Louisiana Believes

Crosswalk for Louisiana Student Standards for Science and NGSS: 5th grade

This document provides guidance to assist teachers, schools, and systems with determining alignment to Louisiana Student Standards for Science for resources designed for the Next Generation Science Standards. This guidance document is considered a "living" document, as we believe that teachers and other educators will find ways to improve the document as they use it. Please send feedback to STEM@la.gov so that we may use your input when updating this guide.

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DEPARTMENT of EDUCATION
Louisiana Believes

MATTER AND ITS INTERACTIONS	**5-PS1-1**
LSSS	**NGSS**
Develop a model to describe that matter is made of particles too small to be seen.	
Clarification Statement	
Examples of evidence could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, or evaporating salt water. Does not include atomic scale mechanism of evaporation and condensation or defining the unseen particles.	Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.
Science and Engineering Practice:	Developing and Using Models
Disciplinary Core Ideas:	STRUCTURE AND PROPERTIES OF MATTER
Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including boiling water, the inflation and shape of a balloon, and the effects of air on larger particles or objects. (UE.PS1A.a)	
Crosscutting Concepts:	SCALE, PROPORTION, AND QUANTITY
Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods.	Natural objects exist from the very small to the immensely large.

Underlined sections denote **information that does **not** appear in both sets of standards.*

MATTER AND ITS INTERACTIONS	**5-PS1-2**
LSSS	**NGSS**
Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total amount of matter is conserved.	
Clarification Statement	
Examples of chemical changes includes reactions that produce new substances with new properties. Examples of physical changes could include phase changes, dissolving, or mixing.	Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.
Science and Engineering Practice:	Using mathematics and computational thinking
Disciplinary Core Ideas:	Structure and properties of matter
The amount of mass in matter is conserved when it changes form, even in transitions in which it seems to vanish. (UE.PS1A.b)	The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.
	Chemical reactions
When two or more different substances are mixed, a new substance with different properties may be formed. (UE.PS1B.a) No matter what reaction or change in properties occurs, the total mass of the substances does not change. (UE.PS1B.b)	No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.)
Crosscutting Concepts:	Energy and matter
Matter flows and cycles can be tracked in terms of mass of the substances before and after a process occurs. The total mass of the substances does not change. This is what is meant by conservation of matter. Matter is transported into, out of, and within systems.	Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.

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MATTER AND ITS INTERACTIONS	**5-PS1-3**
LSSS	**NGSS**
Make observations and measurements to identify materials based on their properties.	
Clarification Statement	
Examples of materials to be identified could include baking soda and other powders, metals, minerals, or liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, or solubility; density is not intended to be used as an identifiable property. No attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.	Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.
Science and Engineering Practice:	Planning and carrying out Investigations
Disciplinary Core Ideas:	Structure and properties of matter
Measurements of a variety of properties can be used to identify materials. (UE.PS1A.c)	Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.)
Crosscutting Concepts:	Scale, proportion, and quantity
Standard units are used to measure and describe physical quantities such as mass, time, temperature, and volume.	Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.

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MATTER AND ITS INTERACTIONS	**5-PS1-4**
LSSS	**NGSS**
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	
Clarification Statement	
Examples of interactions forming new substances can include mixing baking soda and vinegar. Examples of interactions not forming new substances can include mixing baking soda and water.	NONE PROVIDED IN NGSS
Science and Engineering Practice:	Planning and carrying out Investigations
Disciplinary Core Ideas:	Chemical reactions
When two or more different substances are mixed, a new substance with different properties may be formed. (UE.PS1B.a)	
Crosscutting Concepts:	Cause and effect
Cause and effect relationships are routinely identified, tested, and used to explain change.	

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MOTION AND STABILITY: FORCES AND INTERACTIONS	**5-PS2-1**
LSSS	**NGSS**
Support an argument that the gravitational force exerted by the Earth is directed down.	
Clarification Statement	
"Down" is a local description of the direction that points toward the center of the spherical Earth. <u>Earth's mass causes objects to have a force on them that points toward the center of the Earth, "down". Support for arguments can be drawn from diagrams, evidence, and data that are provided. This does not include mathematical representation of gravitational force.</u>	"Down" is a local description of the direction that points toward the center of the spherical Earth.
Science and Engineering Practice:	Engaging in argument from evidence
Disciplinary Core Ideas:	Types of interactions
The gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (UE.PS2B.c)	
Crosscutting Concepts:	Cause and effect
Cause and effect relationships are routinely identified, <u>tested,</u> and used to explain change.	Cause and effect relationships are routinely identified and used to explain change.

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MATTER AND ENERGY IN ORGANISMS AND ECOSYSTEMS	5-PS3-1
LSSS	**NGSS**
Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	
Clarification Statement	
Examples of models could include diagrams or flowcharts.	
Science and Engineering Practice:	Developing and using models
Disciplinary Core Ideas:	Energy in chemical processes and everyday life
The energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (UE.PS3D.b)	
	Organization for matter and energy flow in organisms
Food provides animals with the materials they need for body repair and growth and energy they need to maintain body warmth and for motion. (UE.LS1C.a)	
Crosscutting Concepts:	Energy and matter
Energy can be transferred in various ways and between objects.	

FROM MOLECULES TO ORGANISMS: STRUCTURES AND PROCESSES	**5-LS1-1**
LSSS	**NGSS**
Ask questions about how air and water affect the growth of plants.	Support an argument that plants get the materials they need for growth chiefly from air and water.
Clarification Statement	
Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil. <u>The chemical processes of photosynthesis and cellular respiration are not addressed at this grade level.</u>	Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.
Science and Engineering Practice:	
Asking questions and defining problems	Engaging in argument from evidence
Disciplinary Core Ideas:	Organization for matter and energy flow in organisms
Plants acquire their material for growth chiefly from air and water. (UE.LS1C.b)	
Crosscutting Concepts:	Energy and matter
Matter is transported into, out of, and within systems.	

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ECOSYSTEMS	**5-LS2-1**
LSSS	**NGSS**
Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	
Clarification Statement	
Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems of the Earth <u>not including molecular explanations.</u>	Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.
Science and Engineering Practice:	Developing and using models
Disciplinary Core Ideas:	Interdependent relationships in ecosystems
The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. (UE.LS2A.a) Some organisms, such as fungi and bacteria, break down dead organisms and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. (UE.LS2A.b) Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. (UE.LS2A.c) Newly introduced species can damage the balance of an ecosystem. (UE.LS2A.d)	
	Cycles of matter and energy transfer in ecosystems
Matter cycles between the air and soil and among plants, animals, decomposers, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (UE.LS2B.a)	
Crosscutting Concepts:	Systems and system models
A system can be described in terms of its components and their interactions.	

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EARTH'S PLACE IN THE UNIVERSE	**5-ESS1-1**
LSSS	**NGSS**
Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.	Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.
Clarification Statement	
Examples include the relative distances of the stars, but not the sizes. It does not include other factors that affect apparent brightness (such as stellar masses, age, stage).	NONE PROVIDED IN NGSS
Science and Engineering Practice:	Engaging in argument from evidence
Disciplinary Core Ideas:	The universe and its stars
The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (UE.ESS1A.a)	
Crosscutting Concepts:	Scale, proportion, and quantity
Natural objects and/or observable phenomena exist from the very small to the immensely large or from very short to very long time periods.	Natural objects exist from the very small to the immensely large.

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EARTH'S PLACE IN THE UNIVERSE	**5-ESS1-2**
LSSS	**NGSS**
Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	
Clarification Statement	
Patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months; <u>not including the causes of the seasons.</u>	<u>Examples of</u> patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.
Science and Engineering Practice:	Analyzing and interpreting data
Disciplinary Core Ideas:	History of planet earth
The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include: day and night, daily changes in the length and direction of shadows, and different positions of the sun, moon, and stars at different times of the day, month, and year. (UE.ESS1B.a)	
Crosscutting Concepts:	Patterns
Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena <u>and designed products.</u>	Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.

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EARTH'S SYSTEMS	**5-ESS2-1**
LSSS	**NGSS**
Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	
Clarification Statement	
Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.	
Science and Engineering Practice:	Developing and using models
Disciplinary Core Ideas:	Earth materials and systems
Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (UE.ESS2A.b)	
Crosscutting Concepts:	Systems and system models
A system can be described in terms of its components and their interactions.	

EARTH'S PLACE IN THE UNIVERSE	**5-ESS2-2**
LSSS	**NGSS**
Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
Clarification Statement	
Examples include oceans, lakes, rivers, glaciers, ground water, and polar ice caps.	NONE PROVIDED IN NGSS
Science and Engineering Practice:	Using mathematics and computational thinking
Disciplinary Core Ideas:	The roles of water in earth's surface processes
Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (UE.ESS2C.a)	
Liquid water can become the gas form of water (water vapor) and liquid water can become a solid as ice. (UE.ESS2C.b)	NO ADDITIONAL INFORMATION
Crosscutting Concepts:	Scale, proportion, and quantity
Standard units are used to measure and describe physical quantities such as mass, time, temperature, and volume.	

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EARTH'S PLACE IN THE UNIVERSE	**5-ESS3-1**
LSSS	**NGSS**
Generate and compare multiple solutions about ways individual communities can use science to protect the Earth's resources and environment.	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
Clarification Statement	
Examples of solutions can include cleanup of oil spills, protecting against coastal erosion, or prevention of polluted runoff into waterways.	NONE PROVIDED IN NGSS
Science and Engineering Practice:	
Constructing explanations and designing solutions	Obtaining, evaluating, and communicating information
Disciplinary Core Ideas:	Human impacts on earth systems
Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean and the atmosphere. But individuals and communities are doing things to help protect Earth's resources and environments. (UE.ESS3C.a)	
Disciplinary Core Ideas:	Developing possible solutions
Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (ETS.UE.1B.c)	NONE PROVIDED IN NGSS
Crosscutting Concepts:	Systems and system models
A system can be described in terms of its components and their interactions.	

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