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 and Energy in Ecosystems**	Module: **Dynamic Ecosystems**	Module: **Biodiversity in Ecosystems**
MS-LS1-6	●		
MS-LS1-7	●		
MS-LS2-1		●	
MS-LS2-2		●	
MS-LS2-3	●		
MS-LS2-4		●	
MS-LS2-5			●
MS-ETS1-1			●
MS-ETS1-2			●
MS-ETS1-3			●

Correlations by Module to the NGSS

MODULE: Matter and Energy in Ecosystems		
MS-LS1	**From Molecules to Organisms: Structures and Processes**	
MS-LS1-6.	**Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.** [Clarification Statement: Emphasis is on tracing movement of matter and flow of energy.] [*Assessment Boundary: Assessment does not include the biochemical mechanisms of photosynthesis*.]	59–64, 65
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 6–8 builds on K-5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories. • Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-6)		8–9, *12–14*, 16, 24, 28–29, 46–47, 49, 58, 59–64, 65

Labs and investigations are in italics.

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Connections to Nature of Science **Scientific Knowledge is Based on Empirical Evidence** • Science knowledge is based upon logical connections between evidence and explanations. (MS-LS1-6)	*12–14*
DCI Disciplinary Core Ideas	
LS1.C: Organization for Matter and Energy Flow in Organisms • Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use.	10–11, *12–14*, 15, 20–24, *30*, 59–64, 65
PS3.D: Energy in Chemical Processes and Everyday Life • The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (i.e., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon–based organic molecules and release oxygen. (secondary to MS-LS1-6)	11, *12, 14*, 15–16, 19–23, 59–64, 65
CCC Crosscutting Concepts	
Energy and Matter • Within a natural system, the transfer of energy drives the motion and/or cycling of matter. (MS-LS1-6)	11, 15–16, 19–20, 59–64
CCSS ELA/Literacy Connections	
ELA RST.6–8.1	16, Literacy Skill Handbook (online)
ELA RST.6–8.2	16, Literacy Skill Handbook (online)
ELA WHST.6–8.2	24, 35, 59–64, Literacy Skill Handbook (online)
ELA WHST.6–8.9	16, 21, 24, 33, Literacy Skill Handbook (online)
CCSS Math Connections	
Math 6.EE.C.9	Math Handbook (online)

MS-LS1	From Molecules to Organisms: Structures and Processes	
MS-LS1-7.	**Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.** [Clarification Statement: Emphasis is on describing that molecules are broken apart and put back together and that in this process, energy is released.] [*Assessment Boundary: Assessment does not include details of the chemical reactions for photosynthesis or respiration*.]	59–64

Labs and investigations are in italics.

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SEP Science and Engineering Practices	
Developing and Using Models Modeling in 6–8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. • Develop a model to describe unobservable mechanisms. (MS-LS1-7)	22, *34–35*, 35, 37B, 40, Lab *How is energy transferred in a food chain?* (online)
DCI Disciplinary Core Ideas	
LS1.C: Organization for Matter and Energy Flow in Organisms • Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7)	19–22, 24, 30–31, *32*, 38, 40–41, 59–64, 65
PS3.D: Energy in Chemical Processes and Everyday Life • Cellular respiration in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (secondary to MS-LS1-7)	*17–18*, 19–20, 24, 59–64, 65
CCC Crosscutting Concepts	
Energy and Matter • Matter is conserved because atoms are conserved in physical and chemical processes. (MS-LS1-7)	15, 19–20, 22
CCSS ELA/Literacy Connections	
ELA SL.8.5	21, 33, 37B, 55, Literacy Skill Handbook (online)

MS-LS2	Interactions, Energy, and Dynamics	
MS-LS2-3.	**Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.** [Clarification Statement: Emphasis is on describing the conservation of matter and flow of energy into and out of various ecosystems, and on defining the boundaries of the system.] [*Assessment Boundary: Assessment does not include the use of chemical reactions to describe the processes.*]	*34–35*, *36–37*, 59–64
SEP Science and Engineering Practices		
Developing and Using Models Modeling in 6–8 builds on K-5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. • Develop a model to describe phenomena. (MS-LS2-3)		*34–35*, 35, *36–37*, 37B, 40, 45, *51–52*, 56, 59–64

Labs and investigations are in italics.

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CCC Crosscutting Concepts	
Stability and Change* • Small changes in one part of a system might cause large changes in another part. (MS-LS2-4) *Other aspects of this CCC are integrated throughout this module and are listed in the *Also Integrates* section.	112, *113–114,* 114–115, 117, *118,* 119–120, 122, 123–130
CCSS ELA/Literacy Connections	
ELA RST.6–8.1	72–73, 88–89, 106–107, Literacy Skill Handbook (online)
ELA RI.8.8	115, Literacy Skill Handbook (online)
ELA WHST.6–8.1	118, 123–130, Literacy Skill Handbook (online)
ELA WHST.6–8.9	Literacy Skill Handbook (online)

ALSO INTEGRATES:	
SEP Asking Questions and Defining Problems	131
SEP Planning and Carrying Out Investigations	131
SEP Using Mathematics and Computational Thinking	*76–77,* 79
SEP Obtaining, Evaluating, and Communicating Information	115, 119
DCI LS2.B: Cycles of Matter and Energy Transfer in Ecosystems	115
CCC Stability and Change	82–84, 116, *116,* 121–122, 123–130
CCSS ELA RST.6-8.3	*76–77, 92–94*
CCSS ELA RST.6–8.10	81, 96, 99, 115, 119
CCSS ELA WHST.6-8.6	115A–115B
CCSS ELA WHST.6-8.7	81, *92–94,* 119
CCSS ELA WHST.6-8.8	81, *92–94,* 119
CCSS ELA SL.7.5	*92–94,* 96, 123–130

Labs and investigations are in italics.

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DCI Disciplinary Core Ideas	
LS2.B: Cycle of Matter and Energy Transfer in Ecosystems • Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)	31–33, *34–35*, 35, *36–37*, 37, 37B, 38, 40–41, 49–51, 52–54, 56–58, 59–64
CCC Crosscutting Concepts	
Energy and Matter • The transfer of energy can be tracked as energy flows through a natural system. (MS-LS2-3)	30, 32, *34–35*, 35, *36–37*, 37–38, 37B, 38, 40–41, 50, 59–64, 65, Lab *How is energy transferred in a food chain?* (online)
Connections to Nature of Science **Scientific Knowledge Assumes an Order and Consistency in Natural Systems** • Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. (MS-LS2-3)	39
CCSS ELA/Literacy Connections	
ELA SL.8.5	21, 33, 37B, 55, Literacy Skill Handbook (online)
CCSS Math Connections	
Math 6.EE.C.9	Math Skill Handbook (online)

ALSO INTEGRATES:	
SEP Asking Questions and Defining Problems	65
SEP Planning and Carrying Out Investigations	65
SEP Analyzing and Interpreting Data	*12–14*, *48–49*
SEP Using Mathematics and Computational Thinking	*12–14*
SEP Obtaining, Evaluating, and Communicating Information	16
DCI LS1.B: Growth and Development of Organisms	37A–37B
CCC Patterns	*12–14*
CCC Cause and Effect	16, 37B, 42, *48–49*

Labs and investigations are in italics.

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CCC Systems and System Models	20
CCC Structure and Function	11
CCC Stability and Change	*34–35*, *36–37*, 37A–37B
CCSS ELA RST.6–8.2	16
CCSS ELA RST.6–8.3	*12–14*, *17–18*, *34–35*, *36–37*, *48–49*, *51–52*
CCSS ELA RST.6–8.7	22, 40, 56, 59–64
CCSS ELA RST.6–8.10	16, 21, 33, 37A-37B, 39, 55
CCSS ELA WHST.6–8.8	21, 33
CCSS ELA SL.7.1	3, 16, 39
CCSS ELA SL.7.4	33, 59–64

MODULE: Dynamic Ecosystems

MS-LS2	Ecosystems: Interactions, Energy, and Dynamics	
PERFORMANCE EXPECTATION **MS-LS2-1.**	**Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.** [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]	*76–77,* 79, 123–130
SEP Science and Engineering Practices		
Analyzing and Interpreting Data Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. • Analyze and interpret data to provide evidence for phenomena. (MS-LS2-1)		*76–77,* 79, 83, 123–130
DCI Disciplinary Core Ideas		
LS2.A: Interdependent Relationships in Ecosystems • Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)		75, *75,* 76, 78, *78,* 80–81, 82, 84, 115A–115B, 131
• In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1)		*76–77, 78,* 98, 100

Labs and investigations are in italics.

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• Growth of organisms and population increases are limited by access to resources. (MS-LS2-1)	*76–77,* 77–78, *78,* 79–80, 82, 84
CCC Crosscutting Concepts	
Cause and Effect • Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-LS2-1)	*76–77,* 79–81, 82, 102, 112, *118,* 120, 123–130, 131
CCSS ELA/Literacy Connections	
ELA RST.6–8.1	72–73, 88–89, 106–107, Literacy Skill Handbook (online)
ELA RST.6–8.7	82, *92–94,* 100, Literacy Skill Handbook (online)

MS-LS2	**Ecosystems: Interactions, Energy, and Dynamics**	
MS-LS2-2.	**Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.** [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]	*91,* 123–130
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. • Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena. (MS-LS2-2)		72–73, *78,* 84, 88–89, *91,* 98, 102, 106–107, 120, 123–130, 131
DCI Disciplinary Core Ideas		
LS2.A: Interdependent Relationships in Ecosystems • Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)		*78,* 79, *90,* 91, *91,* 92, *92–94,* 94–97, *97,* 98, 100–102, 123–130
CCC Crosscutting Concepts		
Patterns • Patterns can be used to identify cause and effect relationships. (MS-LS2-2)		95, 97, 123–130, 131

Labs and investigations are in italics.

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CCSS ELA/Literacy Connections	
ELA RST.6–8.1	72–73, 88–89, 106–107, Literacy Skill Handbook (online)
ELA WHST.6–8.2	81–82, 120, Literacy Skill Handbook (online)
ELA WHST.6–8.9	Literacy Skill Handbook (online)
ELA SL.8.1	67, 95, Literacy Skill Handbook (online)
ELA SL.8.4	*92–94,* 99, Literacy Skill Handbook (online)
CCSS Math Connections	
Math 6.SP.B.5	123–130, Math Skill Handbook (online)

MS-LS2	**Ecosystems: Interactions, Energy, and Dynamics**	
PERFORMANCE EXPECTATION **MS-LS2-4.**	**Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.** [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]	112, 118, 123–130
SEP Science and Engineering Practices		
Engaging in Argument from Evidence Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). • Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-LS2-4)		96, *118,* 123–130
Connections to Nature of Science **Scientific Knowledge is Based on Empirical Evidence** • Science disciplines share common rules of obtaining and evaluating empirical evidence. (MS-LS2-4)		119
DCI Disciplinary Core Ideas		
LS2.C: Ecosystem Dynamics, Functioning, and Resilience • Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)		82, 108, *108,* 109–110, *111,* 112, *113–114,* 114–116, *116,* 116–118, *118,* 120–122, 123–130, 131, Animation *Aquatic Succession* (online)

Labs and investigations are in italics.

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MODULE: Biodiversity in Ecosystems

MS-LS2	Ecosystems: Interactions, Energy, and Dynamics	
MS-LS2-5.	**Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*** [Clarification Statement: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]	*177–178*, 180, 185–192
SEP Science and Engineering Practices		
Engaging in Argument from Evidence	Engaging in argument from evidence in 6–8 builds on K-5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). • Evaluate competing design solutions based on jointly developed and agreed–upon design criteria. (MS-LS2-5) *Other aspects of this SEP are integrated throughout this module and are listed in the *Also Integrates* section.	*177–178*, 180, 185–192
DCI Disciplinary Core Ideas		
LS2.C: Ecosystem Dynamics, Functioning, and Resilience	• Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5)	137, *140*, 141, *142*, 142–144, *144–145*, 145, *146–147*, *148*, *149*, 150–158, 163A–163B, 164–166, 175, 181–182, 185–192
LS4.D: Biodiversity and Humans	• Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. (secondary to MS-LS2-5)	137, *148*, 150, *159*, 159–160, *160–162*, 162, 163A–163B, 164–166, 173–175, 180, 182, 184, 185–192
ETS1.B: Developing Possible Solutions	• There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (secondary to MS-LS2-5)	*177–178*, 185–192
CCC Crosscutting Concepts		
Stability and Change	• Small changes in one part of a system might cause large changes in another part. (MS-LS2-5)	*149*, 150–151, 165–166, 169, 175, 175A–175B, 180, 184, 185–192
Connections to Engineering, Technology, and Applications of Science **Influence of Science, Engineering, and Technology on Society and the Natural World**	• The use of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time. (MS-LS2-5)	*142*, 142–144, 166, *177–178*, 179, 183

Labs and investigations are in italics.

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Connections to Nature of Science **Science Addresses Questions About the Natural and Material World** • Science knowledge can describe consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-LS2-5)	169, 173–175, 177, *177–178,* 178–182, 184
CCSS ELA/Literacy Connections	
ELA RST.6-8.8	174, Literacy Skill Handbook (online)
ELA RI.8.8	174, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.4	*146–147*, Math Skill Handbook (online)
Math 6.RP.A.3	*144–145*, *146–147, 172, Math Skill Handbook (online)*

MS-ETS1	**Engineering Design**	
MS-ETS1-1.	**Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.**	*177–178*, 185–192
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Asking questions and defining problems in grades 6–8 builds on grades K-5 experiences and progresses to specifying relationships between variables, clarifying arguments and models. • Define a design problem that can be solved through the development of an object, tool, process or system and includes multiple criteria and constraints, including scientific knowledge that may limit possible solutions. (MS-ETS1-1) *Other aspects of this SEP are integrated throughout this module and are listed in the Also Integrates section.		185–192
DCI Disciplinary Core Ideas		
ETS1.A: Defining and Delimiting Engineering Problems • The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1-1)		Science and Engineering Practices Handbook (online)

Labs and investigations are in italics.

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CCC Crosscutting Concepts	
Connections to Engineering, Technology, and Applications of Science **Influence of Science, Engineering, and Technology on Society and the Natural World** • All human activity draws on natural resources and has both short and long-term consequences, positive as well as negative, for the health of people and the natural environment. (MS-ETS1-1)	173–175, *176–177*, 177, *177–178*, 179–181, 185–192
• The uses of technologies and limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions	*142*, 142–144, 166, *177–178*, 179, 183
CCSS ELA/Literacy Connections	
ELA RST.6–8.1	138–139, 170–171, 174, Literacy Skill Handbook (online)
ELA WHST.6–8.8	*160–162*, 163, 163B, 175, 175B, *177–178*, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.2	*144–145*, *146–147,* Math Skill Handbook (online)
Math 7.EE.3	*144–145*, *146–147*, *172,* Math Skill Handbook (online)

MS-ETS1	Engineering Design	
MS-ETS1-2.	**Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.**	*177–178*, 180, 185–192
SEP Science and Engineering Practices		
Engaging in Argument from Evidence Engaging in argument from evidence in 6–8 builds on K-5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. • Evaluate competing design solutions based on jointly developed and agreed–upon design criteria. (MS-ETS1-2) *Other aspects of this SEP are integrated throughout this module and are listed in the *Also Integrates* section.		*177–178*, 180, 185–192
DCI Disciplinary Core Ideas		
ETS1.B: Developing Possible Solutions • There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-2)		*177–178*, 185–192, Science and Engineering Practices Handbook (online)

Labs and investigations are in italics.

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CCSS ELA/Literacy Connections	
ELA RST.6–8.1	138–139, 170–171, 174, Literacy Skill Handbook (online)
ELA RST.6–8.9	*149*, Literacy Skill Handbook (online)
ELA WHST.6–8.7	*160–162*, 163, 163B, 175, 175B, *177–178*, Literacy Skill Handbook (online)
ELA WHST.6–8.9	163, *177–178*, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.2	*144–145*, *146–147*, Math Skill Handbook (online)
Math 7.EE.3	*144–145, 146–147, 172*, Math Skill Handbook (online)

MS-ETS1	**Engineering Design**	
MS-ETS1-3.	**Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.**	185–192
SEP Science and Engineering Practices		
Analyzing and Interpreting Data Analyzing data in 6–8 builds on K-5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. • Analyze and interpret data to determine similarities and differences in findings. (MS-ETS1-3) *Other aspects of this SEP are integrated throughout this module and are listed in the Also Integrates section.		*148*, *149*, *172*, 185–192
DCI Disciplinary Core Ideas		
ETS1.B: Developing Possible Solutions • There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-3)		*177–178*, 185–192, Science and Engineering Practices Handbook (online)
• Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. (MS-ETS1-3)		*177–178*, 185–192, Science and Engineering Practices Handbook (online)
ETS1.C: Optimizing the Design Solution • Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design. (MS-ETS1-3)		185–192, Science and Engineering Practices Handbook (online)

Labs and investigations are in italics.

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CCSS ELA/Literacy Connections	
ELA RST.6–8.1	138–139, 170–171, 174, Literacy Skill Handbook (online)
ELA RST.6–8.7	*160–162*, 164, Literacy Skill Handbook (online)
ELA RST.6–8.9	*149*, Literacy Skill Handbook (online)
CCSS Math Connections	
Math MP.2	*144–145*, *146–147*, Math Skill Handbook (online)
Math 7.EE.3	*144–145*, *146–147*, *172*, Math Skill Handbook (online)

ALSO INTEGRATES:	
SEP Asking Questions and Defining Problems	163, 193
SEP Developing and Using Models	*146–147*
SEP Planning and Carrying Out Investigations	193
SEP Analyzing and Interpreting Data	*144–145, 146–147,* 165
SEP Using Mathematics and Computational Thinking	*144–145, 146–147, 149,* 150, *172*
SEP Constructing Explanations and Designing Solutions	138–139, 141, 170–171, 184, 185–192
SEP Engaging in Argument from Evidence	*166*
SEP Obtaining, Evaluating, and Communicating Information	*160–162,* 163–164, 174–175, 177–178, 182, 185–192
CCC Patterns	*148, 149,* 150, 165
CCC Structure and Function	155
CCSS ELA RST.6-8.3	*144–145, 146–147,* 172, 176
CCSS ELA RST.6–8.10	163, 174–175, 175A–175B, 181
CCSS ELA WHST.6-8.1	166, 180
CCSS ELA WHST.6-8.2	181
CCSS ELA SL.7.4	160–162, 175

Labs and investigations are in italics.