of the Moon </p> <p><input type="checkbox"/> Lesson 3 Resource D: Telescope Photographs of the Moon </p> <p><input type="checkbox"/> <i>One Tiny Turtle</i></p>
Preparation	<p><input type="checkbox"/> Cue night sky video (http://phdsci.link/2578). </p> <p><input type="checkbox"/> Prepare objects in the sky cards. (See Lesson 3 Resource B.)</p>



Lesson 4

Materials	<p>Kit Items <input type="checkbox"/> Building blocks, plastic, red (14) <input type="checkbox"/> Clay, modeling, nonhardening ($\frac{1}{4}$ lb) <input type="checkbox"/> Flashlights with batteries (6) <input type="checkbox"/> Mirrors, plastic, small (6)</p> <p>Module 1 Kit <input type="checkbox"/> Building blocks, plastic, red (40) <input type="checkbox"/> Rulers (6) <input type="checkbox"/> Sentence strips (2)</p> <p>School-Supplied Items <input type="checkbox"/> Cans, soda, empty (6) <input type="checkbox"/> Index cards, 3" × 5" (6) <input type="checkbox"/> Paper, construction, black, 8.5" × 11" (6 sheets) <input type="checkbox"/> Tape, masking (partial roll)</p>
Resources	<p><input type="checkbox"/> Lesson 4 Resource A: Light Investigation Setup and Procedure</p> <p><input type="checkbox"/> Lesson 4 Resource B: Moon Article (Hennessey 2007)</p>
Preparation	<p><input type="checkbox"/> Prepare light investigation materials. (See Lesson 4 Resource A.)</p>

Lesson 5

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p>
Resources	<p><input type="checkbox"/> End of Spotlight Assessment Rubric</p> <p><input type="checkbox"/> Lesson 5 Resource A: Term Cards</p> <p><input type="checkbox"/> Lesson 5 Resource B: Beach with Seaweed Photograph </p> <p><input type="checkbox"/> Student End-of-Spotlight Assessment</p>
Preparation	<p><input type="checkbox"/> Prepare term cards. (See Lesson 5 Resource A.)</p> <p><input type="checkbox"/> Cue sandhopper video (http://phdsci.link/2577). </p> <p><input type="checkbox"/> Prepare to distribute a copy of the End-of-Spotlight Assessment to each student.</p>

Lesson 6

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p>
Resources	<p><input type="checkbox"/> Lesson 6 Resource: Recurring Themes and Concepts Card </p> <p><input type="checkbox"/> End-of-Spotlight Assessment Sample Responses</p> <p><input type="checkbox"/> End-of-Spotlight Assessment Rubric</p>
Preparation	<p><input type="checkbox"/> Cue sandhopper video (http://phdsci.link/2577). </p> <p><input type="checkbox"/> Score End-of-Spotlight Assessment and write individual feedback.</p> <p><input type="checkbox"/> Select at least one End-of-Spotlight Assessment item for the class to debrief, and prepare a sample response for that item to share with students.</p> <p><input type="checkbox"/> Prepare Recurring Themes and Concepts card. (See Lesson 6 Resource.)</p>

Sound | Works Cited

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Johnson, James P., composer. 1923. "Charleston." Lyrics by Cecil Mack. Golden Gate Orchestra. Recorded 1925. <https://adp.library.ucsb.edu/index.php/matrix/detail/2000157151/10292-Charleston>.

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Objects in the Sky | Works Cited

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