

6th Grade Science Year-At-A-Glance

The purpose of the Year at a Glance document is to provide a quick overview of content and skills and the order in which a teacher presents them.

Embedded WIDA Standards		
Explain	ELD-SC.6-8.Explain.Interpretive	<p>Multilingual learners will interpret scientific explanations by...</p> <ul style="list-style-type: none"> • Defining investigable questions or design problems based on observations, information, and/or data about a phenomenon • Determining central ideas in complex evidence and information to help explain how or why a phenomenon occurs • Evaluating scientific reasoning that shows why data or evidence adequately supports conclusions
	ELD-SC.6-8.Explain.Expressive	<p>Multilingual learners will construct scientific explanations that...</p> <ul style="list-style-type: none"> • Describe valid and reliable evidence from sources about a phenomenon • Establish neutral or objective stance in how results are communicated • Develop reasoning to show relationships among independent and dependent variables in models and simple systems • Summarize patterns in evidence, making trade-offs, revising, and retesting
Argue	ELD-SC.6-8.Argue.Interpretive	<p>Multilingual learners will interpret scientific explanations by...</p> <ul style="list-style-type: none"> • Identifying convincing evidence from data, models, and/or information from investigations of phenomena or design solutions • Comparing reasoning and claims based on evidence from two arguments on the same topic • Evaluating whether they emphasize similar or different evidence and/or interpretations of facts
	ELD-SC.6-8.Argue.Expressive	<p>Multilingual learners will construct scientific explanations that...</p> <ul style="list-style-type: none"> • Introduce and contextualize topic/ phenomenon in issues related to the natural and designed world(s) • Support or refute a claim based on data and evidence • Establish and maintain a neutral or objective stance • Signal logical relationships among reasoning, evidence, data, and/or a model when making or defending a claim or counterclaim

6TH GRADE SCIENCE YEAR-AT-A-GLANCE

Quarter 1 Standards

Life Science

Standards	Wkbk Pages	PACING	Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
Unit 1				
6.LS2.1 Evaluate and communicate the impact of environmental variables on population size.	Ch. 3 Lesson 1 & 2	2 day	SEP4. Analyzing and interpreting data with appropriate data presentation (graph, table, statistics, etc.), identifying sources of error and the degree of certainty. Data analysis is used to derive meaning or evaluate solutions.	CCC7: Stability and change: For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study.
6.LS2.3 Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.	Ch. 4 Lesson 1	5 day	SEP2. Developing and using models to develop explanation for phenomena, to go beyond the observable and make predictions or to test designs.	CCC5: Energy and matter: Flows, cycles, and conservation: Tracking fluxes of energy and matter in to, out of, and within systems helps one understand the systems' possibilities and limitations.
6. LS2.6 Research the ways in which an ecosystem has changed over time in response to changes in physical condition, population balances, human interactions, and natural catastrophes.	Ch. 4 Lesson 1 Ch. 3 Lesson 2 Ch. 5 Lesson 1&2	1-2 day	SEP2: Developing and using models to develop explanation for phenomena, to go beyond the observable and make predictions or to test designs.	CCC4: Systems and system models: Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.
		ACT: <ul style="list-style-type: none"> • EMI 301 Identify implications in a model. • EMI 401 Determine which simple hypothesis, prediction, or conclusion is, or is not, consistent with a data presentation, model, or piece of information in text. • EMI 404 Identify similarities and differences between models. 		
Unit 2				
6.LS2.2 Determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.	Ch. 3 Lesson 3	5 day	SEP7. Engaging in argument from evidence to identify strengths and weaknesses in a line of reasoning, to identify best explanations, to resolve problems, and to identify best solutions.	CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such

				mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
Unit 3				
6. LS2.5 Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.	Ch. 5 Lesson 2 Wkbk pg. 170-171	3-4 day	SEP8. Obtaining, evaluating, and communicating information from scientific texts in order to derive meaning, evaluate validity, and integrate information.	CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
Unit 4				
6. LS2.7 Compare and contrast auditory and visual methods of communication among organisms in relation to survival strategies of a populations.	Ch. 3 Lesson 3	2 day	SEP7. Engaging in argument from evidence to identify strengths and weaknesses in a line of reasoning, to identify best explanations, to resolve problems, and to identify best solutions.	CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
Quarter 1 Benchmark				

Quarter 2 Standards
Life Science

Standards	workbook pages	PACING	Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
Unit 5				
6.LS2.4 Using evidence from climate data, draw conclusions about the patterns of abiotic and biotic factors in different biomes, specifically the tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater ecosystems.	Ch.4 Lesson 2&3	8-10 day	SEP7. Engaging in argument from evidence to identify strengths and weaknesses in a line of reasoning, to identify best explanations, to resolve problems, and to identify best solutions.	CCC1: Patterns: Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
Unit 6				
6.LS4.1 Explain how changes in biodiversity would impact ecosystem stability and natural resources.	Ch. 5 Lesson 3	3-4 day	SEP7. Engaging in argument from evidence to identify strengths and weaknesses in a line of reasoning, to identify best explanations, to resolve problems, and to identify best solutions.	CCC7: Stability and change: For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system area critical elements of study.
6.LS4.2 Design a possible solution for maintaining biodiversity of ecosystems while still providing necessary human resources without disrupting environmental equilibrium.	Ch. 5 Lesson 3	2-3 day	SEP8. Obtaining, evaluating, and communicating information from scientific texts in order to derive meaning, evaluate validity, and integrate information.	CCC4: Systems and system models: Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.
6.ETS1.1 Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.		Ongoing throughout	SEP1. Asking questions (for science) and defining problems (for engineering) to determine what is known, what has yet to be satisfactorily explained, and what problems need to be solved.	CCC4: Systems and system models: Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.
Earth's Systems				
Unit 7				
6.PS3.4 Conduct an investigation to demonstrate the way that heat (thermal energy) moves among	Ch. 2 Lesson 1, 2	3 day	SEP3. Planning and carrying out controlled investigations to collect data that is used to test existing theories and explanations, revise and	CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is

objects through radiation, conduction, or convection. **Revisited in Q4 with Physical Science standards.**			develop new theories and explanations, or assess the effectiveness, efficiency, and durability of designs under various conditions.	investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
6.ESS2.1 Gather evidence to justify that oceanic convection currents are caused by the sun's transfer of heat energy and differences in salt concentration leading to global water movement.	Ch. 7 Lesson 4&6	5-6 day	SEP6. Constructing explanations and designing solutions to explain phenomena or solve problems.	CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
6.ESS2.2 Diagram convection patterns that flow due to uneven heating of the earth. (wind)	Ch. 8 Lesson 4	3-4 day	SEP2. Developing and using models to develop explanation for phenomena, to go beyond the observable and make predictions or to test designs.	CCC5: Energy and matter: Flows, cycles, and conservation: Tracking fluxes of energy and matter in to, out of, and within systems helps one understand the systems' possibilities and limitations.
6.ESS2.3 Construct an explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer.	Ch. 7 Lesson 6 Ch. 9 Lesson 1	2 day	SEP7. Engaging in argument from evidence to identify strengths and weaknesses in a line of reasoning, to identify best explanations, to resolve problems, and to identify best solutions.	CCC7: Stability and change: For natural and built systems alike, conditions of stability and determinants of rates of change or evolution of a system are critical elements of study.
6.ESS2.4 Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.	Ch. 7 Lesson 1 Ch. 8 Lesson 1	4-5 day	SEP8. Obtaining, evaluating, and communicating information from scientific texts in order to derive meaning, evaluate validity, and integrate information.	CCC4: Systems and system models: Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.
Quarter 2 Benchmark				

Quarter 3 Standards

Earth's Systems

Standards	Workbook pages	Pacing	Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
Unit 8				
<p>6.ESS2.5 Analyze and interpret data from weather conditions, weather maps, satellites, and radar to predict probable local weather patterns and conditions.</p> <p>**Teach cloud types - predict weather from each type**</p> <p>Ch. 8, Lesson 2</p>	<p>Ch. 8 Lesson 7</p>	<p>2 days</p>	<p>SEP4. Analyzing and interpreting data with appropriate data presentation (graph, table, statistics, etc.), identifying sources of error and the degree of certainty. Data analysis is used to derive meaning or evaluate solutions.</p>	<p>CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.</p>
<p>6.ESS2.6 Explain how relationships between the movement and interactions of air masses, high and low pressure systems, and frontal boundaries result in weather conditions and severe storms.</p>	<p>Ch. 8 Lesson 5</p>	<p>10 days</p>	<p>SEP2. Developing and using models to develop explanation for phenomena, to go beyond the observable and make predictions or to test designs.</p>	<p>CCC4: Systems and system models: Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.</p>
Unit 9				
<p>6.ESS3.1 Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.</p>	<p>Ch. 10 Lesson 2</p>	<p>1-2 days</p>	<p>SEP8. Obtaining, evaluating, and communicating information from scientific texts in order to derive meaning, evaluate validity, and integrate information.</p>	<p>CCC4: Systems and system models: Defining the system under study – specifying its boundaries and making explicit a model of that system – provides tools for understanding and testing ideas that are applicable throughout science and engineering.</p>
<p>6.ESS3.2 Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.</p>	<p>Ch. 6 Lesson 1</p>	<p>5-8 days</p>	<p>SEP7. Engaging in argument from evidence to identify strengths and weaknesses in a line of reasoning, to identify best explanations, to resolve problems, and to identify best solutions.</p>	<p>CCC5: Energy and matter: Flows, cycles, and conservation: Tracking fluxes of energy and matter in to, out of, and within systems helps one understand the systems' possibilities and limitations.</p>
Unit 10				

6.ESS3.3 Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.	Ch. 10 Lesson 1, 3, 4, 5, & 6	2 days	SEP2. Developing and using models to develop explanation for phenomena, to go beyond the observable and make predictions or to test designs.	CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.
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Physical Science

Standards			Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
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Unit 11

6.PS3.1 Analyze the properties and compare sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy.	Ch. 1 Lesson 1	5-6 days	SEP2. Developing and using models to develop explanation for phenomena, to go beyond the observable and make predictions or to test designs.	CCC5: Energy and Matter: Students give general descriptions of different forms and mechanisms for energy storage within a system.
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ACT:

- SIN 403 Identify a control in an experiment.
- SIN 404 Identify similarities and differences between experiments.

6.PS3.2 Construct a scientific explanation of the transformations between potential and kinetic energy.	Ch. 1 Lesson 3	5 -6 days	SEP6. Constructing explanations and designing solutions to explain phenomena or solve problems.	CCC5: Energy and Matter: Students give general descriptions of different forms and mechanisms for energy storage within a system.
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6.PS3.3 Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed.	Ch. 1 Lesson 1	5-6 days	SEP4. Analyzing and interpreting data with appropriate data presentation (graph, table, statistics, etc.), identifying sources of error and the degree of certainty. Data analysis is used to derive meaning or evaluate solutions.	CCC3: Scale, proportion, and quantity: In considering phenomena, it is critical to recognize what is relevant at different measures of size, time, and energy and to recognize how changes in scale, proportion, or quantity affect a system's structure of performance.
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ACT:

- IOD 304 Determine how the values of variables change as the value of another variable changes in a simple data presentation.
- IOD 402 Compare or combine data from a simple data presentation.

- IOD 504 Determine and/or use a simple (e.g., linear) mathematical relationship that exists between data.

Unit 12

<p>6.PS3.4 Conduct an investigation to demonstrate the way that heat (thermal energy) moves among objects through radiation, conduction, or convection.</p>	<p>Ch. 2 Lesson 1&2</p>	<p>3 days</p>	<p>SEP3. Planning and carrying out controlled investigations to collect data that is used to test existing theories and explanations, revise and develop new theories and explanations, or assess the effectiveness, efficiency, and durability of designs under various conditions.</p>	<p>CCC2: Cause and effect: Mechanism and explanation: Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.</p>
<p>6.ETS1.2 Design and test different solutions that impact energy transfer.</p>			<p>SEP3. Planning and carrying out controlled investigations to collect data that is used to test existing theories and explanations, revise and develop new theories and explanations, or assess the effectiveness, efficiency, and durability of designs under various conditions.</p>	<p>CCC5: Energy and matter: Flows, cycles, and conservation: Tracking fluxes of energy and matter in to, out of, and within systems helps one understand the systems' possibilities and limitations.</p>

Quarter 3 Benchmark