Lab-Aids Correlations for

LOUISIANA STUDENT STANDARDS SCIENCE

MIDDLE SCHOOL LEVEL – GRADES 6-8

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This document is intended to show how the SEPUP Issues and Science *program aligns with the Louisiana Student Standards for Science for the middle grades (6-8).*

ABOUT OUR PROGRAMS

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 and navigate to the program of interest.

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. The Third Edition of the *Issues and Science* program has been completely revised for NGSS and is available in 17 units. SEPUP programs include student books, equipment kits, teacher materials, and online digital content. They are available as full year courses, or as separate units, each taking 3-8 weeks to complete.

Suggested Scope and Sequence for Louisiana

Grade 6	Grade 7	Grade 8
Solar System and Beyond	Land, Water, and Human Interactions	Earth's Resources
Chemistry of Materials*	Body Systems	Geological Processes
Force and Motion	From Cells to Organisms	Reproduction
Waves	Ecology	Evolution
Fields and Interactions	Energy	Chemistry of Materials*
	Weather and Climate	Chemical Reactions

**This is a suggested scope and sequence. Units can be arranged to fit each district's sequence. Chemistry of Materials can be taught in either 6th or 8th grade.*

ABOUT THE LAB-AIDS CITATIONS

The following tables are presented in a Disciplinary Core Idea arrangement – Earth Space Science (ESS), Life Science (LS), Physical Science (PS) and Engineering, Technology and Applications of Science (ETS)

Citations included in the correlation document are as follows:

* indicates where Performance Expectation is assessed
Unit title, Activity Number
The Chemistry of Materials, 14

Performance Expectations	6-MS-PS1-2
Science and Engineering Practices	Planning and Carrying Out Investigations
Crosscutting Concepts	Structure and Function
Disciplinary Core Ideas	MS-PS1.A
Common Core English-Language Arts	RST.6-8.3
Common Core Mathematics	MP.2

***ISSUES AND SCIENCE* GRADE 6 UNITS FOR LOUISIANA**

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
MATTER AND ITS INTERACTIONS					
6-MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.	*Chemistry of Materials:* 2, 6, 7, 12*	Analyzing and Interpreting Data **Developing and Using Models** Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	**MS.PS1A: Structure and Properties of Matter** MS.PS1B: Chemical Reactions	Connections to Engineering, Technology, and Applicationsof Science **Scale, Proportion, and Quantity** Structure and Function	RST.6-8.2 RST.6-8.3 RST.6-8.7
MOTION AND STABILITY: FORCES AND INTERACTIONS					
6-MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	*Force and Motion:* 1, 10, 11, 12*	Asking Questions and Defining Problems **Constructing Explanations and Designing Solutions** Developing and Using Mode Obtaining, Evaluating, and Communicating Information	MS.ETS1A: Defining and Delimiting Engineering Problems **MS.PS2A: Forces and Motion** MS.PS3A: Definitions of Energy MS.PS3C: Relationship Between Energy and Forces	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

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
6-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.	*Force and Motion:* 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 Computational Thinking	MS.ETS1A: Defining and Delimiting Engineering Problems **MS.PS2A: Forces and Motion** MS.PS3A: Definitions of Energy MS.PS3C: Relationship Between Energy and Forces	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
6-MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.	*Fields and Interactions:* 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	**MS.PS2B: Types of Interactions** MS.ETS1B: Developing Possible Solutions	**Cause and Effect** Patterns Systems and System Models	RST.6-8.1 RST.6-8.3 WHST.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
		Planning and Carrying Out Investigations			
6-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.	*Fields and Interactions:* 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.PS2B: Types of Interactions** MS.PS3A: Definitions of Energy MS.PS3C: Relationship Between Energy and Forces MS.ETS1A: Defining and Delimiting Engineering Problems MS.ETS1B: Developing Possible Solutions	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
6-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.	*Fields and Interactions:* 5, 7, 9, 10, 12*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to Nature of Science Constructing Explanations and Designing Solutions	**MS.PS2B: Types of Interactions** MS.PS3A: Definitions of Energy MS.PS3C:	**Cause and Effect** Patterns Systems and System Models	RST.6-8.3 WHST.6-8.1 WHST.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
		Developing and Using Models Engaging in Argument from Evidence **Planning and Carrying Out Investigations**	Relationship Between Energy and Forces MS.ETS1B: Developing Possible Solutions		
ENERGY					
6-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.	*Force and Motion:* 1, 2, 3, 4, 5*	**Analyzing and Interpreting Data** Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	MS.ETS1A: Defining and Delimiting Engineering Problems MS.PS2A: Forces and Motion **MS.PS3A: Definitions of Energy** MS.PS3C: Relationship Between Energy and Forces	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
6-MS-PS3-2: Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	*Fields and Interactions:* 3, 4, 6, 7, 10, 11*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to Nature of Science Constructing Explanations and	MS.ETS1A: Defining and Delimiting Engineering Problems MS.ETS1B: Developing Possible Solutions	Cause and Effect Connections to Nature of Science Scale, Proportion, and Quantity	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

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Designing Solutions **Developing and Using Models** Engaging in Argument from Evidence	MS.ETS1C: Optimizing the Design Solution MS.PS2B: Types of Interactions **MS.PS3A: Definitions of Energy** **MS.PS3C: Relationship Between Energy and Forces**	**Systems and System Models**	MP2
	Force and Motion: 1, 3, 4, 5, 10, 14	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	MS.ETS1A: Defining and Delimiting Engineering Problems MS.PS2A: Forces and Motion **MS.PS3A: Definitions of Energy** **MS.PS3C: Relationship Between Energy and Forces**	Cause and Effect Connections to Engineering, Technology, and Applications of Science	RST.6-8.7
WAVES AND THEIR APPLICATIONS IN TECHNOLOGIES FOR INFORMATION TRANSFER					

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
6-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 and how the frequency and wavelength change the expression of the wave.	*Waves:* 1, 2, 3, 7*	Analyzing and Interpreting Data Developing and Using Models Obtaining, Evaluating, and Communicating Information **Using Mathematics and Computational Thinking**	**MS.PS4A: Wave Properties**	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
6-MS-PS4-2: Develop and use a model to describe that waves are refracted, reflected, absorbed, transmitted, or scattered through various materials.	*Waves:* 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.PS4A: Wave Properties** **MS.PS4B: Electromagnetic Radiation**	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
EARTH'S PLACE IN THE UNIVERSE					

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
6-MS-ESS1-1: Develop and use a model of the Earth-sun-moon system to describe the reoccurring patterns of lunar phases, eclipses of the sun and moon, and seasons.	*Solar System and Beyond:* 2, 3, 4, 5*, 6, 7, 8, 9*	Analyze and Interpret Data Constructing Explanations and Designing Solutions **Developing and Using Models**	**MS.ESS1A: The Universe and its Stars** **MS.ESS1B: Earth and the Solar System**	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to Nature of Science **Patterns** Scale, Proportion, and Quantity Systems and System Models	RST.6-8.2 WHST.6-8.2 SL.8.5 6.RP.A.1
6-MS-ESS1-2: Use a model to describe the role of gravity in the motions within galaxies and the solar system.	*Solar System and Beyond:* 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.ESS1A: The Universe and its Stars** **MS.ESS1B: Earth and the Solar System**	Connections to Engineering, Technology, and Applications of Science Connections to Nature of Science 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
6-MS-ESS1-3: Analyze and interpret data to determine scale properties of objects in the solar system.	*Solar System and Beyond:* 1, 10, 11, 12, 13*	**Analyzing and Interpreting Data** Developing and Using Models Using Mathematics and Computational Thinking	MS.ESS1A: The Universe and its Stars **MS.ESS1B: Earth and the Solar System**	Connections to Engineering, Technology, and Applications of Science **Scale, Proportion, and Quantity** Systems and System Models	WHST.6-8.2 SL.8.4 6.RP.A.1 6.RP.A.3 MP.2 MP.4
EARTH AND HUMAN ACTIVITY					
6-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.	*Earth's Resources:* 2, 4, 6, 13*	Constructing Explanations and Designing Solutions Developing and Using Models **Engaging in Argument from Evidence** Obtaining, Evaluating, and Communicating Information	MS.ESS3A: Natural Resources **MS.ESS3C: Human Impacts on Earth Systems**	**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
FROM MOLECULES TO ORGANISMS: STRUCTURSE AND PROCESSES					

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
6-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.	*From Cells to Organisms:* 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** Using Mathematics and Computational Thinking	**MS.LS1A: Structure and Function** MS.LS1C: Organization for Matter and Energy Flow in Organisms MS.PS3D: Energy in Chemical Processes and Everyday Life	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
6-MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	*From Cells to Organisms:* 6, 7, 8*	Analyzing and Interpreting Data Connections to the Nature of Science Constructing Explanations and Designing Solutions **Developing and Using Models**	**MS.LS1A: Structure and Function**	Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Scale, Proportion, and Quantity	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
		Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations		**Structure and Function** Systems and System Models	
ECOSYSTEMS: INTERACTIONS, ENERGY, AND DYNAMICS					
6-MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	*Ecology:* 5, 6, 9*	**Analyzing and Interpret 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.LS2A: Interdependent Relationships in Ecosystems**	**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.6-8.7 RST.6-8.8 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
6-MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	*Ecology:* 2, 8, 10*	Analyzing and Interpreting Data **Constructing Explanations and Designing Solutions** Developing and Using Models	**MS.LS2A: Interdependent Relationships in Ecosystems**	Cause and Effect Connections to the Nature of Science Energy and Matter	RST.6-8.1 RST.6-8.3 RST.6-8.8 SL.8.4 SL.8.5 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations		**Patterns** Stability and Change Systems and System Models	6.RP.A.1 6.RP.A.3 MP.2 MP.4
6-MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	*Ecology:* 7, 8, 11, 12*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions **Developing and Using Models** Planning and Carrying Out Investigations	**MS.LS2B: Cycle of Matter and Energy Transfer in Ecosystems**	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

***ISSUES AND SCIENCE* GRADE 7 UNITS FOR LOUISIANA**

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
Matter and Its Interactions					
7-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.	*Chemical Reactions:* 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.PS1A: Structure and Properties of Matter** **MS.PS1B: Chemical Reactions**	**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
7-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 removed.	*Chemistry of Materials:* 8, 9, 10*	Constructing Explanations and Designing Solutions **Developing and Using Models** Engaging in Argument from Evidence Planning and Carrying Out Investigations	**MS.PS1A: Structure and Properties of Matter** **MS.PS3A: Definitions of Energy**	**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
7-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.	*Chemical Reactions:* 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.PS1A: Structure and Properties of Matter **MS.PS1B: Chemical Reactions**	**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
ENERGY					
7-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.	*Energy:* 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.PS3A: Definitions of Energy** **MS.PS3.B: Conservation of Energy and Energy Transfer** MS.PS3C: Relationship Between Energy and Forces	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

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
EARTH'S SYSTEMS					
7-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.	*Land, Water, and Human Interactions:* 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.ETS1A: Defining and Delimiting Engineering Problems MS.ESS2A: Earth Materials and Systems **MS.ESS2C: The Roles of Water in Earth's Surface Processes** MS.ESS3C: Human Impacts on Earth Systems MS.PS2A: Forces and Motion	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
7-MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	*Weather and Climate:* 2, 3, 7, 9, 10, 11, 12, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions	MS.ETS1B: Developing Possible Solutions **MS.ESS2C: The Roles of Water in Earth's Surface Processes** **MS.ESS2D: Weather and Climate**	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.7 SL.8.1 SL.8.4 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**		Energy and Matter Patterns Structure and Function System and System Models	
7-MS-ESS2-6: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	*Weather and Climate:* 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 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 Planning and Carrying Out Investigations	**MS.ESS2C: The Roles of Water in Earth's Surface and Processes** **MS.ESS2D: Weather and Climate** MS.ESS3D: Global Climate Change MS.LS4C: Adaptation MS.PS3B: Conservation of Energy and Energy Transfer	Cause and Effect Connections to Engineering, Technology, and Applications of Science Connections to the Nature of Science Energy and Matter Patterns **Systems and System Models**	RST.6-8.3 RST.6-8.7 WHST.6-8.7 SL.8.1 SL.8.4 MP.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
EARTH AND HUMAN ACTIVITY					
7-MS-ESS3-5: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	*Weather and Climate:* 1, 10, 14, 15, 16*	Analyzing and Interpreting Data **Asking Questions and Defining Problems** Connections to the Nature of Science Developing and Using Models Planning and Carrying Out Investigations	**MS.ESS2C: The Roles of Water in Earth's Surface and Processes** **MS.ESS2D: Weather and Climate** MS.ESS3C: Human Impacts on Earth Systems **MS.ESS3D: Global Climate Change**	Connections to the Nature of Science Energy and Matter Scale, Proportion, and Quantity **Stability and Change** Systems and System Models	RST.6-8.7 WHST.6-8.1 SL.8.1 MP.4
FROM MOLECULES TO ORGANISMS: STRUCTURES AND PROCESSES					
7-MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	*From Cells to Organisms*: 10, 14, 15	Analyzing and Interpret Data Constructing Explanations and Designing Solutions **Engaging in Argument from Evidence** Obtaining, Evaluating, and Communicating Information	**MS.LS1A: Structure and Function**	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
		Using Mathematics and Computational Thinking		Patterns Scale, Proportion, and Quantity	
	Body Systems: 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 Developing and Using Models **Engaging in Argument from Evidence** Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking	**MS.LS1A: Structure and Function** MS.PS3D: Energy in Chemical Processes and Everyday Life	Cause and Effect Connections to the Nature of Science Structure and Function **Systems and System** **Models**	RST.6-8.2 RST.6-8.3 RST.6-8.4 RST.6-8.7 RST.6-8.9 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.1 6.SP.B.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
7-MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.	*From Cells to Organisms*: 5, 12, 13*	**Constructing Explanations and Designing Solutions**	MS.LS1A: Structure and Function **MS.LS1C: Organization for Matter and Energy Flow in Organisms** **MS.PS3D: Energy in Chemical Processes and Everyday Life**	**Energy and Matter** Structure and Function	RST.6-8.3
7-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.	*From Cells to Organisms*: 5, 11*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions **Developing and Using Models** Planning and Carrying Out an Investigation	MS.LS1A: Structure and Function **MS.LS1C: Organization for Matter and Energy Flow in Organisms** MS.PS3D: Energy in Chemical Processes and Everyday Life	Energy and Matter	RST.6-8.2 RST.6-8.3 RST.6-8.9
	Body Systems: 5	Constructing Explanations and Designing Solutions **Developing and Using Models**	MS.LS1A: Structure and Function **MS.LS1C: Organization for Matter and Energy Flow in Organisms**	Energy and Matter	RST.6-8.2 RST.6-8.9
ECOSYSTEMS: INTERACTIONS, ENERGY, AND DYNAMICS					

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
7-MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	*Ecology:* 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 Planning and Carrying Out Investigations	**MS.LS2C: Ecosystem Dynamics, Functioning, And Resilience**	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
7-MS-LS2-5: Undertake a design project that assists in maintaining diversity and ecosystem services.	*Ecology:* 2, 4, 5, 15	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science **Constructing Explanations and Designing Solutions**	**MS.ETS1B: Engineering Design: Developing Possible Solutions** **MS.LS2C: Ecosystem Dynamics, Functioning, And Resilience** **MS.LS4D: Biodiversity and Humans**	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

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations Using Mathematics and Computational Thinking			
HEREDITY: INHERITANCE AND VARIATION OF TRAITS					
7-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.	*Reproduction:* 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	**MS.LS1B: Growth and Development of Organisms** **MS.LS3A: Inheritance of Traits** **MS.LS3B: Variation of Traits**	**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
		Planning and Carrying Out Investigations Using Mathematics and Computational Thinking			
BIOLOGICAL EVOLUTION: UNITY AND DIVERSITY					
7-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.	*Evolution:* 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.LS2A: Interdependent Relationships in Ecosystems MS.LS3B: Variation of Traits **MS.LS4B: Natural Selection** MS.LS4C: Adaptation	**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
7-MS-LS4-5: Gather, read, and synthesize information about technologies that have changed the way humans influence the inheritance of desired traits in organisms.	*Evolution:* 14, 15, 16*	Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence **Obtaining, Evaluating, and Communicating Information**	MS.ESS3C: Human Impacts on Earth's Systems MS.LS4A: Evidence of Common Ancestry and Diversity **MS.LS4B: Natural Selection**	**Cause and Effect** Connections to the Nature of Science: Science Addresses Questions About the Natural and Material World Connections to the Nature of Science:	RST.6-8.1 RST.6-8.7 WHST.6-8.2 WHST.6-8.8 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
			MS.LS4C: Adaptation MS.LS4D: Biodiversity and Humans	Scientific Knowledge Assumes an Order and Consistency in Natural Systems Patterns	

***ISSUES AND SCIENCE* GRADE 8 UNITS FOR LOUISIANA**

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
Matter and Its Interactions					
8-MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures.	*Chemistry of Materials:* 2, 6, 7, 12*	Analyzing and Interpreting Data **Developing and Using Models** Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	**MS.PS1A: Structure and Properties of Matter** MS.PS1B: Chemical Reactions	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
8-MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	*Chemistry of Materials:* 1, 2, 3, 4, 5, 11, 12, 13*	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.PS1A: Structure and Properties of Matter** **MS.PS1B: Chemical Reactions**	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

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
8-MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	*Chemical Reactions:* 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 Planning and Carrying Out Investigations	MS.ETS1B: Developing Possible Solutions **MS.ETS1C: Optimizing the Design Solution** MS.PS1A: Structure and Properties of Matter **MS.PS1B: Chemical Reactions** MS.PS3A: Definitions of Energy	**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
ENERGY					
8-MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	*Energy:* 1, 7, 8, 10, 11, 12, 13*	Analyzing and Interpreting Data Connections to the Nature of Science **Constructing Explanations and Designing Solutions** Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations	**MS.ETS1A: Defining and Delimiting Engineering Problems** **MS.ETS1B: Developing Possible Solutions** **MS.PS3A: Definitions of Energy** **MS.PS3B: Conservation of Energy and Energy**	Cause and Effect Connections to the Nature of Science **Energy and Matter** Patterns Scale, Proportion, and Quantity Structure and Function	RST.6-8.1 RST.6-8.3 SL.8.4 WHST.6-8.9 EE.6.A.2 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
			Transfer	Systems and System Models	
8-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 the object.	*Energy:* 2, 3, 4, 5, 6*	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.PS3A: Definitions of Energy **MS.PS3B: Conservation of Energy and Energy Transfer** MS.PS3C: Relationship Between Energy and Forces	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
EARTH'S PLACE IN THE UNIVERSE					
8-MS-ESS1-4: Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is	*Earth's Resources:* 9, 10, 11, 12*	**Constructing Explanations and Designing Solutions** Developing and Using Models Planning and Carrying Out	**MS.ESS1C: The History of Planet Earth**	Patterns **Scale, Proportion, and Quantity** Stability and Change	RST.6-8.3 WHST.6-8.1 WHST.6-8.9

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
used to organize Earth's geologic history.		Investigations Connections to the Nature of Science			
EARTH'S SYSTEMS					
8-MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	*Geological Processes:* 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 Communicating Information Planning and Carrying Out Investigations	MS.ESS1C: The History of Planet Earth **MS.ESS2A: Earth's Materials and Systems** MS.ESS2B: Plate Tectonics and Large-Scale System Interactions MS.ESS2C: The Roles of Water in Earth's Surface Processes MS.ESS3A: Natural Resources MS.ESS3B: Natural Hazards	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** Structure and Function	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
		Using Mathematics and Computational Thinking		Systems and System Models	
8-MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	*Geological Processes:* 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13*	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 Communicating Information Planning and Carrying Out Investigations Using Mathematics and	MS.ESS1C: The History of Planet Earth **MS.ESS2A: Earth's Materials and Systems** MS.ESS2B: Plate Tectonics and Large-Scale System Interactions **MS.ESS2C: The Roles of Water in Earth's Surface Processes** MS.ESS3A: Natural Resources MS.ESS3B: Natural Hazards	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 Structure and Function	RST.6-8.1 RST.6-8.2 RST.6-8.3 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 SL.8.1 6.RP.A.1 6. NS.C.5 7. RP.A.2 MP.4

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Computational Thinking		Systems and System Models	
	Land, Water, and Human Interactions: 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.ETS1A: Defining and Delimiting Engineering Problems MS.ETS1B: Developing Possible Solutions **MS.ESS2A: Earth's Materials and Systems** **MS.ESS2C: The Roles of Water in Earth's Surface Processes** MS.ESS3C: Human Impacts on Earth's Systems MS.LS2A: Interdependent Relationships in Ecosystems MS.LS2C: Ecosystem Dynamics, Functioning,	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

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
			and Resilience		
8-MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and sea floor structures to provide evidence of the past plate motions.	*Geological Processes:* 10, 11, 12, 13, 14*	**Analyze and Interpreting Data** Connections to the Nature of Science Constructing Explanations and Designing Solutions Developing and Using Models Engaging in Argument from Evidence Planning and Carrying Out Investigations Obtaining, Evaluating, and Communicating Information	**MS.ESS1C: The History of Planet Earth** MS.ESS2A: Earth's Materials and Systems **MS.ESS2B: Plate Tectonics and Large-Scale System Interactions** MS.ESS3B: Natural Hazards	Cause and Effect Connections to the Nature of Science **Patterns** Scale, Proportion, and Quantity Stability and Change System and System Models	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
EARTH AND HUMAN ACTIVITY					

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
8-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.	*Geological Processes:* 2, 16*, 17*	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.ESS2A: Earth's Materials and Systems MS.ESS2C: The Roles of Water in Earth's Surface Processes **MS.ESS3A: Natural Resources**	**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
	Earth's Resources: 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	**MS.ESS3A: Natural Resources** MS.ESS3C: Human Impacts on Earth's Systems	**Cause and Effect** Connections to Engineering, Technology, and Applications of Science Connections to the	RST.6-8.1 RST.6-8.3 WHST.6-8.1 WHST.6-8.2 WHST.6-8.9 7.RP.A.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
		Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information		Nature of Science Scale, Proportion, and Quantity Stability and Change Structure and Function	
8-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.	*Geological Processes:* 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 Obtaining, Evaluating, and Communicating Information Using Mathematics and Computational Thinking	MS.ESS1C: The History of Planet Earth MS.ESS2A: Earth's Materials and Systems MS.ESS2C: The Roles of Water in Earth's Surface Processes **MS.ESS3B: Natural Hazards**	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 Structure and Function	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
				Systems and System Models	
8-MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.	*Land, Water, and Human Interactions:* 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 Communicating Information Planning and Carrying Out Investigations	MS.ESS2A: Earth's Materials and Systems MS.ESS2C: The Roles of Water in Earth's Surface Processes **MS.ESS3C: Human Impacts on Earth's Systems** MS.LS2A: Interdependent Relationships in Ecosystems MS.LS2C: Ecosystem Dynamics, Functioning, and Resilience	**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.6-8.1 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
FROM MOLECULES TO ORGANISMS: STRTUCTURES AND PROCESSES					
8-MS-LS1-4: Construct and use argument(s) based on empirical evidence and scientific	*Reproduction:* 10*, 11*	Constructing Explanations and Designing Solutions Developing and Using Models	**MS.LS1B: Growth and Development of Organisms**	**Cause and Effect** Patterns	RI.6.8 RST.6-8.1 RST.6-8.4 WHST.6-8.1

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of survival and successful reproduction of animals and plants respectively.			MS.LS3A: Inheritance of Traits MS.LS3B: Variation of Traits		6.SP.A.2 6.SP.B.4 6.SP.B.5
8-MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	*Reproduction:* 1, 7*	Asking Questions and Defining Problems Obtaining, Evaluating, and Communicating Information	**MS.LS1B: Growth and Development of Organisms** MS.LS3A: Inheritance of Traits	**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
HEREDITY: INHERITANCE AND VARIATION OF TRAITS					
8-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	*Reproduction:* 1, 3, 8, 12, 13*	Analyzing and Interpreting Data Asking Questions and Defining Problems Connections to the Nature of Science Constructing Explanations and Designing Solutions	MS.LS1B: Growth and Development of Organisms **MS.LS3A: Inheritance of Traits** **MS.LS3B: Variation of Traits**	Cause and Effect Connections to the Nature of Science Patterns Scale, Proportion, and Quantity **Structure and**	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
organism.		**Developing and Using Models** Obtaining, Evaluating, and Communicating Information Planning and Carrying Out Investigations		**Function**	
	Evolution: 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.LS2A: Interdependent Relationships in Ecosystems **MS.LS3A: Inheritance of Traits** **MS.LS3B: Variation of Traits** MS.LS4B: Natural Selection MS.LS4C: Adaptation	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
BIOLOGICAL EVOLUTION: UNITY AND DIVERSITY					
8-MS-LS4-1: Analyze and interpret data for patterns in the fossil record that document the existence, diversity,	*Evolution:* 7, 8, 9, 10 11*	**Analyzing and Interpreting Data** Connections to the Nature of Science	MS.ESS1C: The History of Planet Earth MS.LS3B: Variation of Traits	Cause and Effect Connections to Engineering, Technology, and	RST.6-8.3 RST.6-8.7 RST.6-8.9 WHST.6-8.2

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
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.		Constructing Explanations and Designing Solutions Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information	**MS.LS4A: Evidence of Common Ancestry and Diversity** MS.LS4B: Natural Selection MS.LS4C: Adaptation	Applications of Science Connections to the Nature of Science **Patterns**	6.SP.B.5
8-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.	*Evolution:* 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 Communicating Information	MS.ESS1C: The History of Planet Earth MS.LS3B: Variation of Traits **MS.LS4A: Evidence of Common Ancestry and Diversity** MS.LS4B: Natural Selection MS.LS4C: Adaptation	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
8-MS-LS4-3: Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to	*Evolution:* 12, 13*	**Analyzing and Interpreting Data** Constructing Explanations and Designing Solutions Engaging in Argument from Evidence	MS.ESS1C: The History of Planet Earth **MS.LS4A: Evidence of Common Ancestry and Diversity**	Connections to the Nature of Science **Patterns**	RST.6-8.7 6.SP.B.5

Performance Expectation	SEPUP Unit and Activity Number	Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts	Common Core ELA/Math
identify relationships not evident in the fully formed anatomy.					
8-MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations of species over time.	*Evolution:* 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.LS2A: Interdependent Relationships in Ecosystems MS.LS3A: Inheritance of Traits MS.LS3B: Variation of Traits MS.LS4B: Natural Selection **MS.LS4C: Adaptation**	**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