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 7 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)

Grade 7 Achievement-Level Descriptors

Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
Investigate				
7-MS-PS3-4: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. CCC: SPQ SEP: 3	Predict the effects of experimental error on the results of an investigation and/or refine an investigation to determine the relationships among energy transferred, type of matter, mass, and change in average kinetic energy of particles as measured by the temperature of the sample.	Plan an investigation to determine relationships among energy transferred, type of matter, mass, and change in average kinetic energy of the particles as measured by the temperature of the sample.	Classify variables in an investigation about the relationships among factors (including energy transferred, type of matter, mass, and change in average kinetic energy of particles as measured by the temperature of the sample) as independent, dependent, or constant.	Organize the steps to an investigation about the effects of different factors on the average kinetic energy of a sample.
7-MS-ESS-2-5 Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. CCC: C/E SEP: 3	Use collected data to construct an explanation about how the relationship between the motions and complex interactions of air masses results in changes in weather conditions.	Use collected data as evidence to support a claim about how the relationship between the motions and complex interactions of air masses results in changes in weather conditions.	Use data to describe how the motions and interactions of air masses result in changes in weather conditions.	Identify simple data to predict changes in weather conditions.
7-MS-ESS3-5 Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. CCC: S/C SEP: 1	Evaluate questions about data presented in tables, graphs, and maps to clarify evidence of factors producing the rise in global temperatures over the past century.	Ask questions about data presented in tables, graphs, and maps to clarify evidence of factors producing the rise in global temperatures over the past century.	Identify evidence that can answer questions about the factors producing changes in global temperatures over time.	Identify variables that should be studied to answer a question about the factors that have caused changes in global temperatures over time.

Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
Evaluate				
7-MS-PS1-2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. CCC: PAT SEP: 4	Use data presented in tables, graphs, and diagrams about the properties of substances before and after the substances interact to construct an explanation as to whether a physical or chemical change has occurred.	Analyze and interpret data presented in tables, graphs, and diagrams about the properties of substances before and after the substances interact to support an explanation that a chemical reaction has occurred.	Interpret qualitative data about the properties of substances before and after the substances interact to describe patterns that suggest that a chemical reaction has occurred.	Interpret simple data displays about the properties of substances before and after the substances interact to suggest that a chemical reaction has occurred.
7-MS-LS1-3 Use an argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. CCC: SYS SEP: 7	Evaluate an argument supported by evidence about the interaction of subsystems within the human body.	Construct an argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	Describe the evidence that supports an argument about the interactions of systems within the human body.	Identify evidence to support an argument about the interaction of two systems within the human body.
7-MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. CCC: S/C SEP: 7	Evaluate an argument about how changes to physical or biological components of an ecosystem affect a population.	Construct an argument supported by empirical evidence about how changes to physical or biological components of an ecosystem affect a population.	Describe the evidence that supports an argument about how a change to an ecosystem affects a population.	Identify evidence that supports an argument about how a change to an ecosystem affects a population.

Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
Reason Scientifically				
7-MS-PS1-4 Develop a model that predicts and describes changes in particle motion, temperature, and the state of a pure substance when thermal energy is added or removed. CCC: C/E SEP: 2	Develop and/or use a model to construct explanations about the changes to particle motion, temperature, and state that result when thermal energy is added to/removed from a pure substance.	Develop and/or use a model to predict and describe the changes to particle motion, temperature, and state that result when thermal energy is added to/removed from a pure substance.	Use a model to describe the changes to particle motion and temperature that result when thermal energy is added to/removed from a pure substance.	Use a model to identify the changes to particle motion that result when thermal energy is added to/removed from a pure substance.
7-MS-PS1-5 Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. CCC: E/M SEP: 2	Develop and/or use a model to construct explanations about how the total number of atoms/total mass remains constant in a chemical reaction, and thus mass is conserved.	Develop and/or use a model to describe how the total number of atoms/total mass remains constant in a chemical reaction, and thus mass is conserved.	Use a model to describe how the total number of atoms remains constant in a chemical reaction.	Use a model to identify that the total number of atoms remains constant in a chemical reaction.
7-MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. CCC: E/M SEP: 2	Develop and/or use a model to construct explanations about changes to the cycling of water through Earth's systems under different conditions.	Develop and/or use a model to describe how the cycling of water through Earth's systems is driven by energy from the sun and the force of gravity.	Use a model to describe the processes occurring as water cycles through Earth systems.	Use a model to identify the interaction of components as water cycles through Earth's systems.

Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
7-MS-ESS2-6 Develop and use a model to describe how unequal heating and rotation of the Earth causes patterns of atmospheric and oceanic circulation that determine regional climates. CCC: SYS SEP: 2	Develop and/or use a model to construct explanations about how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	Develop and/or use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	Use a model to support a claim that unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	Use a model to identify factors that cause patterns of atmospheric and oceanic circulation that determine regional climates.
7-MS-LS1-6 Construct a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms. CCC: E/M SEP: 6	Construct an explanation about photosynthesis/cellular respiration and the cycling of matter and flow of energy in and out of organisms, using evidence presented in multiple sources of information.	Construct an explanation about photosynthesis/cellular respiration and the cycling of matter and flow of energy in and out of organisms, using evidence presented in one source of information.	Support an explanation about photosynthesis/cellular respiration and the cycling of matter and flow of energy in and out of organisms.	Complete a model showing the cycling of matter and flow of energy into and out of organisms during photosynthesis and cellular respiration.
7-MS-LS1-7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. CCC: E/M SEP: 2	Develop and/or use a model to construct explanations about the changes to matter that occur as food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as matter moves through an organism.	Develop and/or complete a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as matter moves through an organism.	Use a model to describe the changes to matter that occur as a result of chemical reactions as food moves through an organism.	Use a model to identify the changes to matter that occur as a result of chemical reactions as food moves through an organism.

Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
7-MS-LS2-5 Undertake a design project that assists in maintaining diversity and ecosystem services. CCC: S/C SEP: 6	Evaluate possible design solutions for their ability to assist in maintaining diversity and ecosystem services.	Describe possible implementation outcomes for a design solution that assists in maintaining diversity and ecosystem services.	Predict how a potential design solution will affect changes within a particular ecosystem (ex. habitat/survival) to mitigate problems related to changes in biodiversity.	Identify solutions to mitigate manmade problems related to increasing the diversity of a habitat.
7-MS-LS3-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. CCC: C/E SEP: 2	Develop and/or use a model to construct explanations about why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	Develop and/or use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	Use a model to identify that asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	Identify the difference between asexual reproduction and sexual reproduction.
7-MS-LS4-4 Construct an explanation based on evidence that describes how genetic variations of traits in a population increases some individuals' probability of surviving and reproducing in a specific environment. CCC: C/E SEP: 6	Construct an explanation about the effect of genetic variation within a population on the probability of surviving in a specific environment.	Evaluate an explanation about the effect of genetic variation within a population on the probability of surviving in a specific environment.	Support an explanation about the effect of genetic variation within a population on the probability of surviving in a specific environment.	Identify an explanation showing the cause-and-effect relationship between genetic variation within a population and probability of being preyed upon.

7-MS-LS4-5 may be assessed and would be reported as part of the overall score. This particular PE does not fit neatly into any one of the three categories; rather, it partly touches all three categories.

Performance Expectation	Level 5: Advanced	Level 4: Mastery	Level 3: Basic	Level 2: Approaching Basic
7-MS-LS4-5 Gather, read and synthesize information about technologies that have changed the way humans influence the inheritance of desired traits in organisms. CCC: C/E SEP: 8	Evaluate evidence from multiple sources to make recommendations or counterarguments about technologies that have changed the way humans influence the inheritance of desired traits.	Use information from multiple sources to describe technologies that have changed the way humans influence the inheritance of desired traits.	Compare multiple sources of information to draw conclusions about technologies that have changed the way humans influence the inheritance of desired traits.	Identify information from one source to draw conclusions about technologies that have changed the way humans influence the inheritance of desired traits.