Performance Expectation *and Louisiana Connectors*
3-PS2-1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. ***LC-3-PS2-1a Identify ways to change the motion of an object (e.g., number, size, or direction of forces).*** ***LC-3-PS2-1b Describe how objects in contact exert forces on each other.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Planning and carrying out investigations: Planning and carrying out investigations to answer questions (science) or test solutions (engineering) 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. ***Plan investigations collaboratively to produce data to serve as the basis for evidence.*** ***Conduct investigations collaboratively to produce data to serve as the basis for evidence.*** ***Plan investigations collaboratively using fair tests in which variables are controlled and the number of trials considered.***	**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. (UE.PS2A.a) ***A force is a push or pull.*** ***A force can cause an object to start moving, stop moving, or change the object's direction.*** ***All forces have strength and direction.*** ***Forces typically occur in pairs and can be either balanced or unbalanced.*** ***When balanced forces act on an object it will remain at rest, but if unbalanced forces act on the object it will begin to move.*** ***If an object is not moving, the total of the forces acting on it have a sum of zero.*** Forces that do not sum to zero can cause changes in the object's speed or direction of motion. (Qualitative and conceptual, but not quantitative addition of forces are used at this level.) (UE.PS2A.b) ***The motion of an object depends on the effects of multiple forces.*** ***If an object is moving, the total of the forces acting on it do not have a sum of zero.*** ***When unbalanced forces are applied to an object, they can cause the object to increase in speed or change in direction.*** **TYPES OF INTERACTIONS** Objects in contact exert forces on each other. (UE.PS2B.a) ***Whenever there is an interaction between two objects, there is a force upon each of the objects.***	**CAUSE AND EFFECT** Cause and effect relationships are routinely identified, tested, and used to explain change. ***Cause and effect relationships may be identified.*** ***Cause and effect relationships may be tested.*** ***Cause and effect relationships may be used to explain change.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Conduct investigations collaboratively using fair tests in which variables are controlled and the number of trials considered.	***When two objects are no longer in contact with one another, the two objects no longer experience the force.***	

Clarification Statement
Examples could include an unbalanced force on one side of an object that can make it start moving, or balanced forces pushing on an object from opposite sides will not produce any motion at all. Investigations include one variable at a time: number, size, or direction of forces.

Performance Expectation *and Louisiana Connectors*
3-PS2-2 Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. ***LC-3-PS2-2a Describe the patterns of an object's motion in various situations (e.g., a pendulum swinging, a ball moving on a curved track, a magnet repelling another magnet).*** ***LC-3-PS2-2b Predict future motion of an object given its pattern of motion.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Planning and carrying out investigations: Planning and carrying out investigations to answer questions (science) or test solutions (engineering) 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. ***Make observations to collect data.*** ***Make measurements to collect data.*** ***Use data to as evidence for an explanation of a phenomenon.***	**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. (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.) (UE.PS2A.c) ***Some objects move in a pattern (e.g., a pendulum swinging, a ball moving on a curved track, a magnet repelling another magnet).*** ***The patterns changing an object's motion can be observed and measured.*** ***The motion of an object can typically be observed and measured.*** ***Regular patterns changing an object's motion can be used to predict future motion.***	**PATTERNS** Patterns of change can be used to make predictions. ***A regular pattern of events can be used to predict a future event.***

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, or two children on a see-saw.

Performance Expectation *and Louisiana Connectors*
3-PS2-3 Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. ***LC-3-PS2-3a Ask questions to identify cause and effect relationships of magnetic interactions between two objects not in contact with each other (e.g., how the orientation of magnets affects the direction of the magnetic force).*** ***LC-3-PS2-3b Ask questions to identify cause and effect relationships of electric interactions (e.g., the force on hair from an electrically charged balloon) between two objects not in contact with each other (e.g., how the distance between objects affects the strength of the force).***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Asking questions and defining problems: Asking questions (science) and defining problems (engineering) in 3-5 builds on K-2 experiences and progresses to specifying qualitative relationships. • Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. ***Scientific questions arise in a variety of ways.*** ***Ask scientific questions to which the answers can be supported through investigation.*** ***Questions can be about the prediction of outcomes based on cause and effect relationships.***	**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. (UE.PS2B.b) ***There are some forces (e.g., electric and magnetic) that can change the motion of an object without having contact with that object.*** ***Magnets attract or repel other magnets and objects.*** ***Magnets can move objects without touching them.*** ***The size of the force depends on the properties of the objects.*** ***The size of the force also depends on the distance between the objects.*** ***The forces between two magnets depends on their orientation relative to each other.***	**CAUSE AND EFFECT** Cause and effect relationships are routinely identified, tested, and used to explain change. ***Cause and effect relationships may be identified.*** ***Cause and effect relationships may be tested.*** ***Cause and effect relationships may be used to explain change.***

Clarification Statement
Examples of an electric force could include the force on hair from an electrically charged balloon or 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 paper clips, or

Clarification Statement
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 the strength of the force or how the orientation of magnets affects the direction of the magnetic force. Examples could include forces produced by objects that can be manipulated by students, or electrical interactions could include static electricity.

Performance Expectation *and Louisiana Connectors*
3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets. ***LC-3-PS2-4a Identify and describe the scientific ideas necessary for solving a given problem about magnets (e.g., size of the force depends on the properties of objects, distance between the objects, and orientation of magnetic objects relative to one another).***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Asking questions and defining problems: Asking questions (science) and defining problems (engineering) in 3-5 builds on K-2 experiences and progresses to specifying qualitative relationships. • Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. ***A simple design problem can be solved with the development of a new or improved object, tool, or process.*** ***Develop an object which solves a problem using a simple design.*** ***Develop a tool which solves a problem using a simple design.*** ***Develop a process which solves a problem using a simple design.*** ***Develop a system which solves a problem using a simple design.*** ***Consider criteria for success of a***	**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, their orientation relative to each other. (UE.PS2B.b) ***There are some forces (e.g., electric and magnetic) that can change the motion of an object without having contact with that object.*** ***Magnets attract or repel other magnets and objects.*** ***Magnets can move objects without touching them.*** ***The size of the force depends on the properties of the objects.*** ***The size of the force also depends on the distance between the objects.*** ***The forces between two magnets depends on their orientation relative to each other.*** **DEFINING AND DELIMITING ENGINEERING PROBLEMS** Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (UE.ETS1A.a) ***Possible limits to a design can be in terms of materials, time, or cost.*** ***The criteria for success of a design must be determined.*** ***Solutions can be compared on how well they each solve the problem.*** ***Solutions can be compared on how well they each take the constraints into account.***	**PATTERNS** Patterns can be used as evidence to support an explanation. ***Patterns can be used as evidence.*** ***Patterns can be used to support an explanation.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
design. ***Consider limits to a design in terms of materials, time, or cost.***		

Clarification Statement
Examples of problems could include constructing a latch to keep a door shut or creating a device to keep two moving objects from touching each other.

Performance Expectation *and Louisiana Connectors*
3-LS1-1 Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. ***LC-3-LS1-1a Identify that organisms have unique and diverse life cycles.*** ***LC-3-LS1-1b Identify a common pattern between models of different life cycles.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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 and/or use models to describe and/or predict phenomena. ***Use models to describe phenomena.*** ***Use models to predict phenomena.***	**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. (UE.LS1B.a) ***Organisms must reproduce in order for their population to survive.*** ***Organisms (both plants and animals) have different life cycles.*** ***All plants and animals go through a life cycle of birth, growth, development, reproduction, and death.*** ***Patterns in life cycles are describable and differ from organism to organism.***	**PATTERNS** Patterns of change can be used to make predictions. ***A regular pattern of events can be used to predict a future event.***

Clarification Statement
Changes that organisms go through during their lives form a pattern. For plant life cycles there is an emphasis on flowering plants.

Performance Expectation *and Louisiana Connectors*
3-LS2-1 Construct and support an argument that some animals form groups that help members survive. ***LC-3-LS2-1a Describe that animals within a group help the group obtain food for survival, defend themselves, and survive changes in their ecosystem.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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 and/or support an argument with evidence, data, and/or a model. ***Use evidence to construct an argument.*** ***Use evidence to support an argument.*** ***Use data to construct an argument.*** ***Use data to support an argument.*** ***Use a model to construct an argument.*** ***Use a model to support an argument.***	**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. (UE.LS2D.a) ***Being part of a group helps some animals obtain food.*** ***Being part of a group helps some animals defend themselves.*** ***Being part of a group helps some animals cope with changes in the environment.*** ***The structure of groups of animals may serve many purposes.*** ***Groups of animals vary in size.***	**SYSTEMS AND SYSTEM MODELS** A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. ***A system is a group of related parts.*** ***A system works as a whole unit.*** ***A system is able to perform functions that its individual part cannot.***

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.

Performance Expectation *and Louisiana Connectors*
3-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from their parents and that variation of these traits exists in a group of similar organisms. ***LC-3-LS3-1a Identify similarities in the traits of a parent and the traits of an offspring.*** ***LC-3-LS3-1b Identify that characteristics of organisms are inherited from their parents.*** ***LC-3-LS3-1c Identify variations in similar traits in a group of similar organisms.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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, mathematics, and/or computation. ***Use logical reasoning to interpret data to make sense of phenomena.*** ***Use mathematics to interpret data to make sense of phenomena.*** ***Use computation to interpret data to make sense of phenomena.*** ***Analyze data to make sense of phenomena.***	**INHERITANCE OF TRAITS** Many characteristics of organisms are inherited from their parents. (UE.LS3A.a) ***Organisms inherit characteristics from parents.*** ***Organisms reproduce, develop, have predictable life cycles, and pass on many characteristics to their offspring.*** **VARIATION OF TRAITS** Different organisms vary in how they look and function because they have different inherited information. (UE.LS3B.a) ***Characteristics can vary within groups of similar organisms.*** ***Characteristics can vary within groups of similar organisms because of differences in what they inherited from their parents.*** ***Organisms with two parents inherit characteristics of both parents.***	**PATTERNS** Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena and designed products. ***Similarities and differences in patterns can be used to sort simple rates of change (natural phenomena and designed products).*** ***Similarities and differences in patterns can be used to classify simple rates of change (natural phenomena and designed products).*** ***Similarities and differences in patterns***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
		can be used to analyze simple rates of change (natural phenomena and designed products).

Clarification Statement
Emphasis is on organisms other than humans and does not include genetic mechanisms of inheritance and prediction of traits. Data can include drawings, photographs, measurements, or written observations. Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings.

Performance Expectation *and Louisiana Connectors*
3-LS3-2 Use evidence to support the explanation that traits can be influenced by the environment. ***LC-3-LS3-2a Identify examples of inherited traits that vary between organisms of the same type.*** ***LC-3-LS3-2b Identify a cause and effect relationship between an environmental factor and its effect on a given variation in a trait (e.g., not enough water produces plants that have fewer flowers than plants that had more water available).***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Constructing explanations and designing solutions: Constructing explanations (science) and designing solutions (engineering) 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., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. ***Support an explanation using evidence (e.g., measurements, observations, patterns).*** ***Construct an explanation using evidence (e.g., measurements, observations, patterns).***	**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. (UE.LS3A.b) ***Some traits in organisms that vary are influenced by the environment.*** ***Some traits in organisms that vary are influenced by the inheritance of traits.*** ***Many characteristics involve both inheritance and environment.*** **VARIATION OF TRAITS** The environment also affects the traits that an organism expresses. (UE.LS3B.b) ***The organism's environment can influence some traits.*** ***External environmental factors can modify an individual's specific development, appearance, behavior, and likelihood of producing offspring.***	**CAUSE AND EFFECT** Cause and effect relationships are routinely identified, tested, and used to explain change. ***Cause and effect relationships may be identified.*** ***Cause and effect relationships may be tested.*** ***Cause and effect relationships may be used to explain change.***

Clarification Statement
Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted or an animal that is given too much food and little exercise may become overweight.

Performance Expectation *and Louisiana Connectors*
3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. ***LC-3-LS4-1a Identify that fossils represent plants and animals that lived long ago.*** ***LC-3-LS4-1b Identify that fossils provide evidence about the environments in which organisms lived long ago (e.g., fossilized seashells indicate shelled organisms that lived in aquatic environments).***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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, mathematics, and/or computation. ***Use logical reasoning to interpret data to make sense of phenomena.*** ***Use mathematics to interpret data to make sense of phenomena.*** ***Use computation to interpret data to make sense of phenomena.*** ***Analyze data to make sense of phenomena.***	**EVIDENCE OF COMMON ANCESTRY AND DIVERSITY** Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (UE.LS4A.a) ***Some plants and animals that once lived on Earth are no longer alive.*** ***Most of the species that have lived on Earth no longer exist.*** Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environment. (UE.LS4A.b) ***Fossils provide us with evidence of organisms that lived long ago.*** ***Fossils provide us with evidence about the environment from the past in which living organisms once lived.***	**SCALE, PROPORTION, AND QUANTITY** Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods. ***Natural processes vary in size (very small to the immensely large).*** ***Natural processes vary in time span (very short to very long).*** ***Observable phenomena vary in size (very small to the immensely large).*** ***Observable phenomena vary in time span (very short to very long).***

Clarification Statement
Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include major fossil types such as marine fossils found on dry land, tropical plant fossils found in arctic areas, or fossils of extinct organisms and relative ages.

Performance Expectation *and Louisiana Connectors*
3-LS4-2 Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. ***LC-3-LS4-2a Identify features and characteristics that enable an organism to survive in a particular environment.*** ***LC-3-LS4-2b Identify features and characteristics that increase an organism's chances of finding mates.*** ***LC-3-LS4-2c Identify features and characteristics that increase an organism's chances of reproducing.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
Constructing explanations and designing solutions: Constructing explanations (science) and designing solutions (engineering) 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., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem. ***Support an explanation using evidence (e.g., measurements, observations, patterns).*** ***Construct an explanation using evidence (e.g., measurements, observations, patterns).***	**NATURAL SELECTION** Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (UE.LS4B.a) ***Different plants and animals of the same species have some different characteristics.*** ***Some organisms have characteristics that make them better able to survive than other organisms of the same species.*** ***Some organisms have characteristics that make them better able to find mates than other organisms of the same species.*** ***Some organisms have characteristics that make them better able to reproduce than other organisms of the same species.*** ***Characteristics that make it easier for some organisms to survive, find mates, and reproduce give those organisms an advantage over other organisms of the same species that don't have those characteristics.***	**CAUSE AND EFFECT** Cause and effect relationships are routinely identified, tested, and used to explain change. ***Cause and effect relationships may be identified.*** ***Cause and effect relationships may be tested.*** ***Cause and effect relationships may be used to explain change.***

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 or animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.

Performance Expectation *and Louisiana Connectors*
3-LS4-3 Construct and support an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. ***LC-3-LS4-3a Identify changes in a habitat that would cause some organisms to move to new locations.*** ***LC-3-LS4-3b Identify changes in a habitat that would cause some organisms to die.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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 and/or support an argument with evidence, data, and/or a model. ***Use evidence to construct an argument.*** ***Use evidence to support an argument.*** ***Use data to construct an argument.*** ***Use data to support an argument.*** ***Use a model to construct an argument.*** ***Use a model to support an argument.***	**ADAPTATION** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (UE.LS4C.a) ***Organisms of the same type can vary in appearance.*** ***Habitats can cause some organisms to survive well, less well, or not at all.*** ***There can be a cause and effect relationship between characteristics of some kinds of organisms (e.g., a specific variation in a characteristic) and its ability to survive and reproduce.*** ***These variations may provide an advantage in reproduction and survival.***	**CAUSE AND EFFECT** Cause and effect relationships are routinely identified, tested, and used to explain change. ***Cause and effect relationships may be identified.*** ***Cause and effect relationships may be tested.*** ***Cause and effect relationships may be used to explain change.***

Clarification Statement
Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitats make up a system in which the parts depend on each other.

Performance Expectation *and Louisiana Connectors*
3-LS4-4 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. ***LC-3-LS4-4a Identify evidence that supports a claim that changes in habitats affect the organisms living there.*** ***LC-3-LS4-4b Identify a solution to a problem that is caused when the environment changes.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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 a problem. ***Cite evidence to support a claim about the solution to a problem.*** ***Cite evidence to support a claim about how the solution to a problem meets the criteria.*** ***Cite evidence to support a claim about how the solution to a problem meets the constraints of the situation.***	**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. (UE.LS2C.a) ***Changes in one part of an Earth system affect other parts of the system.*** ***An environment's physical characteristics can change.*** ***An environment's temperature may change.*** ***Availability of natural resources can change over time in an environment.*** ***When an environment changes, some organisms survive and reproduce.*** ***When an environment changes, some organisms move to new locations.*** ***When an environment changes, some organisms move into the changed environment.*** ***When an environment changes, some organisms die.*** **BIODIVERSITY AND HUMANS** Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (UE.LS4D.a) ***Populations of organisms live in many different habitats.*** ***Changes to an environment have an impact on the living organisms in the habitat.*** ***Organisms change over time.*** **DEVELOPING POSSIBLE SOLUTIONS**	**SYSTEMS AND SYSTEM MODELS** A system can be described in terms of its components and their interactions. ***A system can be described in terms of its parts.*** ***A system can be described in terms of how its parts interact.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
	At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (ETS.UE.1B.b) ***Share ideas about how to solve problems with peers.*** ***Sharing ideas with peers can improve solution designs.***	

Clarification Statement
Examples of environmental change(s) could include changes in land characteristics, water distribution, temperature, food, and other biological communities. Louisiana specific examples could include impacts related to levees, dams, crop rotations, irrigation systems, hunting limits, diversion canals, or sea level rise.

Performance Expectation *and Louisiana Connectors*
3-ESS2-1 Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. ***LC-3-ESS2-1a Use data to describe observed weather conditions (e.g., temperature, precipitation, wind direction) during a season.*** ***LC-3-ESS2-1b Use data to predict weather conditions (e.g., temperature, precipitation, wind direction) during a season.***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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/or various graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. ***Use data tables to describe patterns that show relationships.*** ***Use graphical displays (bar graphs, pictographs and/or pie charts) to describe patterns that show relationships.***	**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. (UE.ESS2D.a) ***Scientists can use data tables to show how the weather changes over time.*** ***Looking at the records of weather over time can help us identify weather patterns.*** ***There are seasonal patterns that help people predict future weather.*** ***Weather scientists, called meteorologists, use weather patterns to predict typical weather conditions during a particular season in different areas.***	**PATTERNS** Patterns of change can be used to make predictions. ***A regular pattern of events can be used to predict a future event.***

Clarification Statement
Examples of data could include average temperature, precipitation, and wind direction. Examples of data representations could include pictographs and bar graphs.

Performance Expectation *and Louisiana Connectors*
3-ESS2-2 Obtain and combine information to describe climates in different regions around the world. ***LC-3-ESS2-2a Identify and describe climates in different regions of the world (e.g., equatorial, polar).***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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/ or other reliable media to explain phenomena or solutions to a design problem. ***Combine information from various books to explain phenomena.*** ***Combine information from various books to support a solution to a problem.*** ***Combine information from various forms of media to explain phenomena*** ***Combine information from various forms of media to support a solution to a problem.***	**WEATHER AND CLIMATE** Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (UE.ESS2D.b) ***Patterns of weather can be attributed to the climates in different regions.*** ***Climate describes how weather conditions in a region varies over time.*** ***Patterns in climate can be used to predict typical weather conditions.***	**PATTERNS** Patterns of change can be used to make predictions. ***A regular pattern of events can be used to predict a future event.***

Clarification Statement
Information could include rainfall and temperature data.

Performance Expectation *and Louisiana Connectors*
3-ESS3-1 Make a claim about the merit of a design solution that reduces the impact of a weather-related hazard. ***LC-3-ESS3-1a Identify the positive impact of a solution humans can take to reduce the impact of weather-related hazards (e.g., barriers to prevent flooding).***

Science and Engineering Practice	Disciplinary Core Idea	Crosscutting Concept
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. ***Cite evidence to support a claim about the solution to a problem.*** ***Cite evidence to support a claim about how the solution to a problem meets the criteria.*** ***Cite evidence to support a claim about how the solution to a problem meets the constraints of the situation.***	**NATURAL HAZARDS** A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (UE.ESS3B.a) ***Natural hazards are the result of natural processes.*** ***Earth's processes can affect human life.*** ***Humans can take steps to reduce the impacts that natural hazards have on humans.*** ***Among other things, structures can be built outside of the natural floodplains; structures can be built to prevent areas from flooding (levees, barrier islands); and forecasting can prevent loss of life.*** **DEVELOPING POSSIBLE SOLUTIONS** Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (ETS.UE.1B.a) ***Researching a problem allow scientists to define the problems that require solutions.*** ***Researching a possible solution to a problem will help show how well it is likely to meet the identified criteria for a successful solution.*** ***Testing a possible solution to a problem will help show how well it is likely to meet the identified criteria for a successful solution under different conditions.*** ***Engineers test their solutions under many conditions to determine the strengths and weaknesses of the solution.***	**CAUSE AND EFFECT** Cause and effect relationships are routinely identified, tested, and used to explain change. ***Cause and effect relationships may be identified.*** ***Cause and effect relationships may be tested.*** ***Cause and effect relationships may be used to explain change.***

Clarification Statement
Examples could include an unbalanced force on one side of an object that can make it start moving, or balanced forces pushing on an object from opposite sides will not produce any motion at all. Investigations include one variable at a time: number, size, or direction of forces.