



This document includes the following:

- LEAP 2025 Science Assessments Support Key Shifts in Science Instruction
- Achievement-Level Definitions
- Achievement-Level Descriptors

## LEAP 2025 Science Assessments Support Key Shifts in Science Instruction

The operational test will assess a student's understanding of the grade 8 LSS for Science reflecting the multiple dimensions of the standards.

#### Shift: Apply content knowledge and skills (Disciplinary Core Idea, DCI)

In the classroom, students develop skills and content knowledge reflected in the Performance Expectations (PE) and detailed in the Disciplinary Core Ideas (DCI), the key skills and knowledge students are expected to master by the end of the course.

On the test, students answer questions which require content knowledge and skills aligned to PE bundles (groupings of like PEs) and the corresponding DCIs.

#### Shift: Investigate, evaluate, and reason scientifically (Science and Engineering Practice, SEP)

In the classroom, students do more than learn about science: they "do" science. Simply having content knowledge and scientific skills are not enough; students must investigate and apply content knowledge to scientific phenomena. Phenomena are real world observations that can be explained through scientific knowledge and reasoning (e.g., water droplets form on the outside of a water glass, plants tend to grow toward their light source, different layers of rock can be seen on the side of the road). Science instruction must integrate the practices, or behaviors, of scientists and engineers as students investigate real-world phenomena and design solutions to problems.

**On the test**, students do more than answer recall questions about science; they apply the practices, or behaviors, of scientists and engineers as students investigate each real-world phenomenon and design solutions to problems.

#### Shift: Connect ideas across disciplines (Crosscutting Concept, CCC)

In the classroom, students develop a coherent and scientifically-based view of the world, they must make connections across the domains of science (life science, physical science, earth and space science, environmental science, and engineering, technology, and applications of science). These connections are identified as crosscutting concepts (CCC).

**On the test**, sets of questions assess student application of knowledge across the domains of science for a comprehensive picture of student readiness for their next grade or course in science.

## **Achievement-Level Definitions**

Achievement-level definitions briefly describe the expectations for student performance at each of Louisiana's five achievement levels. The achievement levels are part of Louisiana's cohesive assessment system and indicate a student's ability to demonstrate proficiency on the Louisiana student standards defined for a specific course.

The following list identifies the achievement-level definitions for the LEAP 2025 assessment program.





- Advanced: Students performing at this level have exceeded college and career readiness expectations and are well prepared for the next level of studies in this content area.
- Mastery: Students performing at this level have met college and career readiness expectations and are prepared for the next level of studies in this content area.
- **Basic:** Students performing at this level have **nearly met** college and career readiness expectations and may need additional support to be fully prepared for the next level of studies in this content area.
- Approaching Basic: Students performing at this level have partially met college and career readiness expectations and will need much support to be prepared for the next level of studies in this content area.
- Unsatisfactory: Students performing at this level have not yet met the college and career readiness expectations and will need extensive support to be prepared for the next level of studies in this content area

## **Achievement-Level Descriptors**

Achievement-level descriptors (ALDs) are content specific and describe the knowledge, skills, and processes that students typically demonstrate at each achievement level. The Achievement-Level Descriptors Table, shown below, is color-coded to highlight the key shifts in science instruction built into the LEAP 2025 science assessments. The codes are: **SEP = blue; DCI = orange; CCC = green** 

Science and Engineering Practices (SEP) are the practices that scientists and engineers use when investigating real world phenomena and designing solutions to problems. There are eight science and engineering practices that apply to all grade levels and content areas.

- 1. Asking questions (science) and defining problems (engineering)
- 2. Developing and using models
- 3. Planning and carrying out investigations
- 4. Analyzing and interpreting data
- 5. Using mathematical and computational thinking
- 6. Constructing explanations (science) and designing solutions (engineering)
- 7. Engaging in argument with evidence
- 8. Obtaining, evaluating, and communicating information

**Crosscutting Concepts (CCC)** are common themes that have application across all disciplines of science and allow students to connect learning within and across grade levels or content areas. The seven crosscutting concepts apply to all grade levels and content areas.

- 1. Patterns (PAT)
- 2. Cause and effect (C/E)
- 3. Scale, proportion, and quantity (SPQ)
- 4. Systems and models (SYS)
- 5. Energy and matter (E/M)
- 6. Structure and function (S/F)
- 7. Stability and change (S/C)





Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
Investigate					
8-MS-PS1-3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. CCC: S/F SEP: 8	Use information to construct an explanation about how synthetic materials come from natural resources and impact society.	Use information to describe that synthetic materials come from natural resources and their impact on society.	Use information to describe synthetic materials that come from natural resources.	Identify synthetic materials that come from natural resources.	
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. CCC: E/M SEP: 6	Design a project to construct, test, and/or modify a device that either releases or absorbs thermal energy by chemical processes.	Evaluate a design project to construct, test, and/or modify a device that either releases or absorbs thermal energy by chemical processes.	Identify a design project to construct, test, and/or modify a device that either releases or absorbs thermal energy by chemical processes.	Identify variables in a design project to construct, test, and/or modify a device that either releases or absorbs thermal energy by chemical processes.	
8-MS-PS3-3 Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. CCC: E/M SEP: 6	Apply scientific ideas to design, construct, and/or test a device that either minimizes or maximizes thermal energy transfer.	Apply scientific ideas to evaluate a device that either minimizes or maximizes thermal energy transfer.	Apply scientific ideas to describe a device that either minimizes or maximizes thermal energy transfer.	Apply scientific ideas to identify a device that either minimizes or maximizes thermal energy transfer.	
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. CCC: PAT SEP: 4	Use patterns found in data on natural hazards to construct claims about future catastrophic events and inform the development of technologies to mitigate their effects.	Analyze and interpret patterns in data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	Analyze and interpret patterns in qualitative data on natural hazards to forecast future catastrophic events and/or inform the development of technologies to mitigate their effects.	Identify patterns in qualitative data on natural hazards to forecast future catastrophic events or inform the development of technologies to mitigate their effects.	



#### Louisiana Believes



Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic		
8-MS-ESS3-3 Apply scientific	Apply scientific ideas to	Apply scientific ideas to	Apply scientific ideas to	Apply scientific ideas to		
principles to design a method	design, construct, and/or test	evaluate a method for	describe a method for	identify a method for		
for monitoring and	a method for monitoring and	monitoring and minimizing	monitoring and minimizing	monitoring and minimizing		
minimizing human impact on	minimizing human impact on	human impact on the	human impact on the	human impact on the		
the environment.	the environment.	environment.	environment.	environment.		
CCC: C/E						
SEP: 6						
8-MS-LS1-5 Construct a	Evaluate a scientific	Construct a scientific	Support a scientific	Identify a scientific		
scientific explanation based	explanation based on	explanation based on	explanation for how	explanation based on		
on evidence for how	evidence for how	evidence for how	environmental and genetic	evidence for how		
environmental and genetic	environmental and genetic	environmental and genetic	factors influence the growth	environmental and genetic		
factors influence the growth	factors influence the growth	factors influence the growth	of organisms.	factors influence the growth		
of organisms.	of organisms.	of organisms.		of organisms.		
CCC: C/E						
SEP: 6						
		Evaluate				
8-MS-PS3-5 Construct, use,	Evaluate and defend	Construct and use arguments	Describe an observation	Identify an observation to		
and present arguments to	arguments to support the	to support the claim that	based on evidence to support	support the claim that when		
support the claim that when	claim that when the kinetic	when the kinetic energy of an	the claim that when the	the kinetic energy of an		
the kinetic energy of an	energy of an object changes,	object changes, energy is	kinetic energy of an object	object changes, some other		
object changes, energy is	energy is transferred to or	transferred to or from the	changes, energy is	change in energy will occur at		
transferred to or from the	from the object.	object.	transferred to or from the	the same time.		
object.			object.			
CCC: E/M						
SEP: 7						
8-MS-ESS2-3 Analyze and	Use data on the distribution	Analyze and interpret data	Analyze and interpret	Identify patterns in the		
interpret data on the	of fossils and rocks,	on the distribution of fossils	qualitative data on the	distribution of fossils and		
distribution of fossils and	continental shapes, and sea	and rocks, continental	distribution of fossils and	rocks, continental shapes, or		
rocks, continental shapes,	floor structures to construct	shapes, and sea floor	rocks, continental shapes,	sea floor structures to		
and sea floor structures to	explanations about past plate	structures to provide	and sea floor structures to	provide evidence of the past		
provide evidence of the past	motions.	evidence of the past plate	provide evidence of the past	plate motions.		
plate motions.		motions.	plate motions.			
CCC: PAT						
SEP: 4						





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Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
8-MS-LS1-4 Construct and use argument(s) based on empirical evidence and scientific 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. CCC: C/E SEP: 7	Evaluate argument(s) based on empirical evidence and scientific 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.	Construct and use argument(s) based on empirical evidence and scientific 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.	Describe an observation based on evidence and scientific 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.	Identify an observation to support an explanation that characteristic animal behaviors or specialized plant structures affect the probability of survival and successful reproduction of animals and plants respectively.
8-MS-LS4-1 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. CCC: PAT SEP: 4	Use data to construct explanations about patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	Analyze and interpret qualitative data for patterns in the fossil record that document the existence, diversity, extinction, and/or change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.	Identify qualitative data that describe patterns in the fossil record that document the existence, diversity, extinction, or change of life forms throughout the history of life on Earth.
8-MS-LS4-3 Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy. CCC: PAT SEP: 4	Analyze and interpret multiple displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to construct explanations about relationships not evident in the fully formed anatomy.	Analyze multiple displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	Analyze a display of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	Identify patterns in pictorial data that compare the similarities in the embryological development between species to identify relationships not evident in the fully formed anatomy.



#### Louisiana Believes



Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
8-MS-LS4-6 Use	Use mathematical	Use mathematical	Analyze graphical	Use simple mathematical	
mathematical	representations to construct	representations to support	representations of	representations to identify	
representations to support	explanations of how natural	explanations of how natural	mathematical	relationships of how natural	
explanations of how natural	selection may lead to	selection may lead to	relationships of how natural	selection may lead to	
selection may lead to	increases and decreases of	increases and decreases of	selection may lead to	increases and decreases of a	
increases and decreases of	specific traits in populations	specific traits in populations	increases and decreases of	trait in a population of a	
specific traits in populations	of species over time.	of species over time.	specific traits in populations	species over time.	
of species over time.			of species over time.		
CCC: C/E					
SEP: 5					
		Reason Scientifically			
8-MS-PS1-1 Develop models	Develop models to construct	Develop models to describe	Use a model to describe the	Use a model to identify the	
to describe the atomic	explanations about the	the atomic composition of	atomic composition of simple	atomic composition of simple	
composition of simple	atomic composition of simple	simple molecules and	molecules and/or extended	molecules and/or extended	
molecules and extended	molecules and extended	extended structures.	structures.	structures.	
structures.	structures.				
CCC: SPQ					
SEP: 2					
8-MS-ESS1-4 Construct a	Evaluate a scientific	Construct a scientific	Support a scientific	Identify a scientific	
scientific explanation based	explanation based on	explanation based on	explanation with evidence	explanation based on	
on evidence from rock strata	evidence from rock strata for	evidence from rock strata for	from rock strata for how the	evidence from rock strata for	
for how the geologic time	how the geologic time scale	how the geologic time scale	geologic time scale is used to	how the geologic time scale	
scale is used to organize	is used to organize Earth's	is used to organize Earth's	organize Earth's geologic	is used to organize Earth's	
Earth's geologic history.	geologic history.	geologic history.	history.	geologic history.	
CCC: SPQ					
SEP: 6					
8-MS-ESS2-1 Develop a	Develop models to construct	Develop models to describe	Use a model to describe the	Use a model to identify the	
model to describe the cycling	explanations about the	the cycling of Earth's	cycling of Earth's materials	cycling of Earth's materials	
of Earth's materials and the	cycling of Earth's materials	materials and the flow of	and the flow of energy that	and the flow of energy that	
flow of energy that drives	and the flow of energy that	energy that drives this	drives this process over time.	drives this process over time.	
this process.	drives this process over time.	process over time.			
CCC: S/C					
SEP: 2					





Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic	
8-MS-ESS2-2 Construct an	Evaluate an explanation	Construct an explanation	Support an explanation for	Identify an explanation based	
explanation based on	based on evidence for how	based on evidence for how	how geoscience processes	on evidence for how	
evidence for how geoscience	geoscience processes have	geoscience processes have	have changed Earth's surface	geoscience processes have	
processes have changed	changed Earth's surface at	changed Earth's surface at	at varying time and spatial	changed Earth's surface at	
Earth's surface at varying	varying time and spatial	varying time and spatial	scales.	varying time and spatial	
time and spatial scales.	scales.	scales.		scales.	
CCC: SPQ					
SEP: 6					
8-MS-ESS3-1 Construct a	Evaluate a scientific	Construct a scientific	Support a scientific	Identify a scientific	
scientific explanation based	explanation based on	explanation based on	explanation for how the	explanation based on	
on evidence for how the	evidence for how the uneven	evidence for how the uneven	uneven distributions of	evidence for how the uneven	
uneven distributions of	distributions of Earth's	distributions of Earth's	Earth's mineral, energy, and	distributions of Earth's	
Earth's mineral, energy, and	mineral, energy, and	mineral, energy, and	groundwater resources are	natural resources are the	
groundwater resources are	groundwater resources are	groundwater resources are	the result of past and current	result of geoscience	
the result of past and current	the result of past and current	the result of past and current	geoscience processes.	processes.	
geoscience processes.	geoscience processes.	geoscience processes.			
CCC: C/E					
SEP: 6					
8-MS-LS3-1 Develop and use	Develop and use a model to	Develop and use a model to	Use a model to describe how	Use a model to identify that	
a model to describe why	construct explanations to	describe why structural	structural changes to genes	changes to genes may affect	
structural changes to genes	describe why structural	changes to genes (mutations)	may affect proteins and may	proteins and may result in	
(mutations) located on	changes to genes (mutations)	located on chromosomes	result in harmful, beneficial,	changes to the structure and	
chromosomes may affect	located on chromosomes	may affect proteins and may	or neutral effects on the	function of the organism.	
proteins and may result in	may affect proteins and may	result in harmful, beneficial,	structure and function of the		
harmful, beneficial, or	result in harmful, beneficial,	or neutral effects to the	organism.		
neutral effects to the	or neutral effects to the	structure and function of the			
structure and function of the	structure and function of the	organism.			
organism.	organism.				
CCC: S/F					
SEP: 2					



#### Louisiana Believes



Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
8-MS-LS4-2 Apply scientific	Evaluate an explanation	Construct an explanation	Support an explanation	Identify an explanation based
ideas to construct an	based on scientific ideas for	based on scientific ideas for	based on scientific ideas for	on scientific ideas for the
explanation for the	the anatomical similarities	the anatomical similarities	the anatomical similarities or	anatomical similarities or
anatomical similarities and	and differences among	and differences among	differences among modern	differences among modern
differences among modern	modern organisms and	modern organisms and	organisms or between	organisms or between
organisms and between	between modern and fossil	between modern and fossil	modern and fossil organisms	modern and fossil organisms
modern and fossil organisms	organisms to infer	organisms to infer	to infer evolutionary	to infer evolutionary
to infer evolutionary	evolutionary relationships.	evolutionary relationships.	relationships.	relationships.
relationships.				
CCC: PAT				
SEP: 6				