CA NGSS TIME Prescreen Review Guide

Weather and Sky, Grade K

Building Blocks OF SCIENCE™ | 3D

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Building Blocks OF SCIENCE™ 3D

This prescreen tool uses one Building Blocks of Science™ 3D unit to provide a roadmap of how the program meets the criteria of the CA NGSS* Toolkit of Instructional Materials Evaluation. Each page of this document highlights features in the Teacher's Guide, with page references from the printed version. All the information found in the printed Teacher's Guide is also accessible in the digital version of the Teacher's Guide, which you can view at www.carolina.com/bbs3dreview. Both versions of the Teacher's Guide will be provided to all teachers who implement Building Blocks of Science 3D. In addition to the digital support, the equipment for the investigations is also part of the all-inclusive package that teachers receive.

To help with your review, here's an overview of the program's organization:

- Building Blocks of Science 3D consists of 18 units that cover the grade-level CA NGSS Performance Expectations and the three dimensions
- There are three units per grade level
- Each unit is divided into lessons, each lesson is divided into investigations

The cornerstone of each lesson is a phenomena-based, hands-on, three-dimensional learning experience **for all students.** Each all-inclusive unit includes:

- Investigative phenomena that provides real-world context for each lesson
- Notebook prompts that help students use data and ideas to develop evidence-based claims
- Informational texts that support the science content—in English and in Spanish
- Thought-provoking questions in every investigation for the teacher to ask to support students' sensemaking
- A comprehensive assessment system that provides formative, summative, pre- and post-assessments
- A complete digital version for every classroom—instantly access instruction, simulations, literacy, assessments and more at www.carolina.com/bbs3dreview

CA NGSS TIME Prescreen Review Guide

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All digital resources—no annual license fee

Leveled literacy

All-inclusive, phenomena-based science

Building Blocks of Science™ 3D has already been reviewed by the Instructional Materials Advisory Panel (IMAP) and the Content Review Panel (CRP). They determined that Building Blocks of Science 3D meets the requirements of Chapter 13 of the CA Science Framework. This takes the verification of program requirements as outlined by the Framework out of adoption committee's responsibility, allowing the committee time to focus on developing a district lens for review.

Weather and Sky, Grade K

The examples in this prescreen tool are reflective of formatting and features that consistently appear throughout each unit in the program.

You can review the scope and sequence of instruction for the entire unit in the Evidence of Instructional Scaffolding chart on the last pages of this Reviewer's Guide and in the unit's Teacher's Guide (pages xxii-xxiii).

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Weather and Sky.***

Criteria	Evidence from Weather and Sky
Use Phenomena/Problems Materials provide relevant and authentic learning contexts through which students: • engage as directly as possible with phenomena or problems to ask and answer their questions as well as questions from other sources; and • have the potential to use the three dimensions to make sense of phenomena or design solutions to problems.	The **Anchoring Phenomenon** for the unit is understanding the internal and external structures of organisms and the conditions in which they function effectively. **1.** The unit begins instruction in Lesson 1 with an **Anchoring Phenomenon** (pg. 32) narrative, which is shared with the class. The Phenomena Video (pg. 32) accompanies this narrative. It is found at www.carolina.com/bbs3dreview • **Click on:** Unit Title > Unit Overview > Digital Resources **2.** A lesson-specific **Investigative Phenomenon** (pg. 32) opens each lesson. Students ask questions that they want to answer and that will be revisited at the end of each lesson in the Phenomenon discussion (pg. 41). **3. Investigation** titles are posed as a question to set a problem (pg. 92). **4. Investigations** always put phenomena in students' hands. They are asked to gather and analyze information, share their learning with others, and use a model of a tornado (Lesson 3, Investigation C, pgs. 94-97). **5. Tell Me More** prompts at the end of each Investigation provide opportunities for formative assessment as students complete a task in which they apply their learning to additional phenomena, which helps students to develop more complex and complete understandings over time (pgs. 92-93). **6. Using three dimensions:** The 3Ds are listed at the start of each investigation and are integrated into instruction at point of use (Lesson 3, Investigation C, pgs. 94-97).

Examples

ANCHORING PHENOMENON

Weather impacts what we do every day, from the way we dress to the activities we do. Is it hot? Cold? Windy? Rainy? The more students interact with their surroundings, the more they will notice patterns in weather conditions where they live. The anchoring phenomenon for *Weather and Sky* is recognizing how weather affects our daily lives.

Read the investigative phenomenon aloud to the class. Encourage students to generate questions about what they hear. Keep track of students' questions on a class chart, or have students record the questions in their science notebooks. Refer to these questions at the end of the lesson and throughout the unit to support the unit's anchoring phenomenon.

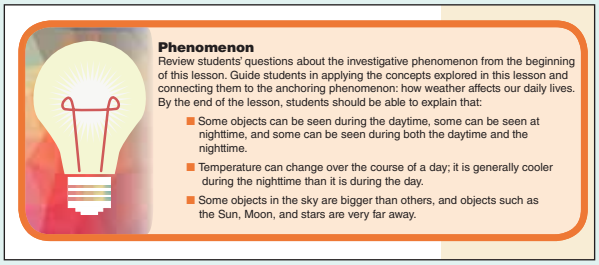
Investigative Phenomenon for Lesson 1: You are on the school playground. You look up at the sky and see the Moon! This seems strange to you because the Sun is out, too. What does this make you wonder?

Anticipated Questions:

- Why can I see the Moon and the Sun at the same time?
- Can I always see the Moon?
- What other things can I see in the sky?

Phenomena Video: Watch the phenomena video for *Weather and Sky* as a class. As you watch, encourage students to record questions in their science notebooks about what they see in the video. At the end of the video, create a class chart of students' questions. Save this chart to refer to at the end of the unit.

1. Phenomena (pg. 32)

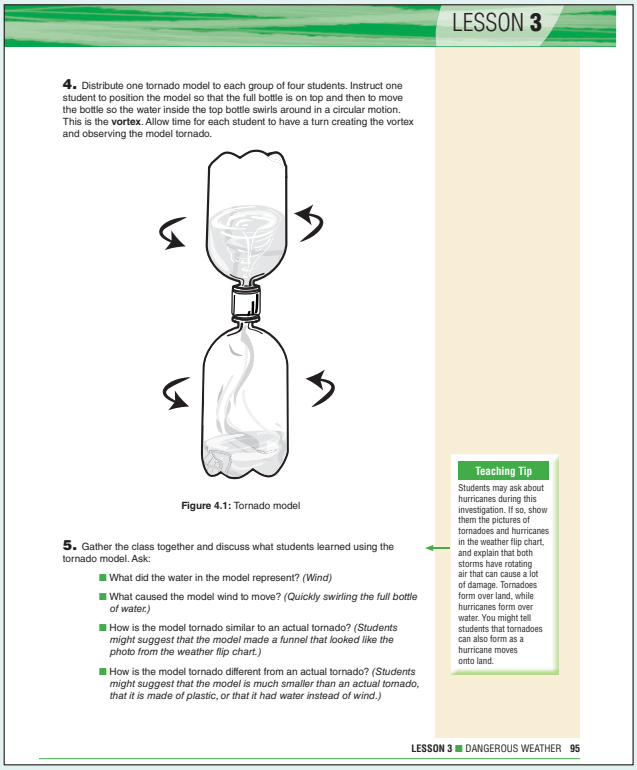


Phenomenon

Review students' questions about the investigative phenomenon from the beginning of this lesson. Guide students in applying the concepts explored in this lesson and connecting them to the anchoring phenomenon: how weather affects our daily lives. By the end of the lesson, students should be able to explain that:

- Some objects can be seen during the daytime, some can be seen at nighttime, and some can be seen during both the daytime and the nighttime.
- Temperature can change over the course of a day; it is generally cooler during the nighttime than it is during the day.
- Some objects in the sky are bigger than others, and objects such as the Sun, Moon, and stars are very far away.

2. Phenomena (pg. 41)



LESSON 3

4. Distribute one tornado model to each group of four students. Instruct one student to position the model so that the full bottle is on top and then to move the bottle so the water inside the top bottle swirls around in a circular motion. This is the **vortex**. Allow time for each student to have a turn creating the vortex and observing the model tornado.

Figure 4.1: Tornado model

5. Gather the class together and discuss what students learned using the tornado model. Ask:

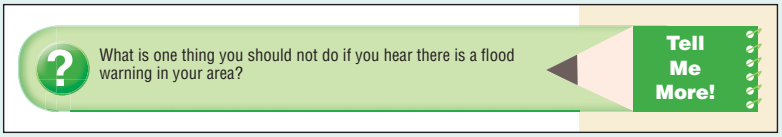
- What did the water in the model represent? *(Wind)*
- What caused the model wind to move? *(Quickly swirling the full bottle of water.)*
- How is the model tornado similar to an actual tornado? *(Students might suggest that the model made a funnel that looked like the photo from the weather flip chart.)*
- How is the model tornado different from an actual tornado? *(Students might suggest that the model is much smaller than an actual tornado, that it is made of plastic, or that it had water instead of wind.)*

Teaching Tip

Students may ask about hurricanes during this investigation. If so, show them the pictures of tornadoes and hurricanes in the weather flip chart, and explain that both storms have rotating air that can cause a lot of damage. Tornadoes form over land, while hurricanes form over water. You might tell students that tornadoes can also form as a hurricane moves onto land.

LESSON 3 ■ DANGEROUS WEATHER 95

4. Phenomena in students' hands (pg. 95)



5. Formative assessment (pg. 93)

Investigation B

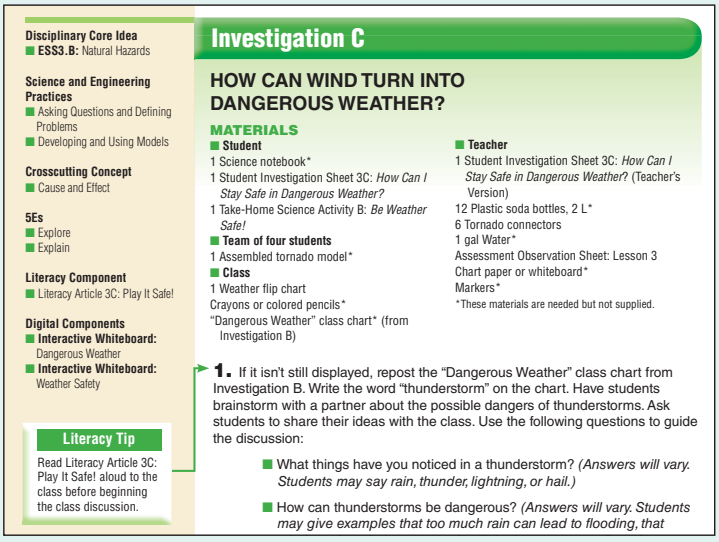
WHAT HAPPENS WHEN TOO MUCH RAIN FALLS?

MATERIALS

■ **Student**
1 Science notebook*
■ **Team of two students**
1 Bucket of water
1 Clear plastic tray
1 Pipet
1 Plastic cup with lid, 2.5 oz
1 Sponge

■ **Class**
"Dangerous Weather" class chart* (from Investigation B)
1 Weather flip chart
1 Weather pocket chart
■ **Teacher**
12 Plastic buckets
1.5 gal Water*
Assessment Observation Sheet: Lesson 3
Chart paper or whiteboard*
Markers*
*These materials are needed but not supplied.

3. Investigations as questions (pg. 92)



Disciplinary Core Idea
■ **ESS3.B:** Natural Hazards

Science and Engineering Practices
■ Asking Questions and Defining Problems
■ Developing and Using Models

Crosscutting Concept
■ Cause and Effect

5Es
■ Explore
■ Explain

Literacy Component
■ Literacy Article 3C: Play It Safe!

Digital Components
■ **Interactive Whiteboard:** Dangerous Weather
■ **Interactive Whiteboard:** Weather Safety

Literacy Tip

Read Literacy Article 3C: Play It Safe! aloud to the class before beginning the class discussion.

Investigation C

HOW CAN WIND TURN INTO DANGEROUS WEATHER?

MATERIALS

■ **Student**
1 Science notebook*
1 Student Investigation Sheet 3C: *How Can I Stay Safe in Dangerous Weather?*
1 Take-Home Science Activity B: *Be Weather Safe!*
■ **Team of four students**
1 Assembled tornado model*
■ **Class**
1 Weather flip chart
Crayons or colored pencils*
"Dangerous Weather" class chart* (from Investigation B)

■ **Teacher**
1 Student Investigation Sheet 3C: *How Can I Stay Safe in Dangerous Weather?* (Teacher's Version)
12 Plastic soda bottles, 2 L*
6 Tornado connectors
1 gal Water*
Assessment Observation Sheet: Lesson 3
Chart paper or whiteboard*
Markers*
*These materials are needed but not supplied.

1. If it isn't still displayed, repost the "Dangerous Weather" class chart from Investigation B. Write the word "thunderstorm" on the chart. Have students brainstorm with a partner about the possible dangers of thunderstorms. Ask students to share their ideas with the class. Use the following questions to guide the discussion:

- What things have you noticed in a thunderstorm? *(Answers will vary. Students may say rain, thunder, lightning, or hail.)*
- How can thunderstorms be dangerous? *(Answers will vary. Students may give examples that too much rain can lead to flooding, that*

6. Integrated three dimensions (pgs. 94-97)

Weather and Sky, Grade K

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Weather and Sky.***

Criteria	Evidence from Weather and Sky
Presence of Logical Sequence Student learning across the three dimensions is: • arranged in a logical sequence; and • sufficient and appropriate for students to figure out the phenomena or problems.	***Weather and Sky*** is a Kindergarten Earth and space science unit. This unit supports NGSS Performance Expectations and provides connections to Earth and space science, physical science, and engineering: • **K-PS3-1; K-PS3-2; K-ESS2-1; K-ESS3-2; K-2-ETS1-1; K-2-ETS1-2** **1. NGSS** for the unit (pg. vi) **2. Evidence of Instructional Scaffolding** (pgs. xxii–xxiii) **3. Investigations** refer to previous learnings and provide multiple opportunities to use the 3Ds to make sense of phenomena and problems (Lesson 1, Investigation D, pg. 39, Step 1) to build a conceptual progression upon prior learning. **4. Tell Me More** prompts at the end of each investigation provide opportunities for formative assessment as students complete a task in which they apply their learning to additional phenomena, developing more complex and complete understandings over time (pg. 66). **5. Notebooking** tasks for each investigation provide authentic opportunities for students to share evidence-based arguments and reasoning (pgs. 112-114 and Student investigation Sheet 4C [pgs. 118-121]).

Examples

Next Generation Science Standards

The Building Blocks of Science unit *Weather and Sky* integrates process skills as defined by the Next Generation Science Standards (NGSS).

Performance Expectations

- **K-ESS2-1:** Use and share observations of local weather conditions to describe patterns over time.
- **K-ESS3-2:** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.
- **K-PS3-1:** Make observations to determine the effect of sunlight on Earth's surface.
- **K-PS3-2:** Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.
- **K-2-ETS1-1:** Ask questions, make observations and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **K-2-ETS1-2:** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as need to solve a given problem.

Disciplinary Core Ideas

- **ESS2.D:** Weather and Climate
- **ESS3.B:** Natural Hazards
- **PS3.B:** Conservation of Energy and Energy Transfer
- **ETS1.A:** Defining and Delimiting Engineering Problems
- **ETS1.B:** Developing Possible Solutions

Science and Engineering Practices

- Asking Questions and Defining Problems
- Developing and Using Models
- Planning and Carrying Out Investigations
- Analyzing and Interpreting Data
- Constructing Explanations and Designing Solutions

Crosscutting Concepts

- Patterns
- Cause and Effect
- Scale, Proportion, and Quantity

1. NGSS for unit (pg. vi)

Evidence of Instructional Scaffolding

Scaffolding is a crucial yet natural element in all classrooms. Building Blocks of Science strives to simplify this instructional strategy by integrating this guided process into each unit, systematically building upon student knowledge, using hands-on learning to reinforce concepts, and employing student-driven inquiry. These strategies introduce new concepts and, with practice and review, lead students toward mastery. It is important to integrate scaffolding not only throughout the unit but also throughout each lesson. As students demonstrate understanding of a concept, they should be encouraged to take a leadership role in class or to attempt assignments independently. Additionally, scaffolding reveals opportunities for differentiation. Below-level learners require more reinforcement as they learn new skills, so the process toward mastery will need to be adjusted. Above-level learners do not need as much support and achieve mastery more quickly; therefore, these students can be assigned more independent study.

	Lesson 1 ▸	Lesson 2 ▸
OBJECTIVES	■ Begin building an age-appropriate understanding about weather. ■ Observe and record patterns and scale of objects that can be observed in the sky including clouds, Sun, and Moon. ■ Describe the changes in temperature over the course of a day.	■ Describe activities that take place during specific weather conditions. ■ Discuss the effects of weather on human activities. ■ Observe and record daily weather changes. ■ Identify patterns in weather features. ■ Analyze and graph weekly weather data
SCAFFOLDING	Students should know: ■ Some objects can be seen during the daytime, some at nighttime, and some at both times. ■ Some objects in the sky are bigger than others, and objects such as the Sun, Moon, and stars are very far away. ■ Temperature can change over the course of a day.	Students should know: ■ Temperature, cloud cover, wind, and precipitation are four weather conditions. ■ Temperature is how hot or cold an object or area is. ■ Cloud cover is the amount of sky that is blocked by clouds. ■ Wind is the movement of air. ■ Precipitation is any form of water that falls from the sky. ■ Weather can be observed to look for patterns.

2. Evidence of Instructional Scaffolding (pg. xxii)

Investigation D

HOW DO THE DAYTIME AND NIGHTTIME SKIES COMPARE?

MATERIALS

■ **Student**
1 Science notebook*
1 Student Investigation Sheet 1D: *How Do the Daytime and Nighttime Skies Compare?*
1 Take-Home Science Activity A: *Observing the Nighttime Sky*
1 Glue stick*
1 Pair of scissors*
1 Sticky note*

■ **Class**
Crayons and colored pencils*
"Daytime Sky" class chart* (from Investigation B)
"Nighttime Sky" class chart* (from Investigation C)

■ **Teacher**
1 Student Investigation Sheet 1D: *How Do the Daytime and Nighttime Skies Compare?* (Teacher's Version)
Assessment Observation Sheet: Lesson 1
Chart paper or whiteboard*
Markers*

*These materials are needed but not supplied.

1. After students have had plenty of time to complete Take-Home Science Activity A: *Observing the Nighttime Sky* at home, gather them together to discuss their observations. Direct students' attention to the "Nighttime Sky" class chart from Investigation C of this lesson. As students share their observations of the nighttime sky, circle any objects that are already listed on the chart. Add any object students observed that were not predicted in Investigation C. Use the questions below to guide the discussion:

- What objects did you include in your drawing of the nighttime sky? *(Record all objects and observations on the class chart as students share. Students' observations might include clouds, birds, airplanes, rain, the Moon, stars, or lightning.)*
- Which of those objects are big? Which are small? *(Answers will vary.)*
- Which of those objects are close? Far away? *(Answers will vary.)*
- How did the temperature feel outside? What words could you use to describe temperature? *(Answers will vary.)*
- What was the weather like? What words could you use to describe the weather? *(Answers will vary. Students may use words like cloudy, foggy, breezy, windy, or rainy to describe the weather.)*
- What was different about the temperature in the daytime compared to the nighttime? *(Students should recognize that the temperature is generally cooler at night than during the day.)*

3. Build on prior learning (pg. 39)

Tell Me More!

Draw a picture of how you would dress for a rainy day, a windy day, and a cold day. Share your drawings with a partner.

4. Apply new learning (pg. 66)

Name:_____ Date:_____

A. Plan

Word Bank:
soil rocks sand water

1. We chose _____

2. Our cups look like this:

B. Predict

Word Bank:
hot warm cool cold

1. I think the cup placed in the sunlight will be _____.

2. I think the cup placed in the shade will be _____.

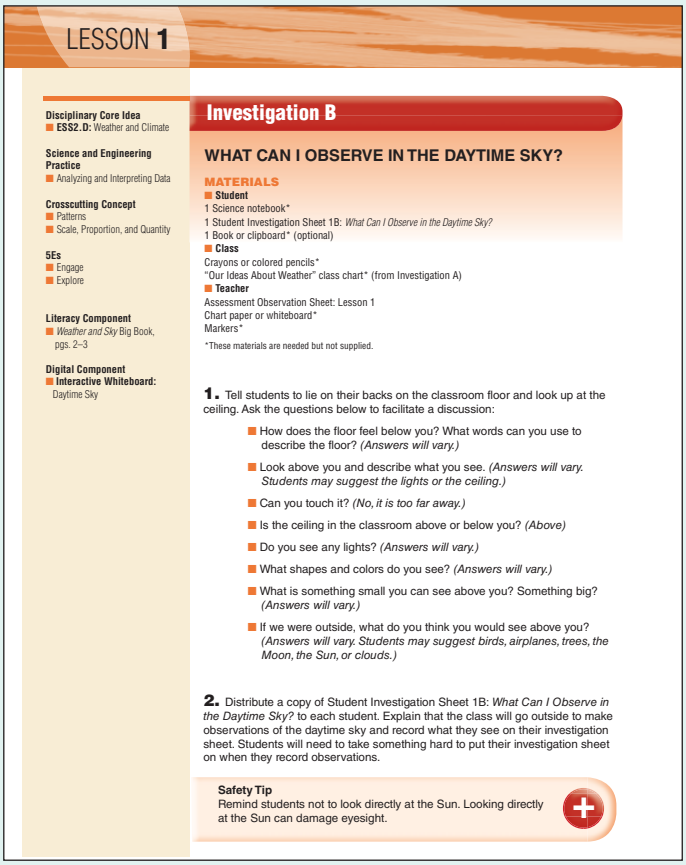
5. Notebooking (pgs. 118-119)

Weather and Sky, Grade 3

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Weather and Sky.***

Criteria	Evidence from Weather and Sky
Students Are Figuring Out Materials position students to make sense of phenomena and design solutions to problems by: • asking and answering questions that link learning over time; and • using the three dimensions to link prior knowledge and negotiate new understandings and abilities.	**1.** Each investigation provides an opportunity for students to make sense of phenomena. In Lesson 1, Investigation B (pgs. 36-37), students use position words in context (Step 1), observe weather conditions outside (Step 3), and discuss those observations in pairs and as a class (Step 4), deepening vocabulary development. **2.** Opportunities to engineer **design solutions** are integrated into the Instructional Scaffolding. In Lesson 5, Investigations B and C (pgs. 128-131), students work in teams to build a structure that reduces the warming effect of the Sun.

Examples



LESSON **1**

Disciplinary Core Idea
- **ESS2.D:** Weather and Climate

Science and Engineering Practice
- Analyzing and Interpreting Data

Crosscutting Concept
- Patterns
- Scale, Proportion, and Quantity

5Es
- Engage
- Explore

Literacy Component
- *Weather and Sky* Big Book, pgs. 2–3

Digital Component
- **Interactive Whiteboard:** Daytime Sky

Investigation B

WHAT CAN I OBSERVE IN THE DAYTIME SKY?

MATERIALS
- **Student**

1 Science notebook*
1 Student Investigation Sheet 1B: *What Can I Observe in the Daytime Sky?*
1 Book or clipboard* (optional)
- **Class**

Crayons or colored pencils*
"Our Ideas About Weather" class chart* (from Investigation A)
- **Teacher**

Assessment Observation Sheet: Lesson 1
Chart paper or whiteboard*
Markers*

*These materials are needed but not supplied.

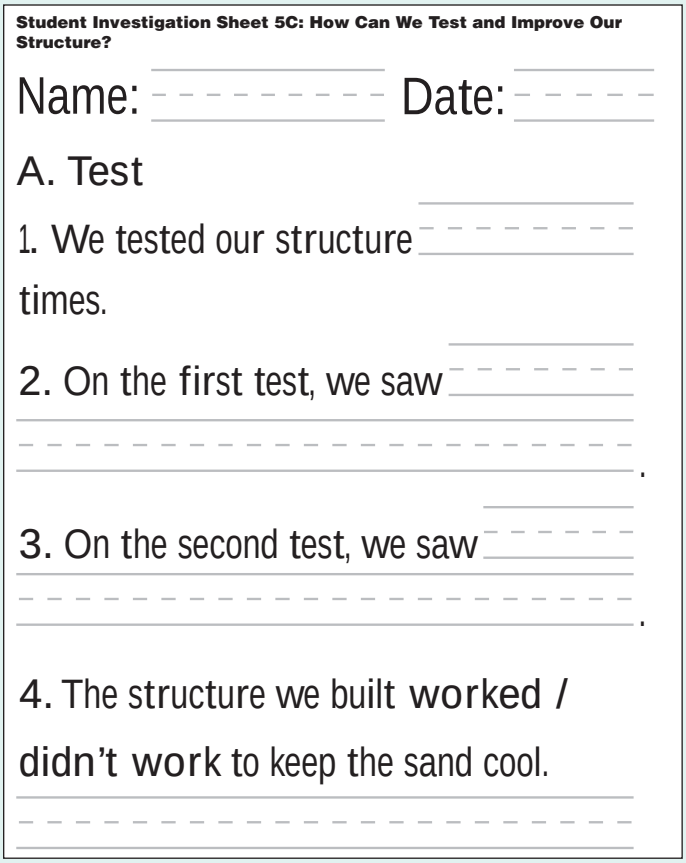
1. Tell students to lie on their backs on the classroom floor and look up at the ceiling. Ask the questions below to facilitate a discussion:

- How does the floor feel below you? What words can you use to describe the floor? *(Answers will vary.)*
- Look above you and describe what you see. *(Answers will vary. Students may suggest the lights or the ceiling.)*
- Can you touch it? *(No, it is too far away.)*
- Is the ceiling in the classroom above or below you? *(Above)*
- Do you see any lights? *(Answers will vary.)*
- What shapes and colors do you see? *(Answers will vary.)*
- What is something small you can see above you? Something big? *(Answers will vary.)*
- If we were outside, what do you think you would see above you? *(Answers will vary. Students may suggest birds, airplanes, trees, the Moon, the Sun, or clouds.)*

2. Distribute a copy of Student Investigation Sheet 1B: *What Can I Observe in the Daytime Sky?* to each student. Explain that the class will go outside to make observations of the daytime sky and record what they see on their investigation sheet. Students will need to take something hard to put their investigation sheet on when they record observations.

Safety Tip
Remind students not to look directly at the Sun. Looking directly at the Sun can damage eyesight.

1. Making sense of phenomena (pgs. 36-37)



Student Investigation Sheet 5C: How Can We Test and Improve Our Structure?

Name: _____ Date: _____

A. Test

1. We tested our structure _____ times.

2. On the first test, we saw _____.

3. On the second test, we saw _____.

4. The structure we built **worked / didn't work** to keep the sand cool.

2. Three dimensions applied to engineering challenge (pgs. 128-129)

Weather and Sky, Grade K

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Weather and Sky.***

Criteria	Evidence from Weather and Sky
Three-dimensional Performances Materials include assessments designed to: • match the targeted learning goals; and • elicit evidence of students' use of the three dimensions to make sense of phenomena and/or to design solutions to problems.	Three-dimensional assessment system provides 3D assessment throughout the unit to monitor new growth over time. **1. Pre-Assessment:** Lesson 1, Investigation A (pgs. 35-36): Students draw upon prior knowledge to consider how different structures are linked to the survival, growth, and reproduction of organisms. **2. Formative assessment** opportunities are part of every lesson. The Tell Me More prompt on page 37 focuses on the 3Ds listed on page 36. **3. Assessment Strategies** at the end of every lesson (pg. 46) provide strategies for using Student Investigation Sheets and Tell Me More notebooking prompts to assess the 3Ds (pg. 98). Assessment Observation Sheets provide a monitoring system during each lesson (pg. 103). Also available digitally at www.carolina.com/bbs3dreview • **Click on:** Unit Title > Unit Overview > Digital Resources **4. Summative Assessments** in every unit's final lesson provide a performance task for group assessment of 3Ds (Lesson 5, Investigations C and D, (pgs. 128-132) and a written assessment (pg. 141, after Student Investigation Sheet 5C). A scenario-based assessment is also available online at www.carolina.com/bbs3dreview • **Click on:** Unit Title > Unit Overview > Digital Resources **5. Summative Assessment Remediation Strategies** list lessons to revisit for Performance Expectations-specific remediation based on individual assessment items (chart follows Summative Assessment Answer Key).

Examples

Investigation A

PRE-UNIT ASSESSMENT: WHAT DO WE KNOW ABOUT WEATHER?

MATERIALS

■ **Student**
1 Science notebook*

■ **Teacher**
Assessment Observation Sheet: Lesson 1
Chart paper or whiteboard*
Markers*

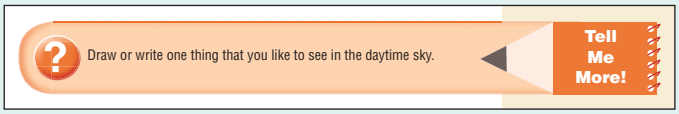
*These materials are needed but not supplied.

1. Post the class chart titled "Our Ideas About Weather." Ask students to think about what they know about weather, either individually or with a partner.

2. After some time, invite students to share their ideas about weather. Encourage an active discussion about what students know and wonder. As students respond, record their ideas on the chart. Ask the following questions to help guide the discussion:

- When you hear the word "weather," what do you think of? *(Answers will vary. Students may suggest thunderstorms, snow, clouds, hot, or cold.)*
- What are some words that describe weather? *(Students may suggest words like hot, cold, wet, dry, snowy, rainy, or windy.)*

1. Pre-unit assessment (pg. 35)



2. Formative assessment (pg. 37)

ASSESSMENT STRATEGIES

1. Investigation A

■ Use students' responses during the class discussion to assess how well they understand the main components of weather and how weather patterns can be helpful in monitoring weather and predicting dangerous weather even

■ Use students' responses to the Tell Me More question to determine what questions they have about dangerous weather.

2. Investigation B

■ As students are working with their flood model use their responses to assess their knowledge th the ground can absorb water but that too much water can lead to flooding.

Assessment Observation Sheet

Lesson 3—Dangerous Weather

Consider the following observations and talking points conversations, and class discussions.

A. Are students able to describe patterns in weather conditions from their data? Can students make connections between temperature, cloud cover and precipitation?

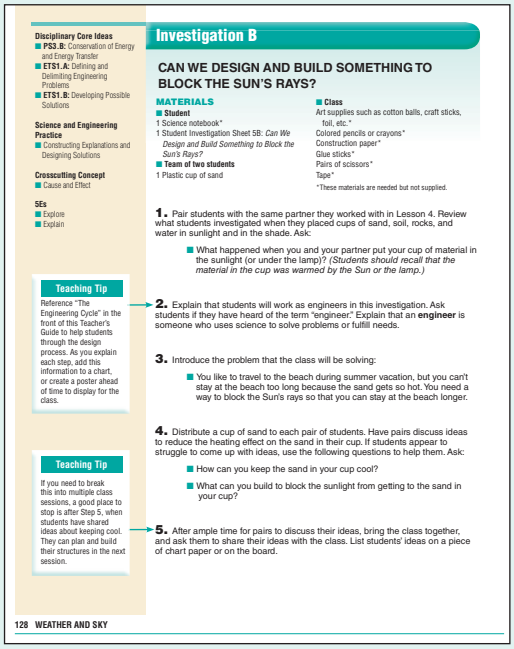
B. Can students accurately describe how floods occur and how tornadoes appear when interacting with their models? What words do they use to describe their observations?

C. Encourage students to record ideas and observations in their science notebooks with drawings, dictated words or sentences, or their own writing.

D. Talk informally about ways to stay safe during dangerous weather. Can students accurately explain ways to stay safe during thunderstorms, floods, and tornadoes?

E. Note students who seem to be having difficulty observing patterns and connections when analyzing their weather observations. Provide additional practice as needed.

3. Assessment Strategies (pgs. 98, 103)



4. Summative assessment (128-132)

Summative Assessment

Name: _____ Date: _____

1. Circle things you can see in the nighttime sky.

a. The Moon
b. Stars
c. The Sun

4. Summative assessment (pgs. 141-148)

Summative Assessment Remediation Strategies

The chart below shows which lessons support the unit's performance expectations. Based on the outcome of each student's summative assessment, you can develop remediation strategies using the relevant lessons from the unit.

Summative Assessment Item Number	Performance Expectation Addressed	Lessons to Revisit
1	K-ESS2-1	Lesson 1
2	K-ESS2-1	Lesson 2, Lesson 4
3	K-ESS2-1	Lesson 2
4	K-PS3-1	Lesson 4, Lesson 5
5	K-ESS3-2	Lesson 2
6	K-ESS3-2	Lesson 3
7	K-PS3-1	Lesson 4
8	K-ESS2-1	Lesson 1
9	K-PS3-2	Lesson 5
10	K-ESS3-2	Lesson 3

5. Summative Assessment Remediation Strategies (pg. 149)

Weather and Sky, Grade K

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Weather and Sky.***

District Lens and Helpful Supports	Evidence from Weather and Sky
1. Environmental Principles and Concepts (EP&Cs)	The unit focuses on weather conditions and changes throughout the day and month. A complete correlation of Building Blocks of Science to the EP&C and is available at www.carolina.com/cascience • **Click on:** Building Blocks of Science 3D > Correlations
2. Spanish Teacher and Student Materials	All student-facing materials are available in Spanish in both print and digital formats. Teacher instruction is also available in Spanish.

Coming soon: Digital Spanish Teacher's Guide

District Lens and Helpful Supports	Evidence from Weather and Sky
3. 5Es	The 5Es are identified for each lesson: • Lesson Overview Charts (pgs. xxv-xxix) • Side column at the start of each investigation (pg. 35)
4. Alignment to ELA Programs and ELD Standards	Correlations to Benchmark, Wonders, and CA ELD Standards are found at www.carolina.com/cascience • **Click on:** Building Blocks of Science 3D > Correlations
5. Common Core Math and ELA	The Language Arts and Math Standards are identified for each lesson: • Lesson Overview Charts (pgs. xxv-xxix)

Disciplinary Core Idea
- **ESS2.D:** Weather and Climate

Crosscutting Concept
- Patterns

5Es
- Engage

Digital Component
- **Interactive Whiteboard:** Our Ideas About Weather

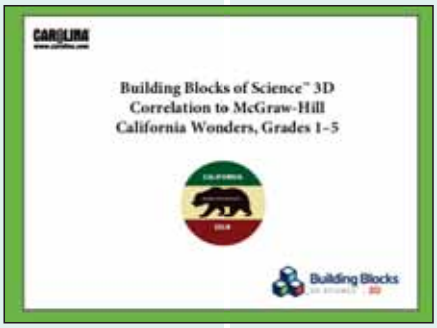
Lesson 1: Observing the Sky

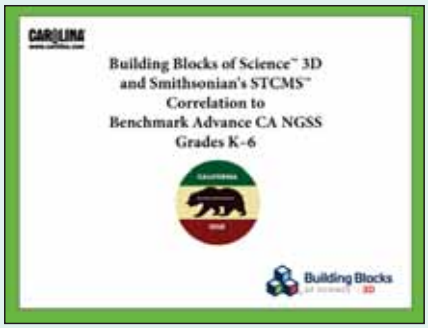
Investigation Overview

Investigation A: Pre-Unit Assessment: What Do We Know About Weather?
5Es: Engage
As a class, students develop a chart to share their ideas about weather.
- **Teacher Preparation:** 5 minutes
- **Lesson:** 30 minutes

Tell Me More! What is one question you have about weather? Draw or write your idea.

Investigation B: What Can I Observe in the Daytime Sky?
5Es: Engage, Explore
As a class, students predict weather conditions and objects that can be observed in the daytime sky and then go outside to record their observations.
- **Teacher Preparation:** 10 minutes





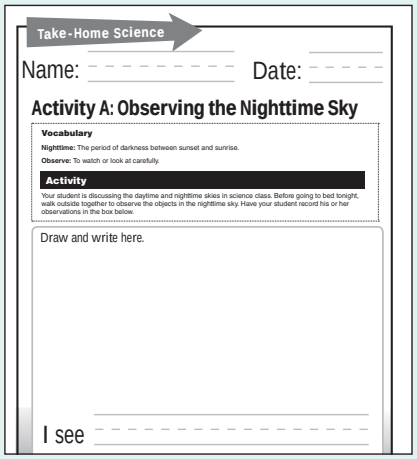
Language and Math Standards
Language Arts
- **L.K.5:** Vocabulary Acquisition and Use
- **RI.K.3:** Key Ideas and Details
- **SL.K.1:** Comprehension and Collaboration
- **SL.K.5:** Presentation of Knowledge and Ideas
- **W.K.8:** Research to Build and Present Knowledge

Math
- **K.G.A.1:** Identify and describe shapes.
- **K.G.A.2:** Identify and describe shapes.
- **K.MD.B.3:** Classify objects and count the number of objects in each category.

Weather and Sky, Grade K

To access resources online, visit **www.carolina.com/bbs3dreview** and click on ***Weather and Sky.***

District Lens and Helpful Supports	Evidence from Weather and Sky
6. Take-Home Science	Built into appropriate lessons, a Take-Home Science project reinforces learning (pgs. 47-48).
7. Safety	Safety, pgs. xvii-xviii
8. Literacy Support	• Literacy Articles provide additional informational text in support of investigations (Literacy Article 3C). • Literacy Connections (pgs. 154-155) provide additional literacy strategies.


Take-Home Science

Name: _____ Date: _____

Activity A: Observing the Nighttime Sky

Vocabulary

Nighttime: The period of darkness between sunset and sunrise.

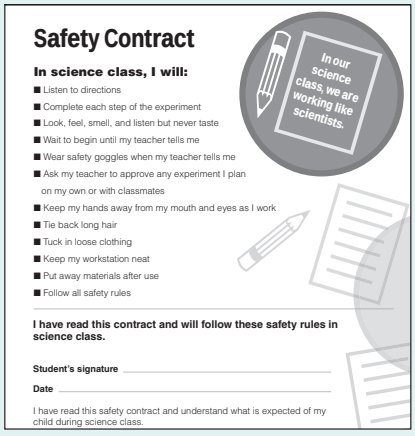
Observe: To watch or look at carefully.

Activity

Your student is discussing the daytime and nighttime skies in science class. Before going to bed tonight, walk outside together to observe the objects in the nighttime sky. Have your student record his or her observations in the box below.

Draw and write here.

I see _____


Safety Contract

In science class, I will:

- Listen to directions
- Complete each step of the experiment
- Look, feel, smell, and listen but never taste
- Wait to begin until my teacher tells me
- Wear safety goggles when my teacher tells me
- Ask my teacher to approve any experiment I plan on my own or with classmates
- Keep my hands away from my mouth and eyes as I work
- Tie back long hair
- Tuck in loose clothing
- Keep my workstation neat
- Put away materials after use
- Follow all safety rules

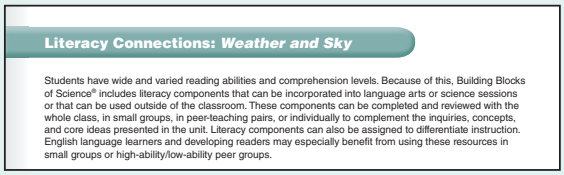
In our science class, we are working like scientists.

I have read this contract and will follow these safety rules in science class.

Student's signature _____

Date _____

I have read this safety contract and understand what is expected of my child during science class.


Literacy Connections: *Weather and Sky*

Students have wide and varied reading abilities and comprehension levels. Because of this, Building Blocks of Science® includes literacy components that can be incorporated into language arts or science sessions or that can be used outside of the classroom. These components can be completed and reviewed with the whole class, in small groups, in peer-teaching pairs, or individually to complement the inquiries, concepts, and core ideas presented in the unit. Literacy components can also be assigned to differentiate instruction. English language learners and developing readers may especially benefit from using these resources in small groups or high-ability/low-ability peer groups.


Literacy Article 3C

Name: _____ Date: _____

Play It Safe!

My brother and I like to play in the rain. We like to splash in puddles.

One day it rained hard. We saw lightning. Crack! We heard thunder. Boom! We ran inside. We stayed away from windows.

The wind became strong. The house shook.

"It might be a tornado," Dad said.

We all went to the basement. We waited there. We told stories.

We played games. The wind died down. The rain stopped. We went out.

The sky was calm. A tree had fallen. Water flooded the lawn. It flooded the streets, too. We were safe.

Credit: Alexandr Kucharski/Shutterstock.com

Go inside if you see lightning or hear thunder.

District Lens and Helpful Supports	Evidence from Weather and Sky
9. Science in the News	Pull phenomena from today's news into your classroom with these projects (pgs. 156-158).
10. Innovators in Science	A diverse group of STEM professionals have impacted science. These scientists and engineers help students see themselves in these careers. Accessible at www.carolina.com/bbs3dreview • **Click on:** Unit Overview > Unit Resources > Digital Resources > Innovators in Science
11. Rubrics for Science	Appendix A, pg. 152

Teacher Sheet: Science in the News Article Report

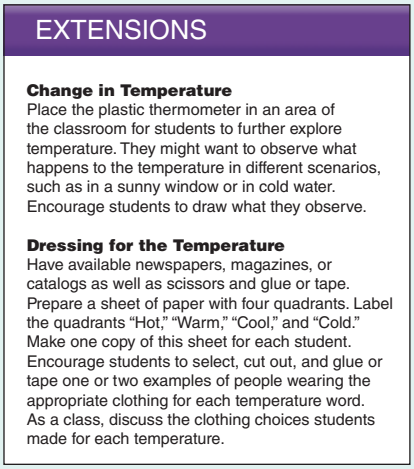
To help students understand a concept, it is often helpful to associate it with an event or phenomenon. Depending on the topic, students may be able to draw connections to recent events in the news or to historical events in your area. Using a literacy tool like an article report is a helpful way to bring in literacy, reading comprehension, and science topics at any grade level.

Science in the News articles can be assigned at any point during a unit to assist students in seeing the "real-world connection" to a particular concept. These articles should be provided by the teacher in lower grades, but students in grades 3–5 may be ready for the challenge of selecting their own articles independently. The following guidelines will help you find appropriate articles. If you ask students to locate their own articles, you may wish to provide some of these guidelines along with the specific requirements for the assignment. Students at all grades are provided with an article report sheet to help them analyze their article and draw connections between it and the unit concepts. For students in grades 3–5, a rubric is provided in this appendix to help them to evaluate an article for bias and credibility.

General Rubric

	Exploration	Vocabulary	Concept Building	Science Notebook
4	Student displays a high level of interest by asking questions, building on concepts, and testing ideas. Provides input and participates in group settings.	Student uses a rich and varied vocabulary that includes appropriate scientific vocabulary that is used in an accurate manner. Writing displays a deep level of understanding of a concept.	Student's responses indicate a higher level of thinking by drawing connections between unit concepts and phenomena. Claims are supported with strong evidence and reasoning.	Student's entries display informative, in-depth responses that demonstrate an understanding of the content. Diagrams are detailed and labeled when applicable. Student draws strong conclusions.
3	Student remains engaged by participating, building on concepts, and testing ideas. Rarely asks questions but is cooperative in group settings.	Student uses a varied vocabulary that includes appropriate scientific vocabulary. Writing accurately describes a concept or experience.	Student's responses during investigations, conversations, and class discussions reflect growth of knowledge. Student understands concepts but may not be able to make strong connections. Claims are supported with evidence and reasoning.	Student's entries provide accurate and descriptive responses. Visual aids, such as data tables and diagrams, are included when applicable. Student draws a conclusion.

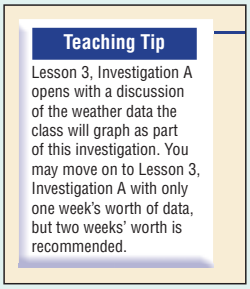
District Lens and Helpful Supports	Evidence from Evidence from Weather and Sky
12. Differentiated Instruction	• Cross-curricular Extensions (pg. 115) • Teaching Tips (pg. 66) • Differentiated Strategies (pg. 35)
13. Teacher Preparation and Support	• Background Information (pg. 34) • Teacher Preparation for investigations (pg. 53) • Teacher Answer Keys (pg. 85 Student Investigation Sheet 2D: Teacher's Version) • Teaching Tips (pg. 128)



EXTENSIONS

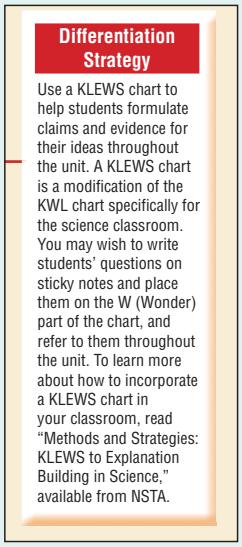
Change in Temperature
Place the plastic thermometer in an area of the classroom for students to further explore temperature. They might want to observe what happens to the temperature in different scenarios, such as in a sunny window or in cold water. Encourage students to draw what they observe.

Dressing for the Temperature
Have available newspapers, magazines, or catalogs as well as scissors and glue or tape. Prepare a sheet of paper with four quadrants. Label the quadrants "Hot," "Warm," "Cool," and "Cold." Make one copy of this sheet for each student. Encourage students to select, cut out, and glue or tape one or two examples of people wearing the appropriate clothing for each temperature word. As a class, discuss the clothing choices students made for each temperature.



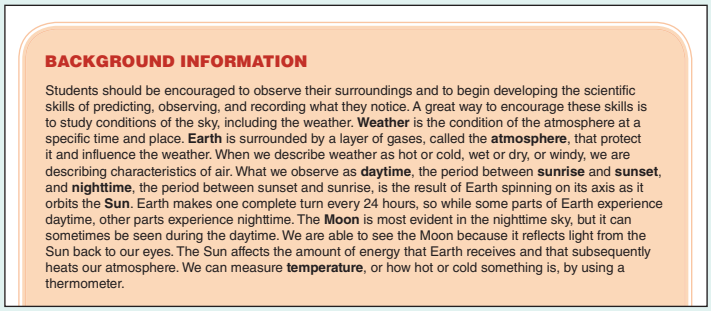
Teaching Tip

Lesson 3, Investigation A opens with a discussion of the weather data the class will graph as part of this investigation. You may move on to Lesson 3, Investigation A with only one week's worth of data, but two weeks' worth is recommended.



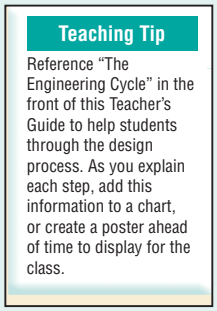
Differentiation Strategy

Use a KLEWS chart to help students formulate claims and evidence for their ideas throughout the unit. A KLEWS chart is a modification of the KWL chart specifically for the science classroom. You may wish to write students' questions on sticky notes and place them on the W (Wonder) part of the chart, and refer to them throughout the unit. To learn more about how to incorporate a KLEWS chart in your classroom, read "Methods and Strategies: KLEWS to Explanation Building in Science," available from NSTA.



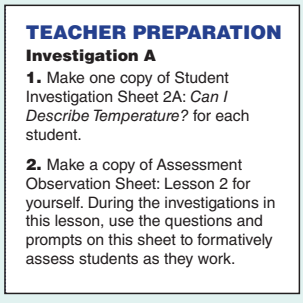
BACKGROUND INFORMATION

Students should be encouraged to observe their surroundings and to begin developing the scientific skills of predicting, observing, and recording what they notice. A great way to encourage these skills is to study conditions of the sky, including the weather. **Weather** is the condition of the atmosphere at a specific time and place. **Earth** is surrounded by a layer of gases, called the **atmosphere**, that protect it and influence the weather. When we describe weather as hot or cold, wet or dry, or windy, we are describing characteristics of air. What we observe as **daytime**, the period between **sunrise** and **sunset**, and **nighttime**, the period between sunset and sunrise, is the result of Earth spinning on its axis as it orbits the **Sun**. Earth makes one complete turn every 24 hours, so while some parts of Earth experience daytime, other parts experience nighttime. The **Moon** is most evident in the nighttime sky, but it can sometimes be seen during the daytime. We are able to see the Moon because it reflects light from the Sun back to our eyes. The Sun affects the amount of energy that Earth receives and that subsequently heats our atmosphere. We can measure **temperature**, or how hot or cold something is, by using a thermometer.



Teaching Tip

Reference "The Engineering Cycle" in the front of this Teacher's Guide to help students through the design process. As you explain each step, add this information to a chart, or create a poster ahead of time to display for the class.

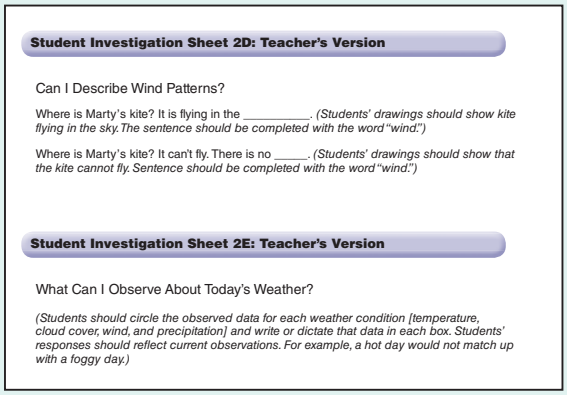


TEACHER PREPARATION

Investigation A

1. Make one copy of Student Investigation Sheet 2A: *Can I Describe Temperature?* for each student.

2. Make a copy of Assessment Observation Sheet: Lesson 2 for yourself. During the investigations in this lesson, use the questions and prompts on this sheet to formatively assess students as they work.



Student Investigation Sheet 2D: Teacher's Version

Can I Describe Wind Patterns?

Where is Marty's kite? It is flying in the _____. *(Students' drawings should show kite flying in the sky. The sentence should be completed with the word "wind.")*

Where is Marty's kite? It can't fly. There is no _____. *(Students' drawings should show that the kite cannot fly. Sentence should be completed with the word "wind.")*

Student Investigation Sheet 2E: Teacher's Version

What Can I Observe About Today's Weather?

(Students should circle the observed data for each weather condition [temperature, cloud cover, wind, and precipitation] and write or dictate that data in each box. Students' responses should reflect current observations. For example, a hot day would not match up with a foggy day.)

Summary of Evidence for *Weather and Sky*

How does a phenomenon/problem organize the learning?

The unit begins with a class discussion of an **Anchoring Phenomenon** and a viewing of a Phenomena Video to generate student-driven questions about the unit's central phenomena. Each lesson kicks off with an **Investigative Phenomenon**, sparking student questions that can be explored through that lesson's investigations, which put phenomena directly into students' hands. Questions are provided for the teacher to help guide instruction, dispel misconceptions, and connect concepts to prior learning as students engage with the unit's the three dimensions through hands-on investigations, data gathering and analysis, notebooking, and discourse.

How are learning opportunities sequenced to enable students to make sense of the phenomena or problems?

The sequence is clearly presented in the **Evidence of Instructional Scaffolding** chart in the front of the Teacher's Guide. Performance Expectations were initially mapped out along with the Crosscutting Concepts, Science and Engineering Practices, and Disciplinary Core Ideas to ensure grade-level instruction of NGSS. Each lesson connects to the previous, creating a seamless, connected instructional path for students. Where appropriate, engineering and other science-discipline PEs are integrated to eliminate any "silos of science." Students experience science and engineering as an integrated whole.

What is the path of student thinking from their prior knowledge to the expected three-dimensional learning outcomes?

By starting with an **Anchoring Phenomenon** and a **Pre-Assessment** lesson to tap into students' prior knowledge, the teacher is able to evaluate what understandings students bring to the sequence of learning for the new unit. Teacher questioning strategies are built into each investigation to tie to the unit's three dimensions, clarify any misconceptions, and help students make meaning out of what they discover in the investigations.

How do students show/demonstrate their three-dimensional understanding of the phenomenon?

- **Pre-Unit Assessment and Post-Unit Assessment Opportunities:** The pre-unit assessment asks students to draw upon previous knowledge, allowing teachers to gauge their levels of understanding. The post-unit assessment touches upon the topics and concepts from the entire unit and evaluates students' learning. Students are asked to compare the pre-unit assessment and post-unit assessment activities to evaluate growth.
- **Formative Assessment Strategies:** At the end of each lesson, specific strategies are listed for each investigation. These include ways to utilize Student Investigation Sheets and Tell Me More prompts as assessment tools. In lower grades, an Assessment Observation Sheet lists what to look for as you work with small groups of students.
- **Literacy and Digital Components:** These resources can be assigned to differentiate assignments and to assess student progress as needed.
- **General Rubric: Appendix A** includes a rubric that provides an expected progression of skills and understanding of science content. These guidelines can be used to assess students throughout the course of the unit.
- **Summative Assessment:** This unit-specific, cumulative assessment allows students to demonstrate their understanding of content presented by responding to questions in a variety of formats. Each question is aligned to performance expectations and provides insight on students' understanding of the concepts addressed. An answer key is provided, as well as a chart that indicates the performance expectation addressed by each question and lessons to revisit if remediation is required.
- **Digital Scenario-based Assessment:** This digital assessment resource supplies phenomena-driven questions that apply the unit's learning to new, authentic situations. It provides an alternative form of summative assessment that can be administered and corrected by the computer. Scores are sent to a report for the teacher.

Evidence of Instructional Scaffolding

Scaffolding is a crucial yet natural element in all classrooms. Building Blocks of Science strives to simplify this instructional strategy by integrating this guided process into each unit, systematically building upon student knowledge, using hands-on learning to reinforce concepts, and employing student-driven inquiry. These strategies introduce new concepts and, with practice and review, lead students toward mastery. It is important to integrate scaffolding not only throughout the unit but also throughout each lesson. As students demonstrate understanding of a concept, they should be encouraged to take a leadership role in class or to attempt assignments independently. Additionally, scaffolding reveals opportunities for differentiation. Below-level learners require more reinforcement as they learn new skills, so the process toward mastery will need to be adjusted. Above-level learners do not need as much support and achieve mastery more quickly; therefore, these students can be assigned more independent study.

	Lesson 1 ▸	Lesson 2 ▸
OBJECTIVES	■ Begin building an age-appropriate understanding about weather. ■ Observe and record patterns and scale of objects that can be observed in the sky including clouds, Sun, and Moon. ■ Describe the changes in temperature over the course of a day.	■ Describe activities that take place during specific weather conditions. ■ Discuss the effects of weather on human activities. ■ Observe and record daily weather changes. ■ Identify patterns in weather features. ■ Analyze and graph weekly weather data.
SCAFFOLDING	Students should know: ■ Some objects can be seen during the daytime, some at nighttime, and some at both times. ■ Some objects in the sky are bigger than others, and objects such as the Sun, Moon, and stars are very far away. ■ Temperature can change over the course of a day.	Students should know: ■ Temperature, cloud cover, wind, and precipitation are four weather conditions. ■ Temperature is how hot or cold an object or area is. ■ Cloud cover is the amount of sky that is blocked by clouds. ■ Wind is the movement of air. ■ Precipitation is any form of water that falls from the sky. ■ Weather can be observed to look for patterns.

	Lesson 3 ▸	Lesson 4 ▸	Lesson 5
OBJECTIVES	■ Analyze collected weather data for patterns and connections. ■ Use models to explain two types of dangerous weather, floods and tornadoes. ■ Discuss weather safety and analyze ways to stay safe during a variety of weather conditions. ■ Describe how weather forecasting can help people avoid the serious impacts of dangerous weather. ■ Participate in a practice drill as a preventive measure for tornadoes.	■ Identify a thermometer as a tool to measure temperature. ■ Describe how temperature can change during the day. ■ Identify the Sun as Earth's main source of light and heat. ■ Explore how different materials can be affected by heat.	■ Describe the effects of the Sun on an object. ■ Investigate, design, and build a structure to reduce the warming effect of sunlight on Earth's surface. ■ Evaluate learning from throughout the unit about weather, and compare that knowledge to initial ideas from the beginning of the unit.
SCAFFOLDING	Students should know: ■ Weather can be dangerous. ■ If too much rain falls at one time and can't be soaked up by the soil, flooding can occur. ■ Tornadoes can form during severe thunderstorms. ■ Weather forecasts can help people prepare for dangerous weather. ■ It is important to prepare for dangerous weather before it happens.	Students should know: ■ The Sun is Earth's main source of light and heat energy. ■ A thermometer is a tool that is used to measure temperature. ■ Placing objects in sunlight will affect their temperature. ■ Placing objects in shade will affect their temperature.	Students should know: ■ An engineer is someone who uses science to solve problems or fulfill needs. ■ Energy from the Sun warms Earth's atmosphere and contributes to Earth's weather. ■ There are ways to design an object to block sunlight or cool the air to reduce the Sun's warming effect. ■ Problems should be fixed to improve a design solution.

Building Blocks OF SCIENCE™ | 3D

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Learning Framework

Kindergarten	**Push, Pull, Go** *K-PS2-1; K-PS2-2; K-2-ETS1-1; K-2-ETS1-2*	**Living Things and Their Needs** *K-LS1-1; K-ESS2-2; K-ESS3-1; K-ESS3-3; K-2-ETS1-2*	**Weather and Sky** *K-PS1-1; K-PS3-1; K-PS3-2; K-ESS2-1; K-ESS3-2; K-2-ETS1-1; K-2-ETS1-2*
1st Grade	**Light and Sound Waves** *1-PS4-1; 1-PS4-2; 1-PS4-3; 1-PS4-4; K-2-ETS1-1; K-2-ETS1-2*	**Exploring Organisms** *1-LS1-1; 1-LS1-2; 1-LS3-1; K-2-ETS1-2*	**Sky Watchers** *1-ESS1-1; 1-ESS1-2*
2nd Grade	**Matter** *2-PS1-1; 2-PS1-2; 2-PS1-3; 2-PS1-4; K-2-ETS1-1; K-2-ETS1-2*	**Ecosystem Diversity** *2-LS2-1; 2-LS2-2; 2-LS4-1; K-2-ETS1-2; K-2-ETS1-3*	**Earth Materials** *2-PS1-1; 2-ESS1-1; 2-ESS2-1; 2-ESS2-2; 2-ESS2-3; K-2-ETS1-1; K-2-ETS1-2*
3rd Grade	**Forces and Interactions** *3-PS2-1; 3-PS2-2; 3-PS2-3; 3-PS2-4; 3-5-ETS1-1; 3-5 ETS1-2*	**Life in Ecosystems** *3-LS1-1; 3-LS2-1; 3-LS3-1; 3-LS3-2; 3-LS4-1; 3-LS4-2; 3-LS4-3; 3-LS4-4; 3-5-ETS1-2*	**Weather and Climate Patterns** *3-ESS2-1; 3-ESS2-2; 3-ESS2-3; 3-ESS3-1; 3-5-ETS1-2*
4th Grade	**Energy Works** *4-PS3-1; 4-PS3-2; 4-PS3-3; 4-PS3-4; 4-PS4-1; 4-PS4-3; 4-ESS3-1; 3-5 ETS1-2; 3-5-ETS1-3*	**Plant and Animal Structures** *4-LS1-1; 4-LS1-2; 4-PS4-2; 3-5-ETS1-2*	**Changing Earth** *4-ESS1-1; 4-ESS2-1; 4-ESS2-2; 4-ESS3-2; 3-5-ETS1-2*
5th Grade	**Structure and Properties of Matter** *5-PS1-1; 5-PS1-2; 5-PS1-3; 5-PS1-4; 3-5-ETS1-2*	**Matter and Energy in Ecosystems** *5-PS3-1; 5-LS1-1; 5-LS2-1; 5-ESS2-1; 5-ESS3-1; 3-5-ETS1-3*	**Earth and Space Systems** *5-PS2-1; 5-ESS1-1; 5-ESS1-2; 5-ESS2-1; 5-ESS2-2; 5-ESS3-1; 3-5-ETS1-2*

Have questions? Please join us at www.carolina.com/bbs or www.carolina.com/cascience, or contact us at cascience@carolina.com.

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