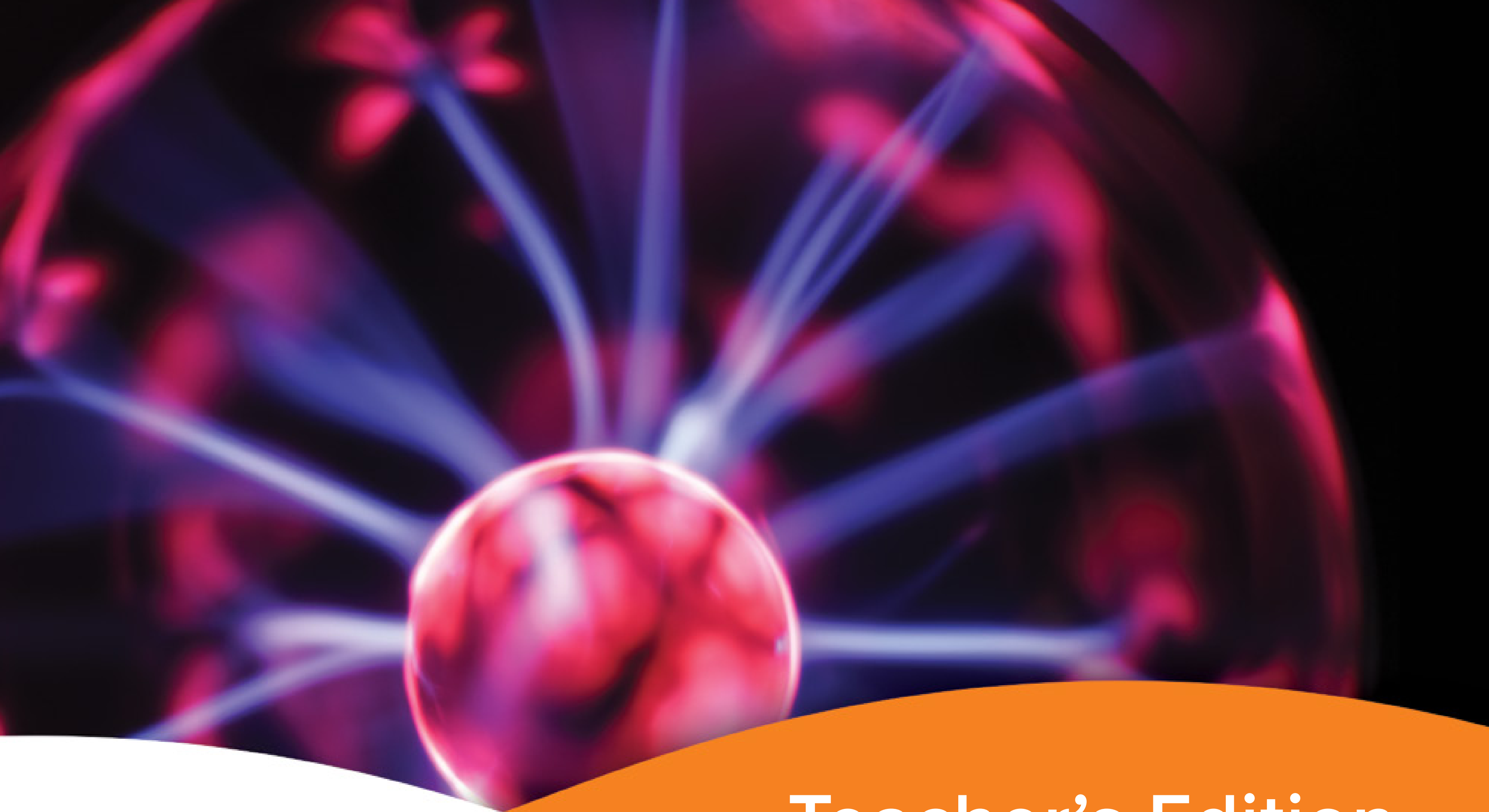
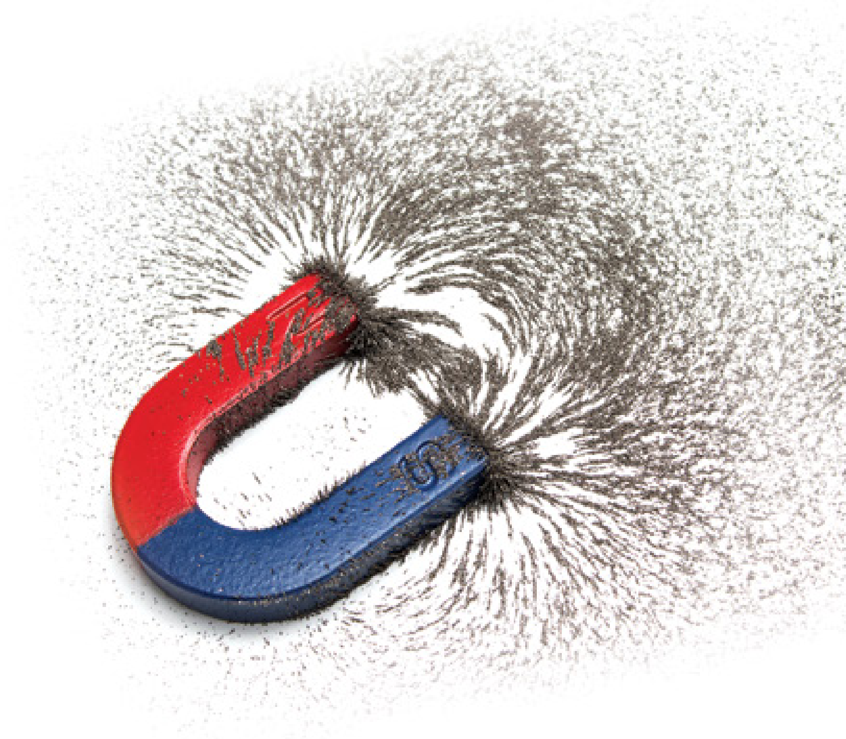


Teacher's Edition

Grade 3 • Unit 1

Inspire Science

Forces Around Us



McGraw Hill Education

Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

Performance Expectations	MODULE: Forces and Motion	MODULE: Electricity and Magnetism
3–5-ETS1-1	●	●
3–5-ETS1-2	●	●
3-PS2-1	●	
3-PS2-2	●	
3-PS2-3		●
3-PS2-4		●

Correlations by Module to the NGSS

MODULE: Forces and Motion

3–5-ETS	Engineering Design	
3–5-ETS1-1	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**	*8–9*, 24–25, 33, *36–37, 41–44*
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Asking questions and defining problems in 3–5 builds on grades 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. (3–5-ETS1-1)		*8–9*, 11, *24–25*, 33, *36–37*, *43–44*
DCI Disciplinary Core Ideas		
ETS1.A: 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. (3–5-ETS1-1)		*8–9*, *24–25*, 33, *36–37*, *43–44*

Inquiry activities are in Italics.

Continued from previous page.

CCC **Crosscutting Concepts**	
Influence of Engineering, Technology, and Science on Society and the Natural World • People's needs and wants change over time, as do their demands for new and improved technologies. (3–5-ETS1-1)	*36–37*, *43–44*

3–5-ETS	**Engineering Design**	
3–5-ETS1-2	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**	*24–25*, *24–25*, *33*, *36–37*, *41–44*
SEP **Science and Engineering Practices**		
Constructing Explanations and Designing Solutions 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. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3–5-ETS1-2)		*24–25*, *30–31, 36–37*, *43–44*
DCI **Disciplinary Core Ideas**		
ETS1.B: 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. (3–5-ETS1-2) • 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. (3–5-ETS1-2)		24–25, *36–37*, *43–44*
CCC **Crosscutting Concepts**		
Influence of Engineering, Technology, and Science on Society and the Natural World • Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3–5-ETS1-2)		*36–37*, 43–44

Inquiry activities are in Italics.

3-PS2	Motion and Stability: Forces and Interactions	
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.** *[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 both 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.]*	*24–26*, 27, 29, 30–31, *36–37*, *43–44*
SEP Science and Engineering Practices		
Connections to Nature of Science Scientific Investigations Use a Variety of Methods Science investigations use a variety of methods, tools, and techniques. (3-PS2-1)		*24–25*, 30–31, *36–37*
Planning and Carrying Out Investigations 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. (3-PS2-1)		*8–9*, *16–17*, 24–25, 41–44
DCI Disciplinary Core Ideas		
PS2.A: 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.) (3-PS2-1)		*26*, 28–29, 30–31
PS2.B: Types of Interactions • Objects in contact exert forces on each other. (3-PS2-1)		28–29, 30–31, *36–37*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified. (3-PS2-1)		*25*, 28–29, 30–31, *36–37*

Inquiry activities are in Italics.

3-PS2	Motion and Stability: Forces and Interactions	
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.** *[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 seesaw.] [Assessment Boundary: Assessment does not include technical terms such as period and frequency.]*	*8–9*, 13–14, *16–17*, *24–26*

SEP Science and Engineering Practices	
Connections to Nature of Science Science Knowledge is Based on Empirical Evidence • Science findings are based on recognizing patterns. (3-PS2-2)	*8*, 13, *16–17*
Planning and Carrying Out Investigations 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. (3-PS2-2)	*8–9*, 16–17
DCI Disciplinary Core Ideas	
PS2.A: 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)	*8–9*, 12–13, 14, *16–17*
CCC Crosscutting Concepts	
Patterns • Patterns of change can be used to make predictions. (3-PS2-2)	*8–9*, 13, 14

Other Correlations	
Math Connections	
3.O.A.A.1-7	*16–17*
MP.5	*8*, *16–17*, *25*, *37*
MP.6	*8*, 11, *16*–17, *25*, *37*

Inquiry activities are in Italics.

Continued from previous page.

ELD Connections	
ELD.P1.3.1	Teacher Edition *Only*: 18
ELD.P1.3.5	Teacher Edition *Only*: 35
ELD.P1.3.12	Teacher Edition *Only*: 12–13, 38
CCSS ELA/Literacy Connections	
RI.3.4	10–12, 32
L.3.4	10–12
ALSO INTEGRATES	
CCC Stability and Change	12–14
Math 3.MD.B.4	*24–25*
ELA RI.3.1	28–29, 30–31, *37*
ELA RI.3.2	32–33
ELA W.3.7	32–33
ELA W.3.8	32–33

MODULE: Electricity and Magnetism

3–5-ETS	Engineering Design	
3–5-ETS1-1	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**	*52–53*, 60, 62, *63*, *88–89*
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Asking questions and defining problems in 3–5 builds on grades 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. (3–5-ETS1-1)		*52–53*, 60, 62, *63*, *88–89*

Inquiry activities are in Italics.

Continued from previous page.

DCI Disciplinary Core Ideas	
ETS1.A: 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. (3–5-ETS1-1)	60,*63*, *88–89*
CCC Crosscutting Concepts	
Influence of Engineering, Technology, and Science on Society and the Natural World • People's needs and wants change over time, as do their demands for new and improved technologies. (3–5-ETS1-1)	60, 62, *63*, *88*

3–5-ETS	Engineering Design	
3–5-ETS1-2	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**	*78–79*, *88–89*
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions 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. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3–5-ETS1-2)		*70–71*, *78–79*, *88–89*
DCI Disciplinary Core Ideas		
ETS1.B: 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. (3–5-ETS1-2) • 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. (3–5-ETS1-2)		*70–71*, *78–79*, *88–89*
CCC Crosscutting Concepts		
Influence of Engineering, Technology, and Science on Society and the Natural World • Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3–5-ETS1-2)		76, *78–79*, 80, *88–89*

Inquiry activities are in Italics.

3-PS2	Motion and Stability: Forces and Interactions	
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.** *[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.]*	*52–53*, 56–57, 60, 62, *63*
SEP Science and Engineering Practices		
Asking Questions and Defining Problems 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. (3-PS2-3)		*52–53*, 56–57, 60, 62, *63*
DCI Disciplinary Core Ideas		
PS2.B: 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)		*52–53*, 56–57, *63*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified, tested, and used to explain change. (3-PS2-3)		*52–53*, *63*, *70–71*, *78–79*, 81

3-PS2	Motion and Stability: Forces and Interactions	
3-PS2-4	**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.]*	*70–71*, *74*, 75, *78–79*, 81

Inquiry activities are in Italics.

SEP Science and Engineering Practices	
Asking Questions and Defining Problems • Define a simple problem that can be solved through the development of a new or improved object or tool. (3-PS2-4)	*71*, 73, *74*, 75, *78–79*, 81
DCI Disciplinary Core Ideas	
PS2.B: 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-PS2-4)	*70–71*, 72 –73, *74*, 75, *78–79*, 81
CCC Crosscutting Concepts	
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)	76, *78–79*, 81

Other Correlations	
CCSS Math Connections	
MD.B.3	*78–79*
ELD Connections	
ELD P1.3.1	81
ELD. P1.3.5	Teacher Edition *Only*: 62, 80
CCSS ELA/Literacy Connections	
ELD P1.3.12	55, 64, 77
L.3.4	56–57, 72–73
L.3.5	72–73
RI.3.4	56–57, 58 –59, 72–73, 76
RI.3.7	56, 73, 81

Inquiry activities are in Italics.

Teacher's Edition

Grade 3 • Unit 2

Inspire Science

Life Cycles and Traits

McGraw Hill Education

Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

Performance Expectations	MODULE: **Plants**	MODULE: **Animals**
3-LS1-1	●	●
3-LS2-1		●
3-LS3-1	●	●
3-LS4-2	●	●

Correlations by Module to the NGSS

MODULE: Plants		
3-LS1	**From Molecules to Organisms: Structures and Processes**	
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.** *[Clarification Statement: Changes 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.]*	*8*, 10–11, 13–14, *17*, *40–41*
SEP Science and Engineering Practices		
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. (3-LS1-1)		12, 14, *17*, *40–41*
Scientific Knowledge is Based on Empirical Evidence • Science findings are based on recognizing patterns. (3-LS1-1)		*9*, *11–12*, 14
DCI Disciplinary Core Ideas		
LS1.B: 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)		5, *8–9*, 11–14, 17, 19, *40–41*

Inquiry activities are in Italics.

Continued from previous page.

CCC Crosscutting Concepts	
Patterns • Patterns of change can be used to make predictions. (3-LS1-1)	*8–9*, 11–12, 14, *17*, *29*, 33

3-LS3	Heredity: Inheritance and Variation of Traits	
3-LS3-1	**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.]*	*24*, 25, *28–29*, 33
SEP Science and Engineering Practices		
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. (3-LS3-1)		*24*, *28–29*, 33
DCI Disciplinary Core Ideas		
LS3.A: Inheritance of Traits • Many characteristics of organisms are inherited from their parents. (3-LS3-1)		26–27, *28–29*, 33, 35
LS3.B: Variation of Traits • Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)		21, 27, *28–29*, 33, 35
CCC Crosscutting Concepts		
Patterns • Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)		*24*, *28–29*, 33, 34

Inquiry activities are in Italics.

3-LS4	Biological Evolution: Unity and Diversity	
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.** *[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.]*	*28–29*, 32
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions 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. (3-LS4-2)		*28–29*
DCI Disciplinary Core Ideas		
LS4.B: Natural Selection • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)		26, *28–29*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS4-2)		27, *28–29*

Other Correlations	
CCSS Math Connections	
3.MD.B.4	*28, 40*
ELD Connections	
ELD.3.PI.9	15, 32, 34

Inquiry activities are in Italics.

Continued from previous page.

CCSS ELA/Literacy Connections	
RI.3.7	10–11, 14
SL.3.1-3.3	7, *8–9*, 23, 40,
ALSO INTEGRATES:	
SEP Analyzing and Interpreting Data	*8–9*, 14, *17*, 33
SEP Engaging in Argument from Evidence	14, *17*, 25, *28*
SEP Planning and Carrying Out Investigations	*28*, *37–42*
CCC Stability and Change	*17*, *40*
CCC Structure and Function	10–11, 26
ELD.3.PI.3.1	18
ELD.3.PI.3.12	12
ELA RI.3.1	27, 32
ELA RI.3.3	*30–31*
ELA W.3.2	*29*

MODULE: Animals

3–5-ETS	From Molecules to Organisms: Structures and Processes	
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.** *[Clarification Statement: Changes 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.]*	47, *50–51*, 52–55, *57*, *59*, 61
SEP Science and Engineering Practices		
Developing and Using Models Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. • Develop models to describe phenomena (3-LS1-1)		47, *50–51*, 52–53, *56–57*, *59*

Inquiry activities are in Italics.

Continued from previous page.

Scientific Knowledge is Based on Empirical Evidence Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. • Science findings are based on recognizing patterns. (3-LS1-1)	47, 53–55, *59*, 61
DCI Disciplinary Core Ideas	
LS1.B: 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)	47, *50–51*, 52–55, *56–57*, *59*, 60–61
CCC Crosscutting Concepts	
Patterns • Patterns of change can be used to make predictions. (3-LS1-1)	47, *50–51*, 53–55, *59*, 61

3-LS2	Ecosystems: Interactions, Energy, and Dynamics	
3-LS2-1	**Construct an argument that some animals form groups that help members survive.**	*82–84*, 85, 86, 88, *90–91*, *93*
SEP Science and Engineering Practices		
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. (3-LS2-1)		*82–84*, 85, *93*
DCI Disciplinary Core Ideas		
LS2.D: 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. (Note: Moved from K–2.) (3-LS2-1)		79, 86–88, *90–91*, *93*, 95
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS2-1)		*82–83*, *90–91*, 95

Inquiry activities are in Italics.

3-LS3	Heredity: Inheritance and Variation of Traits	
3-LS3-1	**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.]*	65, *66–67*, 69, 72–73, 74, *75*

SEP Science and Engineering Practices

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. (3-LS3-1)	*66–67*, *75*

DCI Disciplinary Core Ideas

LS3.A: Inheritance of Traits • Many characteristics of organisms are inherited from their parents. (3-LS3-1)	63, *66–67*, 68–69, 74, 77
LS3.B: Variation of Traits • Different organisms vary in how they look and function because they have different inherited information. (3-LS3-1)	*66–67*, 68–69, 72, 74, 77

CCC Crosscutting Concepts

Patterns • Similarities and differences in patterns can be used to sort and classify natural phenomena. (3-LS3-1)	65, *66–67*, 69, *75*, 77

3.LS4	3-LS4 Biological Evolution: Unity and Diversity	
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.** *[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.]*	70–71, 72–73, *75*

Inquiry activities are in Italics.

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SEP Science and Engineering Practices	
Constructing Explanations and Designing Solutions 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. (3-	63, *67*, 68–69, 70–71, 72–73, *75*, 76
DCI Disciplinary Core Ideas	
LS4.B: Natural Selection • Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)	65, 69, 70–71, 72–73, *75*
CCC Crosscutting Concepts	
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS4-2)	69, 70–71, 72–73, *75*

Other Correlations	
CCSS Math Connections	
3.MD.B.4	
ELD Connections	
ELD.3.PI.9	Teacher Edition *Only*: *50–51*, 54, *56–57*, 65, 71, 72, 74, 88
ELD.3.PI.12	Teacher Edition *Only*: 85
CCSS ELA/Literacy Connections	
RI.3.7	52–55, 70–71
SL.3.1-3.3	49, *56–57*, 65, 71, 81, *102*
ALSO INTEGRATES:	
SEP Analyzing and Interpreting Data	*66–67*, *93*
CCC Cause and Effect	*56–57*, *59*, 77
CCC Stability and Change	*56–57*, *59*
CCC Structure and Function	69

Inquiry activities are in Italics.

Continued from previous page.

Math 3.MD.B.3	*50*
Math 3.MD.B.4	*66*
ELD.PI.3.1	Teacher Edition *Only*: *60*, *92*
ELD.PI.3.2	Teacher Edition *Only*: *60*
ELD.PI.3.11	76
ELA W.3.1	71
ELA W.3.2	95
ELA W.3.7	*59*

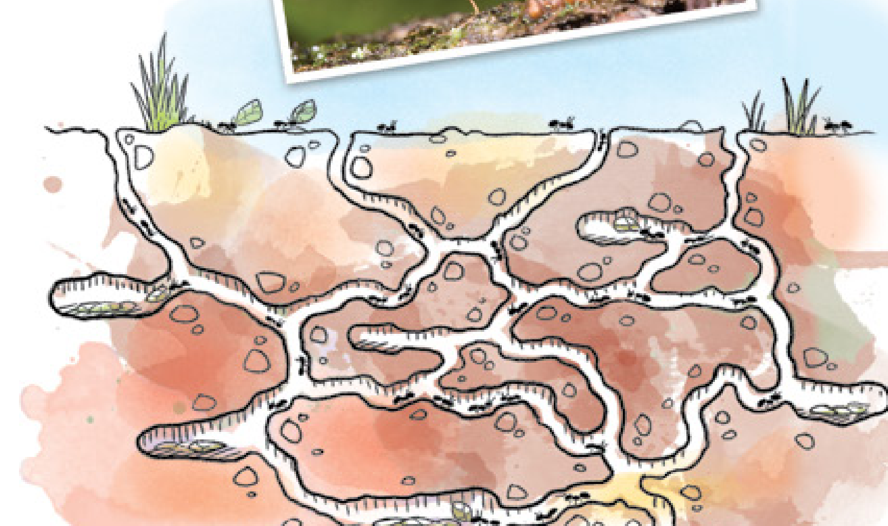
Inquiry activities are in Italics.

Teacher's Edition

Grade 3 • Unit 3

Inspire Science

Different Environments



McGraw Hill Education

Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

Performance Expectations	MODULE: **Survive the Environment**	MODULE: **Change of Environments**
3–5-ETS1-1		●
3–5-ETS1-3	●	
3-LS3-2	●	
3-LS4-1		●
3-LS4-3	●	●
3-LS4-4		●

Correlations by Module to the NGSS

MODULE: Survive the Environment		
3–5-ETS	**Engineering Design**	
3–5-ETS1-3	**Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**	*8–9, 11–12. 26–28, 31, 38–39, 43–46*
SEP Science and Engineering Practices		
Planning and Carrying Out Investigations 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. (3–5-ETS1-3)		*8–9, 11–12, 43–46*
DCI Disciplinary Core Ideas		
ETS1.B: Developing Possible Solutions • Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3–5-ETS1-3)		*11–12, 38–39, 45–46*
ETS1.C: Optimizing the Design Solution • Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3–5-ETS1-3)		*11–12 26–27, 31, 38–39, 45–46*

Inquiry activities are in Italics.

3-LS3	Heredity: Inheritance and Variation of Traits	
3-LS3-2	**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; and a pet dog that is given too much food and little exercise may become overweight.]*	*8–9*, *11–12*, 30, 32–34, *45–46*
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions 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. (3-LS3-2)		5, *8–9*, 10, 14, 21
DCI Disciplinary Core Ideas		
LS3.A: 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. (3-LS3-2)		*8–9*, *11–12*, 14, 21
LS3.B: Variation of Traits • The environment also affects the traits that an organism develops. (3-LS3-2)		*8–9*, 21, 32–34, *26–28*, *38–39*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2)		*8–9*, *11–12*, 14, 21

3-LS4	Biological Evolution: Unity and Diversity	
3-LS4-3	**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.]*	14, 16–17. 36, 38, *38–39*, *45–46*

Inquiry activities are in Italics.

SEP Science and Engineering Practices	
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. (3-LS4-3)	29, 35, *38–39*
DCI Disciplinary Core Ideas	
LS4.C: Adaptation • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)	*31*, 32–34, 36, *38–39*, 41, *43–46*
CCC Crosscutting Concepts	
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)	*26–28*, 30, *31*, 36, *38–39*, 41

Other Correlations	
CCSS Math Connections	
3.MD.B.4	*26–27*
ELD Connections	
ELD.PI.3.10	*11–12*, 15, 18–19, 33, 36, *38–39*, 40, *43–46*
CCSS ELA/Literacy Connections	
RI.3.7	14, 36
SL.3.1-3.3	*8–9*, *38–39*, *46*
ALSO INTEGRATES:	
3–5-ETS1-1	39–*40*, *44–48*
SEP Analyzing and Interpreting Data	*8–9*, *11–12*, *26–28*
SEP Constructing Explanations and Designing Solutions	23, *28*, 29, *38–39*, *45–46*
SEP Obtaining, Evaluating, and Communicating Information	*8–9*, *11–12*, *26–28*, *38–39*, *43–46*

Inquiry activities are in Italics.

Continued from previous page.

SEP Planning and Carrying Out Investigations	*26–28*, *37*, *38–39*
DCI LS2.C	*11–12*, 14, 16–17, 34, 38, *38–39*, 41
DCI LS4.D	14, 32–34, *43–46*
CCC Patterns	*8–9*
CCC Scale, Proportion, and Quantity	*11–12*, 15, *43–46*
CCC Systems and System Models	10, 13, 15, *38–39*, *43–46*
Math 3.MD.B.3	*11*
ELD.PI.3.1	*8–9*, 16–17, *38–39*, *43–46*
ELD.PI.3.10	*11–12*, 15, 18–19, 33, 36, *38–39*, 40, *43–46*
ELD.PI.3.11	*8–9*, *11–12*, 15, 18–19, 20, 37, *38–39*, *43–46*
ELA RI.3.1	10, 13, 16–17
ELA RI.3.3	*11–12*, 15, 36, *38–39*, *43–46*
ELA W.3.1	*11–12*, 15, 36, *38–39*, *43–46*
ELA W.3.7	*11–12*

MODULE: Change the Environment

3–5-ETS	Engineering Design	
3–5-ETS1-1	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**	77, 81, *85–90*
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Asking questions and defining problems in 3–5 builds on grades 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. (3–5-ETS1-1)		81, *85–90*

Inquiry activities are in Italics.

Continued from previous page.

DCI Disciplinary Core Ideas	
ETS1.A: 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. (3–5-ETS1-1)	77, 81, *85–90*
CCC Crosscutting Concepts	
Influence of Engineering, Technology, and Science on Society and the Natural World • People's needs and wants change over time, as do their demands for new and improved technologies. (3–5-ETS1-1)	*72*, 77, *85–90*

3-LS4	Biological Evolution: Unity and Diversity	
4-LS4-1	**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.] Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.*	*54–55*, 58, *59*, 60, *61*, 63, *64–65*, 67, *85–90*
SEP Science and Engineering Practices		
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. (3-LS4-1)		*54–55*, *59*, *61*, *64–65*
DCI Disciplinary Core Ideas		
LS4.A: Evidence of Common Ancestry and Diversity • Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: Moved from K -2.) (3-LS4-1) • Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)		*54–55*, 56–58, *61*, *64–65*, 67, *85–90*

Inquiry activities are in Italics.

Continued from previous page.

CCC Crosscutting Concepts	
Scale, Proportion, and Quantity • Observable phenomena exist from very short to very long time periods. (3-LS4-1)	*54–55*, 56–57, *59*, *61*, 67
Scientific Knowledge Assumes an Order and Consistency in Natural Systems • Science assumes consistent patterns in natural systems. (3-LS4-1)	58, *59*, 60, 63, *64–65*, *85–90*

3-LS4	Biological Evolution: Unity and Diversity	
3-LS4-3	**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.]*	51, 58, 67, 69, 75–76, 78–79, *81*, *85–90*
SEP Science and Engineering Practices		
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. (3-LS4-3)		51, *59*, 73, 76, 77, *81*, *88–90*
DCI Disciplinary Core Ideas		
LS4.C: Adaptation • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)		67, 75–76, 78–79, *81*, *85–90*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)		67, *72*, 74, 75–76, 77, 78–79, *81*, 82, *85–90*

Inquiry activities are in Italics.

3-LS4	Biological Evolution: Unity and Diversity	
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.*** *[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.]*	*72*, 75–76, 77, *81*, *85–90*
SEP Science and Engineering Practices		
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. (3-LS4-4)		73, 76, 77, *81*, *88–90*
DCI Disciplinary Core Ideas		
LS2.C: 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)		*72*, 75–76, 77, 78–79, *81*, *85–90*
LS4.D: Biodiversity and Humans • Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)		*72*, 74–76, 77, 78–79, *81*, 83, *85–90*
CCC Crosscutting Concepts		
Systems and System Models • A system can be described in terms of its components and their interactions. (3-LS4-4)		74–76, 83, *85–90*
Connections to Engineering, Technology, and Applications of Science **Interdependence of Engineering, Technology and Applications of Science on Society and the Natural World** • Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)		*72, 77, 85–90*

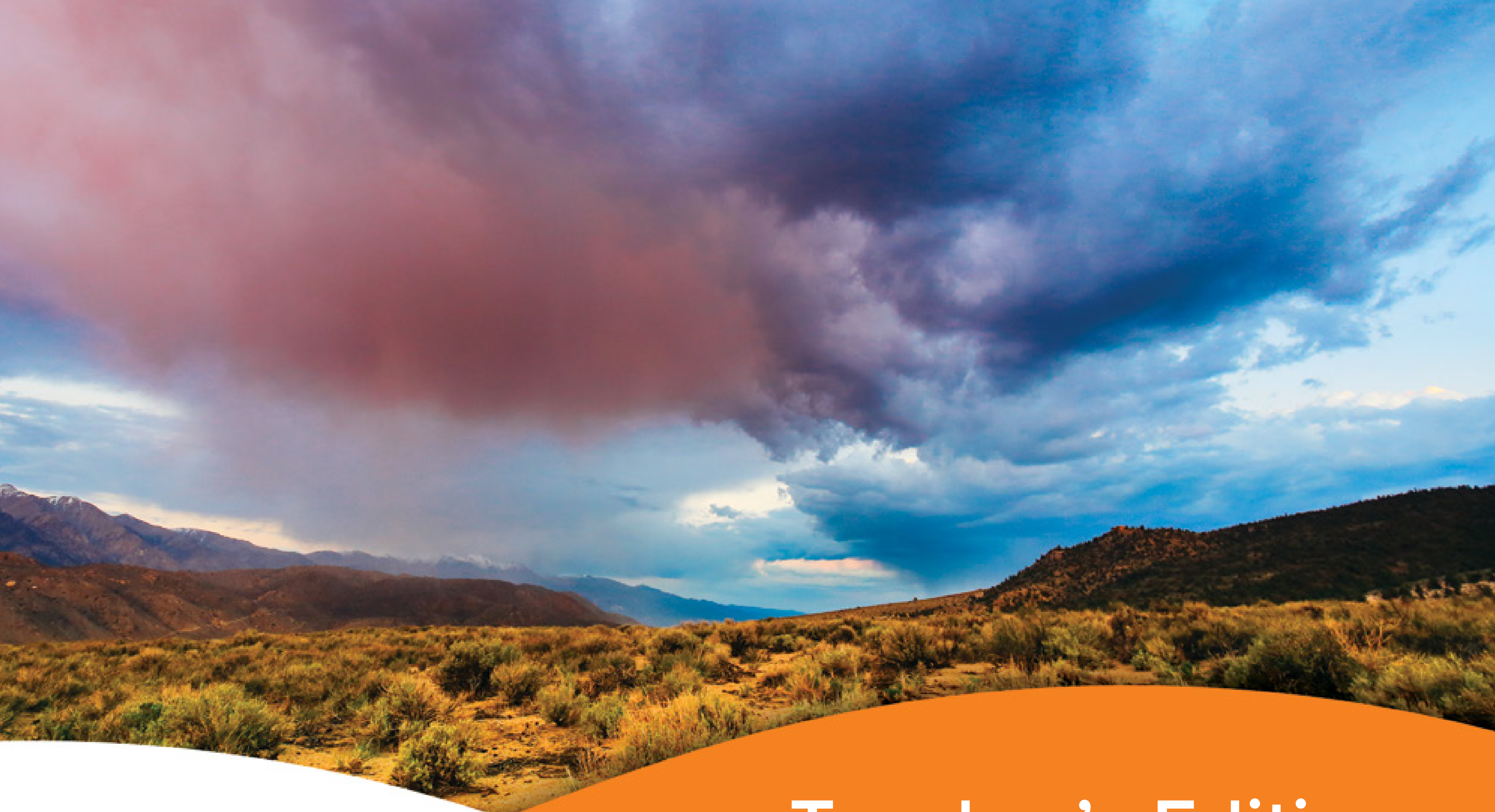
Other Correlations	
CCSS Math Connections	
MP. 2	*54, 64*
MP.5	*54*
3.MD.B.3	*64–65*

Inquiry activities are in Italics.

Continued from previous page.

ELD Connections	
ELD.PI.3.1	Teacher's Edition *Only*: 66
ELD.PI.3.10	Teacher's Edition *Only*: *72*, 73, 82
ELD.PI.3.11	Teacher's Edition *Only*: *72*, 73
CCSS ELA/Literacy Connections	
RI.3.1, 3, 5, 7	56–57, 58, 60, *61*, 63, 74–76
SL.3.1	*59*, 79, *81*
W.3.1, 7	*72*, 77, *81*
ALSO INTEGRATES:	
CCC Patterns	*54–55*, *59*
Math 3.MD.B.2	*54–55*
ELD.PI.3.5	Teacher's Edition *Only*: 60
ELD.PI.3.6	Teacher's Edition *Only*: 58, 80
ELA W.3.2	57, 77

Inquiry activities are in Italics.



Teacher's Edition

Grade 3 • Unit 4

Inspire Science

Observing Weather

McGraw Hill Education

Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

Performance Expectations	MODULE: **Weather**
3-ESS2-1	●
3-ESS2-2	●
3-ESS3-1	●
3–5-ETS1-1	●
3–5-ETS1-2	●

Correlations by Module to the NGSS

MODULE: Weather

3-ESS2	**Earth's Systems**	
3-ESS2-1	**Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.** *[Clarification Statement: Examples of data 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.]*	*8–9*, *16–17*, 21, *24–25*, 26–27, 28, 29–30, 31, 32, *34–35*
SEP Science and Engineering Practices		
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, pictographs) to reveal patterns that indicate relationships. (3-ESS2-1)		*8–9*, 14, *16–17*, 19, *24–25*, 28, 32, *34–35*
DCI Disciplinary Core Ideas		
ESS2.D: 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)		*8–9*, 13–14, 15, *16–17*, 19
CCC Crosscutting Concepts		
Patterns • Patterns of change can be used to make predictions. (3-ESS2-1)		*8–9*, 10–13, 15, *16–17*, 18, 19

Inquiry activities are in Italics.

3-ESS2	From Molecules to Organisms: Structures and Processes	
3-ESS2-2	**Obtain and combine information to describe climates in different regions of the world.**	21, *24–25*, 26, 28, 29–30, 31, 32, 33, *34–35*, 37
SEP Science and Engineering Practices		
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. (3-ESS2-2)		21, 23, *24–25*, 26–27, 28, 29–30, 31, 32, *34–35*, 36, 37, *42–43*, 44–45, *46*, 47, 48–49, 51, *58*, 61, 62–63, *64–65*, 66–67, 68, *70–71*, 72, *75–80*
DCI Disciplinary Core Ideas		
ESS2.D: 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)		26, 28–30, 31, 32, 33, *34–35*, 37, 53
CCC Crosscutting Concepts		
Patterns • Patterns of change can be used to make predictions. (3-ESS2-2)		21, 23, *24–25*, 26–27, 28, 29–30, 31, 32, 33, *34–35*, 37, 53

3-ESS3	Earth's Place in the Universe	
3-ESS3-1	**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, and lightning rods.]*	41, *42–43*, 44–45, *46*, 47, 48–49, 53, 55, *58*, 61, 62–63, *64–65*, 66–67, 68, *70–71*, 72, *75–80*
SEP Science and Engineering Practices		
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. (3-ESS3-1)		*42–43*, 61, *64–65*, 66–67, *70–71*
DCI Disciplinary Core Ideas		
ESS3.B: Natural Hazards • A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)		39, 41, *42–43*, 44–45, *46*, 47, 48–49, 53, 55, *58*, 61, 62–63, *64–65*, 66–67, 68, *70–71*, 72, 73, *75–80*

Inquiry activities are in Italics.

Next Generation Science Standards

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CCC Crosscutting Concepts	
Cause and Effect • Cause and effect relationships are routinely identified, tested, and used to explain change. (3-ESS3-1)	39, *42–43*, 45, *46*, 47, 48–49, 53, *58*, 73
Connections to Nature 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)	51, *58*, 62–63, *64–65*, 68, *70–71*
Science is a Human Endeavor • Science affects everyday life. (3-ESS3-1)	62–63

3–5-ETS	Engineering Design	
3–5-ETS1-1	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**	*58*, 62–63, *64–65*, *70–71*, *75–80*
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Asking questions and defining problems in 3–5 builds on grades 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. (3–5-ETS1-1)		41, 62–63, *64–65*, *70–71*
DCI Disciplinary Core Ideas		
ETS1.A: 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. (3–5-ETS1-1)		*58*, 62–63, *64–65*, 68, *70–71*, *75–80*
CCC Crosscutting Concepts		
Influence of Engineering, Technology, and Science on Society and the Natural World • People's needs and wants change over time, as do their demands for new and improved technologies. (3–5-ETS1-1)		*58*, 62–63, *64–65*, *70–71*

Inquiry activities are in Italics.

3–5-ETS	Engineering Design	
3–5-ETS1-2	**Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**	*47*, 63, *70–71*, *75–80*
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions 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. • Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3–5-ETS1-2)		*42–43*, *47*, 51, 55, *58*, 62–63, *64–65*, *70–71*, 72, *75–80*
DCI Disciplinary Core Ideas		
ETS1.B: 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. (3–5-ETS1-2) • 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. (3–5-ETS1-2)		*43*, 51, *64–65*, *70*–71, *75–80*
CCC Crosscutting Concepts		
Influence of Engineering, Technology, and Science on Society and the Natural World • Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3–5-ETS1-2)		51, 62–63, 68

Other Correlations	
CCSS Math Connections	
3.MD.B.3	11, *16–17*, 28, *35*
3.MD.B.4	*47*
ELD Connections	
ELD.PI.3.1	Teacher's Edition *Only*: 3, *8–9*, 18, 23, *24–25*, 36, 41, *42–43*, 52, 57, *58*, 66–67, *75–80*
ELD.PI.3.2	Teacher's Edition *Only*: 13, 20, 68

Inquiry activities are in Italics.

Continued from previous page.

ELD.PI.3.5	Teacher's Edition *Only*: 3, *8–9*, 11, *16–17*, 23, *24–25*, 29, 41, *42–43*, 57, *58*, 66–67, *75–80*
ELD.PI.3.9	Teacher's Edition *Only*: *16–17*, 51, *75–80*
CCSS ELA/Literacy Connections	
RI.3.1, 3, 4, 5, 7	5, *8–9*, 10–11, 12–13, 15, *16–17*, 19, 21, *24–25*, 26–27, 28, 29–30, 32, 33, *34–35*, 39, 45, 47, 51, 62–63, 66–67
SL.3.1, 2, 3, 4	3, *8–9*, 18, 23, *24–25*, 36, 41, *42–43*, 57, *58*, 66–67, 72, *75*–80
W.3.8	*8–9*, *16–17*, *24–25*, 28, 31, 32, *42–43*, 68
ALSO INTEGRATES:	
SEP Analyzing and Interpreting Data	*42–43*, *58*
SEP Constructing Explanations and Designing Solutions	*8–9*, 10–11, 12, 18, *24–25*, 29–30, 32, *34–35*, 36, 37
SEP Engaging in Argument from Evidence	5, 21, *24–25*
SEP Obtaining, Evaluating, and Communicating Information	5, *8–9*, 10–11, 12–14, 15, *16–17*, 18, 19
SEP Planning and Carrying Out an Investigation	*34–35*
CCC Cause and Effect	10–13, 23, 27, 29–30, *34–35*, 37
CCC Structure and Function	23, 29–30, 32, 37, 45, *58*, 61, 62–63, *64–65*, *70–71*
Math MP.5	*8–9*, 10–11, 14, *16–17*, 19, *24–25*, 28, 32, *34–35*, *42–43*
ELD.PI.3.6	Teacher's Edition *Only*: 33, 46

Inquiry activities are in Italics.