




Preparation Guide


Level K Module 1

WEATHER

with Spotlight Lessons on Magnets

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.

Weather | 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
2	1 day†	Anchor Model Setup	Collect materials for the anchor model and assemble boxes to use to develop the model during the lesson.
5	1 day†	Thermometer Setup	Prepare indoor–outdoor thermometer, student thermometers, and demonstration thermometer.
6, 7	2 days†	Wind Measuring Tool Activity	Arrange for an adult to operate the fan and hair dryer during Lessons 6 and 7.




Lesson	Time in Advance	Investigation	Description
8	2 days†	Effects of Wind and Rain	Place $2\frac{1}{3}$ cups potting soil in an even layer in a pan to dry out.
9	2 days	Sunlight, Shade, and Temperature Investigation Planning	Lesson 9 requires a sunny day. Check the local weather forecast to identify a day when the weather will be sunny. One- or two-day forecasts are most likely to be accurate. (See additional instructions in the Lesson 7 Preparation section.)
13	1 day†	Roof Materials Preparation	Prepare roof materials for student exploration and shelter building. (See additional instructions in the Lesson 12 Preparation section.)
18	1 month†	Monthly Temperature Data Analysis	Take a class photograph outside during the first week of school.

Weather | Lesson Preparation

Lesson 1

Materials	<p>Kit Items None</p> <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Camera, digital (1) <input type="checkbox"/> Tent-building materials (e.g., blankets, cardboard boxes, poster boards, sheets, tarps, towels) (6 sets) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 8 requires the digital camera.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 1 Resource A: Tent in Rain Photograph  <input type="checkbox"/> Lesson 1 Resource B: Tent-Building Setup Instructions
<p>Preparation</p> 	<ul style="list-style-type: none"> <input type="checkbox"/> Identify areas in the classroom or outside where groups can build their tents. Set up the tent-building activity. (See Lesson 1 Resource B.) <p>Advance Preparation for Lesson 2</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Day Before: Collect materials for the anchor model and assemble boxes to use to develop the model during the lesson. (See Lesson 2 Resource C.) <p>Advance Preparation for Lesson 18</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Month Before: Take a class photograph outside during the first week of school.


Lesson 2

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Binder rings, 1" (24) <input type="checkbox"/> Box, cardboard, 4" × 4" × 5" or smaller (1) <input type="checkbox"/> Box, cardboard, 12" × 12" × 12" or larger, unassembled (1) <input type="checkbox"/> Dolls, wooden (3) <input type="checkbox"/> Floor tiles, adhesive backing, 12" × 12" (2) <input type="checkbox"/> Knowledge Deck™ cards, Mesa Verde Long Ago (24) <input type="checkbox"/> Knowledge Deck poster, Mesa Verde Long Ago (1) <input type="checkbox"/> Sticky note arrows (48) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Marker, permanent (1) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Sheet or blanket (1) <input type="checkbox"/> Tape, packing, clear, 2" wide (partial roll) <input type="checkbox"/> US map (1, optional) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 requires the prepared anchor model. <input type="checkbox"/> Lesson 21 requires the Mesa Verde Long Ago Knowledge Deck poster.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 1 Resource A: Tent in Rain Photograph  <input type="checkbox"/> Lesson 2 Resource A: Mesa Verde National Park Photograph  <input type="checkbox"/> Lesson 2 Resource B: Mesa Verde Cliff Dwelling Photograph  <input type="checkbox"/> Lesson 2 Resource C: Anchor Model Setup Instructions
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Identify two corners or areas in the classroom to use for a Question Corners routine. Prepare a copy of the photographs in Lesson 1 Resource A and Lesson 2 Resource B. During the lesson, post one photograph in each corner or area. <input type="checkbox"/> Prepare anchor model materials. (See Lesson 2 Resource C.)


Lesson 3

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strips (3) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Pocket chart (1) <input type="checkbox"/> Scissors (1)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 3 Resource A: Outdoor Activity Cards <input type="checkbox"/> Lesson 3 Resource B: Weather Symbols
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare outdoor activity cards. (See Lesson 3 Resource A.) <input type="checkbox"/> Select four outdoor activity cards and post them in different corners of the classroom for a Question Corners routine. At least one card should show an activity that students could do outside in today's weather and at least one card should show an activity that students would have difficulty doing outside in today's weather. <input type="checkbox"/> Prepare weather symbols. (See Lesson 3 Resource B.)




Lesson 4

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Calendar pocket chart (1) <ul style="list-style-type: none"> ○ Days of the week cards (7) ○ Month cards (12) ○ Number cards (31) <input type="checkbox"/> Ruler (1) <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construction paper, blue, green, orange, purple, red, yellow; 9" x 12" (3 sheets each color) <input type="checkbox"/> Glue stick (1) <input type="checkbox"/> Scissors (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 5 requires the prepared weather calendar. <input type="checkbox"/> Lesson 21 requires 1 blue, 3 green, and 2 orange prepared construction paper squares.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: Weather Cards <input type="checkbox"/> Lesson 4 Resource B: Weather Calendar Setup Instructions <input type="checkbox"/> Lesson 4 Resource C: Weather Calendar Suggestions
Preparation	<div style="display: flex; align-items: center;">  <div> <ul style="list-style-type: none"> <input type="checkbox"/> Prepare weather cards. (See Lesson 4 Resource A.) <input type="checkbox"/> Prepare weather calendar. (See Lesson 4 Resources B and C.) <p>Advance Preparation for Lesson 5</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Day Before: Prepare indoor-outdoor thermometer, student thermometers, and demonstration thermometer. (See Lesson 5 Resources A, B, and C.) <p>Advance Preparation for Lesson 6</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 Days Before: Arrange for an adult to operate the fan and hair dryer during the wind measuring tool activity. </div> </div>



Lesson 5

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bags, resealable plastic, 1 qt (24) <input type="checkbox"/> Cups, disposable, insulated, 12 oz (27) <input type="checkbox"/> Plates, rimmed heavy paper, 7" (24) <input type="checkbox"/> Ruler (1) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Thermometer, demonstration (1) <input type="checkbox"/> Thermometer, indoor–outdoor (1) <input type="checkbox"/> Thermometers, Fahrenheit, plastic-backed (12) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construction paper, blue, green, orange, purple, red, yellow; 9" x 12" (1 sheet of each color) <input type="checkbox"/> Containers, insulated, large (2) <input type="checkbox"/> Crayons, red (24) <input type="checkbox"/> Ice cubes (about 52) <input type="checkbox"/> Marker, black (1) <input type="checkbox"/> Paper towels (partial roll) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Stapler (1) <input type="checkbox"/> Tape, packing, clear, 2" wide (partial roll) <input type="checkbox"/> Water (access) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Weather calendar from Lesson 4 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 requires the prepared indoor–outdoor thermometer and prepared weather calendar. <input type="checkbox"/> Lesson 9 requires the red crayons, prepared demonstration thermometer, and prepared student thermometers.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 5 Resource A: Indoor–Outdoor Thermometer Setup Instructions <input type="checkbox"/> Lesson 5 Resource B: Student Thermometer Setup Instructions <input type="checkbox"/> Lesson 5 Resource C: Demonstration Thermometer Setup Instructions <input type="checkbox"/> Lesson 5 Resource D: Temperature Comparison Demonstration Setup Instructions and Procedure <input type="checkbox"/> Lesson 5 Resource E: Thermometer Exploration Setup Instructions and Classroom Procedure
<p>Preparation</p> 	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare indoor–outdoor thermometer, student thermometers, and demonstration thermometer. (See Lesson 5 Resources A, B, and C.) <input type="checkbox"/> Prepare materials for temperature comparison demonstration. (See Lesson 5 Resource D.) <input type="checkbox"/> Prepare materials for thermometer exploration. (See Lesson 5 Resource E.) <p>Advance Preparation for Lesson 7</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 Days Before: Arrange for an adult to operate the fan and hair dryer during the wind measuring tool activity.


Lesson 6

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Craft foam, 9" × 12" (1 sheet) <input type="checkbox"/> Felt, 9" × 12" (1 sheet) <input type="checkbox"/> Flagging tape, 1" thick (9 ft) <input type="checkbox"/> Paper, tissue, 9" × 12" (1 sheet) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (2) <input type="checkbox"/> Table fan (1) <input type="checkbox"/> Yarn (9 ft) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Envelope, manila, 9" × 12" (1) <input type="checkbox"/> Hair dryer with cool setting (1) <input type="checkbox"/> Magnet (1, optional) <input type="checkbox"/> Scissors (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Indoor–outdoor thermometer from Lesson 5 (1) <input type="checkbox"/> Weather calendar from Lesson 4 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 7 requires the table fan, prepared indoor–outdoor thermometer, prepared weather calendar, and prepared wind measuring tool materials.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 Resource A: Wind Measuring Tool Activity Setup Instructions <input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual 
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare materials for wind measuring tool activity. (See Lesson 6 Resource A.) <input type="checkbox"/> Cue flag in wind video (http://phdsci.link/1510)  and flag in weak wind video (http://phdsci.link/1511). 


Lesson 7

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Clipboard (1) <input type="checkbox"/> Clothespins, wooden, 3" (24) <input type="checkbox"/> Rulers (12) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (2) <input type="checkbox"/> Sheet protector (1) <input type="checkbox"/> Table fan (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayons, blue, green, orange, purple, red, yellow, black (1 of each) <input type="checkbox"/> Hair dryer with cool setting (1) <input type="checkbox"/> Magnet (1, optional) <input type="checkbox"/> Marker, dry erase (1) <input type="checkbox"/> Paper, 11" x 17" or larger (4 sheets) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Indoor–outdoor thermometer from Lesson 5 (1) <input type="checkbox"/> Weather calendar from Lesson 4 (1) <input type="checkbox"/> Wind measuring tool materials from Lesson 6 (12 sets) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 requires the prepared daily weather report materials. <input type="checkbox"/> Lesson 18 requires the prepared weather calendar.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual  <input type="checkbox"/> Lesson 7 Resource A: Daily Weather Report Setup Instructions and Procedure <input type="checkbox"/> Lesson 7 Resource B: Monthly Temperature and Weather Log Setup Instructions
<p>Preparation</p> 	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare materials for daily weather report. (See Lesson 7 Resources A and B.) <p>Advance Preparation for Lesson 9</p> <ul style="list-style-type: none"> <input type="checkbox"/> 2 Days Before: Lesson 9 requires a sunny day. Check the local weather forecast and select a day that is predicted to be sunny. If it is not possible to conduct the investigation on a sunny day, use the alternative activity that appears in Lesson 9 Resource B.




Lesson 8

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cardboard, 6" × 6" (6) <input type="checkbox"/> Containers, clear plastic, round, 8 oz (8) <input type="checkbox"/> Flashlight with batteries (1) <input type="checkbox"/> Gravel/small rocks (5 cups) <input type="checkbox"/> Measuring cup, dry, $\frac{1}{3}$ cup (1) <input type="checkbox"/> Pans, aluminum, 12" × 8" × 2" (7) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Sentence strip (1) <input type="checkbox"/> Spice shakers, 4 oz (6) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Camera, digital (1) <input type="checkbox"/> Marker, permanent (1) <input type="checkbox"/> Newspapers (6 sheets) <input type="checkbox"/> Paper towels (partial roll) <input type="checkbox"/> Plants, small with leaves (or alternatives) (7) <input type="checkbox"/> Potting soil ($2\frac{1}{3}$ cups) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Water (access) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 requires 1 of the 6" × 6" pieces of cardboard, the flashlight with batteries, and 1 of the spice shakers.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 8 Resource A: Playground Photograph  <input type="checkbox"/> Lesson 8 Resource B: Effects of Wind and Rain Investigation and Effects of Sunlight Investigation Setup Instructions <input type="checkbox"/> Lesson 8 Resource C: Investigate the Effects of Sunlight Alternative Activities
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Take a photograph of the school's playground (or other outdoor play area) before the lesson. <input type="checkbox"/> Prepare materials for the effects of wind and rain investigation and effects of sunlight investigation. (See Lesson 8 Resource B.) Check the local forecast and select a day that is predicted to be sunny to conduct the sunlight investigation, or conduct the investigation during Lesson 9. If the classroom does not have a window, use an alternative way to warm the rocks for the sunlight investigation. (See Lesson 8 Resource C.)




Lesson 9

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cups, disposable, insulated, 12 oz (2) <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayons, red (24) <input type="checkbox"/> Index card (1, optional) <input type="checkbox"/> Water (12 oz) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstration thermometer from Lesson 5 (1) <input type="checkbox"/> Student thermometers from Lesson 5 (2) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 requires the prepared demonstration thermometer.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 9 Resource A: Covered Playground Photograph  <input type="checkbox"/> Lesson 9 Resource B: Investigate Sunlight, Shade, and Temperature Alternative Activity
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare materials for sunlight, shade, and temperature investigation. Check the local weather forecast and select a day that is predicted to be sunny. If it is not possible to conduct the investigation on a sunny day, use an alternative activity. (See Lesson 9 Resource B.) Locate a safe, outdoor location (e.g., playground or other outdoor play area) with areas of sunlight and shade. Fill two 12 oz disposable insulated cups halfway with room-temperature water. At least 1 hour before Lesson 9, take the cups to the outdoor location selected for the investigation. Place one cup in direct sunlight, and place the other cup in the shade.




Lesson 10

Materials	<p>Kit Items</p> <p>None</p> <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayons or markers (6 sets) <input type="checkbox"/> Glue sticks (6) <input type="checkbox"/> Paper, 11" x 17" or larger (6 sheets) <input type="checkbox"/> Scissors (1)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 10 Resource: Shelter Posters Setup Instructions
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Cue <ul style="list-style-type: none"> <input type="radio"/> yurt video (http://phdsci.link/1515),  <input type="radio"/> apartment building video (http://phdsci.link/1516),  and <input type="radio"/> cave dwelling video (http://phdsci.link/1517).  <input type="checkbox"/> Prepare shelter posters and weather symbol cards. (See Lesson 10 Resource.)


Lesson 11

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cardboard, 6" × 6" (1) <input type="checkbox"/> Crayons, light-colored (24) <input type="checkbox"/> Flashlight with batteries (1) <input type="checkbox"/> Gravel/small rocks ($\frac{1}{2}$ cup) <input type="checkbox"/> Labels, removable, $2\frac{5}{8}$" × 1" (6) <input type="checkbox"/> Spice shaker, 4 oz (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Marker, permanent (1) <input type="checkbox"/> Water (4 oz) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Anchor model from Lesson 2 (1) <input type="checkbox"/> Daily weather report materials from Lesson 7 (1 set) <input type="checkbox"/> Demonstration thermometer from Lesson 5 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 12 requires the prepared anchor model and the flashlight with batteries. <input type="checkbox"/> Lesson 17 requires the prepared demonstration thermometer.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 11 Resource A: Weather Recording Sheet <input type="checkbox"/> Lesson 11 Resource B: Conceptual Checkpoint 
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare two color copies of Lesson 11 Resource A to use during the lesson. Label one copy with a sketch of the school and the other copy with a photograph or other image of Spruce Tree House. <input type="checkbox"/> Cue Spruce Tree House webcam (NPS, n.d.) (http://phdsci.link/1518).  <input type="checkbox"/> Prepare to distribute a copy of Lesson 11 Resource B to each student. <input type="checkbox"/> Place small rocks inside and on top of the anchor model. <input type="checkbox"/> Open Street View of Spruce Tree House on Google Maps™ (http://phdsci.link/1471). 


Lesson 12

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Flashlight with batteries (1) <input type="checkbox"/> Gravel/small rocks ($\frac{1}{2}$ cup) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Equity sticks (class set) <input type="checkbox"/> Magnet (1, optional) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Anchor model version from Lesson 11 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 13 requires the flashlight with batteries and prepared Mesa Verde dig site model. <input type="checkbox"/> Lesson 21 requires the prepared anchor model.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual  <input type="checkbox"/> Lesson 12 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 12 Resource B: Mesa Verde Dig Site Template
<p>Preparation</p> 	<ul style="list-style-type: none"> <input type="checkbox"/> Cue video “Treasure Trove of Artifacts Discovered near This Colorado City” (ABC Action News 2019) (http://phdsoci.link/1520).  <input type="checkbox"/> Prepare a Mesa Verde dig site. Prepare a copy of Lesson 12 Resource B and place it on top of the anchor model. Then use the template as a guide to construct a model dig site. Make three rings of small rocks on the circles to represent dig sites, and position three wooden dolls on the circled crosses to represent archaeologists. <p>Advance Preparation for Lesson 13</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Day Before: Prepare roof materials for imagine a shelter activity and shelter building. Cut the aluminum foil, plastic mesh, lace, and screen into 3” × 5” pieces. Cut enough of the materials to create 70 pieces of aluminum foil and 40 pieces each of plastic mesh, lace, and screen. Also gather 120 jumbo craft sticks and 70 index cards. Then determine how students will retrieve roof materials during lesson activities. Either line up all materials by item on a counter or table for students to access when needed or place a set of materials for each student pair in a box or bag beforehand for ease of distribution and cleanup.


Lesson 13

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Aluminum foil (1 roll) <input type="checkbox"/> Craft sticks, jumbo (120) <input type="checkbox"/> Flashlights with batteries (6) <input type="checkbox"/> Lace (6 sq ft) <input type="checkbox"/> Plastic mesh (6 sq ft) <input type="checkbox"/> Ruler (1) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Screen (6 sq ft) <input type="checkbox"/> Straw connector set (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Index cards, 3" × 5" (70) <input type="checkbox"/> Magnet (1, optional) <input type="checkbox"/> Tape, clear (1 roll) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mesa Verde dig site model from Lesson 12 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 14 requires the prepared Mesa Verde dig site model, prepared roof materials, and prepared shelter frames. <input type="checkbox"/> Lesson 15 requires the flashlights with batteries.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual  <input type="checkbox"/> Lesson 12 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 12 Resource B: Mesa Verde Dig Site Template <input type="checkbox"/> Lesson 13 Resource: Shelter Frame Setup Instructions
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare shelter frames. (See Lesson 13 Resource.)



Lesson 14

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dolls, wooden (36) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Tape, painter's (partial roll) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Equity sticks (class set, optional) <input type="checkbox"/> Magnet (1, optional) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mesa Verde dig site model from Lesson 12 <input type="checkbox"/> Roof materials from Lesson 13 (12 sets) <input type="checkbox"/> Shelter frames from Lesson 13 (13) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 15 requires the wooden dolls, prepared Mesa Verde dig site model, prepared roof materials, and prepared shelter frames.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual  <input type="checkbox"/> Lesson 12 Resource A: Engineering Challenge Rubric <input type="checkbox"/> Lesson 12 Resource B: Mesa Verde Dig Site Template
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare to distribute a copy of Lesson 12 Resource B to each student pair.


Lesson 15

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dolls, wooden (36) <input type="checkbox"/> Flashlights with batteries (6) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Tape, painter's (partial roll) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Magnet (1, optional) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mesa Verde dig site model from Lesson 12 <input type="checkbox"/> Roof materials from Lesson 13 (12 sets) <input type="checkbox"/> Shelter frames from Lesson 13 (13)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual  <input type="checkbox"/> Lesson 12 Resource A: Engineering Challenge Rubric
Preparation	<p>None</p>

Lesson 16

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Magnet (1, optional)</p>
Resources	<p><input type="checkbox"/> Lesson 6 Resource B: Engineering Design Process Visual </p> <p><input type="checkbox"/> Lesson 12 Resource A: Engineering Challenge Rubric</p> <p><input type="checkbox"/> Lesson 16 Resource: Casa Batlló Photographs </p>
Preparation	None


Lesson 17

Materials	<p>Kit Items <input type="checkbox"/> Sentence strips (2)</p> <p>School-Supplied Items <input type="checkbox"/> Construction paper, blue, green, orange, purple, red, yellow; 9" x 12" (1 sheet each color) <input type="checkbox"/> Glue stick (1) <input type="checkbox"/> Stickers, small dot (5)</p> <p>Prepared Items from Previous Lessons <input type="checkbox"/> Demonstration thermometer from Lesson 5 (1)</p> <p>Item Reuse <input type="checkbox"/> Lesson 18 requires the prepared demonstration thermometer.</p>
Resources	<p><input type="checkbox"/> Lesson 17 Resource A: Times of Day Photographs </p> <p><input type="checkbox"/> Lesson 17 Resource B: Daily Temperature Chart Setup Instructions</p>
Preparation	<p><input type="checkbox"/> Identify three corners or areas of the classroom to use for a Question Corners routine. Prepare a color copy of each photograph in Lesson 17 Resource A. During the lesson, post one photograph in each corner or area.</p> <p><input type="checkbox"/> Prepare daily temperature chart. (See Lesson 17 Resource B.)</p>


Lesson 18

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bags, resealable plastic, 1 gal (12) <input type="checkbox"/> Linking cubes, blue, green, orange, purple, red, yellow (12 sets) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construction paper, blue, green, orange, purple, red, yellow; 9" × 12" (1 sheet each color) <input type="checkbox"/> Glue stick (1) <input type="checkbox"/> Paper, 11" × 17" or larger (1 sheet) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Demonstration thermometer from Lesson 5 (1) <input type="checkbox"/> Weather calendar from Lesson 4 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 19 requires the plastic bags, linking cubes, prepared weather calendar, and prepared monthly weather poster.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Photograph of students outside during the first week of school
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> On the weather calendar, identify a 3- to 5-day span during which the temperature remained in the same color band (e.g., five green squares in a row). Cover the rest of the weather calendar before Lesson 18 so that only the selected days are visible. <input type="checkbox"/> Prepare bags of linking cubes for temperature data analysis. For each student pair, prepare 1 bag of cubes that correspond in color and quantity to the temperature squares on the weather calendar for the first month of school.




Lesson 19

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bags, resealable plastic, 1 gal (12) <input type="checkbox"/> Linking cubes, blue, green, orange, purple, red, yellow (12 sets) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Paper, printer, 8.5" × 11" (1 sheet) <input type="checkbox"/> Stickers, small dot (5) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Weather calendar from Lesson 4 (1) <input type="checkbox"/> Monthly weather poster from Lesson 18 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 21 requires the plastic bags and linking cubes. <input type="checkbox"/> Lesson 22 requires the prepared weather calendar.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 19 Resource: Cloud Cover Photographs 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare a copy of the completed weather log for the first month of school for each student pair. <input type="checkbox"/> Prepare bags of linking cubes for weather data analysis. For each student pair, prepare 1 bag with enough linking cubes to represent the data on the first month of school's weather log for rain and snow data and wind data. Consider using a different color linking cube for each part of weather.





Lesson 20

Materials	<p>Kit Items</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)
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 20 Resource: Weather Forecasts
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Identify and cue a video of a local weather forecast from a television broadcast or online resource. If possible, use a video that shows the forecast for the upcoming weekend. <input type="checkbox"/> Cue meteorologist video (http://phdsci.link/1557).  <input type="checkbox"/> Prepare weather forecasts. (See Lesson 20 Resource.)


Lesson 21

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bags, resealable plastic, 1 gal (18) <input type="checkbox"/> Gravel/small rocks ($\frac{1}{4}$ cup) <input type="checkbox"/> Knowledge Deck cards, Farming at Mesa Verde (24) <input type="checkbox"/> Knowledge Deck posters <ul style="list-style-type: none"> ○ Farming at Mesa Verde (1) ○ Mesa Verde Long Ago (1) <input type="checkbox"/> Linking cubes, blue (54), green (258), orange (54), yellow (174) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Crayon, black (1) <input type="checkbox"/> Markers, blue, orange (1 of each) <input type="checkbox"/> Marker, permanent (1) <input type="checkbox"/> Glue stick (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Construction paper squares, 3" × 3", blue (1), green (3), orange (2) from Lesson 4 <input type="checkbox"/> Anchor model from Lesson 12 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 27 requires the prepared anchor model and the Mesa Verde Long Ago Knowledge Deck poster.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 21 Resource A: Linking Cube Bag Setup Instructions <input type="checkbox"/> Lesson 21 Resource B: Mesa Verde Temperature Logs  <input type="checkbox"/> Lesson 21 Resource C: Conceptual Checkpoint 
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare linking cube bags. (See Lesson 21 Resource A.) <input type="checkbox"/> Prepare Mesa Verde daily temperature chart. Use a marker on chart paper to draw a likeness of the chart in the Conceptual Checkpoint Part B section of Lesson 21. Each cell should be large enough to fit a 3" × 3" construction paper square. Populate the Saturday row by attaching temperature color squares for morning (blue), afternoon (orange), and night (green). Label each square with its numerical temperature. Prepare two more green squares and one more orange square to add to the Sunday row during the lesson. <input type="checkbox"/> Prepare to distribute a color copy of Lesson 21 Resource C to each student. <input type="checkbox"/> Cue Mesa Verde Balcony House virtual tour (CyArk 2020) (http://phdsci.link/1558). 



Lesson 22

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Scissors (1)</p> <p>Prepared Items from Previous Lessons <input type="checkbox"/> Weather calendar from Lesson 4 (1)</p>
Resources	<p><input type="checkbox"/> Lesson 22 Resource A: Fallen Branches Photograph </p> <p><input type="checkbox"/> Lesson 22 Resource B: Thunderstorm Photographs </p> <p><input type="checkbox"/> Lesson 22 Resource C: Severe Weather Symbols</p> <p><input type="checkbox"/> Lesson 22 Resource D: Severe Weather Photographs</p>
Preparation	<p><input type="checkbox"/> Identify several consecutive days of mild weather (e.g., sunny, partly sunny, not windy, a little windy) on the weather calendar.</p> <p><input type="checkbox"/> Cue</p> <ul style="list-style-type: none"> <input type="checkbox"/> thunderstorm video (http://phdsci.link/1526), <input type="checkbox"/> blizzard video (http://phdsci.link/1527),  <input type="checkbox"/> typhoon video (http://phdsci.link/1528), and <input type="checkbox"/> tornado video (http://phdsci.link/1529).  <p><input type="checkbox"/> Prepare severe weather symbols. (See Lesson 22 Resource C.)</p> <p><input type="checkbox"/> Prepare to distribute a copy of Lesson 22 Resource D to students. During the lesson, each of three groups receives photographs for one kind of severe weather.</p>

Lesson 23

Materials	<p>Kit Items <input type="checkbox"/> Sentence strips (2)</p> <p>School-Supplied Items None</p>
Resources	<p><input type="checkbox"/> Lesson 22 Resource C: Severe Weather Symbols</p> <p><input type="checkbox"/> Lesson 23 Resource: Effects of Drought on Plants Photograph </p>
Preparation	None



Lesson 24

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <p>None</p>
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 23 Resource: Effects of Drought on Plants Photograph  <input type="checkbox"/> Lesson 24 Resource: Effects of Severe Weather Photographs 
Preparation	None



Lesson 25

Materials	<p>Kit Items</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) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 26 requires the prepared local severe weather chart.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 25 Resource A: Severe Weather Forecast <input type="checkbox"/> Lesson 25 Resource B: Severe Weather Maps and Cards <input type="checkbox"/> Lesson 25 Resource C: Local Severe Weather Chart Setup Instructions
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare severe weather maps and cards. (See Lesson 25 Resource B.) <input type="checkbox"/> Prepare local severe weather chart. (See Lesson 25 Resource C.)

Lesson 26

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Sentence strip (1) <p>School-Supplied Items</p> <p>None</p> <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Local severe weather chart started in Lesson 25
Resources	<p>None</p>
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Cue warning siren video (http://phdsci.link/1530).  <input type="checkbox"/> Choose the kind of severe weather (tornado, hurricane, blizzard, or thunderstorm) that is most likely to occur locally, and cue the corresponding video. <ul style="list-style-type: none"> <input type="radio"/> “How to Talk to Youngsters About Tornadoes” (The Weather Channel 2021a) (http://phdsci.link/1533),  <input type="radio"/> “Getting Youngsters Ready for Hurricanes” (The Weather Channel 2020a) (http://phdsci.link/1531), <input type="radio"/> “Talking to Your Kids About Blizzards” (The Weather Channel 2021b) (http://phdsci.link/1562), or <input type="radio"/> “How to Talk to Youngsters About Thunder and Lightning” (The Weather Channel 2020b) (http://phdsci.link/1532). <input type="checkbox"/> Acquire the school’s severe weather response plan for the selected kind of severe weather (tornado, hurricane, blizzard, or thunderstorm).


Lesson 27

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Labels, removable, $2\frac{5}{8}$" × 1" (3) <input type="checkbox"/> Knowledge Deck cards, Ancient Clues (24) <input type="checkbox"/> Knowledge Deck posters <ul style="list-style-type: none"> <input type="radio"/> Ancient Clues (1) <input type="radio"/> Mesa Verde Long Ago (1) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Marker, permanent (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Anchor model from Lesson 21 (1) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 28 requires the Mesa Verde Long Ago Knowledge Deck poster.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 27 Resource A: Mesa Verde Severe Weather Chart  <input type="checkbox"/> Lesson 27 Resource B: Conceptual Checkpoint 
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare to distribute a copy of Lesson 27 Resource A and a copy of Lesson 27 Resource B to each student.


Lesson 28

Materials	<p>Kit Items</p> <input type="checkbox"/> Knowledge Deck poster, Mesa Verde Long Ago (1)
	<p>School-Supplied Items</p> <input type="checkbox"/> Scissors (1)
Resources	<input type="checkbox"/> Lesson 28 Resource: Key Term Cards
Preparation	<input type="checkbox"/> Prepare key term cards. (See Lesson 28 Resource.)

Lesson 29

Materials	<p>Kit Items</p> None
	<p>School-Supplied Items</p> None
Resources	<input type="checkbox"/> <i>Snow Day!</i> (Laminack and Gustavson 2007)
Preparation	<input type="checkbox"/> Cue video “Blizzard of 1978” (WGBH 2013) (http://phdsci.link/1542).  <input type="checkbox"/> Prepare to distribute a copy of the End-of-Module Assessment to each student.

Lesson 30

Materials	<p>Kit Items</p> None
	<p>School-Supplied Items</p> <input type="checkbox"/> Scissors (1)
Resources	<input type="checkbox"/> Lesson 30 Resource: Recurring Themes and Concepts Cards
Preparation	<input type="checkbox"/> Cue video “Blizzard of 1978” (http://phdsci.link/1542).  <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 30 Resource.) <input type="checkbox"/> Select student work products that show evidence of concept mastery, and display them in different areas of the classroom. Student work products may include the anchor model, class charts, selected Science Logbook pages, and Engineering Challenge designs.





Magnets | Advance Preparation

An activity in this module requires 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
1	1 or 2 days before†	Explore Motion	Arrange a time for the class to use an open area, such as a gymnasium, and gather the following equipment: 12 scooter boards, 12 jump ropes, and 12 cones (or other markers). Consult with the school’s physical education teacher about established safety rules to reinforce with students when using this equipment.


Magnets | Lesson Preparation

Lesson 1


Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Jump ropes (12) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cones (or other floor markers) (12) <input type="checkbox"/> Scooter boards, plastic (12)
Resources	None
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Set up scooter board game. Set each scooter board at a start line and a cone approximately 15 feet away. Space the scooter boards far enough apart for students to play the game safely. The jump ropes can be distributed to student pairs before part two of the game begins. <input type="checkbox"/> Cue <ul style="list-style-type: none"> o toy car being pushed and pulled by a magnet video (http://phdsci.link/2421),  o kids playing checkers video (http://phdsci.link/2422),  o pull in a board game video (http://phdsci.link/2423),  and o push and pull in a board game video (http://phdsci.link/2424).  <p>Advance Preparation for Lesson 1</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 or 2 Days Before: Arrange a time for the class to use an open area, such as a gymnasium, and gather the following equipment: 12 scooter boards, 12 jump ropes, and 12 cones (or other markers). Consult with the school’s physical education teacher about established safety rules to reinforce with students when using this equipment.



Lesson 2

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bingo chips (12) <input type="checkbox"/> Blocks, plastic (6) <input type="checkbox"/> Bottle caps, metal (6) <input type="checkbox"/> Erasers, wedge (6) <input type="checkbox"/> Keys, metal (6) <input type="checkbox"/> Lids, metal (6) <input type="checkbox"/> Magnetic fishing poles (6) <input type="checkbox"/> Magnets, bar (6) <input type="checkbox"/> Nails (6) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Spoons, metal (6) <input type="checkbox"/> Sticks, wooden (6) <input type="checkbox"/> Washers, metal (6) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bags or other containers (12) <input type="checkbox"/> Card stock, 8.5" × 11" (12 sheets) <input type="checkbox"/> Dimes (6) <input type="checkbox"/> Glue stick (1) <input type="checkbox"/> Paper (6 sheets) <input type="checkbox"/> Paper clips, metal (12) <input type="checkbox"/> Scissors (1) <input type="checkbox"/> Tape (partial roll) <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 3 requires the bar magnets. <input type="checkbox"/> Lesson 4 requires 4 of the bingo chips. <input type="checkbox"/> Lesson 5 requires 2 of the bingo chips, the bottle caps, the dimes, 6 of the paper clips, the washers, and the Attracts and Does Not Attract class chart.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 2 Resource A: Magnetic Fishing Game Cutouts  <input type="checkbox"/> Lesson 2 Resource B: Card Stock Fish Setup Instructions <input type="checkbox"/> Lesson 2 Resource C: Investigation Materials Photographs




Lesson 2 *continued*

Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare card stock fish for the magnetic fishing game. (See Lesson 2 Resources A and B.) <input type="checkbox"/> Prepare materials for the magnet interactions with objects activity. Assemble one set of objects (bingo chip, metal bottle cap, wooden stick, dime, metal lid, key, paper, metal paper clip, metal washer, metal spoon) and a bar magnet for each group. Ensure that the bar magnet attracts the lid, spoon, paper clip, bottle cap, and washer. Ensure that the magnet does not attract the key. Place each group's objects in a bag or other container for ease of distribution. Keep the bar magnet separate from the other objects. <input type="checkbox"/> (Optional) Print and cut out the photographs of the investigation materials to use on the class chart as needed to support emerging readers. (See Lesson 2 Resource C.) <input type="checkbox"/> Prepare materials for the predict magnet interactions activity. Assemble one set of objects (plastic block, wedge eraser, nail) for each group. Ensure that the bar magnet attracts the nail. Place each group's objects in a bag or other container for distribution. <input type="checkbox"/> Cue toy car being pushed and pulled by a magnet video (http://phdsci.link/2421)  from Lesson 1.
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Lesson 3

Materials	Kit Items <ul style="list-style-type: none"> <input type="checkbox"/> Magnets, bar (12) <input type="checkbox"/> Magnets, ceramic ring (12) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Toy trains (2)
Resources	None
Preparation	None


Lesson 4

Materials	Kit Items <ul style="list-style-type: none"> <input type="checkbox"/> Bingo chips (4) <input type="checkbox"/> Magnetic tape, adhesive, 0.6" wide (6') <input type="checkbox"/> Ruler (1) School-Supplied Items <ul style="list-style-type: none"> <input type="checkbox"/> Folder, manila (1) <input type="checkbox"/> Magnet (1, optional) <input type="checkbox"/> Marker, permanent, black (1) <input type="checkbox"/> Markers, colored (1 set, optional) <input type="checkbox"/> Scissors (1)
Materials	Item Reuse <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 5 requires the bingo chips and the ruler. <input type="checkbox"/> Lesson 7 requires the prepared demonstration game board.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: Engineering Challenge Rubric  <input type="checkbox"/> Lesson 4 Resource B: Vehicle Photographs  <input type="checkbox"/> Lesson 4 Resource C: Engineering Design Process Visual <input type="checkbox"/> Lesson 4 Resource D: Game Board Setup Instructions
Preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Cue kids playing checkers video (http://phdsci.link/2422) from Lesson 1.  <input type="checkbox"/> Prepare demonstration game board and student game boards. (See Lesson 4 Resource D.)


Lesson 5

<p>Materials</p>	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Bingo chips (24) <input type="checkbox"/> Bottle caps, metal (24) <input type="checkbox"/> Foam blocks in different colors (24) <input type="checkbox"/> Magnetic tape, adhesive, 0.6" wide (6 ft) <input type="checkbox"/> Ruler (1) <input type="checkbox"/> Safety goggles, student (24) <input type="checkbox"/> Safety goggles, teacher (1) <input type="checkbox"/> Washers, metal (24) <p>School-Supplied Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Dimes (24) <input type="checkbox"/> Folders, manila (3) <input type="checkbox"/> Magnet (1, optional) <input type="checkbox"/> Marker, permanent, black (1) <input type="checkbox"/> Markers, colored (12 sets, optional) <input type="checkbox"/> Paper clips, metal (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"/> Attracts and Does Not Attract class chart from Lesson 2 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 6 requires the prepared board game materials. <input type="checkbox"/> Lesson 8 requires the Attracts and Does Not Attract class chart.
<p>Resources</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: Engineering Challenge Rubric  <input type="checkbox"/> Lesson 4 Resource C: Engineering Design Process Visual
<p>Preparation</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Prepare demonstration game board and student game boards. (See Lesson 4 Resource D.) <input type="checkbox"/> Prepare materials for the student board games. Cut the adhesive magnetic tape into six 1" long pieces for each student pair. Ensure that the magnetic tape attracts the bottle caps, washers, and paper clips. Ensure that the magnetic tape does not attract the bingo chips, dimes, or blocks.


Lesson 6

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <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"/> Magnet (1, optional) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Board game materials and student-created game boards from Lesson 5 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 7 requires the prepared board game materials and the student-created game boards.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: Engineering Challenge Rubric  <input type="checkbox"/> Lesson 4 Resource C: Engineering Design Process Visual
Preparation	None

Lesson 7

Materials	<p>Kit Items</p> <ul style="list-style-type: none"> <input type="checkbox"/> Magnetic tape, adhesive, 0.6" wide (6 ft) <input type="checkbox"/> Metal bottle cap (1) <input type="checkbox"/> Metal washer (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"/> Magnet (1, optional) <input type="checkbox"/> Paper clip, metal (1) <p>Prepared Items from Previous Lessons</p> <ul style="list-style-type: none"> <input type="checkbox"/> Board game materials and student-created game boards from Lesson 6 <input type="checkbox"/> Demonstration game board from Lesson 4 <p>Item Reuse</p> <ul style="list-style-type: none"> <input type="checkbox"/> Lesson 8 requires the student-created game boards.
Resources	<ul style="list-style-type: none"> <input type="checkbox"/> Lesson 4 Resource A: Engineering Challenge Rubric  <input type="checkbox"/> Lesson 4 Resource C: Engineering Design Process Visual
Preparation	None

Lesson 8

Materials	<p>Kit Items None</p> <p>School-Supplied Items <input type="checkbox"/> Magnet (1, optional)</p> <p>Prepared Items from Previous Lessons <input type="checkbox"/> Attracts and Does Not Attract class chart from Lesson 2 <input type="checkbox"/> Student-created game boards from Lesson 7</p>
Resources	<p><input type="checkbox"/> Lesson 4 Resource A: Engineering Challenge Rubric </p> <p><input type="checkbox"/> Lesson 4 Resource C: Engineering Design Process Visual</p>
Preparation	None

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