First Grade Performance Targets

for the
South Carolina College- and Career-Ready Science Standards 2021

For use 2025-2026

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Contents

Purpose and Use

Science is a way of understanding the physical universe using observation and experimentation to explain natural phenomena. Science also refers to an organized body of knowledge that includes core ideas to the disciplines and common themes that bridge the disciplines. As science educators we must take a 3-dimensional approach in facilitating student learning. By addressing content, science and engineering practices and crosscutting concepts, students can have relevant and evidence-based instruction that can help solve current and future problems.

This document is intended as a guide for discerning and describing features of students and their work who have met the stated Performance Expectation (PE). This document is not intended to be read from cover to cover, but to be used, when needed, to support teacher professional learning and curriculum decisions. This is not intended for student use, and thus is not written in student-friendly language. This is not a curriculum or a means to limit instruction in the classroom. Although each PE states a dedicated Science and Engineering Practice (SEP) and Crosscutting Concept (CCC), students will need to use the whole range of SEPs and CCCs to achieve success by the end of instruction.

Three-dimensional science learning requires discipline specific communication skills. This means that effective science learning occurs when students are expected to speak, listen, read, and write in ways that are appropriate to science. With each Performance Target, there are question/sentence stems and terminology to support student discourse about phenomena to help teachers facilitate the acquisition of science discourse. Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding. The terms and stems in this section are intended to provide a baseline for teachers, neither list is exhaustive nor complete.

In addition to the doing (SEP), thinking (CCC), and learning of science knowledge (Disciplinary Core Ideas) outlined here, students will also require a working knowledge of grade-level appropriate tools and techniques of science. Students should know and recognize how scientists and engineers use these tools and techniques, not just identify them. Students should be able to use these tools to gather data, describe how these tools gather data, and/or interpret data sampled from them. These tools and techniques for Grade One include all those previously identified and add or emphasize:

- binoculars
- hand lens
- light source
- mirror
- objects of varying transparency
- ruler
- telescope
- timing device
- tuning fork

Document Updates

August 2025

- All Performance Expectation statements have been reformatted to call out each of the dimensions as follows:
    - Science and Engineering Practice – **bold**
    - Crosscutting Concept – *italicize*
    - Disciplinary Core Idea – regular
- The watermark from previous versions of this resource has been replaced with the wording “For use 2025-2026” on the title page and in the footer. This change was made to improve accessibility of this resource.
- Adjusted formatting and grammar

June 2024

- Updated watermark to 2024-2025
- Adjusted formatting and grammar

PS4 – Waves and their Applications in Technologies for Information Transfer

1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials *can make* sound *and that sound can make materials vibrate*.

> ***Clarification Statement:*** Examples of vibrating materials that make sound could include tuning forks and a stretched string that is plucked. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.	**PS4.A: Wave Properties** Sound can make matter vibrate and vibrating matter can make sound.	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Observable features of student performance by the end of the course:

1. **Identifying the phenomenon under investigation**
    a. With guidance, students identify and describe the phenomenon involving sound vibrations.
    b. With guidance, students describe the purpose of the investigation, including determining the relationship between vibrating materials and sound.
2. **Identifying the evidence to address the purpose of the investigation**
    a. With guidance, students describe the data to be collected and the evidence to be derived, including:
        i. vibrating materials can cause sounds and
        ii. that sounds can cause materials to vibrate.
    b. With guidance, students describe how the evidence will address the purpose of the investigation.

3. **Planning the investigation**
    a. In the investigation plans, students describe:
        i. materials to be used,
        ii. how the materials will be used to vibrate to make sound,
        iii. how resulting sounds will be observed and described,
        iv. what sounds will be used to make materials vibrate, and
        v. how vibration will be determined.
4. **Collecting the data**
    a. With guidance, students collect and record observations about:
        i. vibrating materials causing sounds, and
        ii. sounds causing materials to vibrate.

1-PS4-1 Academic Language

Question/Sentence Stems

- Testing can provide evidence that _____ causes _____ because _____.
- If _____ happens, I/we predict that ___ will occur.
- By looking at patterns, I/we determined that _____ caused _____.
- What does the pattern of data you see allow you to conclude about _____?

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- cause and effect
- investigation
- matter
- relationship
- sound
- vibration

1-PS4-2. Make observations to support an *evidence-based claim* that objects in darkness can be seen *only when illuminated by light sources*.

> ***Clarification Statement:*** Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena	**PS4.B: Electromagnetic Radiation** Objects can only be seen if light is available to illuminate them or if they give off their own light.	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Observable features of student performance by the end of the course:

1. **Articulating the explanation of phenomena**
    a. Students articulate a statement that describing the cause-and-effect relationship that when an object in darkness is illuminated by light or produces its own light (for example: turning on a light in the dark space or from light the object itself gives off, etc.), it becomes visible.
2. **Evidence**
    a. Students identify and describe the evidence from observations (firsthand or from media), including:
        i. The appearance (for example: visible, not visible, somewhat visible, but difficult to visualize, etc.) of objects in a space with no light.
        ii. The appearance (for example: visible, not visible, somewhat visible, but difficult to visualize, etc.) of objects in a space with light.
        iii. The appearance (for example: visible, not visible, somewhat visible, but difficult to visualize, etc.) of objects (for example: light bulbs, glow sticks, etc.) that give off light in a space with no other light.

b. Students describe how their observations provide evidence to support their explanation.

3. **Reasoning**
    a. Students use the following chain of reasoning to connect the evidence and support or refute an explanation for how objects become visible when lit, including:
        i. The presence of light in space causes objects to be visible in that space.
        ii. Objects cannot be visible if there is no light to illuminate them, but the same object in the same space can be visible if a light source is introduced.
        iii. The ability of an object to give off its own light causes the object to be visible in a space where there is no other light.

1-PS4-2 Academic Language

Question/Sentence Stems

- I/We can observe the pattern of _____ in the data presented.
- If _____happens, I/we predict that ___ will occur.
- By looking at patterns, I/we determined that _____ caused _____.
- How do _____ and _____ affect _____?

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- cause
- effect
- illuminate
- light beam
- model
- redirect

1-PS4-3. Plan and conduct an investigation to determine *the effect* of placing objects made with different materials in the path of a beam of light.

Clarification Statement: Examples of materials could include clear plastic (transparent), wax paper (translucent), cardboard (opaque), and mirrors (reflective).

State Assessment Boundary: Assessment does not include the speed of light, or the terms transparent, translucent, opaque, and reflective.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct investigations collaboratively to produce data to serve as the basis for evidence to answer a question.	**PS4.B: Electromagnetic Radiation** Light travels from place to place. Some materials allow light to pass through them, others allow only some light through, and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam.	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Observable features of student performance by the end of the course:

1. **Identifying the phenomenon under investigation**
    a. With guidance, students identify and describe the phenomenon and purpose of the investigation, including:
        i. Answering a question about what happens when objects made of different materials (that allow light to pass through them in different ways) are placed in the path of a beam of light.
        ii. Designing and conducting an investigation to gather evidence to support or refute student ideas about putting objects made of different materials in the path of a beam of light.

2. **Identifying evidence to address the purpose of the investigation**
    a. With guidance, students develop an investigation plan and describe the data to be collected and the evidence to be derived, including:
        i. Observations of the effect of placing objects made of different materials in a beam of light, including
            1. material that allows all light through results in the background lighting up,
            2. material that allows only some light through results in the background lighting up, but looking darker than when the material allows all light in,
            3. material that blocks all of the light will create a shadow, and
            4. material that changes the direction of the light will light up the surrounding space in a different direction.
    b. Students describe how these observations provide evidence to answer the question under investigation.
3. **Planning the investigation**
    a. In the investigation plan, students describe:
        i. The materials to be placed in the beam of light, including:
            1. material that allows all light through (for example: clear plastic, clear glass, etc.),
            2. material that allows only some light through (for example: clouded plastic, wax paper, etc.),
            3. material that blocks all of the light (for example: cardboard, wood, etc.), and
            4. material that changes the direction of the light (for example: mirror, aluminum foil, etc.).
        ii. How the effect of placing different materials in the beam of light will be observed and recorded.
        iii. The light source used to produce the beam of light.
4. **Collecting the data**
    a. With guidance, students collect and record observations of what happens when objects made of materials that allow light to pass through them in different ways are placed in the path of a beam of light, according to the developed investigation plan.

1-PS4-3 Academic Language

Question/Sentence Stems

- Testing can provide evidence that _____ causes _____ because _____.
- If _____ happens, I/we predict that ___ will occur.
- By looking at patterns, I/we determined that _____ caused _____.
- Even a small change of _____ can cause a big effect of _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- light beam
- opaque
- reflected/reflective
- translucent
- transparent

1-PS4-4. Use tools and materials to design and build *a device* that uses light or sound to communicate over a distance.

> ***State Assessment Boundary:*** Assessment does not include technological details for how communication devices work.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Use tools and materials provided to design a device that solves a specific problem.	**PS4.C: Information Technologies and Instrumentation** People also use a variety of devices to communicate (send and receive information) over long distances. **ETS1.B: Developing Possible Solutions** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. To design something complicated, one may need to break the problem into parts and attend to each part separately, then bring the parts together to test the overall solution. **ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World** Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.	**Systems and System Models** Systems in the natural and designed world have parts that work together.

Observable features of student performance by the end of the course:

1. **Using scientific knowledge to generate design solutions**
    a. Students describe a problem (for example: a student not visible around a corner) involving people communicating over long distances.
    b. With guidance, students design and build a device that uses light or sound to solve a problem.
    c. With guidance, students describe the scientific information used to design the solution.

2. **Describing specific features of the design solution, including quantification when appropriate**
    a. Students describe the specific expected or required features of the design solution should include:
        i. The design solution is able to send or receive information over a given distance.
        ii. The design solution must use light or sound to communicate.
3. **Evaluating potential solutions**
    a. Students describe using oral and/or written form on how the design solution:
        i. meets the required features of the design solution, and
        ii. provides a solution to the problem involving people communicating over a distance by using light or sound.
    b. Students describe how communicating over long distances helps people.

1-PS4-4 Academic Language

Question/Sentence Stems

- This system performs _____.
- My design solution is successful because _____.
- _____ is how the solutions are similar/different.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- communicate
- compare
- design
- device
- distance
- model
- receive
- send
- solution
- system
- test

LS1 – From Molecules to Organisms: Structures and Processes

1-LS1-1. Use materials to design a solution to a human problem *by mimicking how plants and/or animals* use their external parts to help them survive, grow, and meet their needs.

> ***Clarification Statement:*** Examples of human problems that can be solved by mimic plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimic turtle shells, acorn shells, or animal scales; stabilizing structures by mimic animal tails and roots on plants; keeping out intruders by mimic thorns on branches or animal quills; or detecting intruders by mimic eyes or ears.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Use materials to design a device that solves a specific problem or a solution to a specific problem.	**LS1.A: Structure and Function** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them survive and grow. **LS1.D: Information Processing** Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs. **ETS1.B: Developing Possible Solutions** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. **ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World** Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world.	**Structure and Function** The shape and stability of structures and natural and designed objects are related to their function(s).

Observable features of student performance by the end of the course:

1. **Using scientific knowledge to generate design solutions**
    a. Students describe a human problem (for example: designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorns shells, and/or animal scales; stabilizing structures by mimicking animal tails or roots on plants; keeping intruders out by mimicking thorns on branches or animal quills; or detecting intruders by mimicking eyes or ears) to be solved by the design.
    b. With guidance, students use scientific information about plants and/or animals to design the solution, including:
        i. external structures are used to help the plant and/or animal grow and/or survive,
        ii. animals use external structures to capture and convey different kinds of information they need, and
        iii. plants and/or animals respond to information they receive from the environment.
    c. Students design and build a solution to a human problem by mimicking how plants and/or animals use external structures to survive, grow, and/or meet their needs. In the design, students:
        i. Mimic the way a plant and/or animal uses an external structure to help it survive, grow, and/or meet its needs.
        ii. Mimic the way an external structure of an animal captures and conveys information.
        iii. Mimic the way an animal and/or plant responds to information from the environment.
2. **Describing features of the design solution, including quantification when appropriate**
    a. Students describe the features in their designs and/or devices, including how:
        i. the device provides a solution to the given human problem and
        ii. the device mimics plant and/or animal external parts, and/or animal information-processing from their environment.
3. **Evaluating potential solutions**
    a. Students describe how the design solution is expected to solve the human problem.
    b. Students determine and describe whether their device meets the specific required features.

1-LS1-1 Academic Language

Question/Sentence Stems

- This (animal/plant) _____ lives in _____ (environment) because it has structure of _____(external features) because it _____ (function).
- Together, the _____ structures of the system function _____.
- _____ is the connection between my solution's structure and its function
- _____ are the structures in my solution. _____ is the function of my/our solution.
- My/Our design solution is successful because _____ (connection between structure and function).
- _____ is how the solutions are similar/different.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- animals
- explanation
- external features
- function
- grow
- information processing
- location
- mimic
- plants
- responds
- sensory processing
- structure
- surroundings
- survival

1-LS1-2. Obtain information from multiple sources to determine *patterns in* parent and offspring behavior that help offspring survive.

> ***Clarification Statement:*** Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, or other vocalizations) and the responses of the parents (such as feeding, comforting, or protecting the offspring). Information may be obtained through observation, field study, text, media, etc.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information. Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.	**LS1.B: Growth and Development of Organisms** Adult plants and animals can have young. In many kinds of animals, parents, and the offspring themselves engage in behaviors that help the offspring to survive.	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Observable features of student performance by the end of the course:

1. **Obtaining information**
    a. Students use grade-appropriate texts and other reliable media to obtain the following scientific information:
        i. that both plants and animals can have offspring;
        ii. behaviors of animal parents that help offspring survive (for example: keeping offspring safe from predators by circling the young, feeding offspring, etc.); and
        iii. behaviors of animal offspring that help the offspring survive (for example: crying, chirping, nuzzling for food, etc.).
2. **Evaluating information**
    a. Students evaluate the information to determine and describe the patterns of what animal parents and offspring do to help offspring survive (for example: when a baby cries, the mother feeds it; when danger is present, parents protect offspring; some young animals become silent to avoid predators, etc.).

1-LS1-2 Academic Language

Question/Sentence Stems

- I/We can observe the pattern of _____ in the data presented.
- I/We can classify (group) the following patterns of _____ to create groups that are like each other based on the following attributes/characteristics.
- I/We can identify young plants and/or animals by the similarities (patterns) to their parents' external features but they are not exactly the same because of _____ (external feature differences).

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- animals
- differences
- external features
- growth
- offspring
- parents
- plants
- similarities
- young

LS3 – Heredity: Inheritance and Variation of Traits

1-LS3-1. Make observations to support an evidence-based claim that most young *are like, but not exactly like*, their parents.

Clarification Statement: Emphasis is on identifying patterns of shared features between young and adult plants or animals. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size, and a particular breed of dog looks like its parents but is not exactly the same.

State Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.	**LS3.A: Inheritance of Traits** Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents. **LS3.B: Variation of Traits** Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.	**Patterns** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Observable features of student performance by the end of the course:

1. **Articulating the explanation of phenomena**
    a. Students articulate a statement describing/explaining that young plants and animals are like, but not exactly like, their parents (not to include animals that undergo complete metamorphoses, such as insects or frogs).

2. **Evidence**
    a. Students identify and describe evidence from observations (firsthand or from media) about patterns of features in plants and animals, including:
        i. key differences between different types of plants and animals (for example: features that distinguish dogs versus those that distinguish fish, oak trees vs. bean plants, etc.);
        ii. young plants and animals of the same type have similar, but not identical features (for example: size and shape of body parts, color and/or type of any hair, leaf shape, stem rigidity, etc.);
        iii. adult plants and animals (limited to parents) of the same type have similar, but not identical features (for example: size and shape of body parts, color and/or type of any hair, leaf shape, stem rigidity, etc.), and
        iv. patterns of similarities and differences in features between parents and offspring.
3. **Reasoning**
    a. Students use the following chain of reasoning to connect evidence and support or refute an explanation that young plants and animals are like, but not exactly like their parents:
        i. young plants and animals are similar to their parents,
        ii. young plants and animals are not exactly the same as their parents,
        iii. similarities and differences in features are evidence that young plants and animals are similar—but not exactly—like their parents, and
        iv. similarities and differences in features are evidence that although individuals of the same type of animal or plant are recognizable as similar, they can also vary in many ways.

1-LS3-1 Academic Language

Question/Sentence Stems

- I/We can classify (group) the following patterns of _____ to create groups that are similar to each other based on the following attributes/characteristics.
- I/We can identify young plants and/or animals by the similarities (patterns) to their parents' external features but they are not exactly the same because of _____ (external feature differences).

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- animals
- differences
- external features
- growth
- offspring
- parents
- plants
- similarities
- young

ESS1 – Earth's Place in the Universe

1-ESS1-1. Use observations of the sun, moon, and stars *to describe patterns* that can be predicted.

Clarification Statement: Examples of patterns could include that the Sun and Moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our Sun are seen at night but not during the day.

State Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Analyzing and Interpreting Data Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.	**ESS1.A: The Universe and Its Stars** Patterns of the motion of the Sun, Moon, and stars in the sky can be observed, described, and predicted. **ETS2.A: Interdependence of Science, Engineering, and Technology** People encounter questions about the natural world every day. There are many types of tools produced by engineering that can be used in science to help answer these questions through observation or measurement. Observations and measurements are also used in engineering to help test and refine design ideas.	**Patterns** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Observable features of student performance by the end of the course:

1. **Organizing data**
    a. With guidance, students organize data using graphical displays (for example: picture, chart, etc.), including:
        i. objects (limited to: Sun, Moon, stars) visible in the sky during the day;
        ii. objects (limited to: Sun, Moon, stars) visible in the sky during the night;
        iii. position of the Sun in the sky at various times during the day; and position of the Moon in the sky at various times during the day or night.

2. **Identifying relationships**
    a. Students use the organized data to describe patterns, including:
        i. Stars are not visible in the sky during the day, but they are visible in the sky during the night.
        ii. The Sun is at different positions in the sky at different times of the day, appearing to rise in one part of the sky in the morning and appearing to set in another part of the sky in the evening.
        iii. The Moon can be visible during the day and at night, but the Sun can only be visible during the day.
        iv. The Moon is at different positions in the sky at different times of the day or night, appearing to rise in one part of the sky and appearing to set in another part of the sky.
3. **Interpreting data**
    a. Students use the analyzed data to describe:
        i. if the Moon is observed to rise in one part of the sky, a prediction can be made that the Moon will move across the sky and appear to set in a different portion of the sky and
        ii. if the Sun is observed to rise in one part of the sky, a prediction can be made about approximately where the Sun will be at different times of day.
    b. Students use patterns derived from the data to predict the future appearance of objects, for example:
        i. when the Sun sets and can no longer be visible, a prediction can be made that the Sun will rise again in the morning and
        ii. a prediction can be made that stars will only be visible at night.

1-ESS1-1 Academic Language

Question/Sentence Stems

- I/We can observe (notice) the pattern of _____ presented in the data.
- The pattern seen in the data allows me/us to know that _____.
- The observed pattern supports the conclusion that _____ is caused by _____, because _____.
- The pattern of _____ is changing over time.
- I/We can make a prediction about _____ using the pattern of _____.
- What are some similarities and differences in the patterns that we have observed?

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- data
- day
- difference
- evidence
- Moon
- movement
- night
- patterns
- predictable
- rise
- set
- similarity
- stars
- Sun
- sunlight
- visible

1-ESS1-2. Make observations at different times of year *to relate the amount of daylight to the time of year*.

Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter or summer to the amount in the spring or fall.

State Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Make observations (firsthand or from media) to collect data that can be used to make comparisons.	**ESS1.B: Earth and the Solar System** Seasonal patterns of Sunrise and Sunset can be observed, described, and predicted.	**Patterns** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

Observable features of student performance by the end of the course:

1. **Identifying the phenomenon under investigation.**
    a. With guidance, students identify and describe the purpose of the investigation, involving the relationship between the amount of daylight and the time of year.
2. **Identifying evidence to address the purpose of the investigation.**
    a. With guidance, students describe the data to be collected and the evidence to be derived, including observations (first hand or from media) of relative day length (Sunrise to Sunset) throughout the year.
    b. Students describe how the observations provide evidence for the pattern between the amount of daylight and the time of year (limited to: relative lightness and darkness at different relative times of the day and throughout the year).

3. **Planning the investigation**
    a. In the investigation plan, students describe:
        i. How the relative length of the day will be determined (for example: whether it will be light or dark when waking in the morning, at breakfast, when having dinner, or going to bed at night, etc.).
        ii. When observations will be made and how they will be recorded, both within a day and across the year.
4. **Collecting the data**
    a. With guidance, students collect and record observations about the relative length of the day in different seasons to make relative comparisons between the amount of daylight at different times of the year (for example: summer, winter, fall, spring).

1-ESS1-2 Academic Language

Question/Sentence Stems

- If _____ happens, I/we predict that ____ will occur.
- I/We can observe (notice) the pattern of _____ presented in the data.
- The pattern seen in the data allows me to know that _____.
- The observed pattern supports the conclusion that _____ is caused by _____, because _____.
- The pattern of _____ is changing over time.
- I/We can make a prediction about _____ using the pattern of _____.
- What are some similarities and differences in the patterns we have observed?

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- amount
- conclusion
- day
- daylight
- difference
- location
- night
- observation
- observe
- patterns
- predict
- seasons
- similarity
- sunrise
- sunset
- year

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