

SCIENCE CURRICULUM

EIGHTH GRADE

Board Approval Date: pending May 2024

8 SCIENCE: CHEMISTRY

Grade: 8 Quarter(s): 1 Pacing: 6 weeks Unit Power Standard(s) Standard(s) Unit Power Standard(s) Description Code 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.P51.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 DEVELOP models to DESCRIBE the atomic composition of simple molecules and extended structures Plan and conduct investigations to separate the components of a mixture/solution by their physical properties (i.e., sorting, filtration, magnets, screening) Above Grade/Course Connected Standard(s) P51.B.2 Students who go on to take Chemistry will be engaged with: 9-12.P51.A.1 Develop models to describe that matter is made of particles too small to be seen evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved 9-12.P51.B.2 Unit Supporting Unit Supporting Standards 9-12.P51.B.2 Refine the design of a chemical system by specifying a change in conditions that would alter the amount of products at equilibrium. 9-12.P51.B.2 Refine the design of a chemical system by specifying a change in conditions that would alter the amount of products at equi	Overview				
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6-8.PS1.B.2 Construct, test, and modify a device that either releases or absorbs thermal energy					
by chemical processes.	6-8.PS1.B.2 Construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.				
Unpacked Standard(s)		U	npacked	Standard(s)	
Power Power	Power	Power			
Standard(s) DOK(s) DESE Expectation(s) Unwrapped	Standard(s)	Standard(s)	DOK(s)	DESE Expectation(s) Unwrapped	
Code Description	Code	Description			

			SCIENCE AND ENGINEERING PRACTICES
			Developing and Using Models
			• Develop a model to predict and/or
			describe phenomena
			DISCIPLINARY CORE IDEAS
	Develop and		ChemicalReactions
	use a model to		 Substances react chemically in
	describe how		characteristic ways. In a chemical process.
	the total		the atoms that makeup the original
	number of		substances are grouped into different
6-8DC1 B 1	atoms remains	3	molecules and these new substances
0-0F 31.D.1	the same	5	have different properties from those the
	during a		reactants
	chemical		 The total number of each type of atom is
	reaction and		 The total number of each type of atom is consonved and thus the mass does not
	thus mass is		conserved, and thus, the mass does not
	conserved.		
			CROSSCUTTING CONCEPTS
			• Matter is conserved because atoms are
			conserved in physical and chemical
			processes
			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
	Develop		of atoms, which combine with one
	models to		another in various ways. Atoms form
	describe the		molecules that range in size from two to
6 9 DC1 A1	atomic composition of	2	thousands of atoms
0-0.F31.A1	simple	5	 Solids, liquids and gasses may be
	molecules and		molecules or they may be extended
	extended		structures with repeating
	structures		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	To be completed	as DESE sample	stems are added to Item Specifications.
Examples:			

"Unwrapped" Content (<u>nouns</u>) (students need to know)	"Unwrapped" Skills (VERBS) (students need to be ab to do & DOK)	e "Unwrapped" Understanding (students need to understand)		
 Model Atoms Chemical reaction Mass Atomic composition Simple Molecules Extended Structures 	Students BUILD or IDENTIFY a simple mod of a molecule given basis elements, for example carbon, hydrogen, nitrogen, oxygen. Students DESCRIBE how the periodic table is organized (e.g.,metals, nonmetals, atomic mass • Students evaluat 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 complexit 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 Vocab	ulary Scaff	olded (Review) Academic Vocabulary		
 Chemical reaction Atomic composition Simple Molecules Extended Structure Atoms 	• N • N • C	1odel 1ass 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		
	_	Proficie	ncy 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 so standard(s), ye	ometimes show understa et there are a few aspect	anding for some of the co s that they are still learn	mponents of the ing and improving upon.		
1	Student rarely needing signif	y shows understanding for licant teaching to apply t	or any component of the heir learning.	standard(s) and are still		
	•					
		Additional	Information			
DESE • <u> </u> • <u>5</u>	 DESE MO Performance Level Descriptors Item Specifications Science Curriculum Hub Gizmos Chemical changes Chemical and physical change Molecule builder Ionic bonds Other: MO Leap Blocks 					
	6-8.PS1.E <u>Content I</u> • Ta in <u>Clarificat</u> • Er dr 6-8.PS1.A <u>Content I</u> • Ta st • Ta m hi	<u>imits/Assessment Boun</u> isks should avoid the use termolecular forces <u>ion Statement:</u> mphasis on law of conser rawings, including digital A.1 <u>imits/Assessment Boun</u> isks should avoid valence ructure of subatomic particles should avoid comple olecule or extended structures classmates and himself o a single atom; o a molecule made of the structure of the structures and the structures of the structures and the structures and the structures of the structures and the structures a	daries: of atomic masses, balance vation of matter and on p forms that represent atom daries: electrons, bonding energe rticles te depictions of all indivic ctures. Sample Stems Joh to draw three models:	ing equations, or hysical models or ms. dual atoms in a complex m's teacher challenged		

\circ a molecule made of two or more different atoms	
 Clarification Statement: 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 	

8TH SCIENCE: CELL BIOLOGY AND CELL STRUCTURES

Overview				
Grade: 8				
Quarter(s): 2				
Pacing: 6 week	S			
Unit Power				
Standard(s)		Unit Pow	er Standard(s) Description	
Code				
6-8 LS1.A.2	DEVELOP and USE a	<u>model</u> to DE	SCRIBE the <u>function of a cell</u> as a whole and ways	
	CONSTRUCT a scient	tific explana	tion based on evidence for the role of	
6-8 LS1.C.1	photosynthesis and c	ellular respi	ration in the cycling of matter and flow of energy	
0 0 10 1.0.1	into and out of organi	sms.		
Below Grade/C	Course Connected Stan	dard(s)	Above Grade/Course Connected Standard(s)	
			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	
4.LS1.A.1			through systems of specialized cells.	
Construct an ar	gument that plants and	d animals	9-12 I S1 B 1	
have internal a	nd external structures f	that	Develop and use models to communicate the	
function to sup	port survival, growth, b	ehavior,	role of mitosis cellular division and	
and plant reproduction.			differentiation in producing and maintaining	
			complex organisms.	
			9-12.LS1.C.1	
			Use a model to demonstrate now photosynthesis	
			energy.	
Unit			chergy.	
Supporting		1 Juli 4 Common	utina Chan danda Daganin tian	
Standards		Unit Suppo	rting Standards Description	
Code				
6-8.I S1.A.1	Provide evidence that	t organisms	(unicellular and multicellular) are made of cells	
0 0.201.71	and that a single cell r	nust carry o	ut all of the basic functions of life.	
	Unp	acked	Standard(s)	
Power	Power Standard(s)			
Standard(s)	Description	DOK(s)	DESE Expectation(s) Unwrapped	
Code				
	Develop and use a		Structure and Function	
6-8151 1 2	model to describe	2	Within cells, special structures are	
0-0 L31.A.Z	the function of a	3	responsible for particular functions, and	
	cell as a whole and		the cell membrane forms the boundary	

	ways parts of the		that contro	ols what enters and leaves the
	cell contribute to		cell.	
	that function.			
	Construct a		Organization for I	Matter and Energy Flow in
	scientific		Organisms	
	evolution based		Diganishis	a (including phytoplanktop)
	explanation based		• Thanks, algo	microorganisms use the operation,
			from light	the make suggers (feed) from
		0		
6-8 LS1.C.1	photosynthesis and	3	carbon dio	xide from the atmosphere and
	cellular respiration		water thro	ugn the process of
	in the cycling of		photosynt	nesis, which also releases
	matter and flow of		oxygen. I	nese sugars can be used
	energy into and out		immediate	ly or stored for growth or later
	of organisms.		use.	
DESE	_			
Questions	1.			
Examples:		(11		
"11	l" Contont (norma)	"Unwrapp	ed" Skills (VERBS)	"Unwrapped" Understanding
Unwrapped (studente	Content (<u>nouns</u>)	(students)	heed to be able to	(students need to
Students	Sheed to know)			understand)
		When DF\	(FLOPING and	DISCIPLINARY CORF
		USINGam	odel. students	IDEAS:
		will:		Structure and Function
		● Use	e brief responses	• Within cells, special
		and/or models to		structures are
		show how a cell		responsible for
		cor	ntrols what enters	particular functions,
		and leaves the cell in		and the cell
		order to maintain		membrane forms the
		the cell's internal		boundary that
		processes (e.g.		controls what enters
 Model 		nor	neostasis) which	and leaves the cell.
 Part of the second secon	the Cell		ntify the key	Organization for Matter and
 Functio 	n of a cell	• Ide diff	ferences hetween	Energy Flowing Organisms
 Scientif 	ic Explanation	pla	nt and animal	Plants, algae
Photosy	nthesis	cel	ls based on	(including
Cellular	Respiration	str	ucture and	phytoplankton), and
• Organis	ims	fun	ction (e.g., cell	many microorganisms
		wa	lls and	use the energy from
		chl	oroplasts).	light to make sugars
		• Sho	ow the movement	(food) from carbon
		ofr	nolecules through	dioxide from the
		the	cell membrane.	atmosphere and
		• De	scribe the	water through the
		pur	pose of	process of
		org	anenes, not now	which also releases
			i of ganelies	ovygen These sugars
			rellular	can be used

	students of explanation evaluate, a information in an argumevidence to understam • Th ph cel • Ho enviou • All mod ani pro- res fro • So pla ph mi	spiration occurs in e mitochondria, otosynthesis curs in the loroplast). construct an on; obtain, and communicate on; and/or engage ment from to show ding of: e processes of otosynthesis and lular respiration ow matter and ergy cycle into and t of organisms of the food and ost of the oxygen imals use for life ocesses are the sults of energy om the Sun me animals eat ants, algae, and otosynthetic croorganisms, and	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.		
	otł	ner animals			
 New Academie Cellular Respiration scientific explanate Photosynthesis energy cycling of matter part of cell function of a cell organisms 	on ion	• model • evidence	view) Academic Vocabulary		
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	
		Proficie	ncy Scale		
4	Student has errors when	mastered understanding asked to demonstrate a	g of the entire standard(s) nd apply their learning.	and makes little to no	
	• lobe	completed in the 2024-	2025 School Year.	nto of the stor doud(s)	
3	with few err	ors when asked to demo	nstrate and apply their le	arning.	
	• Student can	sometimes show unders	tanding for some of the c	omponents of the	
2	standard(s),	yet there are a few aspe	cts that they are still learı	ning and improving upon.	
1	Student rare needing sign	ly shows understanding ificant teaching to apply	for any component of the their learning.	e standard(s) and are still	
	•				
		Additional	Information		
DESE • MC • Iter • Scient	rofessional Resource SuggestionsInstructional ResourcesMO Performance Level Descriptors Item Specifications Science Curriculum HubSavaas: Topics 2Gizmos: • Cell Structures • Cell Respirations • Cell Energy Cycle • Photosynthesis • Photosynthesis LabOther: • MO Leap Blocks				
Unit Design 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)				

• A • A	 Recall of photosynthesis equation/cellular respiration Labeling a diagram/model Il evidence for arguments must be provided. Il chemical equations must be provided
Clarificat	tionStatement:
• E	mphasis is on tracing movement of matter and flow of energy

8 SCIENCE: INTERACTIONS IN ECOSYSTEMS

Overview			
Grade: 8			
Quarter(s): 2			
Pacing: 6 week	s		
Unit Power Standard(s) Code		Unit Pow	er Standard(s) Description
6-8.LS2.A.2	CONSTRUCT an <u>ex</u> and between the <u>bi</u>	<u>planation</u> that <u>otic</u> and <u>abioti</u>	PREDICTS the patterns of <u>interactions</u> among <u>c factors</u> in a given <u>ecosystem</u> .
Below Grade/C LS1.A.1 Comparison Co systems (e.g. su digestive,transp response)that p animals belong classes.Structu Unit Supporting Standards Codo	ontrast The major org port,reproductive, port/circulatory,excr perform similar funct ing to different verte re and Function	gans/organ etory, ions for brate Unit Suppo	Above Grade/Course Connected Standard(s) 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. prting Standards Description
Code 6-8. LS2.A.1	Analyze and interpret data to provide evidence for the effects of resource		
	Un	packed	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	 <u>SCIENCE AND ENGINEERING PRACTICES</u> Constructing Explanations and Designing Solutions Construct an explanation that includes qualitative and quantitative relationships between variables that predict phenomena. <u>DISCIPLINARY CORE IDEAS</u> Interdependent Relationships in Ecosystems Predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually

	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		
DESE Questions 1. Examples:			
"Unwrapped" Content (<u>nouns</u>) (students need to know)	(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	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.	

Nev	v Academi	c Vocabulary	Scaffolded (Review)	Academic Vocabulary
• biotic			patterns	
 abiotic 			 interactions 	
 ecosys 	tem		 explanation 	
			 predict 	
		Asses	sment	
	Common	Summative Assessment	/Demonstration of Unde	rstanding
Comm	on Unit As	sessment to be complete	ed in the 2024-2025 Scho	ool Year.
Links to	student e	xample of summative ass	sessments/demonstratio	n of understanding
				0
Score	· 4	Score 3	Score 2	Score 1
Example		Example	Example	Example
		Proficiei	ncy Scale	
St	udent has	mastered understanding	of the entire standard(s)	and make little to no
4 er	rors when	asked to demonstrate ar	nd apply their learning.	
	To be	completed in the 2024-2	2025 School Year.	
St	udent cons	sistently shows understa	nding for most compone	nts of the standard(s)
3 wi	th few erro	ors when asked to demor	nstrate and apply their le	arning.
	•			
St	udent can	sometimes show unders	tanding for some of the c	omponents of the
2 sta	andard(s),	yet there are a few aspec	ts that they are still learr	ning and improving upon.
C t	•		6	standard(s) and ana still
1 St	udent rare	if shows understanding figures in the section of th	for any component of the their learning	e standard(s) and are still
	•		then learning.	
		Additional	nformation	
	15	Auuitional	mormation	1.5
Professi	onal Resou	urce Suggestions	Instructiona District Drewide de	al Resources
	rformance	Loval Descriptors	District Provided:	
	necification	ns	• Javvas	and 6
Science	e Curriculu	im Hub	 Gizmos 	
	<u>e curricure</u>		 Coral Ree 	fs 1-Abiotic Factors
			 Coral Ree 	fs 2-Biotic Factors
			 Circulator 	ry Systems
			 Digestive 	Systems
			• Multiple o	ones about ecosystems
			Other:	
			MO Leap Blocks	
	Content	Limits/Assessment Pour	ndaries:	
		Tasks should not include t	he following.	
Unit Designer		 Student understar 	nding of specific animal ide	entification/behavior
Notes		 Analysis of data be 	eyond given data sets	
		• Labeling a diagram	n/model	

Assessment vocabulary should be limited symbiosis	to predation, competition, and
ClarificationStatement: Emphasis is on predicting consistent patter ecosystems in terms of the relationships a abiotic components of ecosystems. Example	erns of interactions in different among and between organisms and ples of types of interactions could

8 SCIENCE: BIOLOGY

Overview			
Grade: 8			
Quarter(s): 3			
Pacing: 6 week	S		
Unit Power Standard(s) Code		Unit Power	Standard(s) Description
6-8.LS4.C1	INTERPRET <u>grap</u> selection may lea over time.	ohical representa ad to increases ar	<u>tion</u> to SUPPORT <u>explanations</u> of how natural nd decreases of <u>specific traits</u> in <u>population</u>
Below Grade/C	Course Connected	Standard(s)	Above Grade/Course Connected Standard(s)
LS3.D.1 Make a claim at	pout the merit of a	solution to a	Students who take high school Biology will engage with: 9-12.LS4.C.2 Evaluate the evidence supporting claims that
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.		nment changes Is that live	 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 Support	ing Standards Description
6-8.LS4.A.1	Analyze and inte environmental cl throughout the h	rpret evidence fr nange resulting ir iistory of Earth.	om the fossil record to infer patterns of extinction and changes to life forms
6-8.LS4.B.2	Gather and synth the way humans	nesize informatio influence the inh	n about the technologies that have changed eritance of desired traits in Organisms.
	Un	packed S	tandard(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	3	SCIENCE AND ENGINEERING PRACTICE Using Mathematics and Computational Thinking • Use mathematical representations to support scientific conclusions and design solutions. DISCIPLINARY CORE IDEAS Adaptation
	increases and decreases of		 Adaptation by natural selection acting over generations is one important

	specific traits		process	by which species change
	in population		overtime	in response to changes in
	over time		environr	nental conditions those that
	over time.		do not be	ecome less common Thus
			the distr	ibution of traits in a
			nenulati	
				C CONCEPTS
			CRUSSCUTTIN	<u>G CONCEPTS</u>
			Phenom	ena may have more than one
			cause, ar	id some cause and effect
			relations	alusing and ability
DEAE			describe	d using probability.
DESE Questions Examples:	1. To be add	led as DESE upda	ites Sample Stems	on Item Specifications
(11 12)	~ · · / ``	"Unwrapped"	Skills (VERBS)	"Unwrapped"
"Unwrapped" (Content (<u>nouns</u>)	(students need	to be able to do	Understanding (students
(students h	eed to know)	& D	OK)	need to understand)
Graphic represe Explana Specific Populat	cal intation ations traits troi	USING math ar computational or simulations), IDENTIFY relev components, in following: Populat The dist specific Environ condition Multiple effect releven condition selection populati Cause(s decreas traits wi populati ANALYZE and I data as evidence the following ex Through selection better s and repu more con populati	nd thinking (data , students vant cluding the ion changes ribution of traits over time mental ons over time e cause and elationships n environmental ons and natural n in a ion) of increases or es of some ithin a ion NTERPRET te to support xplanations: n natural n, traits that upport survival roduction are mmon in a ion than those at are less e.	DISCIPLINARY CORE IDEAS: • 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.

		 Population Population	lations are not ys able to adapt urvive because occurs over rations.	
• Gr • Int	New Academ aphical repres	ic Vocabulary	Scaffolded (Revie Explanation Specific trai Population Support Lead	w) Academic Vocabulary Is ts
• Co Links	Common ommon Unit A to student ex	Asses Summative Assessmen ssessment to be compl ample of summative as	t/Demonstration of Un eted in the 2024-2025 ssessments/demonstrat	derstanding School Year. tion of understanding
Sc Example	core 4	Score 3 Example	Score 2 Example	Score 1 Example
		Proficie	ncy Scale	
4	Student has no errors w • To b	mastered understandi hen asked to demonstr e completed in the 202	ing of the entire standa ate and apply their lear 4-2025 School Year.	rd(s) and makes little to ning.
3	Student con with few err	isistently shows unders rors when asked to den	standing for most comp nonstrate and apply the	oonents of the standard(s) eir learning.
2	Student can standard(s), upon.	sometimes show unde yet there are a few asp	erstanding for some of t pects that they are still	he components of the learning and improving
1	Student rare still needing	ely shows understanding significant teaching to	ng for any component o apply their learning.	f the standard(s) and are
		Additional	Information	
Prof DESE • <u>M(</u> • <u>Ite</u> • <u>Sci</u>	<u>O Performanc</u> <u>o Performanc</u> <u>om Specificatic</u> <u>ience Curricul</u>	e Level Descriptors ons um Hub	District Provided: • Savvas • Topic • Gizmos • Natu • Rainf Other: • MO Leap Blo	all and Bird's Beak

	 Content Limits/Assessment Boundaries: Tasks should provide students with all needed equations, formulas, and
Unit Designer	data sets.
Notes	ClarificationStatement:
	 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 week	S		
Unit Power Standard(s) Code		Unit Power	Standard(s) Description
6-8.LS1.B.1	CONSTRUCT an <u>ex</u> specialized <u>plant str</u> <u>animals</u> and <u>plants</u> r	<u>planation</u> for h <u>uctures</u> affect respectively.	now characteristic <u>animal behavior</u> as well as the probability of <u>successful reproduction</u> of
Below Grade/C	Course Connected Sta	andard(s)	Above Grade/Course Connected Standard(s)
3.LS1.B.1 Develop a mode observations of and animals.	el to compare and coi n the lifecycle of diffe	ntrast rent plants	Students who go on to take Biology will be engaged with: 9-12 LS.1.B.1
Unit Supporting Standards Code		Unit Support	ing Standards Description
6-8.LS1.B.2	Construct a scientif genetic factors influ	c explanation ence growth c	based on evidence for how environmental and of organisms.
6-8. LS2.A.1	Analyze and interpr availability on indivi ecosystem	et data to pro dual Organisr	vide evidence for the effects of resource ns and populations of Organisms in an
6-8.LS2.C.1	Construct an argum changes to physical populations.	ent supported or biological c	d by empirical evidence that explains how components of an ecosystem affect
6-8 LS2.C2	Evaluate the benefit maintaining an ecos	ts and limitation ystem.	ons of differing design solutions for
	Unp	acked S	tandard(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	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.
	reproduction of		Growth and Development of Organisms

animals and plants respectively.	 Ani beh rep Pla son beh rep CROSSCU Cause and Phe cau rela des 	mals engage in characteristic naviors that increase the odds of roduction. Ints reproduce in a variety of ways, metimes depending on animal navior and specialized features of roduction. TTING CONCEPTS Effect enomena may have more than one ise, and some cause and effect ationships in systems can be cribed only by using probability.
DESE Questions 1. Examples:		
"Unwrapped" Content (<u>nouns</u>) (students need to know)	"Unwrapped" Skills (VERBS) (students need to be abl do & DOK)	"Unwrapped" e to Understanding (students need to understand)
 animal behavior plant structures reproduction animals plant 	CONSTRUCT an explanation by USING REASONING and ARGUMENTATION to SHOW: • Many characteriss animal behaviors affect the likeliho of successful reproduction • Many specialized plant structures affect the likeliho of successful reproduction • Sometimes anima behaviors play a r in successful plan reproduction • Reproductive likelihood can be accurately reflect only in terms of probability SHOW cause and effect relationships between: • Specialized plant structures and th probability of	e e

	suc rep tha stru • Ani anc of s rep ani tho • Pla anc beh pla	cessful roduction plants t have those uctures. mal behaviors I the probability uccessful roduction of mals that exhibit se behaviors. nt reproduction I the animal naviors related to nt reproduction	
New Academ	ic Vocabulary	Scaffolded (Review) Academic Vocabulary
 animal behavior plant structures reproduction probability function 		animalsPlantsexplanation	
	Asses	sment	
Common	Summative Assessment	/Demonstration of Und	erstanding
Common Unit A	ssessment to be comple	ted in the 2024-2025 So	chool Year.
Links to student ex	ample of summative ass	essments/demonstration	on of understanding
Score 4	Score 3	Score 2	Score 1
Example	Example	Example	Example
Start at her	Proficier	ncy Scale	
4 no errors w • To b	hen asked to demonstra e completed in the 2024	te and apply their learn -2025 School Year.	ils) and makes little to ing.
3 Student cor with few er	nsistently shows underst rors when asked to demo	anding for most compo onstrate and apply their	nents of the standard(s) r 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.			
Student rar 1 still needing	ely shows understanding significant teaching to	g for any component of apply their learning.	the standard(s) and are
•			
	Additional	nformation	

DESE	D	District Provided:
MO Per	formance Level Descriptors	Savvas
• Item Sp	<u>ecifications</u>	 Topic 1, 4-8
<u>Science</u>	Curriculum Hub	
		Gizmos
		 Natural Selection
		 Evolution: Natural and
		Artificial Selection
		 Rainfall and bird beaks
		 Food Chain
		Plants and Snails
		Genetic Engineering
	C	Other:
		MO Leap Blocks
	Content Limits/Assessment Bound	<u>daries:</u>
	 Tasks should not include the 	e following:
	 Mathematical comp 	outation of equations and/or formulas of
	probability (qualitat	tive probabilities can be used)
	 Recall of mathemati 	ical equations and formulas
	 Natural Selection 	
	 Symbiotic Relations 	ships
	 Reproductive Orgar 	ns
	 Plant Reproduction 	I
	 Insect Life Cycles 	
	 Labeling Diagram/m 	nodel
Unit Designer	• All evidence for arguments	must be provided.
Notes		
	ClarificationStatement:	
	 Examples of animal behavior 	ors that affect the probability of animal
	reproduction could include	nest building to protect young from cold,
	herding of animals to protee	ct young from predators, and vocalization of
	animals and colorful plumage	ge to attract mates for breeding. Examples of
	plant behaviors that affect t	the probability of plant reproduction could
	include transferring pollen o	or seeds; and, creating conditions for seed
	germination and growth. Ex	camples of plant structures that affect the
	probability of plant reprodu	uction could include bright flowers attracting
	butterflies that transfer pol	llen, flower nectar and odors that attract
	insects that transfer pollen,	,and hard shells on nuts that squirrels bury.

8 SCIENCE: BODY SYSTEMS

Overview			
Grade: 8			
Quarter: 4			
Pacing: 6 week	(S		
Unit Power Standard(s) Code		Unit Power	Standard(s) Description
6-8 LS1.A.4	PRESENT <u>evidence</u> that <u>body systems</u> interact to carry out key <u>body functions</u> , including PROVIDING <u>nutrients</u> , and <u>oxygen</u> to cells, REMOVING <u>carbon</u> <u>dioxide</u> and waste from cells and the body, CONTROLLING <u>body</u> motion/activity and coordination and PROTECTING the body.		
Below Grade/C	Course Connected St	andard(s)	Above Grade/Course Connected Standard(s)
5.LS1.A.1 Compare And C systems (e.g. su transport/circu perform similar to different ver	Contrast The major of pport, reproductive, latory, excretory, res functions for animal tebrate classes	rgans/organ digestive, ponse) that s belonging Unit Support	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.
Standards Code		onit Support	
6-8.LS1.A.1	Provide evidence th and that a single cel	lat organisms I must carry oi	unicellular and multicellular) are made of cells ut all of the basic functions of life.
6-8.LS1.A.3	Develop an argume and are organized b system	nt supported k vy varying leve	by evidence for how multicellular organisms Is of complexity: cells, tissue, organs, organ
	Unp	acked S	tandard(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	DISCIPLINARY	CORE IDEAS
	oxygen to cells,	Structure and F	unction
	removing carbon	 In multi 	cellular organisms, the body
	dioxide and waste	is a syste	em of multiple interacting
	from cells and the	subsyste	ems. These subsystems are
	hody controlling	groups	of cells that work together to
	body, controlling	form tice	sues and organs that are
	motion/activity	specializ	and for particular body
	and coordination	specializ	
	and coordination	Tunction	5.
	and protecting		
	the body.		GCONCEPTS
		Systems and Sy	stem Models
		Systems	may interact with other
		systems	; they may have subsystems
		and be a	part of larger complex
		systems	
DESE			
Questions	1.		
Examples:			
<i>"</i>		"Unwrapped" Skills (VERBS)	"Unwrapped"
"Unwrapped"	" Content (<u>nouns</u>)	(students need to be able to	Understanding (students
(students	need to know)	do 6 DOK	need to understand)
		& DOK)	
		argument from evidence	
		students should REASON	
		about the following:	
		 Every scale of body 	
		 Every scale of body function(e.g.,cells, 	
		 Every scale of body function(e.g.,cells, tissues, organs, 	DISCIPLINARY CORE
		 Every scale of body function(e.g.,cells, tissues, organs, organ systems) is 	DISCIPLINARY CORE
		 Every scale of body function(e.g.,cells, tissues, organs, organ systems) is composed of 	DISCIPLINARY CORE IDEAS: Structure and Function
		 Every scale of body function(e.g.,cells, tissues, organs, organ systems) is composed of systems of 	DISCIPLINARY CORE IDEAS: Structure and Function In multicellular
● Body sy	vstems	• Every scale of body function(e.g.,cells, tissues, organs, organ systems) is composed of systems of interacting	DISCIPLINARY CORE IDEAS: Structure and Function In multicellular organisms, the body
 Body sy Body Fu 	vstems unctions	 Every scale of body function(e.g.,cells, tissues, organs, organ systems) is composed of systems of interacting components. 	DISCIPLINARY CORE IDEAS: Structure and Function In multicellular organisms, the body is a system of multiple interacting
 Body sy Body Fu Nutrier 	vstems unctions its	 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 	DISCIPLINARY CORE IDEAS: Structure and Function In multicellular organisms, the body is a system of multiple interacting subsystems. These
 Body sy Body Fu Nutrier Oxyger 	vstems unctions nts	 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 	DISCIPLINARY CORE IDEAS: Structure and Function In multicellular organisms, the body is a system of multiple interacting subsystems. These
 Body sy Body Fu Nutrier Oxyger Carbon 	vstems unctions hts Dioxide	 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 	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
 Body sy Body Fu Nutrier Oxyger Carbon Body m 	vstems unctions hts Dioxide otion/activity	 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 	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
 Body sy Body Fu Nutrier Oxyger Carbon Body m Coordin 	vstems unctions nts Dioxide otion/activity nation	 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 	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
 Body sy Body Fu Nutrier Oxyger Carbon Body m Coordin 	vstems unctions hts Dioxide otion/activity nation	 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 	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
 Body sy Body Fu Nutrier Oxyger Carbon Body m Coordin 	vstems unctions hts Dioxide otion/activity hation	 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. 	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
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 Body sy Body Fu Nutrier Oxyger Carbon Body m Coordin 	vstems unctions hts Dioxide otion/activity hation	 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 	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.
 Body sy Body Fu Nutrier Oxyger Carbon Body m Coordin 	vstems unctions hts Dioxide otion/activity nation	 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 	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.
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		mus	scle, connective,		
		and	epithelial tissues		
		tha	that allow the heart		
to			eceive and pump		
		bloo	od)		
New Academic Vocabulary Scaffolded (Review) Academic Vocabulary					
• Co	ordination		 Evidence 		
Waste			Interact		
Body Systems		Oxygen			
 Body Functions 			Carbon Dioxide		
• Ni	utrients		 Body motion 	/activity	
Assessment					
Common Summative Assessment/Demonstration of Understanding					
• Co	ommon Unit A	ssessment to be comple	ted in the 2024-2025 S	chool Year.	
Links to student example of summative assessments/demonstration of understanding					
So	core 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				
	To be completed in the 2024 2025 School Veer				
	To be completed in the 2024-2025 School Year				
	Student consistently shows understanding for most components of the standard(s)				
3	with few errors when asked to demonstrate and apply their learning.				
	•				
	Student can	sometimes show under	standing for some of th	e components of the	
	standard(s), yet there are a few aspects that they are still learning and improving				
2	upon.				
	•				
	the standard(s) and are				
1	still needing significant teaching to apply their learning.				
	•				
	Additional Information				
Prot	fessional Reso	ource Suggestions	Instructio	nal Resources	
DESE			District Provided:		
MO Performance Level Descriptors					
Item Specifications		 Savaas 			
Science Curriculum Hub		• Topic 3			
			• Gizmos		
			 Circulatory System 		
			 Digestive System 		
		 Homeostasis 			
				n Homeostasis	

	Other:
	<u>MO Leap Blocks</u>
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.