6TH GRADE SCIENCE YEAR-AT-A-GLANCE

Quarter 1 Standards

Life Science

Relationships Between Organisms (DE Unit 2)	PACING using 70 minute periods	Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
6. LS2.1 Evaluate and communicate the impact of environmental variables on population size.	2 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.	**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. LS2.2 Determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.	5 days	**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.
6. LS2.3 Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.	5 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: 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.
	ACT: • 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.		
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.	8-10 days	**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.

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.	**3-4 days**	**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.
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.	**1-2 days**	**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.
6. LS2.7 Compare and contrast auditory and visual methods of communication among organisms in relation to survival strategies of a populations.	**2 days**	**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

Impacts on Biodiversity (DE Unit 3)	PACING using 70 minute periods	Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
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.	8-10 days	**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.
6. LS4.1 Explain how changes in biodiversity would impact ecosystem stability and natural resources.	3-4 days	**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.	2-3 days	**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

Weather and Climate (DE Unit 4)		Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
6. ESS2.1Gather evidence to justify that oceanic convection currents are caused by	5-6 days	**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

the sun's transfer of heat energy and differences in salt concentration leading to global water movement.			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.	3-4 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: 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.	2 days	**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. ESS2.4 Apply scientific principles to design a method to analyze and interpret the impact of humans and other organisms on the hydrologic cycle.	4-5 days	**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. ESS2.5 Analyze and interpret data from weather conditions, weather maps, satellites, and radar to predict probable local weather patterns and conditions.	2 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.	**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. ESS2.6 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.	10 days	**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.
Quarter 2 Benchmark			

Quarter 3 Standards

6. ESS2.5 Analyze and interpret data from weather conditions, weather maps, satellites, and radar to predict probable local weather patterns and conditions.	2 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.	**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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Earth's Systems

Human Impacts on Earth's Systems (DE Unit 5)		Science and Engineering Practices (SEP)	Crosscutting Concepts (CCC)
6. ESS3.1 Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.	1-2 days	**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. ESS3.2 Investigate and compare existing and developing technologies that utilize renewable and alternative energy resources.	5-8 days	**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.	**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. ESS3.3 Assess the impacts of human activities on the biosphere including conservation, habitat	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.

management, species endangerment, and extinction.			
Physical Science			
Energy (DE Unit 1) & ACT Standards Alignment		**Science and Engineering Practices (SEP)**	**Crosscutting Concepts (CCC)**
6. PS.3.1 Analyze the properties and compare sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy.	**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.
	ACT: • SIN 403 Identify a control in an experiment. • SIN 404 Identify similarities and differences between experiments.		
6. PS.3.2 Construct a scientific explanation of the transformations between potential and kinetic energy.	**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.
6. PS.3.3 Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed.	**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.
	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.		
6. PS.3.4 Conduct an investigation to demonstrate the way that heat (thermal energy) moves among objects through radiation, conduction, or convection.	**3 days**	**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.	**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. ETS1.2 Design and test different solutions that impact energy transfer.		**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.	**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.
Quarter 3 Benchmark			