



**Lab-Aids Correlations**  
**for the**  
**2022 Indiana Academic Standards (Draft Version)**  
**GRADES 6-8**

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This document is intended to show how the SEPUP *Issues and Science, 3<sup>rd</sup> Edition Redesigned for the NGSS* curriculum materials align with the [2022 Indiana Academic Standards](#), grades six through eight (Draft Version.)

#### ABOUT LAB-AIDS

Lab-Aids has maintained its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, grades 6-12. All core curricula support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs that clearly show what students know and are able to do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information, please visit [www.lab-aids.com](http://www.lab-aids.com) and navigate to the program of interest.

#### ABOUT SEPUP

Materials from the Science Education for Public Understanding Program (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by Lab-Aids, Inc. Since 1987, development of SEPUP materials has been supported by grants from the National Science Foundation and other public and private sources. SEPUP programs include student books, equipment kits, teacher materials, and online digital content.

A suggested listing of units for Indiana in grades 6-8 from *Issues and Science, 3<sup>rd</sup> Edition Redesigned for the NGSS* is shown below.

Sixth Grade	Seventh Grade	Eighth Grade
Ecology	Body Systems	Land, Water, and Human Interactions
From Cells to Organisms	Energy	Weather and Climate
Solar System and Beyond	Earth's Resources	Reproduction
Waves	Geological Processes	Evolution
Biomedical Engineering	Force and Motion	Chemistry of Materials
	Fields and Interactions	Chemical Reactions

#### ABOUT THE LAB-AIDS CITATIONS

*Citations included in the correlation document are as follows:*

SEPUP Unit title     *The Chemistry of Materials:*  
 Activity Number     2, 12, 14\*

\* indicates where Performance Expectation is assessed

NGSS Performance Expectation	MS-PS1-2
Science and Engineering Practice	Planning and Carrying Out Investigations
Crosscutting Concept	Structure and Function
Disciplinary Core Idea	MS-PS1.A

**SIXTH GRADE**

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-PS4-1 Waves and Their Applications in Technologies for Information Transfer</b>					
MS-PS4-1: Use Mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.	<i>Waves:</i> 1, 2, 3, 7*	Analyzing and Interpreting Data  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Using Mathematics and Computational Thinking	MS-PS4.A	Connections to Engineering, Technology, and Applications of Science  Patterns  Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.9 6.RP.A.1 7.RP.A.2 MP.2 MP.4
<b>MS-PS4-2 Waves and Their Applications in Technologies for Information Transfer</b>					
MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	<i>Waves:</i> 3, 4, 8, 9, 10, 11, 12, 13*	Analyzing and Interpreting Data  Connections to the Nature of Science  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations  Using Mathematics and Computational Thinking	MS-PS4.A MS-PS4.B	Connections to Engineering, Technology, and Applications of Science  Patterns  Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.9 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-PS4-3 Waves and Their Applications in Technologies for Information Transfer</b>					
MS-PS4-3: Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	<i>Waves:</i> 5, 6	Asking Questions and Defining Problems  Connections to Engineering, Technology, and Applications of Science  Structure and Function  Developing and Using Models  Obtaining, Evaluating, and Communicating Information	MS-PS4.C MS-ETS1.A MS-ETS1.B MS-ETS1.C	Connections to Engineering, Technology, and Applications of Science  Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.9
<b>MS-LS1-6 From Molecules to Organisms: Structures and Processes</b>					
MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	<i>From Cells to Organisms:</i> 12, 13*	Constructing Explanations and Designing Solutions	MS-LS1.A MS-LS1.C MS-PS3.D	Energy and Matter  Structure and Function	RST.6-8.3
<b>MS-LS2-1 Ecosystems: Interactions, Energy, and Dynamics</b>					
MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on	<i>Ecology:</i> 5, 6, 9*	Analyzing and Interpret Data  Connections to the Nature of Science	MS-LS2.A	Cause and Effect  Connections to the Nature of Science	RST.6-8.1 RST.6-8.3 RST.6-8.7 RST.6-8.8

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
organisms and populations of organisms in an ecosystem.		Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations		Energy and Matter Patterns  Stability and Change  Systems and System Models	SL.8.4 SL.8.5 WHST.6-8.1 WHST.6-8.9 6.EE.C.9 6.RP.A.1 6.RP.A.3 6.SP.B.5 MP.2 MP.4
<b>MS-LS2-2 Ecosystems: Interactions, Energy, and Dynamics</b>					
MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	<i>Ecology:</i> 2, 8, 10*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-LS2.A	Cause and Effect  Connections to the Nature of Science  Energy and Matter Patterns  Stability and Change  Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.4 SL.8.5 WHST.6-8.9 6.RP.A.1 6.RP.A.3 MP.2 MP.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-LS2-3 Ecosystems: Interactions, Energy, and Dynamics</b>					
MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	<i>Ecology:</i> 7, 8, 11, 12*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Developing and Using Models  Planning and Carrying Out Investigations	MS-LS2.B	Cause and Effect Energy and Matter  Systems and System Models	RST.6-8.3 RST.6-8.7 WHST.6-8.9 6.RP.A.1 6.RP.A.3 MP.2 MP.4
<b>MS-LS2-4 Ecosystems: Interactions, Energy, and Dynamics</b>					
MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	<i>Ecology:</i> 1, 2, 3, 4, 5, 6, 13, 14*	Analyzing and Interpreting Data  Asking Questions and Defining Problems Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information	MS-LS2.C	Cause and Effect  Connections to the Nature of Science  Energy and Matter Patterns  Stability and Change  Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.5 WHST.6-8.1 WHST.6-8.9 6.EE.C.9 6.SP.B.5 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Planning and Carrying Out Investigations			
<b>MS-LS2-5 Ecosystems: Interactions, Energy, and Dynamics</b>					
MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services. *	<i>Ecology:</i> 2, 4, 15*	Analyzing and Interpreting Data  Asking Questions and Defining Problems Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations  Using Mathematics and Computational Thinking	MS-ETS1.B MS-LS2.C MS-LS4.D	Cause and Effect  Connections to the Nature of Science  Energy and Matter  Patterns  Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.5 WHST.6-8.1 WHST.6-8.9 6.SP.B.5
<b>MS-ESS1-1 Earth's Place in the Universe</b>					
MS-ESS1-1: Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases,	<i>Solar System and Beyond:</i> 2, 3, 4, 5*, 6,	Analyze and Interpret Data  Constructing Explanations and Designing Solutions	MS-ESS1.A MS-ESS1.B	Cause and Effect  Connections to Engineering, Technology, and Applications of Science	RST.6-8.2 WHST.6-8.2 SL.8.5 6.RP.A.1

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
eclipses of the sun and moon, and seasons.	7, 8, 9*	Developing and Using Models		Connections to Nature of Science  Patterns  Scale, Proportion, and Quantity  Systems and System Models	
<b>MS-ESS1-2 Earth's Place in the Universe</b>					
MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.	<i>Solar System and Beyond:</i> 10, 11, 12, 14, 15, 16*	Analyze and Interpret Data  Connections to the Nature of Science  Developing and Using Models  Using Mathematics and Computational Thinking	MS-ESS1.A MS-ESS1.B	Connections to Engineering, Technology, and Applications of Science  Connections to Nature of Science  Patterns  Scale, Proportion, and Quantity  Systems and System Models	RST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.4 6.RP.A.1 6.RP.A.3 MP.2 MP.4



Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ESS1-3 Earth's Place in the Universe</b>					
MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.	<i>Solar System and Beyond:</i> 1, 10, 11, 12, 13*	Analyze and Interpret Data  Developing and Using Models  Using Mathematics and Computational Thinking	MS-ESS1.A MS-ESS1.B	Connections to Engineering, Technology, and Applications of Science  Scale, Proportion, and Quantity	WHST.6-8.2 SL.8.4 6.RP.A.1 6.RP.A.3 MP.2 MP.4
<b>MS-ETS1-1 Engineering Design</b>					
MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	<i>Biomedical Engineering:</i> 1, 2, 3*	Asking Questions and Defining Problems	MS-ETS1.A MS-ETS1.B MS-ETS1.C	Structure and Function  Interdependence of Science, Engineering, and Technology  Influence of Science, Engineering, and Technology on Society and the Natural World	RST.6-8.1 RST.6-8.2 RST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ETS1-2 Engineering Design</b>					
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	<i>Biomedical Engineering:</i> 4, 5, 7*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models Engaging in Argument from Evidence  Using Mathematics and Computational Thinking	MS-ETS1.B MS-ETS1.C MS-LS1.A	Connections to Engineering, Technology, and Applications of Science  Structure and Function	SL.8.4 6.RP.A.1 6.RP.A.3 MP.2
<b>MS-ETS1-3 Engineering Design</b>					
MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	<i>Biomedical Engineering:</i> 1, 2, 4, 5*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Developing and Using Models  Constructing Explanations and Designing Solutions  Using Mathematics and Computational Thinking	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-LS1.A	Connections to Engineering, Technology, and Applications of Science  Structure and Function	SL.8.4  6.RP.A.1 6.RP.A.3 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ETS1-4 Engineering Design</b>					
MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	<i>Biomedical Engineering:</i> 2, 4, 5, 8, 9*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Using Mathematics and Computational Thinking	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-LS1.A	Connections to Engineering, Technology, and Applications of Science  Structure and Function	SL.8.4 6.RP.A.1 6.RP.A.3 MP.2

**SEVENTH GRADE**

<b>Performance Expectation</b>	<b>SEPUP Unit and Activity Number</b>	<b>Science and Engineering Practices</b>	<b>Disciplinary Core Ideas</b>	<b>Crosscutting Concepts</b>	<b>Common Core ELA/Math</b>
<b>MS-PS2-1 Motion and Stability: Forces and Interactions</b>					
MS-PS2-1: Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.*	<i>Force and Motion:</i> 1, 10, 11, 12*	Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models Obtaining, Evaluating, and Communicating Information	MS-ETS1.A MS-PS2.A MS.PS3.A MS-PS3.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.7 MP.2
<b>MS-PS2-2 Motion and Stability: Forces and Interactions</b>					
MS-PS2-2: Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.	<i>Force and Motion:</i> 1, 6, 7, 8, 9, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations  Using Mathematics and	MS-ETS1.A MS-PS2.A MS.PS3.A MS-PS3.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Scale, Proportional, and Quantity  Stability and Change	RST.6-8.1 RST.6-8.2 RST.6-8.3 RST.6-8.7 6.RP.AP.2 6.SP.B.5 7.EE.B.4 7.RP.A.2 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Computational Thinking			
<b>MS-PS2-3 Motion and Stability: Forces and Interactions</b>					
MS-PS2-3: Ask questions and design a plan to determine the factors that affect the strength of electric and magnetic forces.	<i>Fields and Interactions:</i> 7, 8, 9, 12, 13*, 14	Asking Questions and Defining Problems  Developing and Using Models  Engaging in Argument from Evidence  Connections to the Nature of Science  Planning and Carrying Out Investigations	MS-PS2.B MS-ETS1.B	Cause and Effect  Patterns  Systems and System Models	RST.6-8.1 RST.6-8.3 WHST.6-8.7 MP.2
<b>MS-PS2-4 Motion and Stability: Forces and Interactions</b>					
MS-PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	<i>Fields and Interactions:</i> 3, 4, 7*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-PS2.B MS-PS3.A MS-PS3.C MS-ETS1.A MS-ETS1.B	Connections to Nature of Science  Patterns  Systems and System Models	RST.6.8.1 WHST.6-8.1 SL.8.5 6.EE.C.9 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-PS2-5 Motion and Stability: Forces and Interactions</b>					
MS-PS2-5: Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	<i>Fields and Interactions:</i> 5, 7, 9, 10, 12*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Planning and Carrying Out Investigations	MS-PS2.B MS-PS3.A MS-PS3.C MS-ETS1.B	Cause and Effect  Patterns  Systems and System Models	RST.6-8.3 WHST.6-8.1 WHST.6-8.7 MP.2
<b>MS-PS3-1 Energy</b>					
MS-PS3-1: Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	<i>Force and Motion:</i> 1, 2, 3, 4, 5*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Obtaining, Evaluating, and Communicating Information	MS-ETS1.A MS-PS2.A MS-PS3.A MS-PS3.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Energy and Matter Patterns  Scale, Proportion, and Quantity	RST.6-8.7 WHST.6-8.2 6.SP.B.5 7.RP.A.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Planning and Carrying Out Investigations			
<b>MS-PS3-2 Energy</b>					
MS-PS3-2: Develop a model to describe what happens when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	<i>Fields and Interactions:</i> 3, 4, 6, 7, 10, 11*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS2.B MS.PS3.A MS.PS3.C	Cause and Effect  Connections to Nature of Science  Scale, Proportion, and Quantity  Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.7 SL.8.5 WHST.6-8.1 WHST.6-8.7 6.EE.C.9 MP2
	<i>Force and Motion:</i> 1, 3, 4, 5, 10, 14	Asking Questions and Defining Problems  Obtaining, Evaluating, and Communicating Information	MS-ETS1.A MS-PS2.A MS-PS3.A MS-PS3.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science	RST.6-8.7
<b>MS-PS3-3 Energy</b>					
MS-PS3-3: Apply scientific principles to design, construct, and test a device that either	<i>Energy:</i> 1, 7, 8, 10, 11, 12, 13*	Analyzing and Interpreting Data  Connections to the Nature of Science	MS-ETS1.A MS-ETS1.B MS-PS3.A MS-PS3.B	Cause and Effect  Connections to the Nature of Science	RST.6-8.1 RST.6-8.3 SL.8.4 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
minimizes or maximizes thermal energy transfer.*		Constructing Explanations and Designing Solutions  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations		Energy and Matter Patterns Scale, Proportion, and Quantity  Structure and Function  Systems and System Models	EE.6.A.2 EE.6.C.9 MP.2
<b>MS-PS3-4 Energy</b>					
MS-PS3-4: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	<i>Energy:</i> 1, 4, 6, 7, 8*	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Engaging in Argument from Evidence  Planning and Carrying Out Investigations	MS-PS3.A MS-PS3.B MS-PS3.C	Cause and Effect  Energy and Matter Patterns  Scale, Proportion, and Quantity  Systems and System Models	RST.6-8.3 WHST.6-8.1 WHST.6-8.9 EE.6.C.9 MP.2
<b>MS-PS3-5 Energy</b>					
MS-PS3-5: Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from	<i>Energy:</i>	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and	MS-PS3.A MS-PS3.B MS-PS3.C	Cause and Effect  Energy and Matter Patterns  Scale, Proportion, and	RST.6-8.3 WHST.6-8.1 WHST.6-8.9 EE.6.C.9 MP.2



Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
the object.	2, 3, 4, 5, 6*	Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations		Quantity  Systems and System Models	
<b>MS-LS1-1 From Molecules to Organisms: Structures and Processes</b>					
MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	<i>From Cells to Organisms:</i> 1, 2, 3, 4, 9*	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-LS1.A MS-LS1.C MS-PS3.D	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Energy and Matter Patterns  Scale, Proportion, and Quantity  Structure and Function  Systems and System Models	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2 WHST.6-8.7 WHST.6-8.9 SL.8.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Using Mathematics and Computational Thinking			
<b>MS-LS1-2 From Molecules to Organisms: Structures and Processes</b>					
MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.	<i>From Cells to Organisms:</i> 6, 7, 8*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS-LS1.A	Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Scale, Proportion, and Quantity Structure and Function Systems and System Models	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2 WHST.6-8.7 WHST.6-8.9 SL.8.5
<b>MS-LS1-3 From Molecules to Organisms: Structures and Processes</b>					
MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	<i>From Cells to Organisms:</i> 10, 14, 15	Analyzing and Interpret Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and	MS-LS1.A	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science	RST.6-8.2 RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Communicating Information		Patterns	
		Using Mathematics and Computational Thinking		Scale, Proportion, and Quantity	
	<i>Body Systems:</i> 1, 2, 3, 4, 9, 10, 11, 12*	Analyzing and Interpret Data			
		Asking Questions and Defining Problems			
		Connections to the Nature of Science			
		Constructing Explanations and Designing Solutions		Cause and Effect	RST.6-8.2 RST.6-8.3 RST.6-8.4 RST.6-8.7 RST.6-8.9
		Developing and Using Models		Connections to the Nature of Science	WHST.6-8.1 WHST.6-8.2 WHST.6-8.9
		Engaging in Argument from Evidence	MS-LS1.A MS-PS3.D	Structure and Function	SL.8.1 6.SP.B.4
		Obtaining, Evaluating, and Communicating Information		Systems and System Models	
		Planning and Carrying Out Investigations			
		Using Mathematics and Computational Thinking			

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-LS1-1 From Molecules to Organisms: Structures and Processes</b>					
MS-LS1-7: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	<i>From Cells to Organisms:</i> 5, 11*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Developing and Using Models  Planning and Carrying Out an Investigation	MS-LS1.A MS-LS1.C MS-PS3.D	Energy and Matter	RST.6-8.2 RST.6-8.3 RST.6-8.9
	<i>Body Systems:</i> 5	Constructing Explanations and Designing Solutions  Developing and Using Models	MS-LS1.A MS-LS1.C	Energy and Matter	RST.6-8.2 RST.6-8.9
<b>MS-LS1-8 From Molecules to Organisms: Structures and Processes</b>					
MS-LS1-8: Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	<i>Body Systems:</i> 6, 7, 8*	Analyzing and Interpreting Data  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out an Investigation	MS-LS1.D	Cause and Effect	RST.6-8.4 6.SP.B.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ESS1-4 Earth's Place in the Universe</b>					
MS-ESS1-4: Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	<i>Earth's Resources:</i> 9, 10, 11, 12*	Constructing Explanations and Designing Solutions  Developing and Using Models  Planning and Carrying Out Investigations  Connections to the Nature of Science	MS-ESS1.C	Patterns  Scale, Proportion, and Quantity  Stability and Change	RST.6-8.3 WHST.6-8.1 WHST.6-8.9
<b>MS-ESS2-1 Earth's Systems</b>					
MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	<i>Geological Processes:</i> 2, 5, 8, 9, 10, 11, 13, 14, 15*	Analyze and Interpret Data  Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and	MS-ESS1.C MS-ESS2.A MS-ESS2.B MS-ESS2.C MS-ESS3.A MS-ESS3.B	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Energy and Matter  Patterns  Scale, Proportion, and Quantity  Stability and Change	RST.6-8.2 RST.6-8.3 RST.6-8.4 WHST.6-8.1 WHST.6-8.2 SL.8.1 6.RP.A.1 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		<p>Communicating Information</p> <p>Planning and Carrying Out Investigations</p> <p>Using Mathematics and Computational Thinking</p>		<p>Structure and Function</p> <p>Systems and System Models</p>	
<b>MS-ESS2-2 Earth's Systems</b>					
MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	<i>Geological Processes:</i> 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13*	<p>Analyze and Interpret Data</p> <p>Asking Questions and Defining Problems</p> <p>Connections to the Nature of Science</p> <p>Constructing Explanations and Designing Solutions</p> <p>Developing and Using Models</p> <p>Engaging in Argument from Evidence</p> <p>Obtaining, Evaluating, and Communicating Information</p> <p>Planning and Carrying Out Investigations</p> <p>Using Mathematics and</p>	MS-ESS1.C MS-ESS2.A MS-ESS2.B MS-ESS2.C MS-ESS3.A MS-ESS3.B	<p>Cause and Effect</p> <p>Connections to Engineering, Technology, and Applications of Science</p> <p>Connections to the Nature of Science</p> <p>Energy and Matter</p> <p>Patterns</p> <p>Scale, Proportion, and Quantity</p> <p>Stability and Change</p> <p>Structure and Function</p> <p>Systems and System Models</p>	<p>RST.6-8.1</p> <p>RST.6-8.2</p> <p>RST.6-8.3</p> <p>WHST.6-8.1</p> <p>WHST.6-8.2</p> <p>WHST.6-8.9</p> <p>SL.8.1</p> <p>6.RP.A.1</p> <p>6.NS.C.5</p> <p>7.RP.A.2</p> <p>MP.4</p>

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Computational Thinking			
	<i>Land, Water, and Human Interactions:</i> 3, 4, 6, 7, 8, 10, 11, 12, 13, 14*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-ETS1.A MS-ETS1.B MS-ESS2.A MS-ESS2.C MS-ESS3.C MS-LS2.A MS-LS2.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Energy and Matter  Patterns  Scale, Proportion, and Quantity  Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5 MP.2 MP.4
<b>MS-ESS2-3 Earth's Systems</b>					
MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	<i>Geological Processes:</i> 10, 11, 12, 13, 14*	Analyze and Interpret Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions	MS-ESS1.C MS-ESS2.A MS-ESS2.B MS-ESS3.B	Cause and Effect  Connections to the Nature of Science  Patterns	RST.6-8.2 WHST.6-8.1 WHST.6-8.2 SL.8.1 6.RP.A.1 7.RP.A.2 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Developing and Using Models  Engaging in Argument from Evidence  Planning and Carrying Out Investigations  Obtaining, Evaluating, and Communicating Information		Scale, Proportion, and Quantity  Stability and Change  System and System Models	
<b>MS-ESS3-1 Earth and Human Activity</b>					
MS-ESS3-1: Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.	<i>Geological Processes: 2, 16*, 17*</i>	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-ESS2.A MS-ESS2.C MS-ESS3.A	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Patterns  Scale, Proportion, and Quantity  Structure and Function  Systems and System Models	RST.6-8.2 RST.6-8.3 WHST.6-8.1 WHST.6-8.7 SL.8.1



Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
	<i>Earth's Resources:</i> 1, 2, 3, 5, 7, 8, 14*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information	MS-ESS3.A MS-ESS3.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Scale, Proportion, and Quantity  Stability and Change  Structure and Function	RST.6-8.1 RST.6-8.3 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 7.RP.A.2
<b>MS-ESS3-2 Earth and Human Activity</b>					
MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	<i>Geological Processes:</i> 1, 3, 4, 6, 7, 8, 11, 18*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-ESS1.C MS-ESS2.A MS-ESS2.C MS-ESS3.B	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Patterns  Scale, Proportion, and Quantity  Stability and Change	RST.6-8.1 RST.6-8.2 RST.6-8.3 RST.6-8.4 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.1 6.NS.C.5 MP.2 MP.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Obtaining, Evaluating, and Communicating Information  Using Mathematics and Computational Thinking		Structure and Function  Systems and System Models	
<b>MS-ETS1-1 Engineering Design</b>					
MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	<i>Force and Motion:</i> 1, 10, 11, 13, 14, 15*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-ETS1.A MS-PS2.A MS-PS3.A MS-PS3.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Patterns  Stability and Change  Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.7 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
	<i>Fields and Interactions:</i> 2, 3, 6*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to Nature of Science  Developing and Using Models  Engaging in Argument from Evidence	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS3.A MS-PS2.B	Connections to Nature of Science: Influence of Science, Engineering, and Technology on Society and the Natural World  Systems and System Models	RST.6-8.1 RST.6-8.7 SL.8.5 MP.2
<b>MS-ETS1-2 Engineering Design</b>					
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	<i>Fields and Interactions:</i> 6, 13, 15	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-PS2.B MS-PS3.A MS-ETS1.A MS-ETS1.B MS-ETS1.C	Cause and Effect  Connections to Nature of Science  Systems and System Models	RST.6-8.1 RST.6-8.7 SL.8.5 WHST.6-8.9 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ETS1-3 Engineering Design</b>					
MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	<i>Fields and Interactions:</i> 6, 11, 13, 15*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS3.A MS-PS3.C MS-PS2.B	Cause and Effect  Connections to Nature of Science  Scale, Proportion, and Quantity  Systems and System Models	RST.6-8.1 RST.6-8.7 SL8.5 WHST.6-8.9 MP.2
<b>MS-ETS1-4 Engineering Design</b>					
MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	<i>Fields and Interactions:</i> 1, 2, 3, 6, 11, 13*	Asking Questions and Defining Problems  Analyzing and Interpreting Data  Connections to Nature of Science: Scientific Knowledge Is Based on Empirical Evidence  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-ETS1.A MS-ETS1.B MS-ETS1.C MS-PS2.B MS-PS3.A MS-PS3.B MS-PS3.C	Cause and Effect  Connections to Nature of Science: Influence of Science, Engineering, and Technology on Society and the Natural World  Scale, Proportion, and Quantity  Systems and System Models	RST.6-8.1 RST.6-8.7 SL8.5 MP.2

## EIGHTH GRADE

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-PS1-1 Matter and Its Interactions</b>					
MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.	<i>Chemistry of Materials:</i> 2, 6, 7, 12*	Analyzing and Interpreting Data  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-PS1.A MS-PS1.B	Connections to Engineering, Technology, and Applications of Science  Scale, Proportion, and Quantity  Structure and Function	RST.6-8.2 RST.6-8.3 RST.6-8.7
<b>MS-PS1-2 Matter and Its Interactions</b>					
MS-PS1-2: Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	<i>Chemical Reactions:</i> 1, 2, 3, 4, 5*	Analyzing and Interpreting Data  Connections to the Nature of Science  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-PS1.A MS-PS1.B	Patterns  Scale, Proportion, and Quantity  Structure and Function	RST.6-8.1 RST.6-8.3 RST.6-8.4 RST.6-8.7 RST.6-8.9 SL.8.1 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
	<i>Chemistry of Materials: 4</i>	Analyzing and Interpreting Data Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-PS1.A	Scale, Proportion, and Quantity Structure and Function	7.RP.A.2
<b>MS-PS1-3 Matter and Its Interactions</b>					
MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	<i>Chemistry of Materials: 1, 2, 3, 4, 5, 11, 12, 13*</i>	Analyzing and Interpreting Data Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	MS-PS1.A MS-PS1.B	Connections to Engineering, Technology, and Applications of Science Scale, Proportion, and Quantity Structure and Function	RST.6-8.3 RST.6-8.7 WHST.6-8.1 WHST.6-8.9 7.RP.A.2
<b>MS-PS1-4 Matter and Its Interactions</b>					
MS-PS1-4: Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or	<i>Chemistry of Materials: 8, 9, 10*</i>	Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from	MS-PS1.A MS-PS3.A	Cause and Effect	RST.6-8.3

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
removed.		Evidence  Planning and Carrying Out Investigations			
<b>MS-PS1-5 Matter and Its Interactions</b>					
MS-PS1-5: Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	<i>Chemical Reactions:</i> 1, 2, 3, 4, 5, 6, 7*	Analyzing and Interpreting Data  Connections to the Nature of Science  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-PS1.A MS-PS1.B	Energy and Matter Patterns  Scale, Proportion, and Quantity  Structure and Function  Systems and System Models	RST.6-8.1 RST.6-8.3 RST.6-8.4 RST.6-8.7 RST.6-8.9 SL.8.1 WHST.6-8.9
<b>MS-PS1-6 Matter and Its Interactions</b>					
MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.*	<i>Chemical Reactions:</i> 2, 3, 5, 8, 9, 10, 11*	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Obtaining, Evaluating, and Communicating Information	MS-ETS1.B MS-ETS1.C MS-PS1.A MS-PS1.B MS-PS3.A	Energy and Matter Patterns	RST.6-8.1 RST.6-8.3 RST.6-8.4 RST.6-8.7 SL.8.1 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Planning and Carrying Out Investigations			
<b>MS-LS1-4 From Molecules to Organisms: Structures and Functions</b>					
MS-LS1-4: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.	<i>Reproduction:</i> 10*, 11*	Constructing Explanations and Designing Solutions  Developing and Using Models	MS-LS1.B MS-LS3.A MS-LS3.B	Cause and Effect Patterns	RI.6.8 RST.6-8.1 RST.6-8.4 WHST.6-8.1 6.SP.A.2 6.SP.B.4 6.SP.B.5
<b>MS-LS1-5 From Molecules to Organisms: Structures and Functions</b>					
MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	<i>Reproduction:</i> 1, 7*	Asking Questions and Defining Problems  Obtaining, Evaluating, and Communicating Information	MS-LS3.A MS-LS1.B	Cause and Effect  Connections to the Nature of Science  Structure and Function	RST.6-8.2 SL.8.1 WHST.6-8.9 6.RP.A.1 6.SP.B.5
<b>MS-LS1-7 From Molecules to Organisms: Structures and Functions</b>					
MS-LS1-7: Develop a model to describe how	<i>From Cells to Organisms:</i> 5,	Analyzing and Interpreting Data	MS-LS1.A MS-LS1.C	Energy and Matter	RST.6-8.2 RST.6-8.3



Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	11*	Constructing Explanations and Designing Solutions  Developing and Using Models  Planning and Carrying Out an Investigation	MS-PS3.D		RST.6-8.9
	<i>Body Systems: 5</i>	Constructing Explanations and Designing Solutions  Developing and Using Models	MS-LS1.A MS-LS1.C	Energy and Matter	RST.6-8.2 RST.6-8.9
<b>MS-LS3-1 Heredity: Inheritance and Variation of Traits</b>					
MS-LS3-1: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.	<i>Reproduction: 1, 3, 8, 12, 13*</i>	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-LS1.B MS-LS3.A MS-LS3.B	Cause and Effect  Connections to the Nature of Science  Patterns  Scale, Proportion, and Quantity  Structure and Function	RST.6-8.1 RST.6-8.2 RST.6-8.4 RST.6-8.7 SL.8.1 WHST.6-8.2 WHST.6-8.9 6.SP.B.5 6.RP.A.1

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
	<i>Evolution:</i> 3, 4, 5*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Using Mathematics and Computational Thinking	MS-LS2.A MS-LS3.A MS-LS3.B MS-LS4.B MS-LS4.C	Cause and Effect Patterns  Structure and Function	RST.6-8.2 RST.6-8.3 SL.8.1 SL.8.4 WHST.6-8.2 WHST.6-8.9 6.SP.B.5 6.RP.A.1
<b>MS-LS3-2 Heredity: Inheritance and Variation of Traits</b>					
MS-LS3-2: Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	<i>Reproduction:</i> 1, 2, 3, 4, 5, 6, 8, 9*	Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information  Planning and Carrying Out Investigations	MS-LS1.B MS-LS3.A MS-LS3.B	Cause and Effect  Connections to the Nature of Science  Patterns  Scale, Proportion, and Quantity  Structure and Function	RST.6-8.1 RST.6-8.2 RST.6-8.4 RST.6-8.7 RST.6-8.9 SL.8.1 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Using Mathematics and Computational Thinking			
<b>MS-LS4-1 Biological Evolution: Unity and Diversity</b>					
MS-LS4-1: Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	<i>Evolution:</i> 7, 8, 9, 10, 11*	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information	MS-ESS1.C MS-LS3.B MS-LS4.A MS-LS4.B MS-LS4.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Patterns	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2  6.SP.B.5
<b>MS-LS4-2 Biological Evolution: Unity and Diversity</b>					
MS-LS4-2: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.	<i>Evolution:</i> 7, 8, 9, 10 11, 12*	Analyzing and Interpreting Data  Connections to the Nature of Science  Constructing Explanations and Designing Solutions  Engaging in Argument from Evidence  Obtaining, Evaluating, and	MS-ESS1.C MS-LS3.B MS-LS4.A MS-LS4.B MS-LS4.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Patterns	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Communicating Information			
<b>MS-LS4-3 Biological Evolution: Unity and Diversity</b>					
MS-LS4-3: Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	<i>Evolution:</i> 12, 13*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Engaging in Argument from Evidence	MS-ESS1.C MS-LS4.A	Connections to the Nature of Science  Patterns	RST.6-8.7  6.SP.B.5
<b>MS-LS4-4 Biological Evolution: Unity and Diversity</b>					
MS-LS4-4: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	<i>Evolution:</i> 1, 2, 3, 4*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence  Using Mathematics and Computational Thinking	MS-LS2.A MS-LS3.B MS-LS4.B MS-LS4.C	Cause and Effect Patterns	RST.6-8.2 RST.6-8.3 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-LS4-5 Biological Evolution: Unity and Diversity</b>					
MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.	<i>Evolution:</i> 14, 15, 16*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions Engaging in Argument from Evidence  Obtaining, Evaluating, and Communicating Information	MS-ESS3.C MS-LS4.A MS-LS4.B MS-LS4.C MS-LS4.D	Cause and Effect  Connections to the Nature of Science: Science Addresses Questions About the Natural and Material World  Connections to the Nature of Science: Scientific Knowledge Assumes an Order and Consistency in Natural Systems  Patterns	RST.6-8.1 RST.6-8.7 WHST.6-8.2 WHST.6-8.8 WHST.6-8.9
<b>MS-LS4-6 Biological Evolution: Unity and Diversity</b>					
MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	<i>Evolution:</i> 1, 2, 3, 4, 5, 6*	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions  Developing and Using Models Engaging in Argument from Evidence  Using Mathematics and Computational Thinking	MS-LS2.A MS-LS3.A MS-LS3.B MS-LS4.B MS-LS4.C	Cause and Effect Patterns  Structure and Function	RST.6-8.2 RST.6-8.3 SL.8.1 SL.8.4 WHST.6-8.2 WHST.6-8.9 6.RP.A.1 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ESS2-4 Earth's Systems</b>					
MS-ESS2-4: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	<i>Land, Water, and Human Interactions:</i> 2, 5, 7, 8, 9*	Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models  Planning and Carrying Out Investigations	MS-ETS1.A MS-ESS2.A MS-ESS2.C MS-ESS3.C MS-PS2.A	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Energy and Matter  Scale, Proportion, and Quantity  Stability and Change	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.2
<b>MS-ESS3-3 Earth and Human Activity</b>					
MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*	<i>Land, Water, and Human Interactions:</i> 1, 3, 4, 5, 6, 9, 13, 14, 15, 16*	Analyzing and Interpreting Data  Asking Questions and Defining Problems  Connections to the Nature of Science  Constructing Explanations and Designing Solutions Developing and Using Models  Engaging in Argument from Evidence  Obtaining, Evaluating, and	MS-ESS2.A MS-ESS2.C MS-ESS3.C MS-LS2.A MS-LS2.C	Cause and Effect  Connections to Engineering, Technology, and Applications of Science  Connections to the Nature of Science  Energy and Matter  Patterns  Scale, Proportion, and Quantity	RST.6-8.1 RST.6-8.3 RST.6-8.9 WHST.6-8.2 WHST.6-8.9 SL.8.4 6.RP.A.1 6.SP.B.5 MP.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Communicating Information Planning and Carrying Out Investigations		Stability and Change	
<b>MS-ESS3-4 Earth and Human Activity</b>					
MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	<i>Earth's Resources:</i> 2, 4, 6, 13*	Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	MS-ESS3.A MS-ESS3.C	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Systems and System Models	RST.6-8.1 RST.6-8.3 WHST.6-8.1 WHST.6-8.9 6.SP.B.5 7.RP.A.2
	<i>Evolution:</i> 14	Analyzing and Interpreting Data Engaging in Argument from Evidence	MS-ESS3.C MS.LS4.A MS.LS4.B MS.LS4.D	Cause and Effect Connections to the Nature of Science Patterns	RST.6-8.7 WHST.6-8.9
<b>MS-ESS3-5 Earth and Human Activity</b>					
MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	<i>Weather and Climate:</i> 1, 10, 14, 15, 16*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science	MS-ESS2.C MS-ESS2.D MS-ESS3.C MS-ESS3.D	Connections to the Nature of Science Energy and Matter Scale, Proportion, and Quantity	RST.6-8.7 WHST.6-8.1 SL.8.1 MP.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Developing and Using Models  Planning and Carrying Out Investigations		Stability and Change  Systems and System Models	
<b>MS-ETS1-1 Engineering Design</b>					
MS-ETS1-1: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	<i>Land, Water, and Human Interactions: 7, 12*</i>	Asking Questions and Defining Problems  Constructing Explanations and Designing Solutions  Developing and Using Models	MS-ETS1.A MS-ETS2.A MS-ETS2.C	Connections to Engineering, Technology, and Applications of Science  Energy and Matter  Scale, Proportion, and Quantity  Stability and Change	RST.6-8.3
<b>MS-ETS1-2 Engineering Design</b>					
MS-ETS1-2: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	<i>Land, Water, and Human Interactions: 12, 16*</i>	Constructing Explanations and Designing Solutions  Engaging in Argument from Evidence	MS-ESS2.C MS-ESS3.C MS-ETS1.B	Cause and Effect  Connections to Nature of Science	WHST.6-8.2 SL.8.4



Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
<b>MS-ETS1-3 Engineering Design</b>					
MS-ETS1-3: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	<i>Chemical Reactions:</i> 8, 9, 10, 11	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions	MS-ETS1.B MS-ETS1.C MS-PS1.B MS-PS3.A	Energy and Matter	RST.6-8.3
	<i>Weather and Climate:</i> 12*	Analyzing and Interpreting Data  Developing and Using Models  Engaging in Argument from Evidence  Planning and Carrying Out Investigations	MS-ETS1.B MS-ESS1.C MS-ESS2.C	Connections to Engineering, Technology and Applications of Science  Structure and Function	RST.6-8.3 SL.8.1 SL.8.4
<b>MS-ETS1-4 Engineering Design</b>					
MS-ETS1-4: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	<i>Chemical Reactions:</i> 8, 9, 10, 11	Analyzing and Interpreting Data  Constructing Explanations and Designing Solutions	MS-PS1.B MS-PS3.A MS-ETS1.B MS-ETS1.C	Energy and Matter	RST.6-8.3
	<i>Weather and Climate:</i> 12*	Developing and Using Models  Engaging in Argument from Evidence Planning and Conducting Investigations	MS-ETS1.B MS-ESS1.C MS-ESS2.C	Connections to Engineering, Technology and Applications of Science  Structure and Function	RST.6-8.3 SL.8.1 SL.8.4
	<i>Fields and Interactions:</i> 1, 2, 3, 6, 11,	Asking Questions and Defining Problems	MS-ETS1.A MS-ETS1.B MS-ETS1.C	Cause and Effect  Connections to Nature of	RST.6-8.1 RST.6-8.7 SL8.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
	13*	Analyzing and Interpreting Data  Connections to Nature of Science: Scientific Knowledge Is Based on Empirical Evidence  Constructing Explanations and Designing Solutions  Developing and Using Models  Engaging in Argument from Evidence	MS-PS2.B MS-PS3.A MS-PS3.B MS-PS3.C	Science: Influence of Science, Engineering, and Technology on Society and the Natural World  Scale, Proportion, and Quantity  Systems and System Models	MP.2