Platte County

HOME OF THE PIRATES

SCIENCE CURRICULUM

EIGHTH GRADE

Board Approval Date: pending
May 2024

8 Science: Chemistry

Overview

Grade: 8

Quarter(s): 1

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8.PS1.B.1	DEVELOP and USE a model to DESCRIBE how the total number of atoms remains the same during a chemical reaction and thus mass is conserved.
6-8.PS1.A.1	DEVELOP models to DESCRIBE the atomic composition of simple molecules and extended structures

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
PS1.B.1 Plan and conduct investigations to separate the components of a mixture/solution by their physical properties (i.e., sorting,filtration, magnets,screening) **PS1.B.2** Conduct an investigation to determine whether the combining of two or more substances resulting substances. **PS1.A.1** Develop models to describe that matter is made of particles too small to be seen **PS1.A2** Measure and graph quantities to provide evidence that regardless of the typeof change that occurs when heating, cooling,or mixing substances,the total weight of matter is conserved	Students who go on to take Chemistry will be engaged with: **9-12.PS1.A.1** Use the organization of the periodic table to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. **9-12.PS1.A.2** Construct and revise an explanation for the products of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. **9-12.PS1.B.2** Refine the design of a chemical system by specifying a change in conditions that would alter the amount of products at equilibrium.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.PS1.A.4	Develop a model that describes changes in particle motion, temperature and state of a pure substance when thermal energy is added or removed.
6-8.PS1.A.3	Gather, analyze and present information to describe that synthetic materials come from natural resources and how they impact society.
6-8.PS1.A.2	Analyze and interpret data on the properties of substances before or after the substances interact to determine if a chemical reaction has occurred.
6-8.PS1.B.2	Construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped

6-8PS1.B.1	Develop and use a model to describe how the total number of atoms remains the same during a chemical reaction and thus mass is conserved.	3	**SCIENCE AND ENGINEERING PRACTICES** **Developing and Using Models** ● Develop a model to predict and/or describe phenomena **DISCIPLINARY CORE IDEAS** **ChemicalReactions** ● Substances react chemically in characteristic ways.In a chemical process, the atoms that makeup the original substances are grouped into different molecules, and these new substances have different properties from those the reactants. ● The total number of each type of atom is conserved,and thus,the mass does not change. **CROSSCUTTING CONCEPTS** **Energy And Matter** ● Matter is conserved because atoms are conserved in physical and chemical processes
6-8.PS1.A1	Develop models to describe the atomic composition of simple molecules and extended structures	3	**SCIENCE AND ENGINEERING PRACTICES** **Developing and Using Models** ● Develop a model to predict and/or describe phenomena. **DISCIPLINARY CORE IDEAS** **Structure and Properties of Matter** ● Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms ● Solids, liquids and gasses may be molecules or they may be extended structures with repeating subunits(e.g.,crystals). **CROSSCUTTING CONCEPTS** **Scale, Proportion,and Quantity** ● Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.
DESE Questions Examples:	To be completed as DESE sample stems are added to Item Specifications.		

"Unwrapped" Content (nouns) (students need to know)	"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)	"Unwrapped" Understanding (students need to understand)
• Model • Atoms • Chemical reaction • Mass • Atomic composition • Simple Molecules • Extended Structures	**Students BUILD or IDENTIFY a simple model of a molecule given basic elements, for example carbon, hydrogen, nitrogen, oxygen.** **Students DESCRIBE how the periodic table is organized (e.g.,metals, nonmetals, atomic mass).** • Students evaluate whether a given model is a simple molecule or extended structure. • Students develop atomic composition models of simple molecules and extended structures that vary in complexity **Students USE models to DESCRIBE that pure substances are made up of a bulk quantity of individual atoms or molecules.**	DISCIPLINARY CORE IDEAS **6-8.PS1.B.1** **Chemical Reactions** • Substances react chemically in characteristic ways.In a chemical process, the atoms that makeup the original substances are grouped into different molecules, and these new substances have different properties from those the reactants. • The total number of each type of atom is conserved,and thus,the mass does not change. **6-8.PS1.A.1** **Structure and Properties of Matter** • Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms • Solids, liquids and gasses may be molecules or they may be extended structures with repeating subunits (e.g.,crystals).

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Chemical reaction • Atomic composition • Simple Molecules • Extended Structure • Atoms	• Model • Mass • Conserved

Assessment

Common Summative Assessment/Demonstration of Understanding
• **Common Unit Assessment to be completed in the 2024-2025 School Year.**
Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and make little to no errors when asked to demonstrate and apply their learning.**
	•
3	**Student consistently shows understanding for most components of the standard(s) with few errors when asked to demonstrate and apply their learning.**
	•
2	**Student can sometimes show understanding for some of the components of the standard(s), yet there are a few aspects that they are still learning and improving upon.**
	•
1	**Student rarely shows understanding for any component of the standard(s) and are still needing significant teaching to apply their learning.**
	•

Additional Information

Professional Resource Suggestions	Instructional Resources

DESE
• MO Performance Level Descriptors
• Item Specifications
• Science Curriculum Hub
	District Provided:
	• Savvas
	  ○ Topic 8
	  ○ Topic 9
	• Gizmos
	  ○ Chemical changes
	  ○ Chemical and physical change
	  ○ Molecule builder
	  ○ Ionic bonds
	Other:
	• MO Leap Blocks

6-8.PS1.B.1

Content Limits/Assessment Boundaries:

- Tasks should avoid the use of atomic masses, balancing equations, or intermolecular forces

Clarification Statement:

- Emphasis on law of conservation of matter and on physical models or drawings, including digital forms that represent atoms.

6-8.PS1.A.1

Content Limits/Assessment Boundaries:

- Tasks should avoid valence electrons,bonding energies,and charge and structure of subatomic particles
- Tasks should avoid complete depictions of all individual atoms in a complex molecule or extended structures. Sample Stems John's teacher challenged his classmates and himself to draw three models:
  - a single atom;
  - a molecule made of two or more of the same atom;

	○ a molecule made of two or more different atoms **<u>Clarification Statement:</u>** ● Emphasis is on developing models of molecules that vary in complexity. Examples of simple molecules could include ammonia and methanol. Examples of extended structures could include sodium chloride or diamonds. Examples of molecular-level models could include drawings, 3D ball-and-stick structures, or computer representations showing different molecules with different types of atoms.

8TH SCIENCE: CELL BIOLOGY AND CELL STRUCTURES

Overview

Grade: 8

Quarter(s): 2

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8 LS1.A.2	DEVELOP and USE a model to DESCRIBE the function of a cell as a whole and ways parts of the cell contribute to that function.
6-8 LS1.C.1	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.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
4.LS1.A.1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction.	Students who go on to take Biology will be engaged with: **9-12.LS1.A.1** Construct a model of how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. **9-12.LS1.B.1** Develop and use models to communicate the role of mitosis, cellular division, and differentiation in producing and maintaining complex organisms. **9-12.LS1.C.1** Use a model to demonstrate how photosynthesis transforms light energy into stored chemical energy.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.LS1.A.1	Provide evidence that organisms (unicellular and multicellular) are made of cells and that a single cell must carry out all of the basic functions of life.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8 LS1.A.2	Develop and use a model to describe the function of a cell as a whole and	3	**Structure and Function** • Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary

	ways parts of the cell contribute to that function.		that controls what enters and leaves the cell.
6-8 LS1.C.1	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.	3	**Organization for Matter and Energy Flow in Organisms** ● Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use.
DESE Questions Examples:	1.		

"Unwrapped" Content (<u>nouns</u>) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
● Model ● Part of the Cell ● Function of a cell ● Scientific Explanation ● Photosynthesis ● Cellular Respiration ● Organisms	**When DEVELOPING and USING a model, students will:** ● Use brief responses and/or models to show how a cell controls what enters and leaves the cell in order to maintain the cell's internal processes (e.g. homeostasis) which need energy. ● Identify the key differences between plant and animal cells based on structure and function (e.g., cell walls and chloroplasts). ● Show the movement of molecules through the cell membrane. ● Describe the purpose of organelles, not how the organelles achieve the purpose (e.g.,cellular	**<u>DISCIPLINARY CORE IDEAS:</u>** **Structure and Function** ● Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. **Organization for Matter and Energy Flowing Organisms** ● Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used

	respiration occurs in the mitochondria, photosynthesis occurs in the chloroplast). **Students construct an explanation; obtain, evaluate, and communicate information; and/or engage in an argument from evidence to show understanding of:** ● The processes of photosynthesis and cellular respiration ● How matter and energy cycle into and out of organisms ● All of the food and most of the oxygen animals use for life processes are the results of energy from the Sun ● Some animals eat plants, algae, and photosynthetic microorganisms, and some animals eat other animals	immediately or stored for growth or later use. **Energy in Chemical Processes and Everyday Life** ● The chemical reaction by which plants produce complex food molecules (sugars) requires an energy input (e.g., from sunlight) to occur. In this reaction, carbon dioxide and water combine to form carbon- based organic molecules and release oxygen.

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
● Cellular Respiration ● scientific explanation ● Photosynthesis ● energy ● cycling of matter ● part of cell ● function of a cell ● organisms	● model ● evidence

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1

Example	Example	Example	Example

Proficiency Scale

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Additional Information

Professional Resource Suggestions	Instructional Resources
DESE • MO Performance Level Descriptors • Item Specifications • Science Curriculum Hub	Savaas: Topics 2 Gizmos: • Cell Structures • Cell Respirations • Cell Energy Cycle • Photosynthesis • Photosynthesis Lab **Other:** • MO Leap Blocks

Unit Designer Notes	**6-8 LS1.A.2**
	Content Limits/Assessment Boundaries:
	• Tasks should not include the following:
	  ○ Cell parts and functions that are not in the clarification statement
	  ○ Biochemical functions (e.g.,enzymes, specific cycles) of cells or cell parts
	  ○ Chemical equations or processes of photosynthesis or cellular respiration
	  ○ Labeling of cellular diagrams or models
	
	Clarification Statement:
	• Emphasis is on the cell functioning as a whole system and the primary role of identified parts of the cell, specifically the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall.
	
	6-8 LS1.C.1
	Content Limits/Assessment Boundaries:
	• Tasks should not include the following:
	  ○ Chemical mechanisms of photosynthesis/cellular respiration (e.g.,light and dark cycles)

	○ Recall of photosynthesis equation/cellular respiration ○ Labeling a diagram/model ● All evidence for arguments must be provided. ● All chemical equations must be provided **<u>ClarificationStatement:</u>** ● Emphasis is on tracing movement of matter and flow of energy

8 Science: Interactions in Ecosystems

Overview

Grade: 8

Quarter(s): 2

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8.LS2.A.2	CONSTRUCT an explanation that PREDICTS the patterns of interactions among and between the biotic and abiotic factors in a given ecosystem.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
LS1.A.1 Comparison Contrast The major organs/organ systems (e.g. support,reproductive, digestive,transport/circulatory,excretory, response)that perform similar functions for animals belonging to different vertebrate classes.Structure and Function	Students who take high school Biology will engage with: **9-12.LS1.A.2** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. **9-12.LS1.A.3** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8. LS2.A.1	Analyze and interpret data to provide evidence for the effects of resource availability on individual Organisms and populations of Organisms in an ecosystem

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8.LS2.A.2	Construct an explanation that predicts the patterns of interactions among and between the biotic and abiotic factors in a given ecosystem.	3	**SCIENCE AND ENGINEERING PRACTICES** **Constructing Explanations and Designing Solutions** • Construct an explanation that includes qualitative and quantitative relationships between variables that predict phenomena. **DISCIPLINARY CORE IDEAS** **Interdependent Relationships in Ecosystems** • Predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may

			become so interdependent that each organism requires the other for survival. Although the species involved in the competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environment, both living and nonliving, are shared. **<u>CROSSCUTTING CONCEPTS</u>** **Patterns** ● Pattern Can Be Used To Identify Cause And Effect relationships.
DESE Questions Examples:	1.		

"Unwrapped" Content (<u>nouns</u>) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
● explanation ● patterns ● interaction ● biotic factors ● abiotic factors ● ecosystem	**CONSTRUCT explanations that include qualitative or quantitative relationships between variables that predict cause and effect relationships in ecosystems.** **ENGAGE in ARGUMENTS given from multiple and valid reliable sources.** **ANALYZE and INTERPRET data to PREDICT the interactions in an ecosystem.** **DESCRIBE how mutualism, commensalism, and parasitism:** ● Affects resource availability and can affect interactions between organisms (e.g. organisms in mutually beneficial interactions can become so dependent upon one another that they cannot survive alone) ● Interactions occur across multiple and different ecosystems	**<u>DISCIPLINARY CORE IDEAS</u>** **Interdependent Relationships in Ecosystems** ● Predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in the competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environment, both living and nonliving, are shared.

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• biotic • abiotic • ecosystem	• patterns • interactions • explanation • predict

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and make little to no errors when asked to demonstrate and apply their learning.** • **To be completed in the 2024-2025 School Year.**
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Additional Information

Professional Resource Suggestions

DESE

- MO Performance Level Descriptors
- Item Specifications
- Science Curriculum Hub

Instructional Resources

District Provided:

- Savvas
  - Topics 1-3 and 6
- Gizmos
  - Coral Reefs 1-Abiotic Factors
  - Coral Reefs 2-Biotic Factors
  - Circulatory Systems
  - Digestive Systems
  - Multiple ones about ecosystems

Other:

- MO Leap Blocks

Unit Designer Notes

Content Limits/Assessment Boundaries:

- Tasks should not include the following:
  - Student understanding of specific animal identification/behavior
  - Analysis of data beyond given data sets
  - Labeling a diagram/model

	● All evidence for arguments must be provided. ● Assessment vocabulary should be limited to predation, competition, and symbiosis **ClarificationStatement:** ● Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.

8 Science: Biology

Overview

Grade: 8

Quarter(s): 3

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8.LS4.C1	INTERPRET graphical representation to SUPPORT explanations of how natural selection may lead to increases and decreases of specific traits in population over time.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
LS3.D.1 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	Students who take high school Biology will engage with: **9-12.LS4.C.2** Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species (2) the emergence of new species over time, (3) the extinction of other species.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.LS4.A.1	Analyze and interpret evidence from the fossil record to infer patterns of environmental change resulting in extinction and changes to life forms throughout the history of Earth.
6-8.LS4.B.2	Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in Organisms.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8.LS4.C1	Interpret graphical representation to support explanations of how natural selection may lead to increases and decreases of	3	**SCIENCE AND ENGINEERING PRACTICE** **Using Mathematics and Computational Thinking** • Use mathematical representations to support scientific conclusions and design solutions. **DISCIPLINARY CORE IDEAS** **Adaptation** • Adaptation by natural selection acting over generations is one important

	specific traits in population over time.		process by which species change overtime in response to changes in environmental conditions. those that do not become less common. Thus, the distribution of traits in a population changes. **<u>CROSSCUTTING CONCEPTS</u>** **Cause And Effect** ● Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability.
DESE Questions Examples:	1. To be added as DESE updates Sample Stems on Item Specifications		

"Unwrapped" Content (<u>nouns</u>) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
Graphical representation Explanations Specific traits Population	**USING math and computational thinking (data or simulations), students IDENTIFY relevant components, including the following:** ● Population changes ● The distribution of specific traits over time ● Environmental conditions over time ● Multiple cause and effect relationships between environmental conditions and natural selection in a population ● Cause(s) of increases or decreases of some traits within a population **ANALYZE and INTERPRET data as evidence to support the following explanations:** ● Through natural selection, traits that better support survival and reproduction are more common in a population than those traits that are less effective.	**<u>DISCIPLINARY CORE IDEAS:</u>** ● Adaptation by natural selection acting over generations is one important process by which species change overtime in response to changes in environmental conditions. those that do not become less common. Thus, the distribution of traits in a population changes.

	• Populations are not always able to adapt and survive because this occurs over generations.	

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Graphical representation • Interpret	• Explanations • Specific traits • Population • Support • Lead

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

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Additional Information

Professional Resource Suggestions	Instructional Resources

DESE
• MO Performance Level Descriptors
• Item Specifications
• Science Curriculum Hub
	District Provided:
	• Savvas
	  ○ Topic 8
	• Gizmos
	  ○ Natural Selection
	  ○ Rainfall and Bird's Beak
	Other:
	• MO Leap Blocks

Unit Designer Notes	**<u>Content Limits/Assessment Boundaries:</u>** ● Tasks should provide students with all needed equations, formulas, and data sets. **<u>ClarificationStatement:</u>** ● Emphasis is on using mathematical models, probability statements, and proportional reasoning, to support explanations of trends in changes to populations over time.

8 Science: Diversity of Living Things

Overview

Grade: 8

Quarter: 3

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8.LS1.B.1	CONSTRUCT an explanation for how characteristic animal behavior as well as specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
3.LS1.B.1 Develop a model to compare and contrast observations on the lifecycle of different plants and animals.	Students who go on to take Biology will be engaged with: **9-12 LS.1.B.1**

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.LS1.B.2	Construct a scientific explanation based on evidence for how environmental and genetic factors influence growth of organisms.
6-8. LS2.A.1	Analyze and interpret data to provide evidence for the effects of resource availability on individual Organisms and populations of Organisms in an ecosystem
6-8.LS2.C.1	Construct an argument supported by empirical evidence that explains how changes to physical or biological components of an ecosystem affect populations.
6-8 LS2.C2	Evaluate the benefits and limitations of differing design solutions for maintaining an ecosystem.

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8.LS1.B.1	Construct an explanation for how characteristic animal behavior as well as specialized plant structures affect the probability of successful reproduction of	3	**SCIENCE AND ENGINEERING PRACTICES** **Engaging in Argument from Evidence** • Use of oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation of a model for a phenomenon or a solution to a problem. **DISCIPLINARY CORE IDEAS:** **Growth and Development of Organisms**

	animals and plants respectively.		• Animals engage in characteristic behaviors that increase the odds of reproduction. • Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features of reproduction. **<u>CROSSCUTTING CONCEPTS</u>** **Cause and Effect** • Phenomena may have more than one cause, and some cause and effect relationships in systems can be described only by using probability.
DESE Questions Examples:	1.		

"Unwrapped" Content (<u>nouns</u>) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
• animal behavior • plant structures • reproduction • animals • plant	**CONSTRUCT an explanation by USING REASONING and ARGUMENTATION to SHOW:** • Many characteristic animal behaviors affect the likelihood of successful reproduction • Many specialized plant structures affect the likelihood of successful reproduction • Sometimes animal behaviors play a role in successful plant reproduction • Reproductive likelihood can be accurately reflected only in terms of probability **SHOW cause and effect relationships between:** • Specialized plant structures and the probability of	**<u>DISCIPLINARY CORE IDEAS:</u>** **Growth and Development of Organisms** • Animals engage in characteristic behaviors that increase the odds of reproduction. • Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features of reproduction.

	successful reproduction plants that have those structures. • Animal behaviors and the probability of successful reproduction of animals that exhibit those behaviors. • Plant reproduction and the animal behaviors related to plant reproduction	

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• animal behavior • plant structures • reproduction • probability • function	• animals • Plants • explanation

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

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Additional Information

Professional Resource Suggestions	Instructional Resources

<table>
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● MO Performance Level Descriptors
● Item Specifications
● Science Curriculum Hub</td><td>District Provided:
● Savvas
○ Topic 1, 4-8
● Gizmos
○ Natural Selection
○ Evolution: Natural and Artificial Selection
○ Rainfall and bird beaks
○ Food Chain
● Plants and Snails
● Genetic Engineering
Other:
● MO Leap Blocks</td></tr>
<tr><td>Unit Designer Notes</td><td colspan="2"><u>Content Limits/Assessment Boundaries:</u>
● Tasks should not include the following:
○ Mathematical computation of equations and/or formulas of probability (qualitative probabilities can be used)
○ Recall of mathematical equations and formulas
○ Natural Selection
○ Symbiotic Relationships
○ Reproductive Organs
○ Plant Reproduction
○ Insect Life Cycles
○ Labeling Diagram/model
● All evidence for arguments must be provided.

<u>ClarificationStatement:</u>
● Examples of animal behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of plant behaviors that affect the probability of plant reproduction could include transferring pollen or seeds; and, creating conditions for seed germination and growth. Examples of plant structures that affect the probability of plant reproduction could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen,and hard shells on nuts that squirrels bury.</td></tr>
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8 Science: Body Systems

Overview

Grade: 8

Quarter: 4

Pacing: 6 weeks

Unit Power Standard(s) Code	Unit Power Standard(s) Description
6-8 LS1.A.4	PRESENT evidence that body systems interact to carry out key body functions, including PROVIDING nutrients, and oxygen to cells, REMOVING carbon dioxide and waste from cells and the body, CONTROLLING body motion/activity and coordination and PROTECTING the body.

Below Grade/Course Connected Standard(s)	Above Grade/Course Connected Standard(s)
5.LS1.A.1 Compare And Contrast The major organs/organ systems (e.g. support, reproductive,digestive, transport/circulatory, excretory, response) that perform similar functions for animals belonging to different vertebrate classes	Students who go on to take high school Biology will be engaged with: **9-12.LS1.A.1** Construct a model of how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. **9-12.LS1.A.2** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Unit Supporting Standards Code	Unit Supporting Standards Description
6-8.LS1.A.1	Provide evidence that organisms (unicellular and multicellular) are made of cells and that a single cell must carry out all of the basic functions of life.
6-8.LS1.A.3	Develop an argument supported by evidence for how multicellular organisms and are organized by varying levels of complexity: cells, tissue, organs, organ system

Unpacked Standard(s)

Power Standard(s) Code	Power Standard(s) Description	DOK(s)	DESE Expectation(s) Unwrapped
6-8 LS1.A.4	Present evidence that body systems interact to carry out key body functions, including providing	3	**SCIENCE AND ENGINEERING PRACTICES** **Engaging in Argument from Evidence** • Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomenon.

	nutrients, and oxygen to cells, removing carbon dioxide and waste from cells and the body, controlling body motion/activity and coordination and protecting the body.		**DISCIPLINARY CORE IDEAS** **Structure and Function** ● In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. **CROSSCUTTING CONCEPTS** **Systems and System Models** ● Systems may interact with other systems; they may have subsystems and be a part of larger complex systems.
DESE Questions Examples:	1.		

"Unwrapped" Content (nouns) (students need to know)	**"Unwrapped" Skills (VERBS) (students need to be able to do & DOK)**	**"Unwrapped" Understanding (students need to understand)**
● Body systems ● Body Functions ● Nutrients ● Oxygen ● Carbon Dioxide ● Body motion/activity ● Coordination	**When ENGAGING in an argument from evidence, students should REASON about the following:** ● Every scale of body function(e.g.,cells, tissues, organs, organ systems) is composed of systems of interacting components. ● A body is a system of specialized organs that interact with each other and their subsystems to carry out the functions necessary for life. **Students should IDENTIFY reasons** ● different organs can work together to carry out complex function (e.g., the heart contains	**DISCIPLINARY CORE IDEAS:** **Structure and Function** ● In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.

	muscle, connective, and epithelial tissues that allow the heart to receive and pump blood)	

New Academic Vocabulary	Scaffolded (Review) Academic Vocabulary
• Coordination • Waste • Body Systems • Body Functions • Nutrients	• Evidence • Interact • Oxygen • Carbon Dioxide • Body motion/activity

Assessment

Common Summative Assessment/Demonstration of Understanding

- **Common Unit Assessment to be completed in the 2024-2025 School Year.**

Links to student example of summative assessments/demonstration of understanding

Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example

Proficiency Scale

4	**Student has mastered understanding of the entire standard(s) and makes little to no errors when asked to demonstrate and apply their learning.** • **To be completed in the 2024-2025 School Year**
3	**Student consistently shows understanding for most components of the standard(s) with few errors when asked to demonstrate and apply their learning.** •
2	**Student can sometimes show understanding for some of the components of the standard(s), yet there are a few aspects that they are still learning and improving upon.** •
1	**Student rarely shows understanding for any component of the standard(s) and are still needing significant teaching to apply their learning.** •

Additional Information

Professional Resource Suggestions	Instructional Resources

DESE
• MO Performance Level Descriptors
• Item Specifications
• Science Curriculum Hub
	District Provided:
	• Savaas
	  ○ Topic 3
	• Gizmos
	  ○ Circulatory System
	  ○ Digestive System
	  ○ Homeostasis
	  ○ Human Homeostasis

	Other: ● MO Leap Blocks
Unit Designer Notes	**Content Limits/Assessment Boundaries:** ● Tasks should not include the following: ○ Recall of parts of body systems (circulatory, excretory, digestive, respiratory, muscular, and nervous systems) ○ Specific nutrients the body requires ○ Mechanical and chemical digestion ○ Labeling a diagram/model ● All evidence for arguments must be provided.