SUMMIT K12

Summit K12 Pacing Materials

8th Grade Science

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Introduction

The Summit K12 pacing materials are intended to assist educators in planning and organizing science curricula according to the Texas Essential Knowledge and Skills for 8th grade. This guide provides a comprehensive timeline and framework based on state standards and serves as an optional resource that teachers and administrators may use in addition to or in support of any district-provided pacing guidelines.

All pacing materials are based on 45-minute class sessions. Please note that actual times will vary depending on scheduling considerations, the number of students, the amount of setup done ahead of time, the depth of class discussions, and your own needs and preferences.

Year at a Glance

Reporting Category	# of TEKS	Estimated Time Allotment
Matter and Energy	5	38 days
Force, Motion, and Energy	4	28 days
Earth and Space	9	49 days
Organisms and Environments	6	35 days
		150 days*

**Only 150 days have been planned out of the 180 school days, though this course includes more than enough material to cover the full 180 days of instruction. This was intended to account for beginning of year logistics, STAAR review, district and state testing, field trips, or any other interruptions to the daily cycle of instruction. Pacing should be adjusted according to student assessment data and district instructional priorities.*

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Scope and Sequence

Summit K12 has developed an optional year-long scope and sequence for schools and districts who wish to follow a set lesson progression that ensures all TEKS are covered within one school year. Within this framework, all grade-level TEKS have been organized into units of study with suggested time allotments for each TEKS. Each lesson guide includes key concepts, investigations, and activities to facilitate quality instruction for all learners.

Scientific and Engineering Practices and Recurring Themes and Concepts standards are integrated into lessons throughout the course and should be taught within the context of science content standards.

Teachers and administrators should adjust the instructional timeline according to student data and classroom needs. This scope and sequence was designed to be flexible, with extra time built in for concept and spiral review, in-depth discussions and investigations, and extension activities to support learners of all abilities.

Optional Science STAAR Review

For 8th grade, a STAAR review unit is included in the scope and sequence for teachers and administrators who determine students would benefit from this instruction. Summit K12 includes a Science STAAR Review component for teachers and students to use during the Spring semester. This Science STAAR Review includes a full-length STAAR Practice Test, along with new assessment questions, study guides, and teacher lesson guides for each TEKS.

Teachers may assign students to complete the Personalized Learning Plan (PLP) that is automatically generated from each student's STAAR Practice Test data, or target necessary TEKS during a whole-class review using STAAR Review Lesson Guides, Study Guides, TEKS videos, and assessments.

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8th Grade Science Units

Unit 1: Classification and Conservation of Matter
- 8.6A: Classification of Matter
- 8.6B: Atoms in Chemical Reactions
- 8.6E: Law of Conservation of Mass

Unit 2: Properties of Water, Acids, and Bases
- 8.6C: Behavior of Water
- 8.6D: Properties of Acids and Bases

Unit 3: Newton's Laws
- 8.7A: Newton's Second Law of Motion
- 8.7B: Simultaneous Actions of Newton's Three Laws of Motion

Unit 4: Waves and Energy
- 8.8A: Characteristics of Waves
- 8.8B: Applications of Electromagnetic Waves

Unit 5: Characteristics of the Universe
- 8.9A: Stars: Life Cycle and Classification
- 8.9B: Categorization of Galaxies
- 8.9C: Theories of the Origin of the Universe

Unit 6: Weather and Climate
- 8.10A: Energy Systems, Weather, and Climate
- 8.10B: Global Patterns of Air and Weather
- 8.10C: Tropical Cyclones

Unit 7: Impacts on Global Climate
- 8.11A: Impact of Natural Events on Global Climate
- 8.11B: Impact of Human Activity on Global Climate
- 8.11C: The Carbon Cycle

Unit 8: Cell Functions
- 8.13A: Functions of Organelles
- 8.13B: Function of Genes

Unit 9: Populations and Ecosystems
- 8.13C: Variations and Adaptations
- 8.12A: Disruptions of Energy Transfer in Food Webs
- 8.12B: Ecological Succession
- 8.12C: Impact of Biodiversity on Stability of Ecosystems

Unit 10: STAAR Review

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Scope and Sequence

RC	Unit	TEKS	Suggested Instructional Time	Unit Total
RC1: Matter and Energy	1	**8.6A:** Classification of Matter	8 days	20 days
		8.6B: Atoms in Chemical Reactions	5 days	
		8.6E: Law of Conservation of Mass	7 days	
	2	**8.6C:** Behavior of Water	8 days	18 days
		8.6D: Properties of Acids and Bases	10 days	
RC2: Force, Motion, and Energy	3	**8.7A:** Newton's Second Law of Motion	8 days	18 days
		8.7B: Simultaneous Action of Newton's Three Laws of Motion	10 days	
	4	**8.8A:** Characteristics of Waves	5 days	10 days
		8.8B: Applications of Electromagnetic Waves	5 days	
RC3: Earth and Space	5	**8.9A:** Stars: Life Cycle and Classification	7 days	16 days
		8.9B: Categorization of Galaxies	4 days	
		8.9C: Theories of the Origin of the Universe	5 days	
	6	**8.10A:** Energy Systems, Weather, and Climate	7 days	18 days
		8.10B: Global Patterns of Air and Weather	7 days	
		8.10C: Tropical Cyclones	4 days	
	7	**8.11A:** Impact of Natural Events on Global Climate	5 days	15 days
		8.11B: Impact of Human Activity on Global Climate	5 days	
		8.11C: The Carbon Cycle	5 days	
RC4: Organisms and Environments	8	**8.13A:** Functions of Organelles	7 days	14 days
		8.13B: Function of Genes	7 days	
	9	**8.13C:** Variations and Adaptations	7 days	21 days
		8.12A: Disruptions of Energy Transfer in Food Webs	5 days	
		8.12B: Ecological Succession	5 days	
		8.12C: Impact of Biodiversity on Stability of Ecosystems	4 days	
	10	**STAAR Review:** All TEKS	*Teacher Discretion*	

Pacing Guide

In addition to the Scope and Sequence, Summit K12 has also developed a Pacing Guide that can be adapted for teaching the Texas Essential Knowledge and Skills (TEKS) in any preferred order or according to a district provided scope and sequence. The Pacing Guide is arranged by reporting category and includes suggested instructional time for each TEKS, but the actual order of instruction is flexible and should be adjusted according to student needs and district priorities.

Summit K12 suggests introducing the fundamental concepts and principles of science prior to beginning instruction. To assist with this, the Scientific and Engineering Practices (SEPS) section of the LMS provides valuable resources that can be utilized at the teacher's discretion. Within the "Introduction to Science" unit, there are lessons on topics such as the definition of science, scientific conversations, and science notebooking. In addition, SEPS presentations are available to aid in teaching and practicing these skills.

Individual TEKS Pacing Guides

On pages 9-36, you will find more in depth pacing guides for each individual TEKS. Please note that the time allotment lists the estimated time it may take to complete each activity in the Lesson Guide. Please use your professional judgment to determine which activities are best suited for your students, while keeping in mind the recommended pacing located on page 8.

Assessments

Summit K12 includes a multitude of assessment opportunities throughout the course materials. Each district, school, and classroom has different assessment requirements, so our materials are built to provide flexibility to meet these needs. Each TEKS includes two online assessments, which may be given at any time during the unit, as well as phenomena, models, projects, investigations, and study guides that present opportunities to gather performance and concept mastery data for each student.

Teachers may choose to administer one online assessment before beginning a TEKS to gather formative student data, then use the Phenomenon Sensemaking Guide and a second online assessment after the completion of the TEKS Lesson Guide to determine students' growth and mastery of the scientific concepts.

Another possible assessment model is to reserve one online assessment for the completion of a TEKS Lesson Guide, then utilize the second online assessment as a spiral review later in the year.

Our assessment item bank provides the opportunity for districts and schools to build custom unit tests or common assessments to use at any point during the school year. These custom assessments are not included in the Summit K12 Scope and Sequence or Pacing Guides, so teachers and administrators should adjust instruction accordingly to account for any additional assessments.

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Pacing Guide

Reporting Category	TEKS	Suggested Instructional Time
RC1: Matter and Energy	**8.6A:** Classification of Matter	8 days
	8.6B: Atoms in Chemical Reactions	5 days
	8.6C: Behavior of Water	8 days
	8.6D: Properties of Acids and Bases	10 days
	8.6E: Law of Conservation of Mass	7 days
RC2: Force, Motion, and Energy	**8.7A:** Newton's Second Law of Motion	8 days
	8.7B: Simultaneous Action of Newton's Three Laws of Motion	10 days
	8.8A: Characteristics of Waves	5 days
	8.8B: Applications of Electromagnetic Waves	5 days
RC3: Earth and Space	**8.9A:** Stars: Life Cycle and Classification	7 days
	8.9B: Categorization of Galaxies	4 days
	8.9C: Theories of the Origin of the Universe	5 days
	8.10A: Energy Systems, Weather, and Climate	7 days
	8.10B: Global Patterns of Air and Weather	7 days
	8.10C: Tropical Cyclones	4 days
	8.11A: Impact of Natural Events on Global Climate	5 days
	8.11B: Impact of Human Activity on Global Climate	5 days
	8.11C: The Carbon Cycle	5 days
RC4: Organisms and Environments	**8.13C:** Variations and Adaptations	7 days
	8.12A: Disruptions of Energy Transfer in Food Webs	5 days
	8.12B: Ecological Succession	5 days
	8.12C: Impact of Biodiversity on Stability of Ecosystems	4 days
	8.13A: Functions of Organelles	7 days
	8.13B: Function of Genes	7 days

Reporting Category 1:
Matter and Energy

NOTE: The time allotment for each TEKS lists the estimated time it may take to complete each activity in the Lesson Guide. Please use your professional judgment to determine which activities are best suited for your students, while keeping in mind the recommended pacing located on pg. 7.

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8.6A: Classification of Matter

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Modeling Liquids	30 minutes
Establish Relevance	Discussion: Classifying Matter	20 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Classification of Matter	
	Element vs, Compounds	20 minutes
	Practice: Matter Card Sort	20 minutes
	Station Investigation: Modeling Matter	2 days
	TEKS Video: Classification of Matter	19 minutes
Apply and Extend	Project: Photography Exhibition - Classification of Matter	2 days
	Phenomenon: Modeling Liquids	30 minutes
	Study Guide: Classification of Matter	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.6B: Atoms in Chemical Reactions

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Whoosh Bottle	30 minutes
Establish Relevance	Demonstration: Flame Tests	30 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Discussion: Atoms in Chemical Reactions	20 minutes
	Practice: Unraveling Chemical Reactions	1 day
	Practice: Can You Solve It?	1 day
	TEKS Video: Atoms in Chemical Reactions	18 minutes
Apply and Extend	Practice: Atoms in Crime Scene Evidence	1 day
	Phenomenon: Whoosh Bottle	30 minutes
	Study Guide: Atoms in Chemical Reactions	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.6C: Behavior of Water

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Wondrous Water	30 minutes
Establish Relevance	Discussion: Water in the Human Body	30 minutes
Investigate and Learn	Literacy Connection: Properties of Water	1 day
	Key Concept Slides	30 minutes
	Notebooking: Behavior of Water Fold-It	
	Descriptive Investigation: Penny For Your Drops	1 day
	Comparative Investigation: Surface Tension	1 day
	Descriptive Investigation: Capillary Action	1 day
	TEKS Video: Behavior of Water	13 minutes
Apply and Extend	Design an Investigation: Water's Behavior	1 day
	Project: Water's Role	2 days
	Phenomenon: Wondrous Water	30 minutes
	Study Guide: Behavior of Water	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.6D: Properties of Acids and Bases

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Magic Rainbow	30 minutes
Establish Relevance	Activity: Observing the pH Scale	20 minutes
Apply and Extend	Key Concept Slides	30 minutes
	Station Investigation: Acids and Bases	2 days
	Practice: Properties of Acids and Bases Card Sort	15 minutes
	Literacy Connection: pH and Aquatic Ecosystems	1 day
	TEKS Video: Properties of Acids and Bases	10 minutes
Apply and Extend	Project: The Power of Antacids	2 days
	Project: Ocean Acidification	2 days
	Phenomenon: Magic Rainbow	30 minutes
	Study Guide: Properties of Acids and Bases	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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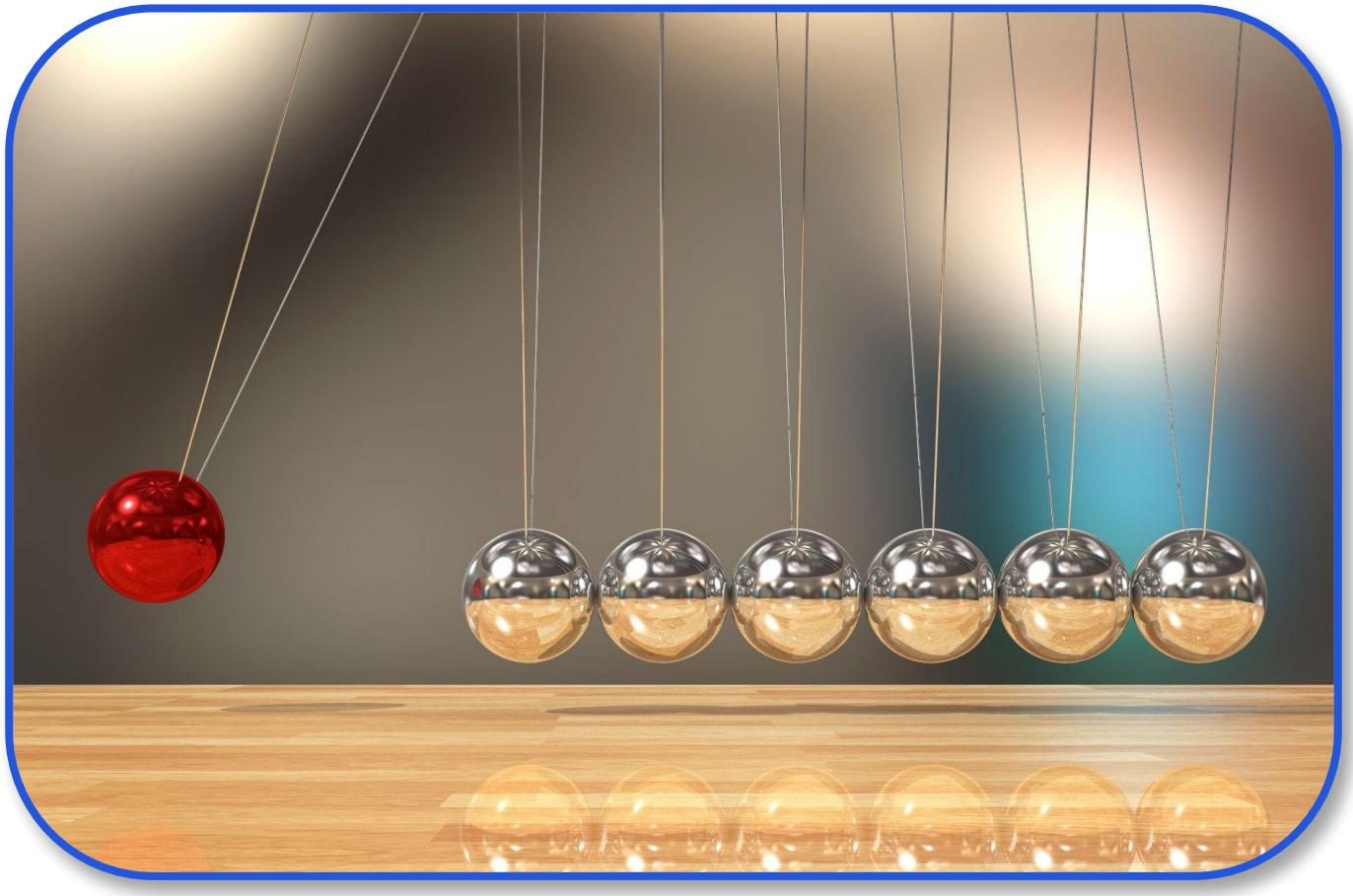
8.6E: Law of Conservation of Mass

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Steel on Fire	30 minutes
	Discussion: Making a Fire	10 minutes
Establish Relevance	Literacy Connection: Our Green Lifeline	20 minutes
Investigate and Learn	Descriptive Investigation: Law of Conservation of Mass	2 days
	Key Concept Slides	30 minutes
	Notebooking: Law of Conservation of Mass	
	Practice: Following the Law	1 day
	TEKS Video: Law of Conservation of Mass	12 minutes
Apply and Extend	Design an Investigation: Reactions in Open vs. Closed Systems	2 days
	Literacy Connection: Yeast Respiration CER	30 minutes
	Phenomenon: Steel on Fire	30 minutes
	Study Guide: Law of Conservation of Mass	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes



Reporting Category 2:
Force, Motion, and Energy

NOTE: The time allotment for each TEKS lists the estimated time it may take to complete each activity in the Lesson Guide. Please use your professional judgment to determine which activities are best suited for your students, while keeping in mind the recommended pacing located on pg. 7.

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8.7A: Newton's Second Law of Motion

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Bungee Launches in Space	30 minutes
	Demonstration: Second Law Relationships	20 minutes
Establish Relevance	Discussion: Vehicle Acceleration	5 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Comparative Investigation: Manipulating Mass	1 day
	Virtual Investigation: Forces and Motion	1 day
	Comparative Investigation: Marshmallow Launcher	1 day
	Practice: Force, Mass, and Acceleration Calculations	30 minutes
	TEKS Video: Newton's Second Law of Motion	15 minutes
Apply and Extend	Practice: Solving for Acceleration	30 minutes
	Design an Investigation: Newton's Second Law	2 days
	Phenomenon: Bungee Launches in Space	30 minutes
	Study Guide: Newton's Second Law of Motion	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.7B: Simultaneous Action of Newton's Three Laws of Motion

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Puck Movement	30 minutes
	Demonstration: Vehicular Collision	10 minutes
Establish Relevance	Discussion: Newton's Laws in Our Lives	10 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Literacy Connection: Shooting a Basketball	1 day
	Station Investigation: Amusement Park Rides	1 day
	Descriptive Investigation: Modeling Tectonic Plate Motion	30 minutes
	TEKS Video: Simultaneous Action of Newton's Three Laws of Motion	14 minutes
Apply and Extend	Descriptive Investigation: Toy Paddle Boat	3 days
	Engineering Challenge: Crash Test Cars	5 days
	Engineering Challenge: Rockets in Motion	5 days
	Phenomenon: Puck Movement	30 minutes
	Study Guide: Simultaneous Action of Newton's Three Laws of Motion	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.8A: Characteristics of Waves

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Don't Rock the Boat	30 minutes
Establish Relevance	Discussion: Everyday Transverse Waves	10 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Literacy Connection: Visible and Invisible Waves	1 day
	Virtual Investigation: Characteristics of Waves	2 days
	Descriptive Investigation: Characteristics of Waves	1 day
	Practice: Characteristics of Waves	30 minutes
	TEKS Video: Characteristics of Waves	10 minutes
Apply and Extend	Project: Modeling Transverse Waves	2 days
	Phenomenon: Don't Rock the Boat	30 minutes
	Study Guide: Characteristics of Waves	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.8B: Applications of Electromagnetic Waves

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: The “Golden” Sun	30 minutes
Establish Relevance	Activity: “Tour of the EMS” Anticipation-Reaction Guide	20 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Literacy Connection: Application of Electromagnetic Waves	1 day
	Practice: Applications of Electromagnetic Waves Card Sort	15 minutes
	TEKS Video: Applications of Electromagnetic Waves	12 minutes
Apply and Extend	Research: Do Microwaves Ovens Pose a Health Risk?	1 day
	Project: Public Service Announcement	2 days
	Project: Photography Exhibition - Applications of Electromagnetic Waves	2 days
	Phenomenon: The “Golden” Sun	30 minutes
	Study Guide: Applications of Electromagnetic Waves	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

Reporting Category 3:
Earth and Space

NOTE: The time allotment for each TEKS lists the estimated time it may take to complete each activity in the Lesson Guide. Please use your professional judgment to determine which activities are best suited for your students, while keeping in mind the recommended pacing located on pg. 7.

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8.9A: Stars: Life Cycle and Classification

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: The Sun's Future	30 minutes
Establish Relevance	Discussion: Stages of Life	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Life Cycle and Classification of Stars	
	Practice: Stars Life Cycle Card Sort	20 minutes
	Practice: Breaking Down the H-R Diagram	1 day
	TEKS Video: Stars: Life Cycle and Classification	17 minutes
Apply and Extend	Project: Celebrity H-R Diagram	1 day
	Project: My Star Life Cycle	1 day
	Phenomenon: The Sun's Future	30 minutes
	Study Guide: Stars: Life Cycle and Classification	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.9B: Categorization of Galaxies

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Five out of a Billion	30 minutes
Establish Relevance	Activity: “What Is a Galaxy?” Anticipation-Reaction Guide	30 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Categorization of Galaxies	
	Practice: Peering into Space	20 minutes
	Practice: Categorizing Galaxies Card Sort	20 minutes
	Literacy Connection: Galactic Disagreement CER	30 minutes
	Project: Mapping My Place in Space	2 days
	TEKS Video: Categorization of Galaxies	11 minutes
Apply And Extend	Research: Space Telescopes	2 days
	Phenomenon: Five out of a Billion	30 minutes
	Study Guide: Categorization of Galaxies	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.9C: Theories of the Origin of the Universe

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Origin of the Universe	30 minutes
Establish Relevance	Activity: “Infrared: Beyond the Visible” Anticipation-Reaction Guide	30 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Practice: Hypothesis, Theory, or Law?	20 minutes
	Demonstration: Shifting Wavelengths	20 minutes
	Descriptive Investigation: The Expanding Universe	1 day
	Activity: Studying Light from the Stars	2 days
	Project: Origin of the Universe Theories	4 days
	TEKS Video: Theories of the Origin of the Universe	11 minutes
Apply and Extend	Project: Century Timeline	2 days
	Project: It’s Not Rocket Science!	2 days
	Activity: Origin of the Universe Theories Extension	2 days
	Phenomenon: Origin of the Universe	30 minutes
	Study Guide: Theories of the Origin of the Universe	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.10A: Energy Systems, Weather, and Climate

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Rainforest Locations	30 minutes
Establish Relevance	Discussion: Convection Currents	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Literacy Connection: Weather vs. Climate	1 day
	Demonstration: Modeling Convection Currents	20 minutes
	Demonstration: Air Pressure	20 minutes
	Literacy Connection: What Are Winds?	1 day
	Demonstration: Water Cycle Model	30 minutes
	Practice: Ocean Currents	30 minutes
	TEKS Video: Energy Systems, Weather, and Climate	12 minutes
Apply and Extend	Literacy Connection: Causes and Impacts of Ocean Currents	30 minutes
	Literacy Connection: Hydrometeorology and Weather Interactions CER	1 day
	Phenomenon: Rainforest Locations	30 minutes
	Study Guide: Energy Systems, Weather, and Climate	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.10B: Global Patterns of Air and Weather

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Moving Weather	30 minutes
	Activity: “Making a Weather Forecast” Anticipation-Reaction Guide	30 minutes
Establish Relevance	Discussion: What is Weather?	10 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Global Patterns of Air and Weather	
	Demonstration: Modeling the Coriolis Effect	30 minutes
	Literacy Connection: What is the Jet Stream?	1 day
	Literacy Connection: How to Read a Weather Map	1 day
	TEKS Video: Global Patterns of Air and Weather	12 minutes
Apply and Extend	Project: Create a Country	1 day
	Project: Faces of the National Weather Service	2 days
	Phenomenon: Moving Weather	30 minutes
	Study Guide: Global Patterns of Air and Weather	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.10C: Tropical Cyclones

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Paths of Hurricanes	30 minutes
Establish Relevance	Discussion: Tropical Cyclones	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Tropical Cyclones	
	Demonstration: Creating a Storm Surge	30 minutes
	Literacy Connection: How Does a Hurricane Form?	1 day
	Practice: Tropical Cyclone Card Sort	15 minutes
	TEKS Video: Tropical Cyclones	9 minutes
Apply and Extend	Project: Tropical Cyclones	2 days
	Phenomenon: Paths of Hurricanes	30 minutes
	Study Guide: Tropical Cyclones	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.11A: Impact of Natural Events on Global Climate

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: A Year Without Summer	30 minutes
Establish Relevance	Discussion: Gases in the Air	20 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Descriptive Investigation: Greenhouse Effect	1 day
	Literacy Connection: Mount Pinatubo	1 day
	Literacy Connection: A Moment that Changed Earth	1 day
	Discussion: The Global Conveyor Belt	30 minutes
	TEKS Video: Impacts of Natural Events on Global Climate	15 minutes
Apply and Extend	Activity: Getting to the Core	1 day
	Project: Modeling the Impact of Natural Events on Global Climate	2 days
	Phenomenon: A Year Without Summer	30 minutes
	Study Guide: Impact of Natural Events on Global Climate	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.11B: Impact of Human Activity on Global Climate

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Urban Heat Island	30 minutes
Establish Relevance	Discussion: City Growth	10 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Literacy Connection: Human Activities and the Global Climate	1 day
	Virtual Investigation: The Greenhouse Effect	1 day
	Literacy Connection: Where Are the Hottest Places on Earth?	1 day
	Design an Investigation: Urbanization and Climate	2 days
	Literacy Connection: Global Temperatures and Carbon Emissions CER	30 minutes
	Activity: Tree Rings and Climate	1 day
	TEKS Video: Impact of Human Activity on Global Climate	15 minutes
Apply and Extend	Engineering Challenge: The Sustainable City	5 days
	Project: Climate Careers	2 days
	Literacy Connection: The Energy Dilemma CER	30 minutes
	Project: Contributions of Research to Climate Change	3 days
	Activity: Influences on Global Climate	2 days
	Phenomenon: Urban Heat Island	30 minutes
	Study Guide: Impact of Human Activity on Global Climate	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.11C: The Carbon Cycle

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Carbon's Story	30 minutes
	Activity: "Gas Problem" Anticipation-Reaction Guide	20 minutes
Establish Relevance	Discussion: Carbon All Around Us	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: The Carbon Cycle	
	Experimental Investigation: Photosynthesis and Respiration	1 day
	Activity: Choose Your Own Carbon Adventure	1 day
	Discussion: Carbon, Carbon Everywhere	20 minutes
	TEKS Video: The Carbon Cycle	15 minutes
Apply and Extend	Project: A Day in the Life of a Carbon Atom	1 day
	Project: Reducing Human Impact on Atmospheric Carbon	2 days
	Phenomenon: Carbon's Story	30 minutes
	Study Guide: The Carbon Cycle	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

Reporting Category 4:
Organisms and Environments

NOTE: The time allotment for each TEKS lists the estimated time it may take to complete each activity in the Lesson Guide. Please use your professional judgment to determine which activities are best suited for your students, while keeping in mind the recommended pacing located on pg. 7.

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8.12A: Disruptions of Energy Transfer in Food Webs

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Changes in Yellowstone	30 minutes
Establish Relevance	Discussion: Disrupting the Flow of Energy	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Activity: Conservation of Energy	20 minutes
	Activity: Food Web Chaos Game	1 day
	Practice: Impacts on Energy Flow	30 minutes
	Literacy Connection: A Changing Ecosystem	1 day
	Practice: Food Web Analysis	30 minutes
	TEKS Video: Disruptions of energy Transfer in Food Webs	12 minutes
Apply and Extend	Research: Invasive Species	2 days
	Phenomenon: Changes in Yellowstone	30 minutes
	Study Guide: Disruption of Energy Transfer in Food Web	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.12B: Ecological Succession

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Controlled Burn	30 minutes
	Activity: “Build A House” STEM Challenge	20 minutes
Establish Relevance	Literacy Connection: Devastation and Recovery at Mount St. Helens	1 day
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Ecological Succession Fold-It	
	Project: Ecological Succession Comic Strip	2 days
	Practice: The Effects of Succession	1 day
	Descriptive Investigation: Ecological Succession in the Field	4 days
	TEKS Video: Ecological Succession	14 minutes
Apply and Extend	Project: Ecological Succession Photo Journal	2 days
	Research: Coral Reef Succession	2 days
	Phenomenon: Controlled Burn	30 minutes
	Study Guide: Ecological Succession	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

SUMMIT K12

8.12C: Impact of Biodiversity on Stability of Ecosystems

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: “Green Deserts”	30 minutes
	Discussion: Biodiversity	10 minutes
Establish Relevance	Activity: Microhabitat Write and Sketch	30 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Demonstration: Modeling Biodiversity	20 minutes
	Discussion: Biodiversity Battles	10 minutes
	Discussion: Stability and Sustainability	15 minutes
	Activity: The Web of Life	1 day
	Practice: Food Web Comparison	1 day
	TEKS Video: Impact of Biodiversity on Stability of Ecosystems	9 minutes
Apply and Extend	Design an Investigation: Detecting Biodiversity	2 days
	Project: Biodiversity in an Ecosystem	2 days
	Phenomenon: “Green Deserts”	30 minutes
	Study Guide: Impact of Biodiversity on Stability of Ecosystems	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.13A: Functions of Organelles

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: A Cellular View	30 minutes
	Activity: What Do I Know about Cells?	15 minutes
Establish Relevance	Discussion: Organ vs. Organelles	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Functions of Organelles	
	Descriptive Investigation: Plant vs. Animal Cells	30 minutes
	Practice: Cell Organelle Card Sort	15 minutes
	TEKS Video: Functions of Organelles	12 minutes
Apply and Extend	Practice: Cell Analogies	30 minutes
	Project: Cell Model	2 days
	Phenomenon: A Cellular View	30 minutes
	Study Guide: Functions of Organelles	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.13B: Function of Genes

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Foxes	30 minutes
	Discussion: Forensic Flicks	15 minutes
Establish Relevance	Discussion: Canine Chromosomes	10 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Functions of Genes	
	Activity: Our Traits	30 minutes
	Descriptive Investigation: Monster Family	1 day
	TEKS Video: Function of Genes	10 minutes
Apply and Extend	Project: Once Upon a Chromosome	2 days
	Phenomenon: Foxes	30 minutes
	Study Guide: Function of Genes	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes

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8.13C: Variations and Adaptations

Lesson Section	Activity	Time Allotment
Engage	Phenomenon: Texas Horned Lizard	30 minutes
	Discussion: Observing Traits in a Marine Environment	15 minutes
Establish Relevance	Discussion: Antibiotic Resistant Bacteria	15 minutes
Investigate and Learn	Key Concept Slides	30 minutes
	Notebooking: Variations and Adaptations Fold-It	
	Literacy Connection: Different Types of Adaptations	1 day
	Literacy Connection: Utilizing Adaptations to Survive	1 day
	Virtual Investigation: Beetle Generations	1 day
	TEKS Video: Variation and Adaptations	14 minutes
Apply and Extend	Project: Species Adaptations	2 days
	Project: Create-a-Creature	2 days
	Phenomenon: Texas Horned Lizard	30 minutes
	Study Guide: Variations and Adaptations	30 minutes
Evaluate	Formative Assessment 1	20 minutes
	Vocabulary Mastery	15 minutes
	Formative Assessment 2	20 minutes