

## 6<sup>th</sup> Grade Science

Systems within organisms and between them are adapted to Earth's climate systems.

Semester 1				Semester 2			
Quarter 1		Quarter 2		Quarter 3		Quarter 4	
<b>Instructional Segment #1:</b> Systems in Earth and Life Science		<b>Instructional Segment #2:</b> Earth System Interactions Cause Weather		<b>Instructional Segment #3:</b> Causes and Effects of Regional Climates		<b>Instructional Segment #4:</b> Effects of Global Warming on Living Systems	
MS-LS1-1 <sub>7</sub> MS-LS1-2 <sub>6</sub> MS-LS1-3 <sub>4</sub> MS-LS1-8* <sub>2</sub>	MS-ESS2-4* <sub>5</sub> MS-ESS2-6* <sub>4</sub> MS-ETS1-1* MS-ETS1-2*	MS-ESS2-4* <sub>5</sub> MS-ESS2-6* <sub>4</sub> MS-PS3-3 <sub>5</sub> MS-PS3-4* <sub>3</sub>	MS-PS3-5 <sub>5</sub> MS-ETS1-1* MS-ETS1-3 MS-ETS1-2*	MS-LS1-4* <sub>2</sub> MS-LS1-5* <sub>2</sub> MS-LS1-8* <sub>2</sub> MS-LS3-2 <sub>2</sub>	MS-ESS2-5 <sub>2</sub> MS-ESS2-6* <sub>4</sub> MS-PS3-4* <sub>3</sub>	MS-LS1-4* <sub>2</sub> MS-LS1-5* <sub>2</sub> MS-ESS3-3 <sub>2</sub> MS-ESS3-5 <sub>7</sub>	MS-ETS1-1* MS-ETS1-2*
* = standard is taught more than once within this course							
<b>EP&amp;Cs Connections:</b> Principles 2, 3, 4	<b>ELD Connections:</b> ELD.PI.6.6a-b,10,9,11a	<b>EP&amp;Cs Connections:</b> Principles 3, 4, 5	<b>ELD Connections:</b> ELD.PI.6.6a-b,9,10,11a	<b>EP&amp;Cs Connections:</b> Principles 2, 4	<b>ELD Connections:</b> ELD.PI.6.1,5,6 a-b, 9,10,11a	<b>EP&amp;Cs Connections:</b> Principles 1, 2, 4	<b>ELD Connections:</b> ELD.PI.6.1,5,6 a-b, 9,10,11a
<b>CCSS ELA Connections:</b> <a href="#">RST.6-8.1</a> , <a href="#">R.I.6.8</a> , <a href="#">WHST.6-8.1,7,8,9</a> , <a href="#">SL.6.5</a>	<b>CCSS Math Connections:</b> <a href="#">6.EE.9</a>	<b>CCSS ELA Connections:</b> <a href="#">SL.6.5</a> , <a href="#">RST.6-8.1,3,7,9</a> , <a href="#">WHST.6-8.1,7,8</a>	<b>CSS Math Connections:</b> <a href="#">MP.2</a> , <a href="#">6.RP.1</a> , <a href="#">6.SP.5</a>	<b>CCSS ELA Connections:</b> <a href="#">RST.6-8.1,2,3,4,7,9</a> , <a href="#">RI.6.8</a> , <a href="#">WHST.6-8.1,2,7,8,9</a> , <a href="#">SL.6.5</a>	<b>CSS Math Connections:</b> <a href="#">6.SP.2</a> , 4, 5, <a href="#">MP.2</a> , <a href="#">MP.4</a>	<b>CCSS ELA Connections:</b> <a href="#">RI.6.8</a> , <a href="#">RST.6-8.1,2</a> , <a href="#">WHST.6-8.7, 8</a>	<b>CSS Math Connections:</b> <a href="#">MP.2</a> , <a href="#">6.RP.1</a> , <a href="#">6.EE.6</a> , <a href="#">6.SP.2,4</a>

### Science & Engineering Practices (SEPs)

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

### Crosscutting Concepts (CCCs)

- 1.) [Patterns](#)
- 2.) [Cause and Effect](#)
- 3.) [Scale, Proportion, Quantity](#)
- 4.) [Systems and System Models](#)
- 5.) [Energy and Matter](#)
- 6.) [Structure and Function](#)
- 7.) [Stability and Change](#)

**Guiding Questions:**

<p><b><i>Instructional Segment #1:</i></b> Systems in Systems in Earth and Life Science</p>	<p><b><i>Instructional Segment #2:</i></b> Earth System Interactions Cause Weather</p>	<p><b><i>Instructional Segment #3:</i></b> Causes and Effects of Regional Climates</p>	<p><b><i>Instructional Segment #4:</i></b> Effects of Global Warming on Living Systems</p>
<ul style="list-style-type: none"> <li>• How are living systems and Earth systems similar and different?</li> <li>• What is the value of creating a systems model?</li> </ul>	<ul style="list-style-type: none"> <li>• Why is the weather so different in different parts of California?</li> <li>• How is weather related to the transfer of energy?</li> <li>• How do models help us understand the different kinds of weather in California?</li> </ul>	<ul style="list-style-type: none"> <li>• Why is the climate so different in different regions of the planet?</li> <li>• Why are organisms so different in different regions of the planet?</li> <li>• What makes organisms so similar to, but also different from, their parents?</li> <li>• What makes animals behave the way they do, and how does their behavior affect their survival and reproduction?</li> </ul>	<ul style="list-style-type: none"> <li>• How do human activities affect Earth's systems?</li> <li>• How do we know our global climate is changing?</li> </ul>

6<sup>th</sup> Grade Science- Quarter 1 Overview

**Quarter Topic Focus:** Systems in Systems in Earth and Life Science

<u>Science &amp; Engineering Practice (SEP)</u>	<u>Disciplinary Core Idea (DCI)</u>	<u>Crosscutting Concept (CCC)</u>	<b>Performance Expectation (PE)</b>
<b>How</b> students will demonstrate their understanding...	<b>What</b> students will understand...	How students will connect their understanding across units and courses... ( <b>Why</b> they should know it)	A complete standard <b>(SEP + DCI + CCC = PE)</b> <small>*colors are associated with SEP (see page 1 for key)</small>
<u>Conduct an investigation</u> to provide evidence that	<u>living things are made of cells</u> ; either one cell or many different kinds of cells.	( <u>Scale, Proportion, Quantity</u> )	MS-LS1-1
<u>Develop and use a model</u> to describe	the <u>function of a cell</u> as a whole and ways the parts of cells contribute to the function.	( <u>Structure and Function</u> )	MS-LS1-2
<u>Use argument</u> supported by evidence for how	the <u>body is a system of interacting subsystems</u> composed of groups of cells.	( <u>System and System Models</u> )	MS-LS1-3
<u>Gather and synthesize information</u> that	<u>sensory receptors</u> respond to stimuli by sending messages to the brain for immediate behavior or storage of memories.	( <u>Cause and Effect</u> )	MS-LS1-8
<u>Develop a model</u> to describe	the <u>cycling of water</u> through Earth's systems driven by energy from the sun and forces from gravity.	( <u>Energy and Matter</u> )	MS-ESS2-4
<u>Develop and use a model</u> to describe	how <u>unequal heating and rotation of the Earth</u> cause patterns of atmospheric and oceanic circulation that determine regional climates.	( <u>System and System Models</u> )	MS-ESS2-6

<p><u>Define the criteria and constraints</u> of a design problem</p>	<p>with <u>sufficient precision</u> to ensure a successful solution, taking into account relevant scientific principles</p>	<p>and <u>potential impacts on people and the natural environment</u> that may limit possible solutions.</p>	<p>MS-ETS1-1</p>
<p><u>Evaluate competing design solutions</u></p>	<p>using a <u>systematic process to determine</u> how well they meet the criteria and constraints of the problem.</p>	<p>n/a</p>	<p>MS-ETS1-2</p>

6<sup>th</sup> Grade Science- Quarter 2 Overview

**Quarter Topic Focus:** Earth System Interactions Cause Weather

<u>Science &amp; Engineering Practice (SEP)</u>	<u>Disciplinary Core Idea (DCI)</u>	<u>Crosscutting Concept (CCC)</u>	<u>Performance Expectation (PE)</u>
<b>How</b> students will demonstrate their understanding...	<b>What</b> students will understand...	How students will connect their understanding across units and courses... <b>(Why</b> they should know it)	A complete standard <b>(SEP + DCI + CCC = PE)</b> <small>*colors are associated with SEP (see page 1 for key)</small>
<u>Develop a model</u> to describe	the <u>cycling of water</u> through Earth's systems driven by energy from the sun and forces from gravity.	( <u>Energy and Matter</u> )	MS-ESS2-4
<u>Develop and use a model</u> to describe	how <u>unequal heating and rotation of the Earth</u> cause patterns of atmospheric and oceanic circulation that determine regional climates.	( <u>System and System Models</u> )	MS-ESS2-6
<u>Apply scientific principles</u> to design, construct, and test a device that	either <u>minimizes or maximizes thermal energy transfer</u> .	( <u>Energy and Matter</u> )	MS-PS3-3
<u>Plan an investigation</u> to determine	the relationship among the <u>energy transferred, the type of matter, the mass, and the change in the average kinetic energy</u> in the particles as measured by the temperature of the sample.	( <u>Scale, Proportion, Quantity</u> )	MS-PS3-4
<u>Construct, use, and present arguments</u> to support the claim that when	the <u>kinetic energy of an object changes, energy is transferred</u> to or from the object.	( <u>Energy and Matter</u> )	MS-PS3-5
<u>Define the criteria and constraints</u> of a design problem	with <u>sufficient precision</u> to ensure a successful solution, taking into account relevant scientific principles	and <u>potential impacts on people and the natural environment</u> that may limit possible solutions.	MS-ETS1-1

<p><a href="#">Analyze data</a> from tests to determine similarities and differences</p>	<p>among several <a href="#">design solutions</a> to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p>	<p>n/a</p>	<p>MS-ETS1-3</p>
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6 <sup>th</sup> Grade Science- Quarter 3 Overview			
Quarter Topic Focus: Causes and Effects of Regional Climates			
<a href="#">Science &amp; Engineering Practice (SEP)</a>	<a href="#">Disciplinary Core Idea (DCI)</a>	<a href="#">Crosscutting Concept (CCC)</a>	Performance Expectation (PE)
How students will demonstrate their understanding...	What students will understand...	How students will connect their understanding across units and courses... ( <b>Why</b> they should know it)	A complete standard (SEP + DCI + CCC = PE) <small>*colors are associated with SEP (see page 1 for key)</small>
Use <a href="#">argument</a> based on empirical evidence and scientific reasons to support	an explanation for how characteristic <a href="#">animal behaviors and specialized plan structures affect the probability of successful reproduction</a> of animals and plants respectively.	( <a href="#">Cause and Effect</a> )	MS-LS1-4
<a href="#">Construct a scientific explanation</a> based on	evidence for how <a href="#">environmental and genetic factors</a> influence the growth of organisms.	( <a href="#">Cause and Effect</a> )	MS-LS1-5
<a href="#">Gather and synthesize information</a> that	<a href="#">sensory receptors</a> respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	( <a href="#">Cause and Effect</a> )	MS-LS1-8
<a href="#">Develop and use a model</a> to describe	why asexual <a href="#">reproduction</a> results in offspring with identical genetic information and sexual reproduction results in offspring with genetic <a href="#">variation</a> .	( <a href="#">Cause and Effect</a> )	MS-LS3-2
<a href="#">Collect data to provide evidence</a> for how the	motions and complex interactions of <a href="#">air masses result in changes in weather conditions</a> .	( <a href="#">Cause and Effect</a> )	MS-ESS2-5
<a href="#">Develop and use a model</a> to describe how	unequal heating and rotation of the Earth cause patterns of <a href="#">atmospheric and oceanic circulation that determine regional climates</a> .	( <a href="#">Systems and System Models</a> )	MS-ESS2-6
<a href="#">Plan an investigation</a> to determine the relationships	among the energy transferred, the type of matter, the mass, and the change in average <a href="#">kinetic energy</a> of the particles as measured by the temperature of the sample.	( <a href="#">Scale, Proportion, Quantity</a> )	MS-PS3-4

6 <sup>th</sup> Grade Science- Quarter 4 Overview			
Quarter Topic Focus: Effects of Global Warming on Living Systems			
<u>Science &amp; Engineering Practice (SEP)</u>	<u>Disciplinary Core Idea (DCI)</u>	<u>Crosscutting Concept (CCC)</u>	<u>Performance Expectation (PE)</u>
How students will demonstrate their understanding...	What students will understand...	How students will connect their understanding across units and courses... (Why they should know it)	A complete standard (SEP + DCI + CCC = PE) <small>*colors are associated with SEP (see page 1 for key)</small>
Use <u>argument</u> based on empirical evidence and scientific reasons to support	an explanation for how characteristic <u>animal behaviors and specialized plan structures affect the probability of successful reproduction</u> of animals and plants respectively.	( <u>Cause and Effect</u> )	MS-LS1-4
<u>Construct a scientific explanation</u> based on	evidence for how <u>environmental and genetic factors</u> influence the growth of organisms.	( <u>Cause and Effect</u> )	MS-LS1-5
<u>Apply scientific principles to design</u>	a method for monitoring and maximizing a <u>human impact on the environment</u> .	( <u>Cause and Effect</u> )	MS-ESS3-3
<u>Ask questions</u> to clarify evidence	of the <u>factors that have caused the rise in global temperatures</u> over the past century.	( <u>Stability and Change</u> )	MS-ESS3-5
<u>Define the criteria and constraints</u> of a design problem	with <u>sufficient precision</u> to ensure a successful solution, taking into account relevant scientific principles	and <u>potential impacts on people and the natural environment</u> that may limit possible solutions.	MS-ETS1-1
<u>Evaluate competing design solutions</u>	using a <u>systematic process to determine</u> how well they meet the criteria and constraints of the problem.	n/a	MS-ETS1-2