F.16 Physics - Grades 9-12

PUBLISHER/PROVIDER MATERIAL INFORMATION (TO BE COMPLETED BY PUBLISHER/PROVIDER)			
Publisher/Provider Name/Imprint:	McGraw Hill LLC	Grade(s):	9-12
Title of Student Edition:	Inspire Science New Mexico Physics Comprehensive Student Bundle with Actively Learn Science, 6-year subscription	Student Edition ISBN:	9781266202872
Title of Teacher Edition:	Inspire Science Physics Teacher Edition	Teacher Edition ISBN:	9780076884544
Title of SE Workbook:		SE Workbook ISBN:	

PUBLISHER/PROVIDER CITATION VIDEO: Reviewer must view video before starting the review of this set of materials.			
Citation Video Link:			
Reviewer citation video certification:			
Digital Material Log In (if applicable):			

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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Forces and Interactions									
1	**PE**	**HS-PS2-1. Students who demonstrate understanding can: Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.**							
2	**DCI**	**PS2.A: Forces and Motion** • Newton's second law accurately predicts changes in the motion of macroscopic objects.	TE: Unit 1, Module 4, Lesson 1, p. 91						
3	**SEP**	**Analyzing and Interpreting Data** *Analyzing data in 9–12 builds on K–8 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.* • Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.	Online Resources: Unit 1, Module 4, Lesson 1, PhET Simulation Teacher Guide: Forces and Motion						
4	**CONN**	**Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Theories and laws provide explanations in science.	TE: Unit 1, Module 4, Lesson 1, p. 91-92						
5	**CONN**	**Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Laws are statements or descriptions of the relationships among observable phenomena.	TE: Unit 1, Module 4, Lesson 1, p. 91-92						
6	**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 4, Lesson 1, Launch Lab Answer Key: Forces in Opposite Directions						
7	**PE**	**HS-PS2-2. Students who demonstrate understanding can: Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.**							
8	**DCI**	**PS2.A: Forces and Motion** • Momentum is defined for a particular frame of reference; it is the mass times the velocity of the object.	TE: Unit 3, Module 9, Lesson 1, pp. 214-215						
9	**DCI**	**PS2.A: Forces and Motion** • If a system interacts with objects outside itself, the total momentum of the system can change; however, any such change is balanced by changes in the momentum of objects outside the system.	TE: Unit 3, Module 9, Lesson 2, p. 223						

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10	SEP	**Using Mathematics and Computational Thinking** *Mathematical and computational thinking at the 9–12 level builds on K–8 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.* • Use mathematical representations of phenomena to describe explanations.	Online Resources: Unit 2, Module 9, Lesson 2, Applying Practices Answer Key: Use Mathematical Representations of Momentum						
11	CCC	**Systems and System Models** • When investigating or describing a system, the boundaries and initial conditions of the system need to be defined.	TE: Unit 3, Module 9, Lesson 2, p. 225, CCC: Systems and System Models						
12	PE	**HS-PS2-3. Students who demonstrate understanding can: Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.**							
13	DCI	**PS2.A: Forces and Motion** • If a system interacts with objects outside itself, the total momentum of the system can change; however, any such change is balanced by changes in the momentum of objects outside the system.	Online Resources: Unit 3, Module 9, Lesson 1, Explore and Explain: Applying Practices Answer Key: Egg Heads, p. 2, Before You Begin						
14	DCI	**ETS1.A: Defining and Delimiting an Engineering Problem** • 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 Resources: Unit 1, Module 3, Lesson 3, Explore and Explain: Applying Practices Answer Key: Egg Heads, p. 3, Day 3: Brainstorm the Solutions!, Bulletpoint 2						
15	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 Resources: Unit 3, STEM Unit Project Answer Key: Crash Safety, p. 3						
16	SEP	**Constructing Explanations and Designing Solutions** *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.* • Apply scientific ideas to solve a design problem, taking into account possible unanticipated effects.	Online Resources: Unit 3, STEM Unit Project Answer Key: Crash Safety, p. 4						

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17	**CCC**	**Cause and Effect** •Systems can be designed to cause a desired effect.	Online Resources: Unit 3, Module 9, Lesson 1, Explore and Explain: Applying Practices Answer Key: Egg Heads, p. 2, Bulletpoint 2						
18	**PE**	**HS-PS2-4. Students who demonstrate understanding can: Use mathematical representations of Newton’s Law of Gravitation and Coulomb’s Law to describe and predict the gravitational and electrostatic forces between objects.**							
19	**DCI**	**PS2.B: Types of Interactions** • Newton’s law of universal gravitation and Coulomb’s law provide the mathematical models to describe and predict the effects of gravitational and electrostatic forces between distant objects.	TE: Unit 2, Module 7, Lesson 1, p. 166 Newton's Law of Universal Gravitation TE: Unit 5, Module 18, Lesson 3, p. 487-488 Coulomb's law and electric fields						
20	**DCI**	**PS2.B: Types of Interactions** • Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	TE: Unit 5, Module 18, Lesson 3, p. 486-487 Coulomb's law and electric fields						
21	**SEP**	**Using Mathematics and Computational Thinking** *Mathematical and computational thinking at the 9–12 level builds on K–8 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.* • Use mathematical representations of phenomena to describe explanations.	Online Resources: Unit 5, Module 18, Lesson 2, Applying Practices Answer Key: Gravitational and Electrostatic Forces, pg. 1-2						
22	**CONN**	**Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Theories and laws provide explanations in science.	TE: Unit 5, Module 18, Lesson 3, p. 487-488 Coulomb's law and electric fields						
23	**CONN**	**Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Laws are statements or descriptions of the relationships among observable phenomena.	TE: Unit 5, Module 18, Lesson 3, p. 487-488 Coulomb's law and electric fields						

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24	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 2, Module 6, Lesson 1, pg. 169, CCC: Patterns						
25	PE	**HS-PS2-5. Students who demonstrate understanding can: Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.**							
26	DCI	**PS2.B: Types of Interactions** • Newton's law of universal gravitation and Coulomb's law provide the mathematical models to describe and predict the effects of gravitational and electrostatic forces between distant objects. (HS-PS2-4)	Online Resource: Unit 5, Module 21, Lesson 1, Applying Practices Answer Key: Investigate Electromagnetism						
27	DCI	**PS2.B: Types of Interactions** • Forces at a distance are explained by fields (gravitational, electric, and magnetic) permeating space that can transfer energy through space. Magnets or electric currents cause magnetic fields; electric charges or changing magnetic fields cause electric fields.	Online Resource: Unit 5, Module 21, Lesson 1, Applying Practices Answer Key: Investigate Electromagnetism						
28	DCI	**PS3.A: Definitions of Energy** • "Electrical energy" may mean energy stored in a battery or energy transmitted by electric currents.	TE: Unit 5, Module 19, Lesson 1, pp. 509-510						
29	SEP	**Planning and Carrying Out Investigations** *Planning and carrying out investigations to answer questions or test solutions to problems 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.* • 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 5, Module 21, Launch Lab Answer Key: Changing Magnetic Fields, pg. 1-2						
30	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 2, p. 580, CCC: Cause and and Effect						
31	PE	**HS-PS2-6. Students who demonstrate understanding can: Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.**							

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32	DCI	**PS2.B: Types of Interactions** • Attraction and repulsion between electric charges at the atomic scale explain the structure, properties, and transformations of matter, as well as the contact forces between material objects.	TE: Unit 5, Module 18, Lesson 1, p. 472-474						
33	SEP	**Obtaining, Evaluating, and Communicating Information** *Obtaining, evaluating, and communicating information in 9–12 builds on K–8 and progresses to evaluating the validity and reliability of the claims, methods, and designs.* • Communicate scientific and technical information (e.g., about the process of development and the design and performance of a proposed process or system) in multiple formats (including oral, graphical, textual and mathematical).	Online Resources: Unit 5, STEM Unit Project Answer Key: From Raw Resource to Usable Energy, pg. 6 Evaluate and Share						
34	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.	Online Resources: Unit 5, STEM Unit Project Answer Key: From Raw Resource to Usable Energy, pg. 2, Design Considerations, paragraph 2						
Energy									
35	PE	**HS-PS3-1. Students who demonstrate understanding can: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.**							
36	DCI	**PS3.A: Definitions of Energy** • Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms.	TE: Unit 3, Module 10, Lesson 2, pg. 248 Definitions of Energy						
37	DCI	**PS3.B: Conservation of Energy and Energy Transfer** • Conservation of energy means that the total change of energy in any system is always equal to the total energy transferred into or out of the system.	TE: Unit 3, Module 10, Lesson 3, pg. 257, The Law of Conservation of Energy						
38	DCI	**PS3.B: Conservation of Energy and Energy Transfer** • Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems.	TE: Unit 3, Module 10, Lesson 3, pg. 257, The Law of Conservation of Energy						

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39	DCI	**PS3.B: Conservation of Energy and Energy Transfer** • Mathematical expressions, which quantify how the stored energy in a system depends on its configuration (e.g., relative positions of charged particles, compression of a spring) and how kinetic energy depends on mass and speed, allow the concept of conservation of energy to be used to predict and describe system behavior.	TE: Unit 3, Module 10, Lesson 3, pg. 259, paragraph 5						
40	DCI	**PS3.B: Conservation of Energy and Energy Transfer** • The availability of energy limits what can occur in any system.	TE: Unit 3, Module 10, Lesson 3, pg. 258, Conservation of mechanical energy paragraph 2						
41	SEP	**Using Mathematics and Computational Thinking** *Mathematical and computational thinking at the 9–12 level builds on K–8 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.* • Create a computational model or simulation of a phenomenon, designed device, process, or system.	Online Resources: Unit 3, Module 10, Lesson 3, PhET Simulation Teacher Guide: Energy Skate Park: Basics						
42	CCC	**Systems and System Models** • Models can be used to predict the behavior of a system, but these predictions have limited precision and reliability due to the assumptions and approximations inherent in models.	TE: Unit 3, Module 10, Lesson 3, pg. 258, CCC: Systems and System Models						
43	CONN	**Scientific Knowledge Assumes an Order and Consistency in Natural Systems** • Science assumes the universe is a vast single system in which basic laws are consistent.	TE: Unit 3, Module 10, Lesson 3, pg. 257, The Law of Conservation of Energy						
44	PE	**HS-PS3-2. Students who demonstrate understanding can: Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).**							
45	DCI	**PS3.A: Definitions of Energy** • Energy is a quantitative property of a system that depends on the motion and interactions of matter and radiation within that system. That there is a single quantity called energy is due to the fact that a system's total energy is conserved, even as, within the system, energy is continually transferred from one object to another and between its various possible forms.	TE: Unit 3, Module 10, Lesson 2, pg. 248, Changing Forms of Energy, paragaph 3						

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46	DCI	**PS3.A: Definitions of Energy** • At the macroscopic scale, energy manifests itself in multiple ways, such as in motion, sound, light, and thermal energy.	TE: Unit 3, Module 10, Lesson 2, pg. 248, Changing Forms of Energy, paragaph 3						
47	DCI	**PS3.A: Definitions of Energy** • These relationships are better understood at the microscopic scale, at which all of the different manifestations of energy can be modeled as a combination of energy associated with the motion of particles and energy associated with the configuration (relative position of the particles). In some cases the relative position energy can be thought of as stored in fields (which mediate interactions between particles). This last concept includes radiation, a phenomenon in which energy stored in fields moves across space.	TE: Unit 3, Module 10, Lesson 2, pg. 255						
48	SEP	**Developing and Using Models** *Modeling in 9–12 builds on K–8 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.* • Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system.	TE: Unit 3, Module 10, Lesson 3, pg. 254, SEP Quick Practice						
49	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 3, Module 10, Lesson 3, pg. 259, CCC: Energy and Matter						
50	PE	**HS-PS3-3. Students who demonstrate understanding can: Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.**							
51	DCI	**PS3.A: Definitions of Energy** • At the macroscopic scale, energy manifests itself in multiple ways, such as in motion, sound, light, and thermal energy.	Online Resources: Unit 5, STEM Unit Project Answer Key: From Raw Resource to Usable Energy, pg. 2 Summarize Challenges						
52	DCI	**PS3.D: Energy in Chemical Processes** • Although energy cannot be destroyed, it can be converted to less useful forms — for example, to thermal energy in the surrounding environment.	TE: Unit 3, Module 11, Lesson 2, pg. 296, Waste heat						

Section 1: Standards Review: Science
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53	DCI	**ETS1.A: Defining and Delimiting an Engineering Problem** • 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 Resources: Unit 5, STEM Unit Project Answer Key: From Raw Resource to Usable Energy, pg. 2 Summarize Challenges						
54	SEP	**Constructing Explanations and Designing Solutions** *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.* • Design, evaluate, and/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 5, STEM Unit Project Answer Key: From Raw Resource to Usable Energy, pg. 4 Design Proposal						
55	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 3, Module 10, Lesson 2, pg. 255, CCC: Energy and Matter						
56	CONN	**Influence of Science, Engineering and Technology on Society and the Natural World** • Modern civilization depends on major technological systems. Engineers continuously modify these technological systems by applying scientific knowledge and engineering design practices to increase benefits while decreasing costs and risks.	TE: Unit 3, Module 10, Lesson 2, pg. 275, Engineering and Technology: Greenhouse Gas Emission Efficiency: Excrement to Energy						
57	PE	**HS-PS3-4. Students who demonstrate understanding can: Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).**							
58	DCI	**PS3.B: Conservation of Energy and Energy Transfer** • Energy cannot be created or destroyed, but it can be transported from one place to another and transferred between systems.	TE: Unit 3, Module 11, Lesson 1, pg. 295, paragraph 4						
59	DCI	**PS3.B: Conservation of Energy and Energy Transfer** • Uncontrolled systems always evolve toward more stable states—that is, toward more uniform energy distribution (e.g., water flows downhill, objects hotter than their surrounding environment cool down).	TE: Unit 3, Module 11, Lesson 1, pg. 282, paragraph 3						
60	DCI	**PS3.D: Energy in Chemical Processes** • Although energy cannot be destroyed, it can be converted to less useful forms — for example, to thermal energy in the surrounding environment.	TE: Unit 3, Module 11, Lesson 1, pg. 300						

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61	SEP	**Planning and Carrying Out Investigations** *Planning and carrying out investigations to answer questions or test solutions to problems 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.* • 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 3, Module 11, Lesson 1, Applying Practices Answer Key: Coffee Cup Calorimetry, p. 1						
62	CCC	**Systems and System Models** • When investigating or describing a system, the boundaries and initial conditions of the system need to be defined and their inputs and outputs analyzed and described using models.	TE: Unit 3, Module 11, Lesson 1, pg. 298, CCC: Systems and System Models						
63	PE	**HS-PS3-5. Students who demonstrate understanding can: Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.**							
64	DCI	**PS3.C: Relationship Between Energy and Forces** • When two objects interacting through a field change relative position, the energy stored in the field is changed.	TE: Unit 5, Module 20, Lesson 1, Applying Practices Answer Key: Modeling Magnetic Fields						
65	SEP	**Developing and Using Models** *Modeling in 9–12 builds on K–8 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).* • Develop and use a model based on evidence to illustrate the relationships between systems or between components of a system.	TE: Unit 5, Module 18, Lesson 3, pg. 480, SEP Quick Practice Developing and Using Models callout box						
66	CCC	**Cause and Effect** • Cause and effect relationships can be suggested and predicted for complex natural and human-designed systems by examining what is known about smaller scale mechanisms within the system.	TE: Unit 5, Module 18, Lesson 3, pg. 490, CCC: Cause and Effect						
Waves and Electromagnetic Radiation									
67	PE	**HS-PS4-1. Students who demonstrate understanding can: Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.**							

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68	DCI	**PS4.A: Wave Properties** • The wavelength and frequency of a wave are related to one another by the speed of travel of the wave, which depends on the type of wave and the medium through which it is passing.	TE: Unit 4, Module 13, Lesson 2, pg. 347						
69	SEP	**Using Mathematics and Computational Thinking** *Mathematical and computational thinking at the 9-12 level builds on K-8 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.* • Use mathematical representations of phenomena or design solutions to describe and/or support claims and/or explanations.	Online Resources: Unit 4, Module 13, Lesson 2, Applying Practices Answer Key: Wave Characteristics						
70	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 4, Module 13, Lesson 2, Applying Practices Answer Key: Wave Characteristics						
71	PE	**HS-PS4-2. Students who demonstrate understanding can: Evaluate questions about the advantages of using a digital transmission and storage of information.**							
72	DCI	**PS4.A: Wave Properties** • Information can be digitized (e.g., a picture stored as the values of an array of pixels); in this form, it can be stored reliably in computer memory and sent over long distances as a series of wave pulses.	Unit 5, Module 21, Lesson 4, pg. 603, Digital signals						
73	SEP	**Asking Questions and Defining Problems** *Asking questions and defining problems in grades 9–12 builds from grades K–8 experiences and progresses to formulating, refining, and evaluating empirically testable questions and design problems using models and simulations.* • Evaluate questions that challenge the premise(s) of an argument, the interpretation of a data set or the suitability of a design.	Online Resource: Unit 5, Module 21, Lesson 4, Applying Practices Answer Key: The Digital Revolution, Process #4						
74	CCC	**Stability and Change** • Systems can be designed for greater or lesser stability.	TE: Unit 5, Module 21, Lesson 4, pg. 600, CCC: Stability and Change						
75	CONN	**Influence of Science, Engineering, and Technology on Society and the Natural World** • Modern civilization depends on major technological systems.	Online Resource: Unit 6, Module 22, Lesson 1, Applying Practices Answer Key: The Digital Revolution, Process #1, #2						

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76	**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 Resource: Unit 6, Module 22, Lesson 1, Applying Practices Answer Key: The Digital Revolution, Process #5						
77	**PE**	**HS-PS4-3. Students who demonstrate understanding can: Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.**							
78	**DCI**	**PS4.A: Wave Properties** • Waves can add or cancel one another as they cross, depending on their relative phase (i.e., relative position of peaks and troughs of the waves), but they emerge unaffected by each other. (Boundary: The discussion at this grade level is qualitative only; it can be based on the fact that two different sounds can pass a location in different directions without getting mixed up.)	TE: Unit 4, Module 13, Lesson 3, pg. 351						
79	**DCI**	**PS4.B: Electromagnetic Radiation** • Electromagnetic radiation (e.g., radio, microwaves, light) can be modeled as a wave of changing electric and magnetic fields or as particles called photons. The wave model is useful for explaining many features of electromagnetic radiation, and the particle model explains other features.	TE: Unit 4, Module 15, Lesson 1, pg. 385, paragraph 1						
80	**SEP**	**Engaging in Argument from Evidence** *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.* • Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.	TE: Unit 4, Module 15, Lesson 1, pg. 389, CCC: SEP Quick Practice Callout						
81	**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. 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.	Online Resource: Unit 6, Module 22, Lesson 1, Applying Practices Answer Key: Is light a wave or a particle? Background Information						

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82	CCC	**Systems and System Models** • Models (e.g., physical, mathematical, and 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 4, Module 15, Lesson 1, pg. 388, CCC: Systems and System Models Callout						
83	PE	**HS-PS4-4. Students who demonstrate understanding can: Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.**							
84	DCI	**PS4.B: Electromagnetic Radiation** • When light or longer wavelength electromagnetic radiation is absorbed in matter, it is generally converted into thermal energy (heat). Shorter wavelength electromagnetic radiation (ultraviolet, X-rays, gamma rays) can ionize atoms and cause damage to living cells.	TE: Unit 5, Module 21, Lesson 4, p. 603, Item 47						
85	SEP	**Obtaining, Evaluating, and Communicating Information** *Obtaining, evaluating, and communicating information in 9–12 builds on K–8 and progresses to evaluating the validity and reliability of the claims, methods, and designs.* • Evaluate the validity and reliability of multiple claims that appear in scientific and technical texts or media reports, verifying the data when possible.	TE: Unit 5, Module 21, Lesson 4, pg. 597 SEP Quick Practice						
86	CCC	**Cause and Effect** • Cause and effect relationships can be suggested and predicted for complex natural and human-designed systems by examining what is known about smaller scale mechanisms within the system.	TE: Unit 5, Module 21, Lesson 4, pg. 600, CCC: Cause and Effect						
87	PE	**HS-PS4-5. Students who demonstrate understanding can: Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.**							
88	DCI	**PS3.D: Energy in Chemical Processes** • Solar cells are human-made devices that likewise capture the sun's energy and produce electrical energy.	TE: Unit 6, Module 22, Lesson 1, pg. 616, Real-World Physics Callout						
89	DCI	**PS4.A: Wave Properties** • Information can be digitized (e.g., a picture stored as the values of an array of pixels); in this form, it can be stored reliably in computer memory and sent over long distances as a series of wave pulses.	TE: Unit 5, Module 21, Lesson 4, pg. 602						
90	DCI	**PS4.B: Electromagnetic Radiation** • Photoelectric materials emit electrons when they absorb light of a high-enough frequency.	TE: Unit 6, Module 22, Lesson 1, pg. 615						

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91	DCI	**PS4.C: Information Technologies and Instrumentation** • Multiple technologies based on the understanding of waves and their interactions with matter are part of everyday experiences in the modern world (e.g., medical imaging, communications, scanners) and in scientific research. They are essential tools for producing, transmitting, and capturing signals and for storing and interpreting the information contained in them.	TE: Unit 5, Module 21, Lesson 4, pg. 597, Radio waves, Microwaves						
92	SEP	**Obtaining, Evaluating, and Communicating Information** *Obtaining, evaluating, and communicating information in 9–12 builds on K–8 and progresses to evaluating the validity and reliability of the claims, methods, and designs.* • Communicate technical information or ideas (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 5, Module 21, Lesson 4, Applying Practices Answer Key: Catching Waves, pg. 2-3						
93	CCC	**Cause and Effect** • Systems can be designed to cause a desired effect.	Online Resources: Unit 6, Module 22, Lesson 4, Applying Practices Answer Key: Communicate Information About Multiple Technologies						
94	CONN	**Interdependence of Science, Engineering, and Technology** • Science and engineering complement each other in the cycle known as research and development (R&D).	Online Resources: Unit 6, Module 22, Lesson 4, Applying Practices Answer Key: Communicate Information About Multiple Technologies						
95	CONN	**Influence of Engineering, Technology, and Science on Society and the Natural World** • Modern civilization depends on major technological systems.	TE: Unit 6, Module 22, Lesson 4,pg. 646						
Space Systems									
96	PE	**HS-ESS1-1. Students who demonstrate understanding can: Develop a model based on evidence to illustrate the life span of the sun and the role of nuclear fusion in the sun's core to release energy in the form of radiation.**							
97	DCI	**ESS1.A: The Universe and Its Stars** • The star called the sun is changing and will burn out over a lifespan of approximately 10 billion years.	Online Resource: Module: Earth and Space Science: Stars, Lesson: The Sun, Applying Practices Answer Key: The Sun's Energy Formation and Radiation						

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98	DCI	**PS3.D: Energy in Chemical Processes and Everyday Life** • Nuclear fusion processes in the center of the sun release the energy that ultimately reaches Earth as radiation.	Online Resource: Module: Earth and Space Science: Stars, Lesson: The Sun, Applying Practices Answer Key: The Sun's Energy Formation and Radiation						
99	SEP	**Developing and Using Models** *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).* • Develop a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resource: Module: Earth and Space Science: Stars, Lesson: The Sun, Applying Practices Answer Key: The Sun's Energy Formation and Radiation						
100	CCC	**Scale, Proportion, and Quantity** • The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs.	Online Resource: Module: Earth and Space Science: Stars, Lesson: The Sun, Applying Practices Answer Key: The Sun's Energy Formation and Radiation						
101	PE	**HS-ESS1-2. Students who demonstrate understanding can: Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.**							
102	DCI	**ESS1.A: The Universe and Its Stars** • The study of stars' light spectra and brightness is used to identify compositional elements of stars, their movements, and their distances from Earth.	Online Resource: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
103	DCI	**ESS1.A: The Universe and Its Stars** • The Big Bang theory is supported by observations of distant galaxies receding from our own, of the measured composition of stars and non-stellar gases, and of the maps of spectra of the primordial radiation (cosmic microwave background) that still fills the universe.	Online Resource: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
104	DCI	**ESS1.A: The Universe and Its Stars** • Other than the hydrogen and helium formed at the time of the Big Bang, nuclear fusion within stars produces all atomic nuclei lighter than and including iron, and the process releases electromagnetic energy. Heavier elements are produced when certain massive stars achieve a supernova stage and explode.	Online Resourcse: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						

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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105	**DCI**	**PS4.B: Electromagnetic Radiation** • Atoms of each element emit and absorb characteristic frequencies of light. These characteristics allow identification of the presence of an element, even in microscopic quantities.	Online Resource: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
106	**SEP**	**Constructing Explanations and Designing Solutions** *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.* • Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, 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: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
107	**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.	Online Resources: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
108	**CCC**	**Energy and Matter** • Energy cannot be created or destroyed–only moved between one place and another place, between objects and/or fields, or between systems.	Online Resources: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
109	**CONN**	**Interdependence of Science, Engineering, and Technology** • Science and engineering complement each other in the cycle known as research and development (R&D). Many R&D projects may involve scientists, engineers, and others with wide ranges of expertise.	Online Resources: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						

Section 1: Standards Review: Science

Abbreviations for the Form F Standards Review Tab:

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110	**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.	Online Resources: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
111	**CONN**	**Scientific Knowledge Assumes an Order and Consistency in Natural Systems** • Science assumes the universe is a vast single system in which basic laws are consistent.	Online Resources: Module: Earth and Space Science: Cosmology, Lesson: Formation of the Universe, Applying Practices Answer Key: The Big Bang Theory						
112	**PE**	**HS-ESS1-3. Students who demonstrate understanding can: Communicate scientific ideas about the way stars, over their life cycle, produce elements.**							
113	**DCI**	**ESS1.A: The Universe and Its Stars** • The study of stars' light spectra and brightness is used to identify compositional elements of stars, their movements, and their distances from Earth.	Online Resources: Module: Earth and Space Science: Stars , Lesson: Stellar Evolution, Applying Practices Answer Key: Element Production in Stars						
114	**DCI**	**ESS1.A: The Universe and Its Stars** • Other than the hydrogen and helium formed at the time of the Big Bang, nuclear fusion within stars produces all atomic nuclei lighter than and including iron, and the process releases electromagnetic energy. Heavier elements are produced when certain massive stars achieve a supernova stage and explode.	Module: Earth and Space Science: Stars , Lesson: Stellar Evolution, Applying Practices Answer Key: Element Production in Stars						
115	**SEP**	**Obtaining, Evaluating, and Communicating Information** *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.* • Communicate scientific ideas (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: Module: Earth and Space Science: Stars , Lesson: Stellar Evolution, Applying Practices Answer Key: Element Production in Stars						
116	**CCC**	**Energy and Matter** • In nuclear processes, atoms are not conserved, but the total number of protons plus neutrons is conserved.	Online Resources: Module: Earth and Space Science: Stars , Lesson: Stellar Evolution, Applying Practices Answer Key: Element Production in Stars						

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117	**PE**	**HS-ESS1-4. Students who demonstrate understanding can: Use mathematical or computational representations to predict the motion of orbiting objects in the solar system.**							
118	**DCI**	**ESS1.B: Earth and the Solar System** • Kepler's laws describe common features of the motions of orbiting objects, including their elliptical paths around the sun. Orbits may change due to the gravitational effects from, or collisions with, other objects in the solar system.	TE: Unit 2, Module 7, Lesson 1, pg. 163						
119	**SEP**	**Using Mathematical and Computational Thinking** *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.* • Use mathematical or computational representations of phenomena to describe explanations.	Online Resources: Unit 2, Module 7, Lesson 1, PhysicsLAB Answer Key: Modeling Orbits						
120	**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).	Online Resources: Unit 2, Module 7, Lesson 1, PhysicsLAB Answer Key: Modeling Orbits						
121	**CONN**	**Interdependence of Science, Engineering, and Technology** • Science and engineering complement each other in the cycle known as research and development (R&D). Many R&D projects may involve scientists, engineers, and others with wide ranges of expertise.	TE: Unit 2, Module 7, Lesson 1, pg. 180, Scientific Breakthroughs						
History of Earth									
122	**PE**	**HS-ESS1-5. Students who demonstrate understanding can: Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.**							
123	**DCI**	**ESS1.C: The History of Planet Earth** • Continental rocks, which can be older than 4 billion years, are generally much older than the rocks of the ocean floor, which are less than 200 million years old.	Online Resource: Unit 2, Module: Earth and Space Science: Eareth Tectonic Processes, Applying Practices Answer Key: How old are crustal rocks?						

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124	**DCI**	**ESS2.B: Plate Tectonics and Large-Scale System Interactions** • Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a framework for understanding its geologic history.	Online Resources: Unit 2, Module: Earth and Space Science: Eareth Tectonic Processes, Applying Practices Answer Key: How old are crustal rocks?						
125	**DCI**	**PS1.C: Nuclear Processes** • Spontaneous radioactive decays follow a characteristic exponential decay law. Nuclear lifetimes allow radiometric dating to be used to determine the ages of rocks and other materials.	Online Resource: Unit 2, Module: Earth and Space Science: Eareth Tectonic Processes, Applying Practices Answer Key: How old are crustal rocks?						
126	**SEP**	**Engaging in Argument from Evidence** *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.* • Evaluate evidence behind currently accepted explanations or solutions to determine the merits of arguments.	Online Resources: Unit 2, Module: Earth and Space Science: Eareth Tectonic Processes, Applying Practices Answer Key: How old are crustal rocks?						
127	**CCC**	**Patterns** • Empirical evidence is needed to identify patterns.	Online Resources: Unit 2, Module: Earth and Space Science: Eareth Tectonic Processes, Applying Practices Answer Key: How old are crustal rocks?						
128	**PE**	**HS-ESS1-6. Students who demonstrate understanding can: Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.**							
129	**DCI**	**ESS1.C: The History of Planet Earth** • Although active geologic processes, such as plate tectonics and erosion, have destroyed or altered most of the very early rock record on Earth, other objects in the solar system, such as lunar rocks, asteroids, and meteorites, have changed little over billions of years. Studying these objects can provide information about Earth's formation and early history.	Online Resources: Unit 6, Module: Earth and Space Science: Cosmology, Applying Practices Answer Key: Earth's Formation and Early History						
130	**DCI**	**PS1.C: Nuclear Processes** • Spontaneous radioactive decays follow a characteristic exponential decay law. Nuclear lifetimes allow radiometric dating to be used to determine the ages of rocks and other materials	Online Resources: Unit 6, Module: Earth and Space Science: Cosmology, Applying Practices Answer Key: Earth's Formation and Early History						

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131	SEP	**Constructing Explanations and Designing Solutions** *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.* • Apply scientific reasoning to link evidence to the claims to assess the extent to which the reasoning and data support the explanation or conclusion.	Online Resources: Unit 6, Module: Earth and Space Science: Cosmology, Applying Practices Answer Key: Earth's Formation and Early History						
132	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.	Online Resources: Unit 6, Module: Earth and Space Science: Cosmology, Applying Practices Answer Key: Earth's Formation and Early History						
133	CONN	**Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena** • Models, mechanisms, and explanations collectively serve as tools in the development of a scientific theory.	Online Resources: Unit 6, Module: Earth and Space Science: Cosmology, Applying Practices Answer Key: Earth's Formation and Early History						
134	CCC	**Stability and Change** • Much of science deals with constructing explanations of how things change and how they remain stable.	Online Resources: Unit 6, Module: Earth and Space Science: Cosmology, Applying Practices Answer Key: Earth's Formation and Early History						
135	PE	**HS-ESS2-1.Students who demonstrate understanding can: Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.**							
136	DCI	**ESS2.A: Earth's Materials and Systems** • Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes.	Online Resources: Unit 2, Module: Earth and Space Science: Earth Tectonic Processes, Lesson: Plate Tectonics, Applying Practices Answer Key: Modeling Earth's Internal and Surface Processes						

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137	DCI	**ESS2.B: Plate Tectonics and Large-Scale System Interactions** • Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a framework for understanding its geologic history. Plate movements are responsible for most continental and ocean-floor features and for the distribution of most rocks and minerals within Earth's crust.	Online Resources: Unit 2, Module: Earth and Space Science: Earth Tectonic Processes, Lesson: Plate Tectonics, Applying Practices Answer Key: Modeling Earth's Internal and Surface Processes						
138	SEP	**Developing and Using Models** *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).* • Develop a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resources: Unit 2, Module: Earth and Space Science: Earth Tectonic Processes, Lesson: Plate Tectonics, Applying Practices Answer Key: Modeling Earth's Internal and Surface Processes						
139	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 2, Module: Earth and Space Science: Earth Tectonic Processes, Lesson: Plate Tectonics, Applying Practices Answer Key: Modeling Earth's Internal and Surface Processes						
Earth's Systems									
140	PE	**HS-ESS2-2. Students who demonstrate understanding can: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.**							
141	DCI	**ESS2.A: Earth's Materials and Systems** • Earth's systems, being dynamic and interacting, cause feedback effects that can increase or decrease the original changes.	Online Resources: Unit 3, Module: Earth and Space Science: Earth's Resources, Lesson: Resources and Society, Teacher Support: Earth's Systems						
142	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.	Online Resources: Unit 3, Module: Earth and Space Science: Earth's Resources, Lesson: Energy Resources, Teacher Support: Earth's Main Energy Source						

Section 1: Standards Review: Science									
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143	**SEP**	**Analyzing and Interpreting Data** *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.* • Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution.	Online Resources: Unit 3, Module: Earth and Space Science: Earth's Resources, Lesson: Energy Resources, Applying Practices Answer Key: Environmental Consulting: Finding Solutions						
144	**CCC**	**Stability and Change** • Feedback (negative or positive) can stabilize or destabilize a system.	Online Resources: Unit 3, Module: Earth and Space Science: Earth's Resources, Lesson: Resources and Society, Teacher Support: Earth's Systems						
145	**CONN**	**Influence of Engineering, Technology, and Science 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 Resources: Unit 3, Module: Earth and Space Science: Earth's Resources, Lesson: Energy Resources, Applying Practices Answer Key: Environmental Consulting: Finding Solutions						
146	**PE**	**HS-ESS2-3. Students who demonstrate understanding can: Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.**							
147	**DCI**	**ESS2.A: Earth Materials and Systems** • Evidence from deep probes and seismic waves, reconstructions of historical changes in Earth's surface and its magnetic field, and an understanding of physical and chemical processes lead to a model of Earth with a hot but solid inner core, a liquid outer core, a solid mantle and crust. Motions of the mantle and its plates occur primarily through thermal convection, which involves the cycling of matter due to the outward flow of energy from Earth's interior and gravitational movement of denser materials toward the interior.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, p. 3						
148	**DCI**	**ESS2.B: Plate Tectonics and Large-Scale System Interactions** • The radioactive decay of unstable isotopes continually generates new energy within Earth's crust and mantle, providing the primary source of the heat that drives mantle convection. Plate tectonics can be viewed as the surface expression of mantle convection.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, p. 3						

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149	DCI	**PS4.A: Plate Wave Properties** • Geologists use seismic waves and their reflection at interfaces between layers to probe structures deep in the planet.	Online Resources: Unit 4, Module: Earth and Space Science: Seismic Waves, Lesson: Earthquakes, Seismic Waves, and Earth's Interior, Teacher Support: Clues to Earth's Interior						
150	SEP	**Developing and Using Models** *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).* • Develop a model based on evidence to illustrate the relationships between systems or between components of a system.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, p. 5						
151	CONN	**Scientific Knowledge is Based on Empirical Evidence** • Science knowledge is based on empirical evidence.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, p. 1						
152	CONN	**Scientific Knowledge is Based on Empirical Evidence** • Science disciplines share common rules of evidence used to evaluate explanations about natural systems.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, p. 1						
153	CONN	**Scientific Knowledge is Based on Empirical Evidence** • Science includes the process of coordinating patterns of evidence with current theory.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, p. 1						
154	CCC	**Energy and Matter** • Energy drives the cycling of matter within and between systems.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, pp. 3-5						
155	CONN	**Interdependence of Science, Engineering, and Technology** • Science and engineering complement each other in the cycle known as research and development (R&D). Many R&D projects may involve scientists, engineers, and others with wide ranges of expertise.	Online Resources: Unit 4, STEM Unit Project Answer Key: What's Inside Earth?, pp. 3-5						
156	NM	**HS-SS-2 NM.** • Construct an argument using claims, scientific evidence, and reasoning that helps decision makers with a New Mexico challenge or opportunity as it relates to science	TE: Unit 4, Module 15, Scientific Breakthroughs, p. 404, Evaluate Design Solutions						
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** *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.* ▪ 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** *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.* • 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** *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.* • 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** *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.* • 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-PS4-2), (HS-PS4-3), (HS-PS4-4)*	Online Resource: Unit 5, Module 21, Lesson 4, Applying Practices Answer Key: Digital Storage and Transmission of Information						

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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-PS1-3), (HS-PS1-5), (HS-PS2-1), (HS-PS2-6), (HS-PS3-4), (HS-PS4-2),(HS-PS4-3), (HS-PS4-4), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-5), (HS-ESS1-6), (HS-ESS2-2), (HS-ESS2-3)*	Online Resource: Unit 5, Module 21, Lesson 4, Applying Practices Answer Key: Human Health and Radiation Frequency						
175	**CCSS ELA/ Literacy**	**RST.11-12.2** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. *(HS-ESS2-2)*	Unit 3, Module 12, Lesson 2, pg. 316, Reinforcement: Summarize Properties						
176	**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-PS4-1), (HS-PS4-4), (HS-ETS1-1), (HS-ETS1-3)*	Online Resources: Unit 4, STEM Unit Project Answer Key: What's inside Earth?, pg. 1-2						
177	**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-PS4-2), (HS-PS4-3), (HS-PS4-4), (HS-ESS1-5), (HS-ESS1-6), (HS-ETS1-1), (HS-ETS1-3)*	Online Resources: Unit 5, STEM Unit Project Answer Key: The History of Everything, pg. 1-2						
178	**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-ETS1-1), (HS-ETS1-3)	Online Resources: Unit 4, STEM Unit Project Answer Key: What's inside Earth?, pg. 5						
179	**CCSS ELA/ Literacy**	**WHST.9-12.1** Write arguments focused on discipline-specific content. (HS-ESS1-6)	TE: Introduction to Physics, Module 1, pg. 27, Revisit the Phenomenon: Claim, Evidence, Reasoning						
180	**CCSS ELA/ Literacy**	**WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. *(HS-PS1-2), (HS-PS1-5), (HS-PS2-6), (HS-PS4-5), (HS-ESS1-2), (HS-ESS1-3), (HS-ESS1-5)*	Online Resources: Unit 5, Module 19, Lesson 1, Applying Practices Answer Key: Touching the Future, pg. 1-2						
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-PS2-3), (HS-PS2-5), (HS-PS3-3), (HS-PS3-4), (HS-PS3-5)*	Online Resources: Unit 3, Module 9, Lesson 1, Explore and Explain: Applying Practices Answer Key: Egg Heads, p. 1, Project Overview						

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182	**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-PS1-3), (HS-PS2-5), (HS-PS3-4), (HS-PS3-5), (HS-PS4-4)*	Online Resources: Unit 5, STEM Unit Project Answer Key: From Raw Resource to Usable Energy, pg. 2, "Ask Questions"						
183	**CCSS ELA/ Literacy**	**WHST.11-12.9** Draw evidence from informational texts to support analysis, reflection, and research. *(HS-PS2-1)*	Online Resources: Unit 1, STEM Unit Project Answer Key: Build a Rocket, pg. 5, Ask Questions						
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-ESS1-3)*	Online Resources: Unit 2, STEM Unit Project Answer Key: In Orbit, pg. 5, Evaluate and Share						
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-PS1-4), (HS-PS3-1), (HS-PS3-2), (HS-PS3-5), (HS-ESS2-1), (HS-ESS2-3)*	Online Resources: Unit 3, Module 11, Lesson 1, Applying Practices Answer Key: Modeling Changes in Energy, pg. 1, Use Your Model #1						
Grades 9-12 CCSS Math									
186	**CCSS Math**	**MP.2** Reason abstractly and quantitatively. *(HS-PS1-5), (HS-PS1-7), (HS-PS2-1), (HS-PS2-2), (HS-PS2-4), (HS-PS3-1), (HS-PS3-2), (HS-PS3-3), (HS-PS3-4), (HS-PS3-5), (HS-PS4-1), (HS-PS4-3), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-3), (HS-ESS1-5), (HS-ESS1-4), (HS-ESS1-6), (HS-ESS2-1), (HS-ESS2-2), (HS-ESS2-3), (HS-ETS1-3), (HS-ETS1-4)*	Online Resources: Unit 3, Module 11, Lesson 2, Applying Practices Answer Key: Modeling Changes in Energy						
187	**CCSS Math**	**MP.4** Model with mathematics. *(HS-PS1-4),(HS-PS1-8), (HS-PS2-1), (HS-PS2-2), (HS-PS2-4), (HS-PS3-1), (HS-PS3-2), (HS-PS3-3), (HS-PS3-4), (HS-PS3-5), (HS-PS4-1), (HS-ESS1-1), (HS-ESS1-4), (HS-ESS2-1), (HS-ESS2-3), (HS-ETS1-2), (HS-ETS1-3), (HS-ETS1-4)*	Online Resource: STEM Project Unit 3 Answer Key, pg.4-5						

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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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. *(HS-PS1-2), (HS-PS1-3), (HS-PS1-4), (HS-PS1-5), (HS-PS1-7), (HS-PS1-8), (HS-PS2-1), (HS-PS2-2), (HS-PS2-4), (HS-PS2-5), HS-PS2-6), (HS-PS3-1), (HS-PS3-3), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-4), (HS-ESS1-5), (HS-ESS1-6), (HS-ESS2-1), (HS-ESS2-2), (HS-ESS2-3)*	Unit 2, Applying Practices Answer Key: Planetary Orbits, pg. 1						
189	**CCSS Math**	**HSN-Q.A.2** Define appropriate quantities for the purpose of descriptive modeling. *(HS-PS1-4), (HS-PS1-7), (HS-PS1-8), (HS-PS2-1), (HS-PS2-2), (HS-PS2-4), (HS-PS2-5), (HS-PS2-6), (HS-PS3-1), (HS-PS3-3), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-4), (HS-ESS1-5), (HS-ESS1-6), (HS-ESS2-1), (HS-ESS2-2), (HS-ESS2-3)*	Online Resources: Unit 5, Module 18, Lesson 2, Applying Practices Answer Key: Gravitational and Electrostatic Forces, pg. 1						
190	**CCSS Math**	**HSN-Q.A.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. *(HS-PS1-2), (HS-PS1-3), (HS-PS1-4), (HS-PS1-5), (HS-PS1-7), (HS-PS1-8), (HS-PS2-1), (HS-PS2-2), (HS-PS2-4), (HS-PS2-5), (HS-PS2-6), (HS-PS3-1), (HS-PS3-3), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-4), (HS-ESS1-5), (HS-ESS2-1), (HS-ESS2-3)*	Onlien Resources: Unit 3, Module 11, Lesson 2, Applying Practices Answer Key: Modeling Changes in Energy						
191	**CCSS Math**	**HSA-SSE.A.1** Interpret expressions that represent a quantity in terms of its context. *(HS-PS2-1), (HS-PS2-4), (HS-PS4-1), (HS-PS4-3), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-4)*	TE: Unit 3, Module 9, Lesson 1, Pg. 216						
192	**CCSS Math**	**HSA-SSE.B.3** Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. *(HS-PS2-1), (HS-PS2-4), (HS-PS4-1), (HS-PS4-3)*	Online Resources: Unit 1, STEM Unit Project Answer Key: Build a Rocket, pg. 9, #4						
193	**CCSS Math**	**HSA-CED.A.1** Create equations and inequalities in one variable and use them to solve problems. *(HS-PS2-1), (HS-PS2-2)*	TE: Unit 3, Module 9, Lesson 1, pg. 217, Practice Problems #1-2						
194	**CCSS Math**	**HSA-CED.A.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. *(HS-PS2-1), (HS-PS2-2), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-4)*	Online Resources: Unit 4, Module 4, Lesson 1, Applying Practices Answer Key: Newton's Second Law #2						
195	**CCSS Math**	**HSA-CED.A.4** Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *(HS-PS2-1), (HS-PS2-2), (HS-PS4-1), (HS-PS4-3), (HS-ESS1-1), (HS-ESS1-2), (HS-ESS1-4)*	TE: Unit 1, Module 4, Lesson 3, pg. 105, Example Problem 5						

Section 1: Standards Review: Science
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196	**CCSS Math**	**HSF-IF.B.5** Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *(HS-ESS1-6)*	Unit 6, Module 22, Lesson 1, pg. 613, Visual Literacy, Activity						
197	**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. *(HS-PS2-1)*	TE Introduction to Physics, Module 1, Lesson 4, pg. 21						
198	**CCSS Math**	**HSS-ID.B.6** Represent data on two quantitative variables on a scatter plot, and describe how those variables are related. *(HS-ESS1-6)*	TE: Unit 3, Module 10, Lesson 1, pg. 243, SEP Quick Practice						
199	**CCSS Math**	**HSS-IS.A.1** Represent data with plots on the real number line (dot plots, histograms, and box plots). *(HS-PS2-1)*	TE Introduction to Physics, Module 1, Lesson 4, Differentiated Instruction						

Section 2: Science Content Review								
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Criteria #	**Grade K-12 Science Content Criteria**	Publisher/Provider Citation	Score	If Scored D: Reviewer's Evidence for Publisher Citation	Reviewer Citation	Score	Required: Reviewer's Evidence	Comments, other citations, notes
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 7, pg. 160A						
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 12, Lesson 2, pg. 314, Explore and Explain						
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 4, pg. 334A-334B						
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.	Online Resources, Three-Dimensional Assessment Guide: Sampler, pg. vi, "Critiical Skills for NGSS Success"						
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, "Engineer's Notebook" Online Resources Unit 3, Module 10, Lesson 3, Applying Practices Answer Key: Earth Power pg. 4, 'Day 5',' Bulletpoint 3						
FOCUS AREA 3: TEACHER SUPPORTS **Materials include opportunities for teachers to effectively plan and utilize materials.**								
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 Physics Online Resources: Course Materials: Teacher Lab Safety						

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7	Materials provide teacher guidance for the use of embedded and meaningful technology to support and enhance student learning, when applicable.	Online Resources: Inpsire Physics Program Resources: Coure Materials, Purposeful Technology in Science						
8	Materials and assessments include teacher guidance for students at, approaching, or exceeding grade level expectations.	TE: Unit 1, Module 3, Lesson 3, pg. 75, Differentiated Instruction, Physics Challenge Activity TE: Unit 1, Module 3, Lesson 3, pg. 73, Formative Assessment Check, Remediation						
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: Lesson 2, pg. 73, Formative Assessment Check, Formative Assessment: Lesson Check Online Resources: Unit 4, STEM Unit Project: Rubric Guide						
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.	Unit 3, Module 12, Lesson 4, pg. 326, Differentiated Instruction: Slime						
11	The flow of lessons from one unit to the next is coherent, meaningful, direct, and apparent to students.	TE: Introduction to Physics, Module 1, pg. 2, Module Storyline						
FOCUS AREA 5: EQUITY **Materials are designed for all learners.**								
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 3, Module 9, Lesson 1, pg. 217, Physics project Activity						
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: Introduction to Physics, Module 1, Lesson 4, pg 18, Science Journal, 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
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. *(Adopted New Mexico Content Standards for 2024: NM STEM Ready Science Standards)*			

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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.			

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32	Instructional materials address multiple ethnic descriptions, interpretations, or perspectives of events and experiences.			