3-LS1-1 From Molecules to Organisms: Structure and Processes

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ **Developing and using models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.** • **Develop models to describe phenomena.** ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Growth and Development of Organisms:** • Reproduction is essential to the continued existence of every kind of organism. • Plants and animals have unique and diverse life cycles.	**3-LS1-1** *Students who demonstrate understanding can:* **Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.** **Clarification Statement:** Changes different organisms go through during their life form a pattern. **Assessment Boundary:** Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction or microscopic organisms.

3-5

Crosscutting Concepts: Patterns
- Patterns of change can be used to make predictions.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources
- Graphic organizers
- Flip books
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Life Cycles
  - Life Cycles of a Jalapeno Pepper Plant
  - Life Cycle of a Lady Bug
  - Life Cycle of a Leopard Frog
  - Investigate Life Cycles
  - Develop a Model

Academic Vocabulary
Life cycle, reproduction, environment, organism, cell, embryo, reproduce

3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ **Engaging in argument from evidence** **Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** • **Construct an argument with evidence, data, and/or a model.** ❽ Obtaining, evaluating, and communicating information	**Social Interactions and Group Behavior:** • Being part of a group helps animals obtain food, defend themselves, and cope with changes. • Groups may serve different functions and vary dramatically in size.	**3-LS2-1** *Students who demonstrate understanding can:* **Construct an argument that some animals form groups that help members survive.** **Clarification Statement:** Arguments could include examples of group behavior such as division of labor in a bee colony, flocks of birds staying together to confuse or intimidate predators, or wolves hunting in packs to more efficiently catch and kill prey. **Assessment Boundary:** N/A

Crosscutting Concepts: Cause and Effect

• Cause and effect relationships are routinely identified and used to explain change.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Project Wild
- Zoo Docents
- Bee Keeper
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Living in Groups
  - Getting Food
  - Protection & Defense
  - Coping with Change
  - Construct an Argument

Academic Vocabulary

Prey, predator, scavenger, colony, flock, pack (wolf), pod (whale), ecosystem, food chain, producer, consumer, food web, community, population

3-LS3-1 Heredity: Inheritance and Variation of Traits

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ **Analyzing and interpreting data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** • **Analyze and interpret data to make sense of phenomena using logical reasoning.** ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Inheritance of Traits:** • Many characteristics of organisms are inherited from their parents. **Variation of Traits:** • Different organisms vary in how they look and function because they have different inherited information.	**3-LS3-1** *Students who demonstrate understanding can:* Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. **Clarification Statement:** Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans. **Assessment Boundary:** Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.

3-5

Crosscutting Concepts: Patterns

- Similarities and differences in patterns can be used to sort and classify natural phenomena.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Graphs
- Charts
- Graphic Organizers
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Inherited Traits: Looks
  - Inherited Traits: Functions
  - Acquired Traits
  - More Acquired Traits
  - Learning

Academic Vocabulary

Inherited traits, offspring, sibling, similarities, differences, patterns, characteristics, inheritance

3-LS3-2 Heredity: Inheritance and Variation of Traits

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ **Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** • **Use evidence (e.g., observations, patterns) to support an explanation.** ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Inheritance of Traits:** • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. **Variation of Traits:** • The environment also affects the traits that an organism develops.	**3-LS3-2** *Students who demonstrate understanding can:* **Use evidence to support the explanation that traits can be influenced by the environment.** **Clarification Statement:** Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; a pet dog that is given too much food and little exercise may become overweight; and animals who teach their offspring skills like hunting. **Assessment Boundary:** N/A

Crosscutting Concepts: Cause and Effect

• Cause and effect relationships are routinely identified and used to explain change.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Cause effect Chart
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Investigate Environment & Traits
  - Variation and Survival
  - Variation and Mates
  - Construct an Explanation
  - Marine Ecologist

Academic Vocabulary

Environment, diet, influence, affects, cause

3-LS4-1 Biological Unity and Diversity

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ **Analyzing and interpreting data** **Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** • **Analyze and interpret data to make sense of phenomena using logical reasoning.** ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Evidence of Common Ancestry and Diversity:** • Some kinds of plants and animals that once lived on Earth are no longer found anywhere. • Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.	**3-LS4-1** *Students who demonstrate understanding can:* **Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.** **Clarification Statement:** Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms. **Assessment Boundary:** Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.

3-5

Crosscutting Concepts: Scale, Proportion, and Quantity
- Observable phenomena exist from very short to very long time periods.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources
- OERB fossils to fuel
- Natural History Museum
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Fossils
  - Fish in the Desert
  - Plants in the Antarctic
  - Investigate Fossils
  - Analyze and Interpret Data

Academic Vocabulary
Extinct, fossil, evidence

3-LS4-2 Biological Unity and Diversity

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ **Constructing explanations (for science) and designing solutions (for engineering)** **Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems.** • **Use evidence (e.g., observations, patterns) to construct an explanation.** ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Natural Selection:** • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.	**3-LS4-2** *Students who demonstrate understanding can:* **Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and reproducing.** **Clarification Statement:** Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring. **Assessment Boundary:** N/A

Crosscutting Concepts: Scale, Proportion, and Quantity

• Observable phenomena exist from very short to very long time periods.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Charts
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Investigate Environment and Traits
  - Variation and Survival
  - Variation and Mates

Academic Vocabulary

Species, relationships, camouflage, adaptation, mimicry, survive, perish, adapt

3-LS4-3 Biological Unity and Diversity

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ **Engaging in argument from evidence** **Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** • **Construct an argument with evidence.** ❽ Obtaining, evaluating, and communicating information	**Adaptation:** • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	**3-LS4-3** *Students who demonstrate understanding can:* **Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.** **Clarification Statement:** Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other. **Assessment Boundary:** N/A

3-5

Crosscutting Concepts: Cause and Effect

• Cause and effect relationships are routinely identified and used to explain change.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Charts
- Zoo resources
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Cold or Warm?
  - Wet or Dry?
  - Light or Dark?
  - Construct an Argument

Academic Vocabulary

Habitat, needs

3-LS4-4 Biological Unity and Diversity

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ **Engaging in argument from evidence** **Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** • **Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.** ❽ Obtaining, evaluating, and communicating information	**Ecosystem Dynamics, Functioning, and Resilience:** • When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4) **Biodiversity and Humans:** • Populations live in a variety of habitats, and change in those habitats affects the organisms living there.	**3-LS4-4** *Students who demonstrate understanding can:* **Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.*** **Clarification Statement:** Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms. **Assessment Boundary:** Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.

Crosscutting Concepts: Systems and System Models

•A system can be described in terms of its components and their interactions.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Project Wild
- Charts
- Cause/Effect
- National Geographic Exploring Science—Inheritance & Variation of Traits
  - Ecosystems
  - Forests Change
  - Searching for Water
  - Changes in Temperature
  - Living Things Make Changes
  - People Change Land
  - People Change Ecosystems
  - Compare Solutions & Make a Claim

Academic Vocabulary

Environmental changes, land characteristics, water distribution, transformed, physical characteristics, locations, interactions, system

3-PS2-1 Motion and Stability: Forces and Interactions

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ **Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** • **Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.** ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Forces and Motion:** • Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) **Types of Interactions:** • Objects in contact exert forces on each other.	**3-PS2-1** *Students who demonstrate understanding can:* **Plan and conduct investigations on the effects of balanced and unbalanced forces on the motion of an object.** (Connected to 3-PS2-2) **Clarification Statement:** Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from opposite sides will not produce any motion at all. **Assessment Boundary:** Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down.

3-5

Crosscutting Concepts: Cause and Effect
• Cause and effect relationships are routinely identified.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources
- Tug of War activity
- National Geographic Exploring Science—Forces & Interactions
  - Pushes & Pulls
  - Balanced Forces
  - Unbalanced Forces
  - Changing Directions
  - Plan and Conduct an Investigation

Academic Vocabulary
Force, motion, balanced force, unbalanced force, gravity

3-PS2-2 Motion and Stability: Forces and Interactions

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ **Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.** • **Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.** ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Forces and Motion:** • The patterns of an object's motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)	**3-PS2-2** *Students who demonstrate understanding can:* **Make observations and/or measurements of the object's motion to provide evidence that a pattern can be used to predict future motion.** (Connected to 3-PS2-1) **Clarification Statement:** Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw. **Assessment Boundary:** Assessment does not include technical terms such as period and frequency.

Crosscutting Concepts: Patterns
• Patterns of change can be used to make predictions.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources
- National Geographic Exploring Science—Forces & Motion
  - Patterns of Motion
  - Investigate Motion
  - Make Observations

Academic Vocabulary
Predictable pattern, future motion, past motion

3-PS2-3 Motion and Stability: Forces and Interactions

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ **Asking questions (for science) and defining problems (for engineering) Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.** • **Ask questions that can be investigated based on patterns such as cause and effect relationships.** ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Types of Interactions:** • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.	**3-PS2-3** *Students who demonstrate understanding can:* **Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.** **Clarification Statement:** Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force. **Assessment Boundary:** Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity.

Crosscutting Concepts: Cause and Effect

• Cause and effect relationships are routinely identified, tested, and used to explain change.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- National Geographic Exploring Science—Forces & Interactions
  - Magnets
  - Investigate Magnetic Force
  - Investigate Electromagnets
  - Electric Forces
  - Determine Cause & Effect Relationships
  - Define and Solve a Problem
  - Roller Coaster Designer

Academic Vocabulary

Electric force, magnetic force, static electricity, electromagnet, permanent magnet, orientation, poles, metal

3-PS2-4 Motion and Stability: Forces and Interactions

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ **Asking questions (for science) and defining problems (for engineering) Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.** • **Define a simple problem that can be solved through the development of a new or improved object or tool.** ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Types of Interactions:** • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. ** Connections to Engineering, Technology, and Application of Science* **Interdependence of Science, Engineering, and Technology:** • Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.	**3-PS2-4** *Students who demonstrate understanding can:* **Define a simple design problem that can be solved by applying scientific ideas about magnets.*** **Clarification Statement:** Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other. **Assessment Boundary:** N/A

Crosscutting Concepts: N/A

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- National Geographic Exploring Science—Forces & Interactions
  - Magnets
  - Investigate Magnetic Force
  - Investigate Electromagnets
  - Electric Forces
  - Determine Cause & Effect Relationships
  - Define and Solve a Problem
  - Roller Coaster Designer

Academic Vocabulary

3-ESS2-1 Earth's Systems

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ **Analyzing and interpreting data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.** • **Represent data in tables and various graphical displays (bar graphs and pictographs) to reveal patterns that indicate relationships.** ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ Obtaining, evaluating, and communicating information	**Weather and Climate:** • Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next.	**3-ESS2-1** *Students who demonstrate understanding can:* Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. **Clarification Statement:** Examples of data at this grade level could include average temperature, precipitation, and wind direction. **Assessment Boundary:** Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.

3-5

Crosscutting Concepts: Patterns

• Patterns of change can be used to make predictions.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- Graphs
- Charts
- Pictograph
- Bar graph
- National Geographic Exploring Science—Weather & Climate
  - Weather
  - Weather Measurement
  - Investigate Weather
  - Patterns & Predictions
  - The Pattern of the Seasons
  - Seasonal Changes
  - Represent Data

Academic Vocabulary

Temperature, precipitation, wind direction, pictograph, bar graph, predictions, thermometer, wind vane, rain gauge, atmosphere, air pressure, anemometer, wind speed, barometer

3-ESS2-2 Earth's Systems

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ Engaging in argument from evidence ❽ **Obtaining, evaluating, and communicating information** **Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.** • **Obtain and combine information from books and other reliable media to explain phenomena.**	**Weather and Climate:** • Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years.	**3-ESS2-2** *Students who demonstrate understanding can:* **Obtain and combine information to describe climates in different regions of the world.** **Clarification Statement:** N/A **Assessment Boundary:** N/A

Crosscutting Concepts: Patterns
• Patterns of change can be used to make predictions.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources
- Local meteorologists
- National Geographic Exploring Science—Weather & Climate
  - Climate
  - Obtain and Combine Information

Academic Vocabulary
Climate, typical, regions

3-ESS3-1 Earth and Human Activity

Science & Engineering Practices	Disciplinary Core Ideas	Performance Expectations
❶ Asking questions (for science) and defining problems (for engineering) ❷ Developing and using models ❸ Planning and carrying out investigations ❹ Analyzing and interpreting data ❺ Using mathematics and computational thinking ⊙ Constructing explanations (for science) and designing solutions (for engineering) ❼ **Engaging in argument from evidence** **Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).** • **Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.** ❽ Obtaining, evaluating, and communicating information	**Natural Hazards:** • A variety of natural hazards result from natural processes. • Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.) --- * *Connections to Engineering, Technology, and Application of Science* **Influence of Engineering, Technology, and Science on Society and the Natural World:** • Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).	**3-ESS3-1** *Students who demonstrate understanding can:* **Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.*** **Clarification Statement:** Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, tornado shelters and lighting rods. **Assessment Boundary:** N/A

Crosscutting Concepts: Cause and Effect

• Cause and effect relationships are routinely identified, tested, and used to explain change.

Oklahoma Academic Standards Connections

ELA/Literacy	Mathematics

Connection to *PASS* Coming Soon

Resources

- National Geographic Exploring Science—Weather & Climate
  - Weather Hazards
  - Reducing the Impact of Flooding
  - Reducing the Impact of Wind
  - Reducing the Impact of Lightning
  - Make a Claim
  - Severe Storms Researchers

Academic Vocabulary

Natural hazards, barriers, wind resistant, lightning rods, tornado shelters