



Grade 5 Science Yearlong Curriculum Plan

Last modified: June 2018

SUMMARY

This curriculum plan provides a year-long overview of 5th grade science standards as they are taught in the 5DP. The first chart shows an overview of where standards are taught during the school year, and the second gives the full set of standards for the grade level.

Additional Resources:

Massachusetts Curriculum Frameworks: <http://www.doe.mass.edu/frameworks/>

GRADE 5 SCIENCE STANDARDS OVERVIEW					
SCIENCE, TECHNOLOGY & ENGINEERING STANDARDS	B1	B2	B3	B4	B5
Earth's Place in the Universe					
5-ESS1-1				X	
5-ESS1-2				X	
Earth's Systems					
5-ESS2-1			X		
5-ESS2-2			X		
Earth and Human Activity					
5-ESS3-1					X
5-ESS3-2(MA)					X
From Molecules to Organisms: Structures and Processes					
5-LS1-1		X			
Ecosystems: Interactions, Energy, and Dynamics					
5-LS2-1		X			
5-LS2-2 (MA)		X			
Matter and Its Interactions					
5-PS1-1	X				
5-PS1-2	X				
5-PS1-3	X				
5-PS1-4	X				
Motion and Stability: Forces and Interactions					
5-PS2-1				X	
Energy					
5-PS3-1		X			
ETS3. Technological Systems					
5.3-5-ETS3-1(MA).					X
5.3-5-ETS3-2(MA).					X

GRADE 5 SCIENCE – Block 1 (September-October)**SCIENCE STANDARDS**

5-PS1-1	Use a model of matter as made of particles too small to be seen to explain common phenomena involving gasses, phase changes between gas and liquid, and dissolving. [Clarification Statement: Examples of common phenomena the model should be able to describe include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]
5-PS1-1 Mastery Checklist	<ol style="list-style-type: none">1. Describe common phenomena including adding air to a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.2. Identify and describe relevant relationships between components of bulk matter (solid, liquid) and matter too small to be seen (gas)..
5-PS1-2	Measure and graph the weights of substances before and after a reaction or phase change to provide evidence that regardless of the type of change that occurs when heating, cooling or combining substances, the total weight of matter is conserved. [Clarification Statement: Assume that reactions with any gas production are conducted in a closed system.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.]
5-PS1-2 Mastery Checklist	<ol style="list-style-type: none">1. Measure, graph, and/or calculate the difference in the weight of substances before and/or after they are heated, cooled, and /or mixed.2. Describe the changes in properties observed during and/or after substances are heated, cooled, and/or mixed.
5-PS1-3	Make observations and measurements to identify substances based on their unique properties, including color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility. [Clarification Statement: Examples of substances to be identified could include baking soda and other powders, metals, minerals, and liquids.] [Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]
5-PS1-3 Mastery Checklist	<ol style="list-style-type: none">1. Identify, measure, and describe substances based on their physical properties.
5-PS1-4	Conduct an experiment to determine whether the mixing of two or more substances results in new substances with new properties.
5-PS1-4 Mastery Checklist	<ol style="list-style-type: none">1. Describe how the data collected during the investigation can serve as evidence that the mixing of two substances did or did not result in one or more new substances.2. Describe the quantitative (weight) and qualitative(state, color, texture, odor) properties of the substances before and after they are mixed.
StemScopes	Matter and Its Interactions <ul style="list-style-type: none">- 5-PS1-1 Matter is Everywhere- 5-PS1-2 Matter Changing States- 5-PS1-3 Properties of Matter- 5-PS1-4 Mixtures

GRADE 5 SCIENCE – Block 2 (November-December)

SCIENCE STANDARDS

<p>5-LS1-1</p>	<p>Support an argument with evidence that plants get the materials they need for growth and reproduction chiefly through a process in which they use air, water, and energy from the sun to produce sugars and plant materials. [Assessment Boundary: The chemical formula or details about the process of photosynthesis is not expected.]</p>
<p>5-LS1-1 Mastery Checklist</p>	<ol style="list-style-type: none"> 1. Provide evidence that plants acquire the materials they need for growth chiefly from air and water. 2. Explain that plants get the energy they need for growth from the sun. 3. Argue that soil does not provide most of the material for plant growth.
<p>5-LS2-1</p>	<p>Develop a model to describe the movement of matter among producers, consumers, decomposers, and the air, water and soil in the environment: a. show that plants produce sugars and plant materials; b. show that some animals eat plants for food and other animals eat the animals that eat plants; and c. show that some organisms, including fungi and bacteria, break down dead organisms and recycle some materials back to the air and soil. [Clarification Statement: Emphasis is on matter moving throughout the ecosystem. Waste includes matter in the form of gasses (such as air), liquids (such as water), or solids (such as minerals or nutrients).] [Assessment Boundary: Assessment does not include molecular explanations.]</p>
<p>5-LS2-1</p>	<ol style="list-style-type: none"> 1. Create a model of the flow of energy from the sun through a food chain/web.(Model of ecosystem should include matter, plants, animals, decomposers)
<p>5-LS2-2 MA</p>	<p>Compare at least two designs for a composter to determine which is most likely to encourage decomposition of materials.* [Assessment Boundary: Assessment is limited to qualitative descriptions or comparisons of decomposition.]</p>
<p>5-LS2-2 MA Mastery Checklist</p>	<ol style="list-style-type: none"> 1. Provide evidence for the most effective composting design.
<p>5-PS3-1</p>	<p>Use a model to describe that the food animals digest: a. contains energy that was once energy from the sun, and b. provides energy and materials for body repair, growth, motion, body warmth, and reproduction. [Clarification Statement: Examples of models could include diagrams and flow charts.] [Assessment Boundary: Details of photosynthesis or respiration are not expected.]</p>
<p>5-PS3-1 Mastery Checklist</p>	<ol style="list-style-type: none"> 1. Using the model from LS2-1, describe how all of the energy animals use for body repair, growth, motion, body warmth, and reproduction is energy that once came from the sun.
<p>StemScopes</p>	<p>From Molecules to Organisms: Structures and Processes</p> <ul style="list-style-type: none"> - 5-LS1-1 Plant Structures <p>Ecosystems: Interactions, Energy, and Dynamics</p> <ul style="list-style-type: none"> - 5-LS2-1 Food Webs <ul style="list-style-type: none"> Basic Needs Ecosystems Matter Cycles <p>Energy</p> <ul style="list-style-type: none"> - 5-PS3-1 Energy Transfer

GRADE 5 SCIENCE – Block 3 (January-February)**SCIENCE STANDARDS**

5-ESS2-1	Use a model to describe the cycling of water through a water shed through evaporation, precipitation, absorption, surface run off, and condensation. [Assessment Boundary: Assessment does not include explanations of mechanisms that drive the cycle.]
5-ESS2-1 Mastery Checklist	1. Create and describe a model of the water cycle. (Models should include interactions that occur between Earth's geosphere, hydrosphere, atmosphere, and biosphere,)
5-ESS2-2	Describe and graph the amounts and percentages of salt water in the ocean; fresh water in lakes, rivers, and ground water; and fresh water frozen in glaciers and polar ice caps to provide evidence about the availability of fresh water in Earth's biosphere. [Clarification Statement: Nearly all of Earth's available water is in the ocean; most fresh water is in glaciers or underground.] [Assessment Boundary: Assessment does not include the atmosphere.]
5-ESS2-2 Mastery Checklist	1. Graph and explain the distribution of salt and freshwater on Earth.
StemScopes	Earth's Systems - 5-ESS2-1 Earth's Systems Earth's Systems Interactions - 5-ESS2-2 Water Sources

GRADE 5 SCIENCE – Block 4 (March-April)**SCIENCE STANDARDS**

5-ESS1-1	Use observations, first-hand and from various media, to argue that the sun is a star that appears larger and brighter than other stars because it is closer to the Earth. [Assessment Boundary: Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]
5-ESS1-1 Mastery Checklist	1, Describe the relationship between the apparent brightness of a star and its relative distance from Earth.
5-ESS1-2	Use a model to communicate Earth's relationship to the sun, moon, and stars that explain: a. why people on Earth experience day and night; b. patterns in daily changes in length and direction of shadows over a day; and c. changes in the position of the sun, moon and constellations at different times during a day, over a month, and over a year. [Clarification Statement: Any model used should illustrate that the Earth, sun, and moon are spheres; include orbits of the Earth around the sun and of the moon around Earth; and Earth's rotation about its axis.] [Assessment Boundary: Assessment does not include causes of seasons nor expect use of Earth's tilt.]
5-ESS1-2 Mastery Checklist	<ol style="list-style-type: none">1. Create and explain a model of the relationship of Earth to the sun, moon and stars2. Use the model to explain why people on Earth experience day and night.3. Use the model to explain the pattern changes of shadows over a day4. Collect data to illustrate changes in the position of sun, moon, and constellations over day, month, and year,
5-PS2-1	Support an argument with evidence that the gravitational force exerted by Earth on objects is directed toward the Earth's center. [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]
5-PS2-1 Mastery Checklist	1, Identify and describe evidence that supports the claim that Earth's center of gravity is at its core. <ul style="list-style-type: none">- Objects dropped fall (are pulled) toward the center of the Earth all around the spherical Earth
StemScopes	<p>Earths Place in the Universe</p> <ul style="list-style-type: none">- 5-ESS1-1 Observing the Stars- 5-ESS1-2 Earth's Rotation <p>Objects in the Sky</p> <p>Motion and Stability: Forces and Interactions</p> <ul style="list-style-type: none">- 5-PS2-1 Gravity

GRADE 5 SCIENCE – Block 5 (May-June)**SCIENCE STANDARDS**

5- ESS3-1	Obtain and combine information about ways communities reduce human impact on the Earth’s resources and environment by changing an agricultural, industrial, or community practice or process. [Clarification Statement: Examples of changed practices or processes include treating sewage, reducing the amounts of materials used, capturing polluting emissions from factories or power plants, and preventing runoff from agricultural activities.] [Assessment Boundary: Climate change or social science aspects of practices such as regulation or policy are not expected in state assessment.]
5-ESS3-1 Mastery Checklist	<ol style="list-style-type: none">1. Research ways communities reduce human impact on Earth.2. Based on research, develop a plan to change a local agricultural, industrial, or community practice of process to reduce human impact on Earth.
5- ESS3-2	Test a simple system designed to filter particulates out of water and propose one change to the design to improve it.*
5-ESS3-2 Mastery Checklist	<ol style="list-style-type: none">1. Research and design an effective water filter.
5.3-5-ETS3-1(MA)	Use informational text to provide examples of improvements to existing technologies (innovations) and the development of new technologies (inventions). Recognize that technology is any modification of the natural or designed world done to fulfill human needs or wants.
5.3-5-ETS3-2(MA)	Use sketches or drawings to show how each part of a product or device relates to other parts in the product or device.*
StemScopes	ETS Standards align well with 5-LS2-2 MA and 5-ESS3-2 MA but can be interwoven throughout most blocks throughout the year. Earth and Human Activity - 5-ESS3-1 Human Footprint Reducing Human Footprint