



F.15 Biology - Grades 9-12

PUBLISHER/PROVIDER MATERIAL INFORMATION (TO BE COMPLETED BY PUBLISHER/PROVIDER)

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Title of Teacher Edition:	Inspire Science Biology Teacher Edition	Teacher Edition ISBN:	9780076884346
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PUBLISHER/PROVIDER CITATION VIDEO: Reviewer must view video before starting the review of this set of materials.

Citation Video Link:			
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Section 1: Standards Review: Science

Abbreviations for the Form F Standards Review Tab:

- PE: Performance Expectation
- DCI: Disciplinary Core Idea
- SEP: Science and Engineering Practices
- CCC: Crosscutting Concepts
- CONN: Connections
- NM: NM STEM Ready Standard
- CCSS: Common Core State Standards for ELA/Literacy in Science and Common Core State Standards for Math in Science as identified in the NGSS

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From Molecules to Organisms: Structures and Processes

1	PE	HS-LS1-1. Students who demonstrate understanding can: Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.							
2	DCI	LS1.A: Structure and Function • Systems of specialized cells within organisms help them perform the essential functions of life.	TE: Module 1, Lesson 1, p. 7, Displays organization and Use Graphic Organizers						
3	DCI	LS1.A: Structure and Function • All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.	TE: Unit 3, Module 11, Lesson 3, p. 299, Central Dogma						
4	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.</i> • Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) 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.	Online Resources: Unit 3, Module 11, Lesson 3. Explore and Explain: Applying Practices Answer Key: Transcription and Translation						
5	CCC	Structure and Function • Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem.	TE: Unit 3, Module 11, Lesson 3, p. 300, CCC: Structure and Function						
6	PE	HS-LS1-2. Students who demonstrate understanding can: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.							
7	DCI	LS1.A: Structure and Function • Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.	TE: Unit 5, Module 19, Lesson 2, pg. 514						

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8	SEP	Developing and Using Models <i>Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.</i> • Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resources: Unit 6, Module 22, Lesson 1. Explore and Explain: Applying Practices Answer Key: Hierarchical Organization in the Human Body						
9	CCC	Systems and System Models • Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions—including energy, matter, and information flows—within and between systems at different scales.	TE: Unit 5, Module 19, Lesson 2, pg.515, CCC: Systems and System Models						
10	PE	HS-LS1-3. Students who demonstrate understanding can: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.							
11	DCI	LS1.A: Structure and Function • Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.	TE: Unit 6, Module 22, Lesson 2 pg. 605						
12	SEP	Planning and Carrying Out Investigations <i>Planning and carrying out investigations in 9-12 builds on K-8 experiences and progresses to include investigations that provide evidence for and test conceptual, mathematical, physical, and empirical models.</i> • Plan and conduct an investigation individually and collaboratively to produce data to serve as the basis for evidence, and in the design: decide on types, how much, and accuracy of data needed to produce reliable measurements and consider limitations on the precision of the data (e.g., number of trials, cost, risk, time), and refine the design accordingly.	Online Resources: Unit 6, Module 25, Lesson 3. Explore and Explain: Applying Practices Answer Key: Investigate Homeostasis in the Human Body						
13	CONN	Scientific Investigations Use a Variety of Methods • Scientific inquiry is characterized by a common set of values that include: logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings.	Online Resources: Unit 6, Module 25, Lesson 3. Explore and Explain: Applying Practices Answer Key: Investigate Homeostasis in the Human Body						
14	CCC	Stability and Change • Feedback (negative or positive) can stabilize or destabilize a system.	TE: Unit 2, Module 7, Lesson 2 pg. 176, CCC: Stability and Change						

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Matter and Energy in Organisms and Ecosystems

15	PE	HS-LS1-5. Students who demonstrate understanding can: Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.							
16	DCI	LS1.C: Organization for Matter and Energy Flow in Organisms • The process of photosynthesis converts light energy to stored chemical energy by converting carbon dioxide plus water into sugars plus released oxygen.	TE Unit 2, Module 8, Lesson 2 pg. 202, Overview of Photosynthesis						
17	SEP	Developing and Using Models <i>Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.</i> • Use a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resources: Unit 2, Module 8, Lesson 2, Explore and Explain: Applying Practices Answer Key: Modeling Photosynthesis						
18	CCC	Energy and Matter • Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system.	TE Unit 2, Module 8, Lesson 2 pg. 205, CCC: Energy and Matter						
19	PE	HS-LS1-6. Students who demonstrate understanding can: Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.							
20	DCI	LS1.C: Organization for Matter and Energy Flow in Organisms • The sugar molecules thus formed contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells.	TE Unit 2, Module 6, Lesson 4 pg.156-157						
21	DCI	LS1.C: Organization for Matter and Energy Flow in Organisms • As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.	TE Unit 2, Module 8, Lesson 1, p. 200						

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22	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.</i> • Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) 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.	Online Resources: Unit 2, Module 6, Lesson 4, Explore and Explain: Applying Practices Answer Key: Exploring Macromolecules						
23	CCC	Energy and Matter • Changes of energy and matter in a system can be described in terms of energy and matter flows into, out of, and within that system.	TE Unit 2, Module 6, Lesson 4 pg.155, CCC: Energy and Matter						
24	PE	HS-LS1-7. Students who demonstrate understanding can: Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.							
25	DCI	LS1.C: Organization for Matter and Energy Flow in Organisms • As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.	TE Unit 2, Module 8, Lesson 3 pg. 210, Glycolysis, Krebs Cycle						
26	DCI	LS1.C: Organization for Matter and Energy Flow in Organisms • As a result of these chemical reactions, energy is transferred from one system of interacting molecules to another. Cellular respiration is a chemical process in which the bonds of food molecules and oxygen molecules are broken and new compounds are formed that can transport energy to muscles. Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment.	TE Unit 2, Module 8, Lesson 3 pg. 209-210						
27	SEP	Developing and Using Models <i>Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.</i> • Use a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resources: Unit 2, Module 8, Lesson 3. Explore and Explain: Applying Practices Answer Key: Modeling Cellular Respiration						

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28	CCC	Energy and Matter • Energy cannot be created or destroyed; it only moves between one place and another place, between objects and/or fields, or between systems.	TE Unit 2, Module 8, Lesson 3, p. 210, CCC: Energy and Matter.						
29	PE	HS-LS2-3. Students who demonstrate understanding can: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.							
30	DCI	LS2.B: Cycle of Matter and Energy Transfer in Ecosystems • Photosynthesis and cellular respiration (including anaerobic processes) provide most of the energy for life processes.	Online Resources: Unit 1, Module 2, Lesson 3. Explore and Explain: Applying Practices Answer Key: The Cycling of Matter and Flow of Energy in Aerobic and Anaerobic Conditions						
31	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.</i> • Construct and revise an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, and peer review) 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.	Online Resources: Unit 1, Module 2, Lesson 3. Explore and Explain: Applying Practices Answer Key: The Cycling of Matter and Flow of Energy in Aerobic and Anaerobic Conditions						
32	CONN	Scientific Knowledge is Open to Revision in Light of New Evidence • Most scientific knowledge is quite durable, but is, in principle, subject to change based on new evidence and/or reinterpretation of existing evidence.	Online Resources: Unit 1, Module 2, Lesson 3. Explore and Explain: Applying Practices Answer Key: The Cycling of Matter and Flow of Energy in Aerobic and Anaerobic Conditions						
33	CCC	Energy and Matter • Energy drives the cycling of matter within and between systems.	TE Unit 1, Module 2, Lesson 2, pg. 36, CCC: Energy and Matter						
34	PE	HS-LS2-4. Students who demonstrate understanding can: Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.							

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35	DCI	LS2.B: Cycles of Matter and Energy Transfer in Ecosystems • Plants or algae form the lowest level of the food web. At each link upward in a food web, only a small fraction of the matter consumed at the lower level is transferred upward, to produce growth and release energy in cellular respiration at the higher level. Given this inefficiency, there are generally fewer organisms at higher levels of a food web. Some matter reacts to release energy for life functions, some matter is stored in newly made structures, and much is discarded. The chemical elements that make up the molecules of organisms pass through food webs and into and out of the atmosphere and soil, and they are combined and recombined in different ways. At each link in an ecosystem, matter and energy are conserved.	TE Unit 1, Module 2, Lesson 2, pg. 37-38						
36	SEP	Using Mathematical and Computational Thinking <i>Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis; a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms; and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.</i> • Use mathematical representations of phenomena or design solutions to support claims.	Online Resources: Unit 1, Module 2, Lesson 2. Explore and Explain: Applying Practices Answer Key: Ecological Pyramids						
37	CCC	Energy and Matter • Energy cannot be created or destroyed; it only moves between one place and another place, between objects and/or fields, or between systems.	TE Unit 1, Module 2, Lesson 3, pg. 44, Question 6						
38	PE	HS-LS2-5. Students who demonstrate understanding can: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.							
39	DCI	LS2.B: Cycles of Matter and Energy Transfer in Ecosystems • Photosynthesis and cellular respiration are important components of the carbon cycle, in which carbon is exchanged among the biosphere, atmosphere, oceans, and geosphere through chemical, physical, geological, and biological processes.	TE Unit 1, Module 2, Lesson 3 pg. 41						
40	DCI	PS3.D: Energy in Chemical Processes • The main way that solar energy is captured and stored on Earth is through the complex chemical process known as photosynthesis.	TE Unit 1, Module 2, Lesson 3 pg. 41						

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42	CCC	Systems and System Models • Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions — including energy, matter and information flows — within and between systems at different scales.	Online Resources: Unit 2, Module 8, Lesson 3. Explore and Explain: Applying Practices Answer Key: Modeling the Carbon Cycle						

Interdependence in Ecosystems

43	PE	HS-LS2-1. Students who demonstrate understanding can: Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.							
44	DCI	LS2.A: Interdependent Relationships in Ecosystems • Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. These limits result from such factors as the availability of living and nonliving resources and from such challenges such as predation, competition, and disease. Organisms would have the capacity to produce populations of great size were it not for the fact that environments and resources are finite. This fundamental tension affects the abundance (number of individuals) of species in any given ecosystem.	TE Unit 1, Module 4, Lesson 1 pg. 84, Carrying Capacity						
45	SEP	Using Mathematics and Computational Thinking <i>Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis; a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms; and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.</i> • Use mathematical and/or computational representations of phenomena or design solutions to support explanations.	Online Resources: Unit 1, Module 4, Lesson 1. Explore and Explain: Applying Practices Answer Key: Carrying Capacity of Nectar-Feeding Bats, p. 1, Analyze						
46	CCC	Scale, Proportion, and Quantity • The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs.	TE Unit 1, Module 4, Lesson 1 pg. 79, CCC: Scale Proportion, and Quantity						

Section 1: Standards Review: Science

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47	PE	HS-LS2-2. Students who demonstrate understanding can: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.							
48	DCI	LS2.A: Interdependent Relationships in Ecosystems • Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. These limits result from such factors as the availability of living and nonliving resources and from such challenges such as predation, competition, and disease. Organisms would have the capacity to produce populations of great size were it not for the fact that environments and resources are finite. This fundamental tension affects the abundance (number of individuals) of species in any given ecosystem.	TE Unit 1, Module 4, Lesson 1 pg. 83 Exponential and Logistic Growth Curves						
49	DCI	LS2.C: Ecosystem Dynamics, Functioning, and Resilience • A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.	Online Resources: Unit 1, Module 4, Lesson 1. Explore and Explain: Applying Practices Answer Key: Population Growth Rate: Reproductive Patterns						
50	SEP	Using Mathematics and Computational Thinking <i>Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis; a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms; and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.</i> • Use mathematical representations of phenomena or design solutions to support and revise explanations.	Online Resources: Unit 1, Module 4, Lesson 1. Explore and Explain: Applying Practices Answer Key: Human Population Growth						
51	CONN	Scientific Knowledge is Open to Revision in Light of New Evidence • Most scientific knowledge is quite durable, but is, in principle, subject to change based on new evidence and/or reinterpretation of existing evidence.	TE Unit 1, Module 4, Lesson 2 pg. 91-92, Earth's Carrying Capacity for Humans						
52	CCC	Scale, Proportion, and Quantity • Using the concept of orders of magnitude allows one to understand how a model at one scale relates to a model at another scale.	TE Unit 1, Module 4, Lesson 2 pg. 90 Table 1 Data. CCC: Scale, Proportion and Quantity						

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53	PE	HS-LS2-6. Students who demonstrate understanding can: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.							
54	DCI	LS2.C: Ecosystem Dynamics, Functioning, and Resilience • A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.	TE Unit 1, Module 3, Lesson 1 pg. 52. Primary Succession						
55	SEP	Engaging in Argument from Evidence <i>Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.</i> • Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.	Online Resources: Unit 1, Module 3, Lesson 1. Explore and Explain: Applying Practices Answer Key: Local Ecosystem Dynamics						
56	CONN	Scientific Knowledge is Open to Revision in Light of New Evidence • Scientific argumentation is a mode of logical discourse used to clarify the strength of relationships between ideas and evidence that may result in revision of an explanation.	TE Unit 1, Module 5 pg. 121 Scientific Breakthroughs 'More Species Fewer Individuals'						
57	CCC	Stability and Change • Much of science deals with constructing explanations of how things change and how they remain stable.	TE Unit 1, Module 3, Lesson 1 p. 51, CCC: Stability and Change						
58	PE	HS-LS2-7. Students who demonstrate understanding can: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.							
59	DCI	LS2.C: Ecosystem Dynamics, Functioning, and Resilience • Moreover, anthropogenic changes (induced by human activity) in the environment-including habitat destruction, pollution, introduction of invasive species, overexploitation, and climate change-can disrupt an ecosystem and threaten the survival of some species.	TE Unit 1, Module 5, Lesson 2 pp. 108-110 TE Unit 1, Module 5, Lesson 2, p. 112, Invasive Species						

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60	DCI	LS4.D: Biodiversity and Humans • Biodiversity is increased by the formation of new species (speciation) and decreased by the loss of species (extinction).	TE Unit 1, Module 5, Lesson 1 pg. 98						
61	DCI	LS4.D: Biodiversity and Humans • Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value.	TE Unit 1, Module 5, Lesson 1 pg. 101 TE Unit 1, Module 5, Lesson 2 pp. 108-110						
62	DCI	ETS1.B: Developing Possible Solutions • When evaluating solutions it is important to take into account a range of constraints including cost, safety, reliability and aesthetics and to consider social, cultural and environmental impacts.	TE Unit 1, Module 5, Lesson 2 pg. 112 Check Your Progress Question #5						
63	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.</i> • Design, evaluate, and refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.	Online Resources: Unit 1, Module 5, Lesson 3. Explore and Explain: Applying Practices Answer Key: Microbeads, Mega-Problem, pp. 3-4						
64	CCC	Stability and Change • Much of science deals with constructing explanations of how things change and how they remain stable.	TE Unit 1, Module 5, Lesson 2 pg. 107, CCC: Stability and Change						
65	NM	HS-LS2-7 NM: • Using a local issue in your solution design, describe and analyze the advantages and disadvantages of human activities that support the local population such as reclamation projects, building dams, and habitat restoration.	Online Resources: Unit 1, Module 5, Lesson 3. Explore and Explain: Applying Practices Answer Key: Microbeads, Mega-Problem, p. 1						
66	PE	HS-LS2-8. Students who demonstrate understanding can: Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.							
67	DCI	LS2.D: Social Interactions and Group Behavior • Group behavior has evolved because membership can increase the chances of survival for individuals and their genetic relatives.	TE Unit 5, Module 21, Lesson 3 pg. 589. Cooperative Behaviors						

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68	SEP	Engaging in Argument from Evidence <i>Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.</i> • Evaluate the evidence behind currently accepted explanations to determine the merits of arguments.	Online Resources: Unit 5, Module 21, Lesson 3. Explore and Explain: Applying Practices Answer Key: Investigating Group Behavior						
69	CONN	Scientific Knowledge is Open to Revision in Light of New Evidence • Scientific argumentation is a mode of logical discourse used to clarify the strength of relationships between ideas and evidence that may result in revision of an explanation.	TE Unit 5, Module 21, Science & Society pg. 591. Make and Defend a Claim						
70	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 5, Module 21, Lesson 3 pg. 587, CCC: Cause and Effect						
71	PE	HS-LS4-6. Students who demonstrate understanding can: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.							
72	DCI	LS4.C: Adaptation • Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline — and sometimes the extinction — of some species.	TE Unit 4, Module 14, Lesson 3 pg. 385, PhET Natural Selection Simulation						
73	DCI	LS4.D: Biodiversity and Humans • Humans depend on the living world for the resources and other benefits provided by biodiversity. But human activity is also having adverse impacts on biodiversity through overpopulation, overexploitation, habitat destruction, pollution, introduction of invasive species, and climate change. Thus sustaining biodiversity so that ecosystem functioning and productivity are maintained is essential to supporting and enhancing life on Earth. Sustaining biodiversity also aids humanity by preserving landscapes of recreational or inspirational value.	TE Unit 1, Module 5, Lesson 2, p. 107, Writing Support						
74	DCI	ETS1.B: Developing Possible Solutions • When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.	Online Resources: Unit 1, Module 5, Lesson 3. Explore and Explain: Applying Practices Answer Key: Cleaning up an Oil Spill, p. 1, Project Overview						

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75	DCI	ETS1.B: Developing Possible Solutions • Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical; and in making a persuasive presentation to a client about how a given design will meet his or her needs.	TE Unit 1, Module 5, Lesson 3 pg.114. Computer based model of Global Consumption of Natural Resources per Capita						
76	SEP	Using Mathematics and Computational Thinking <i>Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.</i> • Create or revise a simulation of a phenomenon, designed device, process, or system.	Online Resources: Unit 1, Module 5, Lesson 3. Explore and Explain: Applying Practices Answer Key: Cleaning up an Oil Spill, p. 3						
77	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 4, Module 14, Lesson 2 pg. 388, CCC: Cause and Effect						

Inheritance and Variation of Traits

78	PE	HS-LS1-4. Students who demonstrate understanding can: Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.							
79	DCI	LS1.B: Growth and Development of Organisms • In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organism begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism.	TE Unit 2, Module 9, Lesson 1 pg. 225. The Stages of Mitosis Graphic						
80	SEP	Developing and Using Models <i>Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed worlds.</i> • Use a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resources: Unit 2, Module 9, Lesson 2. Explore and Explain: Applying Practices Answer Key: Mitosis and Cellular Differentiation						

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81	CCC	Systems and System Models • Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions — including energy, matter, and information flows — within and between systems at different scales.	TE Unit 2, Module 9, Lesson 1 pg. 229. Bottom of Page. CCC: Systems and System Models						
82	PE	HS-LS3-1. Students who demonstrate understanding can: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.							
83	DCI	LS1.A: Structure and Function • All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins.	TE Unit 2, Module 9, Lesson 2 pg. 231. Chromosome Numbers						
84	DCI	LS3.A: Inheritance of Traits • Each chromosome consists of a single very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA. The instructions for forming species' characteristics are carried in DNA. All cells in an organism have the same genetic content, but the genes used (expressed) by the cell may be regulated in different ways. Not all DNA codes for a protein; some segments of DNA are involved in regulatory or structural functions, and some have no as-yet known function.	TE Unit 2, Module 9, Lesson 1 pg. 222. Chromatin and Chromosomes						
85	SEP	Asking Questions and Defining Problems <i>Asking questions and defining problems in 9-12 builds on K-8 experiences and progresses to formulating, refining and evaluating empirically testable questions and design problems using models and simulations.</i> • Ask questions that arise from examining models or a theory to clarify relationships.	Online Resources: Unit 2, Module 9, Lesson 2. Explore and Explain: Applying Practices Answer Key: Meiosis						
86	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 2, Module 9, Lesson 2 pg. 235. CCC: Cause and Effect						
87	PE	HS-LS3-2. Students who demonstrate understanding can: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.							

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88	DCI	LS3.B: Variation of Traits • In sexual reproduction, chromosomes can sometimes swap sections during the process of meiosis (cell division), thereby creating new genetic combinations and thus more genetic variation. Although DNA replication is tightly regulated and remarkably accurate, errors do occur and result in mutations, which are also a source of genetic variation. Environmental factors can also cause mutations in genes, and viable mutations are inherited.	TE Unit 2, Module 9, Lesson 2 pg. 234. Figure 17 Crossing Over. TE Unit 2, Module 9, Lesson 2 pg. 239-240. Figure 21 Nondisjunction and Figure 22 Trisomy 21.						
89	DCI	LS3.B: Variation of Traits • Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus the variation and distribution of traits observed depends on both genetic and environmental factors.	TE Unit 3, Module 10, Lesson 5 pg. 281, Environmental Influences						
90	SEP	Engaging in Argument from Evidence <i>Engaging in argument from evidence in 9-12 builds on K-8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.</i> • Make and defend a claim based on evidence about the natural world that reflects scientific knowledge and student-generated evidence.	Online Resources: Unit 3, Module 11, Lesson 4. Explore and Explain: Applying Practices Answer Key: Investigating Genetic Variation						
91	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 3, Module 10, Lesson 1 pg. 235, CCC: Cause and Effect						
92	PE	HS-LS3-3. Students who demonstrate understanding can: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.							
93	DCI	LS3.B: Variation of Traits • Environmental factors also affect expression of traits, and hence affect the probability of occurrences of traits in a population. Thus, the variation and distribution of traits observed depends on both genetic and environmental factors.	TE Unit 3, Module 10, Lesson 5 pg. 274 Sickle Cell Disease and Malaria						

Section 1: Standards Review: Science

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94	SEP	Analyzing and Interpreting Data <i>Analyzing data in 9-12 builds on K-8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.</i> • Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.	Online Resources: Unit 3, Module 10, Lesson 1. Explore and Explain: Applying Practices Answer Key: Punnett Squares						
95	CCC	Scale, Proportion, and Quantity • Algebraic thinking is used to examine scientific data and predict the effect of a change in one variable on another (e.g., linear growth vs. exponential growth).	TE Unit 3, Module 10, Lesson 4 pg. 269, CCC: Cause and Effect						
96	CONN	Science is a Human Endeavor • Technological advances have influenced the progress of science and science has influenced advances in technology.	TE Unit 3, Module 10 STEM at Work 'Calculated Risks' pg. 283						
97	CONN	Science is a Human Endeavor • Science and engineering are influenced by society and society is influenced by science and engineering.	TE Unit 2, Module 9, Scientific Breakthroughs: 'Cancer and Aging Reserach Enters New TERRA-tory'. pg. 245.						

Natural Selection and Evolution

98	PE	HS-LS4-1. Students who demonstrate understanding can: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.							
99	DCI	LS4.A: Evidence of Common Ancestry and Diversity • Genetic information, like the fossil record, provides evidence of evolution. DNA sequences vary among species, but there are many overlaps; in fact, the ongoing branching that produces multiple lines of descent can be inferred by comparing the DNA sequences of different organisms. Such information is also derivable from the similarities and differences in amino acid sequences and from anatomical and embryological evidence.	TE Unit 4, Module 13, Lesson 1 pg. 347, Table 1 Categories of Fossil Types						
100	SEP	Obtaining, Evaluating, and Communicating Information <i>Obtaining, evaluating, and communicating information in 9-12 builds on K-8 experiences and progresses to evaluating the validity and reliability of the claims, methods, and designs.</i> • Communicate scientific information (e.g., about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (including orally, graphically, textually, and mathematically).	Online Resources: Unit 4, Module 15, Lesson 2. Explore and Explain: Applying Practices Answer Key: Evidence for Evolution						

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101	CONN	Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena • A scientific theory is a substantiated explanation of some aspect of the natural world, based on a body of facts that have been repeatedly confirmed through observation and experiment and the science community validates each theory before it is accepted. If new evidence is discovered that the theory does not accommodate, the theory is generally modified in light of this new evidence.	TE Unit 2, Module 14, Lesson 2 pg. 380 Check Your Progress Q.1 and 3						
102	CCC	Patterns • Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.	Online Resources: Unit 4, Module 13, Lesson 1, Explore and Explain: Virtual Investigation Answer Key-Dino Dig. CCC: Identifying Patterns						
103	CONN	Scientific Knowledge Assumes an Order and Consistency in Natural Systems • Scientific knowledge is based on the assumption that natural laws operate today as they did in the past and they will continue to do so in the future.	TE Unit 4, Module 13, Lesson 1 p. 347. CCC: Scientific Knowledge Assumes an Order and Consistency in Natural Systems						
104	PE	HS-LS4-2. Students who demonstrate understanding can: Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.							
105	DCI	LS4.B: Natural Selection • Natural selection occurs only if there is both (1) variation in the genetic information between organisms in a population and (2) variation in the expression of that genetic information — that is, trait variation — that leads to differences in performance among individuals.	TE Unit 4, Module 14, Lesson 3 p. 381, Population Genetics						
106	DCI	LS4.C: Adaptation • Evolution is a consequence of the interaction of four factors: (1) the potential for a species to increase in number, (2) the genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for an environment's limited supply of the resources that individuals need in order to survive and reproduce, and (4) the ensuing proliferation of those organisms that are better able to survive and reproduce in that environment.	Online Resources: Unit 4, Module 14, Lesson 3. Explore and Explain: Applying Practices Answer Key: Mechanisms of Evolution: Natural Selection						

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107	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.</i> • Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) 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.	Online Resources: Unit 4, Module 14, Lesson 3. Explore and Explain: Applying Practices Answer Key: Pest Management and Natural Selection						
108	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 4, Module 14, Lesson 3 pg. 388, CCC: Cause and Effect						
109	PE	HS-LS4-3. Students who demonstrate understanding can: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.							
110	DCI	LS4.B: Natural Selection • Natural selection occurs only if there is both (1) variation in the genetic information between organisms in a population and (2) variation in the expression of that genetic information — that is, trait variation — that leads to differences in performance among individuals.	TE Unit 4, Module 14, Lesson 2 pg. 378. Types of Adaptation second paragraph						
111	DCI	LS4.B: Natural Selection • The traits that positively affect survival are more likely to be reproduced, and thus are more common in the population.	TE Unit 4, Module 14, Lesson 2 pg. 378. Types of Adaptation second paragraph						
112	DCI	LS4.C: Adaptation • Natural selection leads to adaptation, that is, to a population dominated by organisms that are anatomically, behaviorally, and physiologically well suited to survive and reproduce in a specific environment. That is, the differential survival and reproduction of organisms in a population that have an advantageous heritable trait leads to an increase in the proportion of individuals in future generations that have the trait and to a decrease in the proportion of individuals that do not.	TE Unit 4, Module 14, Lesson 2 pg. 378. Types of Adaptation second paragraph						
113	DCI	LS4.C: Adaptation • Adaptation also means that the distribution of traits in a population can change when conditions change.	TE Unit 4, Module 14, Lesson 2 pg. 378. Types of Adaptation first paragraph						

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114	SEP	Analyzing and Interpreting Data <i>Analyzing data in 9–12 builds on K–8 experiences and progresses to introducing more detailed statistical analysis, the comparison of data sets for consistency, and the use of models to generate and analyze data.</i> • Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible.	Online Resources: Unit 4, Module 14, Lesson 2. Explore and Explain: Applying Practices Answer Key: Could You Beat Natural Selection Using Camouflage?						
115	CCC	Patterns • Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.	TE Unit 4, Module 14, Lesson 3, pg. 391 Check Your Progress Q.4						
116	PE	HS-LS4-4. Students who demonstrate understanding can: Construct an explanation based on evidence for how natural selection leads to adaptation of populations.							
117	DCI	LS4.C: Adaptation • Natural selection leads to adaptation, that is, to a population dominated by organisms that are anatomically, behaviorally, and physiologically well suited to survive and reproduce in a specific environment. That is, the differential survival and reproduction of organisms in a population that have an advantageous heritable trait leads to an increase in the proportion of individuals in future generations that have the trait and to a decrease in the proportion of individuals that do not.	Online Resources: Unit 4, Module 14, Lesson 2. Explore and Explain: Applying Practices Answer Key: Adaptation						
118	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles, and theories.</i> • Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) 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.	Online Resources: Unit 4, Module 14, Lesson 3. Explore and Explain: Applying Practices Answer Key: Can Scientists Model Natural Selection?						
119	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	Online Resources: Unit 5, Module 19, Lesson 1. Explore and Explain: Applying Practices Answer Key: Plant Evolution and Adaptation						

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120	CONN	Scientific Knowledge Assumes an Order and Consistency in Natural Systems • Scientific knowledge is based on the assumption that natural laws operate today as they did in the past and they will continue to do so in the future.	TE Unit 4, Module 13, Lesson 2 pg. 358 CCC: Scientific Knowledge Assumes and Order and Consistency in Natural Systems						
121	PE	HS-LS4-5. Students who demonstrate understanding can: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.							
122	DCI	LS4.C: Adaptation • Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline — and sometimes the extinction — of some species.	TE Unit 1, Module 5, Lesson 2 pg. 105. Extinction Rates						
123	DCI	LS4.C: Adaptation • Species become extinct because they can no longer survive and reproduce in their altered environment. If members cannot adjust to change that is too fast or drastic, the opportunity for the species' evolution is lost.	TE Unit 1, Module 5, Lesson 2 pg. 106 Table 2						
124	SEP	Engaging in Argument from Evidence <i>Engaging in argument from evidence in 9-12 builds on K-8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current or historical episodes in science.</i> • Evaluate the evidence behind currently accepted explanations or solutions to determine the merits of arguments.	Online Resources: Unit 1, Module 5, Lesson 2. Explore and Explain: Applying Practices Answer Key: Evaluating Impacts of Environmental Change in Populations						
125	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 1, Module 5, Lesson 2 pg. 107, Factors that Threaten Biodiversity CCC: Cause and Effect						
Earth's Systems									
126	PE	HS-ESS2-4. Students who demonstrate understanding can: Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate.							

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127	DCI	ESS1.B: Earth and the Solar System • Cyclical changes in the shape of Earth's orbit around the sun, together with changes in the tilt of the planet's axis of rotation, both occurring over hundreds of thousands of years, have altered the intensity and distribution of sunlight falling on the earth. These phenomena cause a cycle of ice ages and other gradual climate changes.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Teacher Support: Natural Causes of Climate Change, Clarify a Preconception, Use Scientific Terms						
128	DCI	ESS2.A: Earth Materials and System • The geological record shows that changes to global and regional climate can be caused by interactions among changes in the sun's energy output or Earth's orbit, tectonic events, ocean circulation, volcanic activity, glaciers, vegetation, and human activities. These changes can occur on a variety of time scales from sudden (e.g., volcanic ash clouds) to intermediate (ice ages) to very long-term tectonic cycles.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Forecasting Climate Change, p. 1, Teaching Strategies, point 2						
129	DCI	ESS2.D: Weather and Climate • The foundation for Earth's global climate systems is the electromagnetic radiation from the sun, as well as its reflection, absorption, storage, and redistribution among the atmosphere, ocean, and land systems, and this energy's re-radiation into space.	TE Unit 1, Module 3, Lesson 2 pg. 56 Greenhouse Effect Model						
130	SEP	Developing and Using Models <i>Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed world(s).</i> • Use a model to provide mechanistic accounts of phenomena.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Forecasting Climate Change, p. 1, Process						
131	CONN	Scientific Knowledge is Based on Empirical Evidence • Science arguments are strengthened by multiple lines of evidence supporting a single explanation.	TE Unit 1, Module 2 Wrap Up pg. 47						
132	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	TE Unit 1, Module 3, Lesson 2 pg. 61. Bottom of Page. CCC: Cause and Effect						

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133	PE	HS-ESS2-7. Students who demonstrate understanding can: Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.							
134	DCI	ESS2.D: Weather and Climate • Gradual atmospheric changes were due to plants and other organisms that captured carbon dioxide and released oxygen.	Online Resources: Module 4, Lesson: Earth's Formation and Early History, Explore and Explain: Applying Practices Answer Key: The Coevolution of Living Things and the Atmosphere, p. 3						
135	DCI	ESS2.E Biogeology • The many dynamic and delicate feedbacks between the biosphere and other Earth systems cause a continual coevolution of Earth's surface and the life that exists on it.	Online Resources: Module 4, Lesson: Earth's Formation and Early History, Explore and Explain: Applying Practices Answer Key: The Coevolution of Living Things and the Atmosphere, p. 3						
136	SEP	Engaging in Argument from Evidence <i>Engaging in argument from evidence in 9–12 builds on K–8 experiences and progresses to using appropriate and sufficient evidence and scientific reasoning to defend and critique claims and explanations about the natural and designed world(s). Arguments may also come from current scientific or historical episodes in science.</i> • Construct an oral and written argument or counter-arguments based on data and evidence.	Online Resources: Module 4, Lesson: Earth's Formation and Early History, Explore and Explain: Applying Practices Answer Key: The Coevolution of Living Things and the Atmosphere, p. 3						
137	CCC	Stability and Change • Much of science deals with constructing explanations of how things change and how they remain stable.	Online Resources: Module 4, Lesson: Earth's Formation and Early History, Explore and Explain: Applying Practices Answer Key: The Coevolution of Living Things and the Atmosphere, p. 3						

Earth and Human Activity

Section 1: Standards Review: Science

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- DCI: Disciplinary Core Idea
- SEP: Science and Engineering Practices
- CCC: Crosscutting Concepts
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138	PE	HS-ESS3-1. Students who demonstrate understanding can: Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.							
139	DCI	ESS3.A: Natural Resources • Resource availability has guided the development of human society.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Human Activity, Natural Resources, Hazards, and Climate Change						
140	DCI	ESS3.B: Natural Hazards • Natural hazards and other geologic events have shaped the course of human history; [they] have significantly altered the sizes of human populations and have driven human migrations.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Human Activity, Natural Resources, Hazards, and Climate Change						
141	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific knowledge, principles, and theories.</i> • Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) 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.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Human Activity, Natural Resources, Hazards, and Climate Change						

Section 1: Standards Review: Science

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142	CCC	Cause and Effect • Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Human Activity, Natural Resources, Hazards, and Climate Change						
143	CONN	Influence of Science, Engineering, and Technology on Society and the Natural World • Modern civilization depends on major technological systems.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Human Activity, Natural Resources, Hazards, and Climate Change						
144	PE	HS-ESS3-3. Students who demonstrate understanding can: Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.							
145	DCI	ESS3.C: Human Impacts on Earth Systems • The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Climate Change and Human Activity						

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146	SEP	Using Mathematics and Computational Thinking <i>Mathematical and computational thinking in 9–12 builds on K–8 experiences and progresses to using algebraic thinking and analysis; a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms; and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.</i> • Create a computational model or simulation of a phenomenon, designed device, process, or system.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Climate Change and Human Activity						
147	CCC	Stability and Change • Change and rates of change can be quantified and modeled over very short or very long periods of time. Some system changes are irreversible.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Climate Change and Human Activity						
148	CONN	Influence of Science, Engineering, and Technology on Society and the Natural World • Modern civilization depends on major technological systems.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Climate Change and Human Activity						
149	CONN	Influence of Science, Engineering, and Technology on Society and the Natural World • New technologies can have deep impacts on society and the environment, including some that were not anticipated.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Climate Change and Human Activity						

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150	CONN	Science is a Human Endeavor • Science is a result of human endeavors, imagination, and creativity.	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Explore and Explain: Applying Practices Answer Key: Climate Change and Human Activity						
151	PE	HS-ESS3-4. Students who demonstrate understanding can: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.							
152	DCI	ESS3.C: Human Impacts on Earth Systems • Scientists and engineers can make major contributions by developing technologies that produce less pollution and waste and that preclude ecosystem degradation.	Online Resources: Unit 1 STEM Unit Project Answer Key: Rooftop Garden, p. 1						
153	DCI	ETS1.B: Developing Possible Solutions • When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.	Online Resources: Unit 1 STEM Unit Project Answer Key: Rooftop Garden, p. 3						
154	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific knowledge, principles and theories.</i> • Design or refine a solution to a complex real-world problem based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.	Online Resources: Unit 1 STEM Unit Project Answer Key: Rooftop Garden, pp. 3-4						
155	CCC	Stability and Change • Feedback (negative or positive) can stabilize or destabilize a system.	Online Resources: Unit 1 STEM Unit Project Answer Key: Rooftop Garden, p. 1						
156	CONN	Influence of Science, Engineering, and Technology on Society and the Natural World • Engineers continuously modify these technological systems by applying scientific knowledge and engineering design practices to increase benefits while decreasing costs and risks.	Online Resources: Unit 1 STEM Unit Project Answer Key: Rooftop Garden, pp. 3-4						

Engineering Design

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157	PE	HS-ETS1-1. Students who demonstrate understanding can: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.							
158	DCI	ETS1.A: Defining and Delimiting Engineering Problems • Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Analyze a Major Global Challenge, pg. 1-3						
159	DCI	ETS1.A: Defining and Delimiting Engineering Problems • Humanity faces major global challenges today, such as the need for supplies of clean water and food or for energy sources that minimize pollution, which can be addressed through engineering. These global challenges also may have manifestations in local communities.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Analyze a Major Global Challenge, pg. 1-3						
160	SEP	Asking Questions and Defining Problems <i>Asking questions and defining problems in 9–12 builds on K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.</i> • Analyze complex real-world problems by specifying criteria and constraints for successful solutions.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Analyze a Major Global Challenge, pg. 1-3						
161	CONN	Influence of Science, Engineering, and Technology on Society and the Natural World • New technologies can have deep impacts on society and the environment, including some that were not anticipated. Analysis of costs and benefits is a critical aspect of decisions about technology.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Analyze a Major Global Challenge, pg. 1-3						
162	PE	HS-ETS1-2. Students who demonstrate understanding can: Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.							
163	DCI	ETS1.C: Optimizing the Design Solution • Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (tradeoffs) may be needed.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Design a Solution, pg. 2-4						

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164	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories.</i> • Design a solution to a complex real-world problem based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Design a Solution, pg. 2-4						
165	PE	HS-ETS1-3. Students who demonstrate understanding can: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.							
166	DCI	ETS1.B: Developing Possible Solutions • When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Evaluate a Solution, pg. 1-3						
167	SEP	Constructing Explanations and Designing Solutions <i>Constructing explanations and designing solutions in 9–12 builds on K–8 experiences and progresses to explanations and designs that are supported by multiple and independent student-generated sources of evidence consistent with scientific ideas, principles and theories.</i> • Evaluate a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and tradeoff considerations.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Evaluate a Solution, pg. 1-3						
168	CONN	Influence of Science, Engineering, and Technology on Society and the Natural World • New technologies can have deep impacts on society and the environment, including some that were not anticipated. Analysis of costs and benefits is a critical aspect of decisions about technology.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Evaluate a Solution, pg. 1-3						
169	PE	HS-ETS1-4. Students who demonstrate understanding can: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.							

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170	DCI	ETS1.B: Developing Possible Solutions • Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical; and in making a persuasive presentation to a client about how a given design will meet his or her needs.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Use a Computer Simulation, pg. 1-3						
171	SEP	Using Mathematics and Computational Thinking <i>Mathematical and computational thinking in 9-12 builds on K-8 experiences and progresses to using algebraic thinking and analysis, a range of linear and nonlinear functions including trigonometric functions, exponentials and logarithms, and computational tools for statistical analysis to analyze, represent, and model data. Simple computational simulations are created and used based on mathematical models of basic assumptions.</i> • Use mathematical models and/or computer simulations to predict the effects of a design solution on systems and/or the interactions between systems.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Use a Computer Simulation, pg. 1-3						
172	CCC	Systems and System Models • Models (e.g., physical, mathematical, computer models) can be used to simulate systems and interactions — including energy, matter, and information flows — within and between systems at different scales.	Online Resource: Program Resources: Course Materials, Applying Practices Answer Key: Use a Computer Simulation, pg. 1-3						

CCSS for ELA/Literacy and Math in Grades 9-12 NGSS

- **NOTE: The standards noted at the end of each CCSS (such as (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-5)) are the occurrences of the CCSS within the NGSS.**

Grades 9-12 CCSS ELA/Literacy

173	CCSS ELA/Literacy	RST.9-10.8 Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. (HS-LS2-6), (HS-LS2-7), (HS-LS2-8)	TE: Unit 5, Module 20, Nature of Science, p. 555, Evaluate the Validity and Reliability of Claims						
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Section 1: Standards Review: Science

Abbreviations for the Form F Standards Review Tab:

- PE: Performance Expectation
- DCI: Disciplinary Core Idea
- SEP: Science and Engineering Practices
- CCC: Crosscutting Concepts
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174	CCSS ELA/Literacy	RST.11-12.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. (HS-LS1-1), (HS-LS1-6), (HS-LS2-1), (HS-LS2-2), (HS-LS2-3), (HS-LS2-6), (HS-LS2-8), (HS-LS3-1), (HS-LS3-2), (HS-LS4-1), (HS-LS4-2), (HS-LS4-3), (HS-LS4-4), (HS-ESS3-1), (HS-ESS3-4)	Online Resources: Unit 4, Module: Earth and Space Science: Earth's Early History, Lesson: Crustal Movements and the Theory of Plate Tectonics, Explore and Explain: Applying Practices Answer Key: How Old Are Crustal Rocks?						
175	CCSS ELA/Literacy	RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. (HS-LS2-6), (HS-LS2-7), (HS-LS2-8), (HS-ETS1-1), (HS-ETS1-3)	TE: Unit 5, Module 21, Module Wrap-Up, p. 593, Revisit the Phenomenon						
176	CCSS ELA/Literacy	RST.11-12.8 Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. (HS-LS2-6), (HS-LS2-7), (HS-LS2-8), (HS-LS2-1), (HS-LS2-2), (HS-LS2-3), (HS-LS4-5), (HS-ETS1-1), (HS-ETS1-3), (HS-ESS3-4)	TE: Unit 5, Module 17, Nature of Science, p. 468, Apply Scientific Evidence and Reasoning						
177	CCSS ELA/Literacy	RST.11-12.9 Synthesize information from a range of sources (e. g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. (HS-LS3-1), (HS-ETS1-1), (HS-ETS1-3)	TE: Unit 2, Module 6, Module Wrap-Up, p. 160, Revisit the Phenomenon						
178	CCSS ELA/Literacy	WHST.9-12.1 Write arguments focused on discipline-specific content. (HS-LS3-2), (HS-ESS2-7)	TE: Unit 5, Module 18, Science & Society, p. 499, Engage in Argument from Evidence						
179	CCSS ELA/Literacy	WHST.9-12.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1), (HS-LS1-6), (HS-LS4-1), (HS-LS4-2), (HS-LS4-3), (HS-LS4-4), (HS-ESS3-1)	TE: Unit 1, Module 4, Lesson 1, p. 81, Independent Research						
180	CCSS ELA/Literacy	WHST.9-12.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (HS-LS1-6), (HS-LS2-3), (HS-LS4-6)	TE: Unit 4, Module 13, Lesson 2, p. 360, Writing Support						

Section 1: Standards Review: Science

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181	CCSS ELA/Literacy	WHST.9-12.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. (HS-LS1-3), (HS-LS2-7), (HS-LS4-6)	TE: Unit 2, Module 6, Science & Society, p. 158, Ask Questions to Clarify						
182	CCSS ELA/Literacy	WHST.9-12.9 Draw evidence from informational texts to support analysis, reflection, and research. (HS-LS-1-1), (HS-LS1-6), (HS-LS4-1), (HS-LS4-2), (HS-LS4-3), (HS-LS4-4), (HS-LS4-5)	Online Resources: Unit 5 STEM Unit Project Answer Key: Biomimetics, pp. 1-2						
183	CCSS ELA/Literacy	WHST.11-12.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. (HS-LS1-3)	TE: Unit 5, Module 21, Lesson 2, p. 577, SEP: Obtaining, Evaluating, and Communicating Information						
184	CCSS ELA/Literacy	SL.11-12.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. (HS-LS4-1), (HS-LS4-2)	Online Resources: Unit 3, STEM Unit Project Answer Key: Analyze Pest Control Options for Corn Crops, p.4						
185	CCSS ELA/Literacy	SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. (HS-LS1-2), (HS-LS1-4), (HS-LS1-5), (HS-LS1-7), (HS-ESS2-4)	TE: Unit 6, Module 23, Engineering & Technology, p. 640, Communicate Scientific Information						
Grades 9-12 CCSS Math									
186	CCSS Math	MP.2 Reason abstractly and quantitatively. (HS-LS2-1), (HS-LS2-2), (HS-LS2-4), (HS-LS2-6), (HS-LS2-7), (HS-LS3-2), (HS-LS3-3), (HS-LS4-1), (HS-LS4-2), (HS-LS4-3), (HS-LS4-4), (HS-LS4-5), (HS-ESS2-4), (HS-ESS3-1), (HS-ESS3-3), (HS-ESS3-4), (HS-ETS1-1), (HS-ETS1-3), (HS-ETS1-4)	Online Resources: Unit 1, Module 4, Lesson 1, Additional Resources: Virtual Investigation Answer Key: Population Biology						
187	CCSS Math	MP.4 Model with mathematics. (HS-LS1-4), (HS-LS2-1), (HS-LS2-2), (HS-LS2-4), (HS-LS4-2), (HS-ESS3-3), (HS-ETS1-1), (HS-ETS1-2), (HS-ETS1-3), (HS-ETS1-4)	Online Resources: Unit 4: STEM Unit Project Answer Key: Develop a Simulation of Conservation Genetics, pp. 3-4						

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188	CCSS Math	HSN-Q.A.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. <i>(HS-LS2-1), (HS-LS2-2), (HS-LS2-4), (HS-LS2-7), (HS-ESS2-4), (HS-ESS3-1), (HS-ESS3-4)</i>	TE: Skillbuilder Handbook, Math Skills, p. 750, Measure in SI						
189	CCSS Math	HSN-Q.A.2 Define appropriate quantities for the purpose of descriptive modeling. <i>(HS-LS2-1), (HS-LS2-2), (HS-LS2-4), (HS-LS2-7), (HS-ESS2-4), (HS-ESS3-1), (HS-ESS3-4)</i>	Online Resources: Unit 1, Module: Earth and Space Science: Relationships Between Humans and Earth, Lesson: Human and Earth Interactions, Teacher Support: Natural Causes of Climate Change, CCC: Stability and Change						
190	CCSS Math	HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. <i>(HS-LS2-1), (HS-LS2-2), (HS-LS2-4), (HS-LS2-7), (HS-ESS2-4), (HS-ESS3-1), (HS-ESS3-4)</i>	TE: Skillbuilder Handbook, Math Skills, p. 751, Make and Use Graphs						
191	CCSS Math	HSF-IF.C.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. <i>(HS-LS1-4)</i>	TE: Unit 1, Module 4, Lesson 1, p. 84, Activity: Compare Growth Rates						
192	CCSS Math	HSF-BF.A.1 Write a function that describes a relationship between two quantities. <i>(HS-LS1-4)</i>	TE: Unit 5, Module 21, Lesson 2, p. 582, Check Your Progress Q6						
193	CCSS Math	HSS-ID.A.1 Represent data with plots on the real number line. <i>(HS-LS2-6)</i>	Online Resources: Unit 1, Module 4, Lesson 1. Explore and Explain: Applying Practices Answer Key: Carrying Capacity of Nectar-Feeding Bats, p. 1, Graphing Exercise						
194	CCSS Math	HSS-IC.A.1 Understand statistics as a process for making inferences about population parameters based on a random sample from that population. <i>(HS-LS2-6)</i>	TE: Module 1, Module Wrap-Up, p. 19, Data Analysis Lab						
195	CCSS Math	HSS-IC.B.6 Evaluate reports based on data. <i>(HS-LS2-6)</i>	TE: Unit 2, Module 8, Module Wrap-Up, p. 217, Go Further						

Section 2: Science Content Review

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FOCUS AREA 1: PHENOMENA-/PROBLEM-BASED AND THREE-DIMENSIONAL APPROACH
Instructional materials are centered around high quality phenomena and/or problems and require a three dimensional approach to make sense of the phenomena or to solve the problems.

1	Materials clearly integrate and describe the three-dimensional NM STEM Ready! Standards via appropriate grade-band, interdisciplinary progressions that center around the phenomena, utilizing aligned SEPs, CCCs, DCIs and the common core math and ELA standards' connections.	TE: Unit 2, Module 9, p. 218A TE: Unit 1, Module 2, p. 22, Module Storyline						
2	Materials consistently support meaningful student sensemaking with the three dimensions, including discourse, that is appropriate to grade band progressions, instruction and assessment.	TE: Unit 3, Module 11, Science & Society, p. 315, Guiding Questions and Engage in Argument from Evidence						
3	Natural and designed phenomena and/or problems that are meaningful and apparent to students drive coherent lessons and activities in all three dimensions.	TE: Unit 2, Module 9, p. 218-219						

FOCUS AREA 2: THREE-DIMENSIONAL ASSESSMENT
Assessments provide tools, guidance and support for teachers to collect, interpret and act on data about student progress toward the learning goals of the 3 dimensional standards.

4	Materials engage students in meaningful tasks as well as multiple assessment types and opportunities, across all dimensions, in order to make sense of phenomena and/or design solutions to problems.	TE: Unit 1, Module 3, Lesson 1, p. 53, Check Your Progress and Formative Assessment Check Online Resources: Unit 6 STEM Unit Project Answer Key: Design an Artificial Heart Valve, pp. 1-3						
5	Materials include opportunities for students to obtain feedback from teachers and peers as well as opportunities for student self-reflection.	Online Resources: Unit 6 Stem Unit Project Rubric Guide Online Resources: Unit 3, Module 11, Lesson 4, Explore and Explain: Applying Practices: Investigating Genetic Variation, p. 2, Evaluation						

FOCUS AREA 3: TEACHER SUPPORTS
Materials include opportunities for teachers to effectively plan and utilize materials.

Section 2: Science Content Review

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6	Materials provide a comprehensive list of supplies and teacher guidance needed to support instructional activities in a safe manner.	Online Resources: Course Materials: Materials List: Inspire Biology Online Resources: Course Materials: Teacher Lab Safety						
7	Materials provide teacher guidance for the use of embedded and meaningful technology to support and enhance student learning, when applicable.	Online Resources: Unit 3, Module 11, Lesson 3, Lesson Library: PhET Simulation Teacher Guide: Gene Expression Essentials Online Resources: Course Materials: Purposeful Technology in Science, Technology Teaching Practices						
8	Materials and assessments include teacher guidance for students at, approaching, or exceeding grade level expectations.	TE: Unit 1, Module 3, Lesson 1, p. 51, Differentiated Instruction TE: Unit 6, Module 26, Lesson 2, p. 703, Extension						
9	Materials provide teacher guidance for interpreting student evidence of learning, monitoring student progress and providing feedback to guide student learning and to modify instruction.	TE: Unit 4, Module 14, Lesson 2, p. 380, Evaluate: Remediation						
FOCUS AREA 4: STUDENT CENTERED INSTRUCTION								
Materials are designed for each student's regular and active participation in science content.								
10	Materials provide opportunities to engage students' curiosity and participation in a way that pulls from their prior knowledge and connects their learning to relevant phenomena and problems.	TE: Unit 6, Preparing for the Unit, p. 594B TE: Unit 6, Module 24, Lesson 1, p. 652, Activate Prior Knowledge						
11	The flow of lessons from one unit to the next is coherent, meaningful, direct, and apparent to students.	TE: Unit 6, p. 594A						
FOCUS AREA 5: EQUITY								
Materials are designed for all learners.								

Section 2: Science Content Review

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12	Materials provide extensions and/or opportunities for all students to engage in learning grade-level/band science and engineering in greater depth.	TE: Unit 4, Module 13, Lesson 1, p. 352, Extension						
13	Materials and assessments are designed in an accessible manner and include multiple ways for all students to build and reflect on science knowledge; multiple ways for all students to access content (Universal Design for Learning); and multiple opportunities for student self-reflection.	TE: Unit 4, Module 13, Lesson 2, p. 360, Differentiated Instruction						

Section 2: All Content Review

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Criteria #	All Content Criteria Review	Score	Required: Reviewer's Evidence from Material	Comments, citations, notes
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FOCUS AREA 1: COHERENCE
Instructional materials are coherent and consistent with the New Mexico Content Standards that all students should study in order to be college- and career-ready.

1	Instructional materials address the full content contained in the standards for all students by grade level.			
2	Instructional materials support students to show mastery of each standard.			
3	Instructional materials require students to engage at a level of maturity appropriate to the grade level under review.			
4	Instructional materials are coherent, making meaningful connections for students by linking the standards within a lesson and unit.			

FOCUS AREA 2: WELL-DESIGNED LESSONS
Instructional materials take into account effective lesson structure and pacing.

5	The Teacher Edition presents learning progressions to provide an overview of the scope and sequence of skills and concepts. The design of the assignments shows a purposeful sequencing of teaching and learning expectations.			
6	Within each lesson of the instructional materials, there are clear, measurable, standards-aligned content objectives.			
7	Within each lesson of the instructional materials, there are clear, measurable language objectives tied directly to the content objectives.			
8	Instructional materials provide focused resources to support students' acquisition of both general academic vocabulary and content-specific vocabulary.			
9	The visual design of the instructional materials (whether in print or digital) maintains a consistent layout that supports student engagement with the subject.			

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Criteria #	All Content Criteria Review	Score	Required: Reviewer's Evidence from Material	Comments, citations, notes
10	Instructional materials incorporate features that aid students and teachers in making meaning of the text.			
11	Instructional materials provide students with ongoing review and practice for the purpose of retaining previously acquired knowledge.			

FOCUS AREA 3: RESOURCES FOR PLANNING
Instructional materials provide teacher resources to support planning, learning, and understanding of the New Mexico Content Standards.

12	Instructional materials provide a list of lessons in the Teacher Edition (in print or clearly distinguished/ accessible as a teacher's edition in digital materials), cross-referencing the standards addressed and providing an estimated instructional time for each lesson, chapter, and unit.			
13	Instructional materials support teachers with instructional strategies to help guide students' academic development.			
14	Instructional materials include a teacher edition/ teacher-facing material with useful annotations and suggestions on how to present the content in the student edition/student-facing material and in the supporting material.			
15	Instructional materials integrate opportunities for digital learning, including interactive digital components.			

FOCUS AREA 4: ASSESSMENT
Instructional materials offer teachers a variety of assessment resources and tools to collect ongoing data about student progress related to the standards.

16	Instructional materials provide a variety of assessments that measure student progress in all strands of the standards for the content under review. <i>(Adopted New Mexico Content Standards for 2024: NM STEM Ready Science Standards)</i>			
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Section 2: All Content Review

PUBLISHER/PROVIDER INSTRUCTIONS:

- The All Content tab will be completed solely by the reviewers. They will score each criterion and provide evidence for their score from the material based on their overall review of the material. You will not provide any citations for this tab.
- The material will be scored for alignment with each criterion as “Meets expectations”, “Partially meets expectations”, or “Does not meet expectations”.

Criteria #	All Content Criteria Review	Score	Required: Reviewer's Evidence from Material	Comments, citations, notes
17	Instructional materials provide multiple formative and summative assessments, clearly defining which standards are being assessed through content and language objectives.			
18	Instructional materials provide scoring guides for assessments that are aligned with the standards they address, and that offer teachers guidance in interpreting student performance and suggestions for further instruction, differentiation, remediation and/or acceleration.			
19	Instructional materials provide appropriate assessment alternatives for English Learners, Culturally and Linguistically Diverse students, advanced students, and special needs students.			
20	Instructional materials include opportunities to assess student understanding and knowledge of the standards using technology.			

FOCUS AREA 5: EXTENSIVE SUPPORT
Instructional materials give all students extensive opportunities and support to explore key concepts.

21	Instructional materials can be customized or adapted to meet the needs of different student populations.			
22	Instructional materials provide differentiated strategies and/or activities to meet the needs of students working below proficiency and those of advanced learners.			
23	Instructional materials provide appropriate linguistic support for English Learners and Culturally and Linguistically Diverse students, and accommodations and modifications for other special populations that will support their regular and active participation in learning content.			

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Criteria #	All Content Criteria Review	Score	Required: Reviewer's Evidence from Material	Comments, citations, notes
24	Instructional materials provide strategies and resources for teachers to inform and engage parents, family members, and caregivers of all learners about the program and provide suggestions for how they can help support student progress and achievement.			
25	Instructional materials include opportunities for all students that encourage and support critical and creative thinking, inquiry, and complex problem-solving skills.			

FOCUS AREA 6: CULTURAL AND LINGUISTIC PERSPECTIVES
Instructional materials represent a variety of cultural and linguistic perspectives.

26	Instructional materials inform culturally and linguistically responsive pedagogy by affirming students' backgrounds in the materials themselves and in the student discussions.			
27	Instructional materials provide a collection of images, stories, and information, representing a broad range of demographic groups, and do not make generalizations or reinforce stereotypes.			
28	Instructional materials provide context, illustrations, and activities for students to make interdisciplinary connections and/or connections to real-life experiences and diverse cultural and linguistic backgrounds.			

FOCUS AREA 7: INCLUSION OF CULTURALLY AND LINGUISTICALLY RESPONSIVE LENS
Instructional materials highlight diversity in culture and language through multiple perspectives.

29	Instructional materials include tools and resources to relate the content area appropriately to diversity in culture and language.			
30	Instructional materials include tools and resources that demonstrate multiple perspectives in a specific concept.			
31	Instructional materials engage students in critical reflection about their own lives and societies, including cultures past and present in New Mexico.			

Section 2: All Content Review**PUBLISHER/PROVIDER INSTRUCTIONS:**

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Criteria #	All Content Criteria Review	Score	Required: Reviewer's Evidence from Material	Comments, citations, notes
32	Instructional materials address multiple ethnic descriptions, interpretations, or perspectives of events and experiences.			