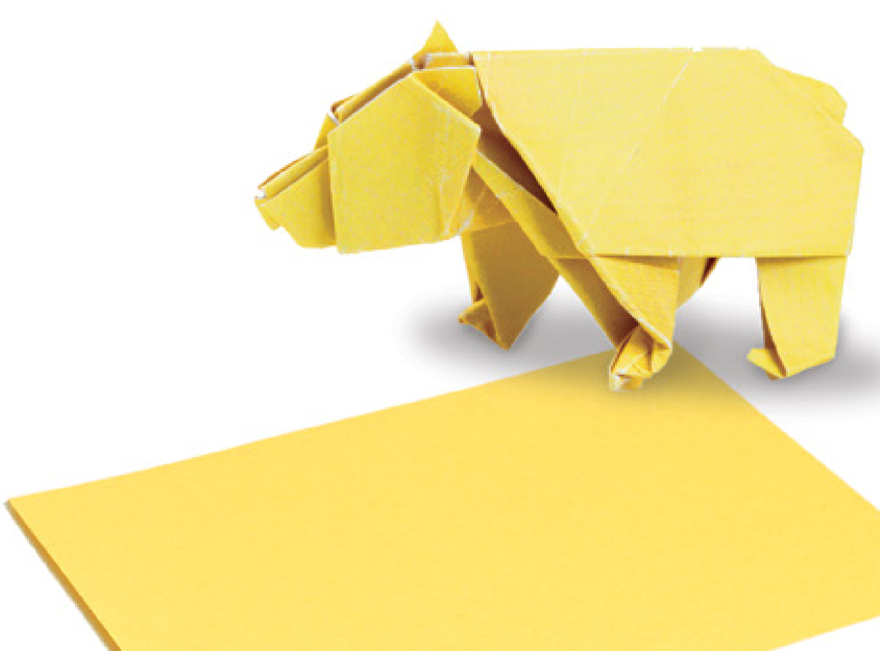
Teacher's Edition

Grade 5 • Unit 1

Inspire Science

Investigate Matter



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: **Matter**
5-PS1-1	●
5-PS1-2	●
5-PS1-3	●
5-PS1-4	●
3–5-ETS1-3	●

Correlations by Module to the NGSS

MODULE: Matter		
5-PS1	**Matter and Its Interactions**	
5-PS1-1	**Develop a model to describe that matter is made of particles too small to be seen.** *[Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]*	10, 19, *22–23*, 49, *52–54*, 55, *57*, 58, 59, 61, 62, 63 Teacher's Edition *Only* 15
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 a model to describe phenomena. (5-PS1-1)		*8–9*, 10, *26–27*, *29*, 46, 48, *52–54*, *57*, 58, 59, 62, 65–70
DCI Disciplinary Core Ideas		
PS1.A: Structure and Properties of Matter • Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model shows that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)		10, 11, 12–13, 16, 17, *22–23*, 25, 39, 40, 41, 42–43, 49, *55, 57*, 58–59, 63 Teacher's Edition *Only* 15

Inquiry activities are in Italics.

Continued from previous page.

CCC Crosscutting Concepts	
Scale, Proportion, and Quantity • Natural objects exist from the very small to the immensely large. (5-PS1-1)	10, 15, *29*, 49, 55, 56, 57, 58, 59, 61, 62, 63, 67 Teacher's Edition *Only*: *9*, 15

5-PS1	Matter and its Interactions	
5-PS1-2	**Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.** *[Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.]*	19, 22–23, 26–27, *36–38*, 40, 47, 55, 57 Teacher's Edition *Only* 45
SEP Science and Engineering Practices		
Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. • Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)		19, 22–23, 26–27, 36–38, 40, 47, 57, 65–70 Teacher's Edition *Only*: *9*, 45
DCI Disciplinary Core Ideas		
PS1.B: Chemical Reactions • No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)		12–13, 19, 33, 35, *36–38*, 39, 40, 41, 42–43, 46, 47, 66 Teacher's Edition *Only* 45
CCC Crosscutting Concepts		
Connections to Nature of Science **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** • Science assumes consistent patterns in natural systems. (5-PS1-2)		*22–23*, 24, 25, *26–27*
Scale, Proportion and Quantity • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1-2),(5-PS1-3)		19, *22–23*, *26–27*, *36–38*, 47, *57*, 65–70

Inquiry activities are in Italics.

5-PS1	Matter and Its Interactions	
5-PS1-3	**Make observations and measurements to identify materials based on their properties.** *[Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]*	*8–9*, 11, 12–13, 14, 17, *22–23*, 65–70, 71
SEP Science and Engineering Practices		
Planning and Carrying Out Investigations • Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3)		4, *8–9*, 21, *22–23*, 25, *26–27, 29*, 35, *36–38*, 39, 51, *52–54*, 55, *57*, 65–70
DCI Disciplinary Core Ideas		
PS1.A: Structure and Properties of Matter • Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)		*8–9*, 10, 11, 12–13, 14, 16–17, *22–23, 52–54*, *57*, 65–70
CCC Crosscutting Concepts		
Scale, Proportion, and Quantity • Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1-2),(5-PS1-3)		17, 19, *22–23, 26–27, 36–38*, 47, *57*, 65–70

5-PS1	Matter and Its Interactions	
5-PS1-4	**Conduct an investigation to determine whether the mixing of two or more substances results in new substances.**	19, *22–23*, 24–25, *26–27*, 36–38, 40, 41, 42–43, 66, 69, 71
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. • 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. (5-PS1-4)		*8–9, 22–23, 26–27, 29, 36–39, 52–54, 57*, 65–70

Inquiry activities are in Italics.

Continued from previous page.

DCI Disciplinary Core Ideas	
PS1.B: Chemical Reactions • When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)	12–13, 33, 39, 40–41, 42–42, 46, 66
CCC Crosscutting Concepts	
Cause and Effect • Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4)	*8–9*, 12–13, 19, *22–23*, *26–27, 29*, *36–37*, 40, 42–43, *52–54*, 55, *57*, 58, 61, 63, 66, 69 Teacher's Edition *Only* 21

3–5-ETS1	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.**	*22–23, 26, 36–37, 57*, 65–70

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, 22–23, 26–27, 29, 36–39, 52–54, 57*, 65–70
DCI Disciplinary Core Ideas	
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)	4, 18, *22–23*, 48, 65–70 Teacher's Edition *Only: 29*
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)	65–70
CCSS Math Connections	
5.MD.C.3a, b	59
5.MD.C.4	59
ELD Connections	
ELD.PI.5.1	3, 12–13, 14, 15, 16, *22–23*, 28, *36–38*, 65–70 Teacher's Edition only 15, *26–27*, 44, 55

Inquiry activities are in Italics.

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ELD.PI.5.6	10, 11, 12–13, 24–25, 40, 42–43, 56, 58, 61 Teacher's Edition *only 28*, 30, 39, 60
CCSS ELA/Literacy Connections	
SL.5.1	3, 5, 7, 12–13, 22–23, 28, *36–38*, 61, 65–70
SL.5.4	18, 27, 32, 61, 64
SL.5.5	64
ALSO INTEGRATES:	
SEP Analyzing and Interpreting Data	9, 23, 26–27, 28, *36–38, 52–54, 57*, 65–70
SEP Asking questions (for science) and defining problems (for engineering)	3, 7, 21, 35, 51 Teacher's Edition *only*:
SEP Engaging in Argument from Evidence	5, 33, *36–38*, 39, 42–43, 46, 47, 49, *52–54*, 55, *57*, 63
SEP Obtaining, Evaluating, and Communicating Information	5, 12–13, 18, 24–25, 27, 40, 42–43, 46, 56, 58, 61, 64, 65–70
DCI: Matter and its Interactions	13
CCC Systems and System Models	28, 35, 48, 58, 59, 62, 65–70
CCC Energy and Matter: Flows, Cycles, and Conservation	19, 26–27, 35, *36–38*, 40, 41, 47, 51, *57*, 58, 59, 62, 63, 65–70
ELA RI.5.7	Teacher's Edition *only*: 58
ELA 5.W.2	41
ELA 5.W.8	41
ELA L.5.4	10, 11, 24, 25, 40, 56 Teacher's Edition only 6, 15
ELD PI.5.9	Teacher's Edition only: 32
ELD PI.5.11	Teacher's Edition only: 46
Math 5.MD.B.2	*38*

Inquiry activities are in Italics.

Teacher's Edition

Grade 5 • Unit 2

Inspire Science

Ecosystems

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: **Matter in Ecosystems**	MODULE: **Energy in Ecosystems**
5-ESS2-1		●
5-LS1-1	●	
5-LS2-1	●	●
5-PS3-1		●

Correlations by Module to the NGSS

MODULE: Matter in Ecosystems

5-LS1	**From Molecules to Organisms: Structures and Processes**	
5-LS1-1	**Support an argument that plants get the materials they need for growth chiefly from air and water.** *[Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]*	5, *8–9*, 10, 11, *12–13, 15*, 16, 18, 51, 52
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). • Support an argument with evidence, data, or a model. (5-LS1-1)		5, *8–9*, 10, *12–13, 15*, 16, 18, 19, *22–24*, 25, 28–29, 31, 37, *40–41*, 43, *44–45*, 50, 51–56
DCI Disciplinary Core Ideas		
LS1.C: Organization for Matter and Energy Flow in Organisms • Plants acquire their material for growth chiefly from air and water. (5-LS1-1)		5, *8–9*, 10, 11, *15*, 16–18
CCC Crosscutting Concepts		
Energy and Matter • Matter is transported into, out of, and within systems. (5-LS1-1)		5, *8–9*, 10, 11, *12–13, 15*, 16–18, 19, *22–24*, 25, 26, 30, 31, 34–35, 36, 37, *40–41*, 42, 43, 46–47, 48–50, 51–56, 57

Inquiry activities are in Italics.

4-LS1	From Molecules to Organisms: Structures and Processes	
5-LS2-1	**Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.** *[Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]*	5, *8–9, 12–13*, 19, *22–24*, 26, 31, 35, 37, *40–41,* 43, *44–45*, 48–49, 51–56
SEP Science and Engineering Practices		
Developing and Using Models Modeling in 3–5 builds on K–2 models and progresses to building and revising simple models and using models to represent events and design solutions. • Develop a model to describe phenomena. (5-LS2-1)		*8–9*, 10, 19, *22–24*, 26, 27, 29, *40–41, 44–45*, 51–56, 57 Teacher's Edition *Only*: 35
Connections to Nature of Science **Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Science explanations describe the mechanisms for natural events. (5-LS2-1)		Teacher's Edition *Only*: 32–33, 43
DCI Disciplinary Core Ideas		
LS2.A: Interdependent Relationships in Ecosystems • The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)		*8–9*, 10, 11, *12–13, 15*, 19, *22–24*, 25, 26, 27, 28–29, 30, 31, 34, 35, 37, *40–41*, 42, 43, *44–45*, 46–47, 48–50, 51–56, 57
LS2.B: Cycles of Matter and Energy Transfer in Ecosystems • Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)		5, *8–9*, 10, 11, *12–13,* 16–18, 19, *22–24*, 25, 30, 31, 34, 37, *40–41*, 42, 43, *44–45*, 46–47, 48–50, 51–56, 57
CCC Crosscutting Concepts		
Systems and System Models • A system can be described in terms of its components and their interactions. (5-LS2-1)		5, *8–9*, 10, 11, *12–13, 15*, 16–18, 19, *22–24*, 25, 26, 27, 30, 31, 34–36, 37, *40–41*, 42, 43, *44–45,* 48–50, 51–56, 57

Inquiry activities are in Italics.

Continued from previous page.

ELD Connections	
ELD.PI.5.1	3, *9, 13, 21,* 29, *41, 45, 46* Teachers Edition *only*: 11, 28, 31, 39
ELD.PI.5.3	5, *9, 13*, *15*, 18, *41, 45, 56* Teacher's Edition *only*: 25, 39
ELD.PI.5.9	18, 50, 56 Teachers Edition *only*: 25
ELD.PI.5.11	5, *8–9, 12–13*, *15*, 16, 18, 19, *22, 24*, 25, 29, 33, 37, *40–41*, 43, *44–45*, 48, 50, 51–54, 56, 57 Teachers Edition *only*: *28*
ELD.PI.5.12	10, 11, *15*, 17, 26–27, 29, 35, 36, 42, *47*, 51–52 Teachers Edition *only*: 32, 48
CCSS ELA/Literacy Connections	
W.5.1	5, *15*, 16, 18, 19, 25, 37, 43, 48, 50, 56, 57 Teacher's Edition *only*: 31
SL.5.4	15, 18, 36, 50, 56 Teacher's Edition *only*: 25, 31
SL.5.6	3, *9, 13, 21, 29*, *36, 41, 45,* 46, 50, 56 Teacher's Edition *only*: 11, 28, 31, 39
L.5.6	10, 11, 14, *15,* 26–27, 36, 42, 43, 47, 51–52
ALSO INTEGRATES:	
SEP Asking Questions (for Science) and Defining Problems (for engineering)	7, 21, 32, 39, 50
SEP Obtaining, Evaluating, and Communicating Information	*23*, 26, 31, 33, 50, 53
SEP Planning and Carrying out Investigations	*44*
DCI ESS3.C: Human Impacts on Earth Systems	28–29, 50
LS4.B: Natural Selection	11
ELA W.5.7	31, 33, 50, 53
Math 5.MD.2	*9, 13*
Math 5.NBT7	*23*

Inquiry activities are in Italics.

MODULE: Energy in Ecosystems

5-ESS2	Earth's Systems	
5-ESS2-1	**Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.** *[Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.]*	61, *64–65, 68–69*, 72, 74, *78–80*, 85, 86, 88–89, *94–95*, 97, 98–99, *100–101*, 105, 107–112, 113

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 a model using an example to describe a scientific principle. (5-ESS2-1)	*68–69, 78–80*, 82, *94–95*, 97, 98–99, *100–101*, 105, 107–112

DCI Disciplinary Core Ideas

ESS2.A: Earth Materials and Systems • Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)	56, 61, *64–65*, 66, 67, *68–69*, 71, 72–74, *78–80*, 81, 82–84, 86, 88–89, 107–112, 113

CCC Crosscutting Concepts

Systems and System Models • A system can be described in terms of its components and their interactions. (5-ESS2-1)	61, *64–65*, 66, 67, *68–69*, 72, 73, 81, 82–84, 85, 86, 88–89, *94–95*, 96–97, 98–99, *100–101*, 104–106, 107–112, 113

Inquiry activities are in Italics.

5-LS2	Ecosystems: Interactions, Energy, and Dynamcs	
5-LS2-1	**Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.** *[Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]*	*78–80*, 81, 82–84, 85, 86, 96–97, 98–99, *100–101*, 105, 107–112, 113
SEP Science and Engineering Practices		
Developing and Using Models Modeling in 3–5 builds on K–2 models and progresses to building and revising simple models and using models to represent events and design solutions. • Develop a model to describe phenomena. (5-LS2-1)		*68–69*, *78–80*, 82, *94–95*, 97, 98–99, *100–101*, 105, 107–112
Connections to Nature of Science **Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Science explanations describe the mechanisms for natural events. (5-LS2-1)		*78–79*, 82–84, 98–99, *100–101*
DCI Disciplinary Core Ideas		
LS2.A: Interdependent Relationships in Ecosystems • The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1)		83, 84, 85, 86, 89, 93, *94–95*, 96, 97, 98–99, *100–101*, 104–105, 107–112
LS2.B: Cycles of Matter and Energy Transfer in Ecosystems • Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)		75, 81, 82–84, 86, 88–89, 90, 91, *94–95*, 96–97, 98–99, *100–101*, 104–105, 107–112, 113
CCC Crosscutting Concepts		
Systems and System Models • A system can be described in terms of its components and their interactions. (5-LS2-1)		61, *64–65*, 66–67, *68–69*, 72, 73, 81, 82–84, 85, 86, 88, 89, *94–95*, 96–97, 98–99, *100–101*, 104–106, 107–112, 113

Inquiry activities are in Italics.

5-PS3	Energy	
5-PS3-1	**Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.** *[Clarification Statement: Examples of models could include diagrams, and flow charts.]*	96–97, 98–99, *100–101*, 104, 105, 107–112, 113
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. • Use models to describe phenomena. (5-PS3-1)		*64–65, 68–69, 78–80*, 82, *94–95*, 97, *98–99*, *100–101*, 105, 107–112
DCI Disciplinary Core Ideas		
LS1.C: Organization for Matter and Energy Flow in Organisms • Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)		95, 97
PS3.D: Energy in Chemical Processes and Everyday Life • The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1)		96–97, 98–99, *100–101*, 104, 105, 107–112, 113
CCC Crosscutting Concepts		
Energy and Matter Energy can be transferred in various ways and between objects. (5-PS3-1)		75, 82, 83, 84, 91, 93, *94–95*, 96–97, 98–99, *100–101*, 104, 105, 107–112, 113
ELD Connections		
ELD.PI.5.1		*63, 65, 69, 74, 79, 93, 95, 101* Teacher's Edition *only*: 70, 85
ELD.PI.5.3		*78–79, 112*, *113* Teacher's Edition *only*: 81, 103
ELD.PI.5.9		74, 112 Teacher's Edition *only*: 87
ELD.PI.5.11		75, 81, 88, 90, 91, 106, 112 Teacher's Edition *only*: 67, 100
ELD.PI.5.12		65, *66–67*, 71, 73, 76, 82, 84, 96–97, 98–99 Teacher's Edition only: 72, 76

Inquiry activities are in Italics.

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CCSS ELA/Literacy Connections	
W.5.1	61, 75, 81 Teacher's Edition *only*: 66, 84
SL.5.4	74, 85, 112
SL.5.6	*63, 65, 69, 74, 79, 93, 95, 101, 112*
L.5.6	65, 66–67, 71, 73, 76, 82, 84, 85, 96, 96–97, 98–99, 111
ALSO INTEGRATES:	
SEP Analyzing and Interpreting Data	80
SEP Asking Questions (for Science) and Defining Problems (for engineering)	59, 63, 77, 79, 93, 95, 106
SEP Obtaining, Evaluating, and Communicating Information	68–69, 80, 104
DCI ESS3.C: Human Impacts on Earth Systems	87, 102, 106
CCC Patterns	80
ELA L.5.4.B	71
ELA W.5.7	68–69, 100, 106, 111
ELA W.5.8	90

Inquiry activities are in Italics.

Teacher's Edition

Grade 5 • Unit 3

Inspire Science

Earth's Interactive Systems

Mc Graw 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: **Earth's Water System**	MODULE: **Earth's Other Systems**
5-ESS2-1	●	●
5-ESS2-2	●	
5-ESS3-1	●	●
3–5-ETS1-1	●	●
3–5-ETS1-2	●	●
3–5-ETS1-3	●	●

Correlations by Module to the NGSS

MODULE: Earth's Water System

5-ESS2	Earth's Systems	
5-ESS2-1	**Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.** *[Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.]*	3, 4, 7, 11, 13, *14–15*, 26, 27, *28*, 29, *30–31*, 33, 34, 35, 36, 37, 39, *40–41*, 42–43, *44*, 45, 46–47, 49, 50, 51, 52, 53–58

SEP Science and Engineering Practices

Practice	
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 a model using an example to describe a scientific principle. (5-ESS2-1)	12, 13, *14–15*, 20, *40–41*, *44*, 46–47, 53–58

Inquiry activities are in Italics.

Continued from previous page.

DCI Disciplinary Core Ideas	
ESS2.A: Earth Materials and Systems • Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)	3, 4, 5, 7, *15*, 21, *24–25*, 26, 27, *28*, 29, *30–31*, 33, 34–36, 37, 39, *40–41*, 42–43, *44*, 45, 46–47, 48, 50–52, 53–58, 59 Teacher's Edition *only*: 2, 6
CCC Crosscutting Concepts	
Systems and System Models • A system can be described in terms of its components and their interactions. (5-ESS2-1)	4, 5, 12, 13, 18–19, 21, 26, 27, *28*, 29, *30–31*, 33, 34–36, 37, 39, *40–41*, 42–43, 44, 45–47, 48, 50–52, 53–58, 59

5-ESS2	Earth's Systems	
5-ESS2-2	**Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.** *[Assessment Boundary: Assessment is limited to oceans, lakes, rivers, glaciers, ground water, and polar ice caps, and does not include the atmosphere.]*	*8–10*, 11, *14–15*, 18, 19, 20

SEP Science and Engineering Practices	
Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. • Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)	*8–10*, 11, 12, 13, *14–15*, 18–19, 20 Teacher's Edition *only*: 57
DCI Disciplinary Core Ideas	
ESS2.C: The Roles of Water in Earth's Surface Processes • Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)	*8–10*, 11, 12, 13, *14–15*, 18–20
CCC Crosscutting Concepts	
Scale, Proportion, and Quantity • Standard units are used to measure and describe physical quantities such as weight and volume. (5-ESS2-2)	*40*, *44*, 48 Teacher's Edition *only*: 57

Inquiry activities are in Italics.

Continued from previous page.

5-ESS3	Earth and Human Activity	
5-ESS3-1	**Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**	16, 17, 26, 27, 29, *30–31*, 33, 34–36, 49, 53–58, 59
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/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)		*8–10*, *14–15*, 18, *30–31*, 33, 34, 46–47, 50, 51, 52, 59
DCI **Disciplinary Core Ideas**		
ESS3.C: Human Impacts on Earth Systems • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)		16–17, 21, 22–23, *24–25*, 26, 27, *28*, 29, *30–31*, 32, 33, 34–35, 36, 49, 53–58, 59
CCC **Crosscutting Concepts**		
Systems and System Models • A system can be described in terms of its components and their interactions. (5-ESS3-1)		4, 5, 12, 13, 18–19, 21, 26, 27, 28, 29, *30–31*, 33, 34–36, 37, 39, *40–41*, 42–43, 44, 45–47, 48, 50–52, 53–58, 59

3–5-ETS1	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.**	4, 53–58
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) Obtaining, Evaluating, and Communicating Information		4, 53–58
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)		4, 53–58

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)	4, 53–58

3–5-ETS1	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*, 29 Teacher's Edition *only*: 58
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)		4, 21, *30–31*, 33, 34, 36, 37, *44*, 50, 51, 52, 53–58, 59
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)		4, *24–25*, 53–58
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-ETS-2)		4, 49, 53–58

3–5-ETS1	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.**	*24–25*, *40–41*, 44, 53–58

Inquiry activities are in Italics.

Continued from previous page.

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)	*8–10*, 12, *14–15*, *24–25*, 27, *28*, *30–31*, *40–41*, 44, 53–58
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)	*24–25*, *44*, 53–58
CCSS Math Connections	
5.MD.A.1	8–10, *14–15*, 48
5.MD.5b	Teacher's Edition *only*: 57
6.RP.3	*10*, *14–15*, Teacher's Edition *only*: *42*, *48*
5.NF.2	*8-10*, *14–15*
ELD Connections	
ELD.PI.5.1	Teacher's Edition *only*: 11, 32, 34, 49, 50
ELD.PI.5.6	Teacher's Edition *only*: 55
CCSS ELA/Literacy Connections	
SL.5.1	21
SL.5.4	17, *30–31*
SL.5.5	*30–31*
ALSO INTEGRATES:	
CCC Cause and Effect	15, 30, 41
ELA W.5.8	11, 47
ELA L.5.4	12, 13, 26, 27, 29, 42, 45, Teacher's Edition *only*: 10, 22, 53, 57

Inquiry activities are in Italics.

Continued from previous page.

MODULE: Earth's Other Systems

5-ESS2	Earth's Systems	
5-ESS2-1	**Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.** *[Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] [Assessment Boundary: Assessment is limited to the interactions of two systems at a time.]*	62, *66–68*, 69, *76–77*, *86–87*, 100, *104–105*, 108, 115–118
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 a model using an example to describe a scientific principle. (5-ESS2-1)		62, *66–68*, 69, *76–77*, *86–87*, 100, *104–105*, 108, 115–118
DCI Disciplinary Core Ideas		
ESS2.A: Earth Materials and Systems • Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)		63, *66–68*, 69, 70, 71, 72, 73, 74, 75, *76–77*, 80–81, 83, *86–87*, 88–89, 90–91, 92–93, *94–95*, *97*, 98–99, 101, *104–105*, 106, 107, *108*, 109, *110*, 112–113, 114, 115–118

5-ESS3	Earth and Human Activity	
5-ESS3-1	**Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.**	101, 103, *104–105*, 106, 107, *108*, *110*, 112–114, 115–118, 119
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/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)		69, 74, 78, 80–82, 92–93, *94–95*, 96, 97, 98–100, *104–105*, 106, *108*, 109, *110*, 112–114, 115–118, 119

Inquiry activities are in Italics.

Continued from previous page.

DCI Disciplinary Core Ideas	
ESS3.C: Human Impacts on Earth Systems • Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)	62, *76–77*, *104–105*, 106, 107, 108, 109, *110*, 112–114
CCC Crosscutting Concepts	
Systems and System Models • A system can be described in terms of its components and their interactions. (5-ESS3-1)	63, *66–68*, 69, 70, 80, 81, 83, 88–89, 90–91, 92–93, *94–95*, *97*, 98, 99, 100, 109, *110*, 112, 113, 115–118
Connections to Nature of Science **Science Addresses Questions About the Natural and Material World.** • Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)	Teacher's Edition *only*: 109

3–5-ETS1	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.**	*110*, 115–118
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)		62, 82, 109, 110, 114, 115–118
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)		115–118

Inquiry activities are in Italics.

3–5-ETS1	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.**	110 Teacher's Edition *only*: 118
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)		63, 66–68, 69, *76–77*, 78, 80, 81, 83, 92–93, *94–95*, *97*, 98, 99, 100, 101, *104–105*, 108, *110*, 112
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)		83, *110*, 115–118
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-ETS-2)		62, 115–118

3–5-ETS1	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.**	66–68, 76–77, 83, 104–105, 115–118
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)		62, *66–68*, 69, *76–77*, *86–87*, *104–105*, *110*, 115–118

Inquiry activities are in Italics.

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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)	83, *110*, 115–118
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)	Teacher's Edition *only*: 118
CCSS Math Connections	
5.G.A.2	*76–77*
MP.2	*97*
MP.6	*76*
ELD Connections	
ELD.PI.5.1	Teacher's Edition *only*: 69, 78, 80, 98, 112, 117
ELD.PI.5.6	Teacher's Edition *only*: 92, 111
CCSS ELA/Literacy Connections	
SL.5.1	65, *92–93*
SL.5.4	*92–93*
ALSO INTEGRATES:	
SEP Using Mathematics and Computational Thinking	76–77, 108
CCC Cause and Effect	110
MP.4	Teacher's Edition *only*: 76
ELA L.5.4	70, 73, 74, 88, 89, 92, 106, 107, Teacher's Edition *only*: 71, 75, 84, 116, 117

Inquiry activities are in Italics.

Teacher's Edition

Grade 5 • Unit 4

Inspire Science

Earth and Space Patterns

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: **Earth's Patterns and Movement**	MODULE: **Earth and Space**
5-ESS1-1		●
5-ESS1-2	●	●
5-PS2-1	●	

Correlations by Module to the NGSS

MODULE: Earth's Patterns and Movement

5-ESS1	Earth's Place in the Universe	
5-ESS1-2	**Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.** *[Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]*	*26–27*, *30*, *32*, *36–38*, 41
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 graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2)		*8–10*, 17–18, 22, *26–27*, *36–38*, 47
DCI Disciplinary Core Ideas		
ESS1.B: Earth and the Solar System • The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)		4, *18*, 23, 25, *26–27*, 28–29, 30, 31–32, 33, 34–35, *36*, *38*, 40–42, 43–44, 47 Teacher's Edition *only*: 2, 24

Inquiry activities are in Italics.

Next Generation Science Standards

Continued from previous page.

CCC Crosscutting Concepts	
Patterns • Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5-ESS1-2)	4, *27*, *30*, *36–38*, 41, 43, 44, 46 Teacher's Edition *only*: 4, 13, 47

5-PS2	Motion and Stability: Forces and Interactions	
5-PS2-1	**Support an argument that the gravitational force exerted by Earth on objects is directed down.** *[Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.]* *[Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]*	5, *9–10*, 11, *16–18*, 20–21, 26–27
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). • Support an argument with evidence, data, or a model. (5-PS2-1)		5, *9*, 11, 17, 20, *27*, *36–37*, 40 Teacher's Edition *only*: 19
DCI Disciplinary Core Ideas		
PS2.B: Types of Interactions • The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (5-PS2-1)		5, 6, *10*, 11, 12–14, *17–18*, 20–22, 43, 47 Teacher's Edition only: 6, *16*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (5-PS2-1)		6, 7, *8*, *10*, 13, 15, *18*, 20–21, 30, *36*, 42, 43 Teacher's Edition *only*: 3, 6, *9*, 11, 14, *16–17*, 29, 31

Other Correlations	
CCSS Math Connections	
4.MD.6	32
5.G.A.2	*27*, *30*, *36–37*
5.NF.6	13

Inquiry activities are in Italics.

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ELD Connections	
PI.5.1	11, *17*, 22, 25, *26, 38*, 45 Teacher's Edition *only*: 29, 35
PI.5.5	*17,* 22, 25, 26, 43-46 Teacher's Edition *only*: 29
PI.5.11	*17* Teacher's Edition *only*: 19, 39
CCSS ELA/Literacy Connections	
RI.5.3	15 Teacher's Edition *only*: 39
W.5.7	15, 22, 39 Teacher's Edition *only*: 3
ALSO INTEGRATES:	
SEP Asking Questions and Defining Problems	3, 7, 22, 25, 42 Teacher's Edition *only*: 29
SEP Constructing Explanations and Designing Solutions	Teacher's Edition *only*: 14
SEP Developing and Using Models	4, *9–10*, *18*, 45–46 Teacher's Edition *only*: 29, 35
SEP Engaging in Argument from Evidence	Teacher's Edition *only*: 19, 39
SEP Obtaining, Evaluating, and Communicating Information	22, 38, 44–46
SEP Planning and Carrying Out Investigations	22
SEP Using Mathematics and Computational Thinking	9, 13, *27*, *30*, *37*
DCI ESS2.D Weather and Climate	*36–38*
CCC Scale, Proportion, and Quantity	*8–10*, 11, 12
Math 5.MD.2	*30*
ELD PI.5.2	Teacher's Edition *only*: 45
ELD PI.5.9	Teacher's Edition *only*: 46
ELD PI.5.12.a	Teacher's Edition *only*: 12, 14, 28, 31, 33
ELA L.5.4.B	Teacher's Edition *only*: 12, 14, 28, 34
ELA L.5.6	Teacher's Edition *only*: 12, 14, 28, 31, 33
ELA RI.5.2	Teacher's Edition *only*: 44

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ELA RI.5.4	Teacher's Edition *only*: 29
ELA SL.5.4	22 Teacher's Edition *only*: 44
ELA W.5.10	15, 46

MODULE: Earth and Space

5-ESS1	Earth's Place in the Universe	
5-ESS1-1	**Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.** *[Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]*	65, *70*, *72*, 73, 82, 89
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). • Support an argument with evidence, data, or a model. (5-ESS1-1)		51, *55*, 58–59, *61*, 64, 67, *72*, 73, 75, 77, *78–79*, 82, 83, 89 Teacher's Edition *only*: *54*, *71*, 80
DCI Disciplinary Core Ideas		
ESS1.A: The Universe and its Stars • The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)		55, 58–59, 68, *70–72*, 73–75, 82–83, 89 Teacher's Edition *only*: 73, 76
CCC Crosscutting Concepts		
Scale, Proportion, and Quantity • Natural objects exist from the very small to the immensely large. (5-ESS1-1)		57, *61*, 65, 70, 75, 82, 83, 86 Teacher's Edition *only*: *71*, 85

Inquiry activities are in Italics.

5-ESS1	Earth's Systems	
5-ESS1-2	**Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.** *[Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]*	54–55, 64–65, *78*, 79, 85, 89 Teacher's Edition *only*: 67
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 graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2)		*55*, *71–72*, 65, 78, 83
DCI Disciplinary Core Ideas		
ESS1.B: Earth and the Solar System • The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)		*54–55*, 56, 64–65, 76, 78, 85, 89 Teacher's Edition *only*: 77
CCC Crosscutting Concepts		
Patterns • Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5-ESS1-2)		55, 65, 76–77, 85–86 Teacher's Edition *only*: 67, 79, 88
CCSS Math Connections		
5.G.A.2		Teacher's Edition *only*: 86
ELD Connections		
PI.5.1		53, 59, 61, 79 Teacher's Edition *only*: 64, 73
PI.5.5		53, 59, 61, 63, 78 Teacher's Edition *only*: 62
PI.5.11		Teacher's Edition *only*: 80
CCSS ELA/Literacy Connections		
RI.5.3		58–59, 81, 85–88 Teacher's Edition *only*: 60, 79
W.5.7		59, 62, 66, 81, 84, 85–88
W.5.10		62, 81

Inquiry activities are in Italics.

Continued from previous page.

ALSO INTEGRATES:	
SEP Asking Questions (for Science) and Defining Problems (for Engineering)	49, 53, 62, 66, 69 Teacher's Edition *only*: 89
SEP Developing and Using Models	50, *54–55*, *61*, *72*, 85–88 Teacher's Edition *only*: 71
SEP Planning and Carrying Out Investigations	66
SEP Using Mathematics and Computational Thinking	Teacher's Edition *only*: 75
CCC Cause and Effect	65, 72
ELD PI.5.6	82
ELD PI.6.9	84, 87–88
ELD PII.5.1	Teacher's Edition *only*: 57
ELA L.5.4.B	Teacher's Edition *only*: 56, 60, 76
ELA L.5.4.C	Teacher's Edition *only*: 52
ELA L.5.6	Teacher's Edition *only*: 56–57, 60, 64, 74, 76

Inquiry activities are in Italics.