

## TEKS Combined K-5 Planning Guide

[Kindergarten Planning Guide](#) | [Grade 1 Planning Guide](#) | [Grade 2 Planning Guide](#)  
[Grade 3 Planning Guide](#) | [Grade 4 Planning Guide](#) | [Grade 5 Planning Guide](#)

### Grade Level Pacing Guides

The Pacing Guide is a resource to support your year-long planning. The units can be taught in any order. In most units, the lessons build on one another. Therefore, we strongly recommend the lessons within each unit are taught in the sequence they are presented. Extensions are available for each lesson and offer an opportunity for students to continue their science content learning. They include assessments and a curated collection of additional activity suggestions, online resources, project ideas, and readings.

### Mystery Science - TEKS Alignment

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Grade 4	<a href="#">Pacing Guide</a>	<a href="#">Matter &amp; Energy</a>	<a href="#">Force, Motion, &amp; Energy</a>	<a href="#">Earth &amp; Space</a>	<a href="#">Organisms &amp; Environments</a>
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## Kindergarten Planning Guide

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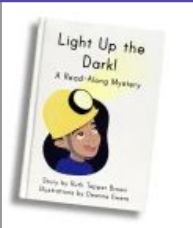
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Light & Material Properties	Pushes & Pulls	Severe Weather	Animal Needs	Plant Needs & Life Cycle

## Light & Material Properties

### Light & Dark



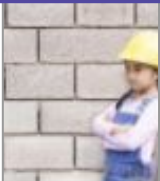



Kindergarten | TEKS K.5 & K.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>What if there were no windows?</u></p>		<p><b>K.5A</b> Observe and record properties of objects, including bigger or smaller, heavier or lighter, shape, color, and texture</p> <p><b>K.6A</b> Use the senses to explore different forms of energy such as light, thermal, and sound.</p>	<p>Students <b>investigate the properties of different materials</b> that they can and cannot see through. Then they create a stained glass window using tissue paper to <b>explore how materials interact with light</b>.</p>	<p><b>K.2D</b> Record and organize data and observations using pictures, numbers, and words.</p>
<p><b>LESSON 2</b></p> <p><u>Can you see in the dark?</u></p>		<p><b>K.6A</b> Use the senses to explore different forms of energy such as light, thermal, and sound.</p>	<p>Students look inside a completely dark box to determine if they can see the shape of the object inside. They allow more light into the box to illuminate the object and allow them to see it. Students <b>use their observations to construct an explanation that objects need light to be seen</b>.</p>	<p><b>K.2B</b> Plan and conduct simple descriptive investigations.</p>

## Pushes & Pulls

### Force Olympics




Kindergarten | TEKS K.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b> <u>What's the biggest excavator?</u>		<p><b>K.6C</b> Observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside.</p> <p><b>K.6D</b> Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	Students <b>observe different machines</b> and use those observations as evidence for why machines make work easier.	<b>K.2C</b> Collect data and make observations using simple tools.
<b>LESSON 2</b> <u>Why do builders need so many big machines?</u>		<p><b>K.6C</b> Observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside.</p> <p><b>K.6D</b> Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	Students <b>observe construction equipment being used in different ways to move objects.</b>	<b>K.2C</b> Collect data and make observations using simple tools.
<b>LESSON 3</b> <u>How can you knock down a wall made of concrete?</u>		<p><b>K.6C</b> Observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside.</p> <p><b>K.6D</b> Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	Students <b>carry out an investigation to determine how far back they should pull a model wrecking ball</b> to knock down a wall, but not the houses behind it.	<b>K.2B</b> Plan and conduct simple descriptive investigations.
<b>LESSON 4</b> <u>How can you knock down the most bowling pins?</u>		<p><b>K.6C</b> Observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside.</p> <p><b>K.6D</b> Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	Students play a game of bumper bowling to <b>observe the way that objects can move in straight lines, zigzags, and back and forth.</b>	<b>K.4B</b> Use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.
<b>LESSON 5</b> <u>How can you protect a mountain town from falling rocks?</u>		<p><b>K.6C</b> Observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside.</p> <p><b>K.6D</b> Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	Students conduct an investigation of how to protect a town from a falling boulder. They <b>design a solution to safely guide the direction of the boulder away from the town.</b>	<b>K.3A</b> Identify and explain a problem such as the impact of littering and propose a solution.
<b>LESSON 6</b> <u>How could you invent a trap?</u>		<p><b>K.6C</b> Observe and describe the location of an object in relation to another such as above, below, behind, in front of, and beside.</p> <p><b>K.6D</b> Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	Students <b>define a problem they would like to solve and then design a solution using what they know about the locations of objects and how they can move.</b>	<b>K.3A</b> Identify and explain a problem such as the impact of littering and propose a solution.

## Severe Weather

### Wild Weather





Kindergarten | TEKS K.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How can you get ready for a big storm?</u></p>		<p><b>K.8A</b> Observe and describe weather changes from day to day and over seasons.</p>	<p>Students obtain information of different types of severe weather to <b>observe and describe how the weather changes</b> during these events and what students can do to prepare and stay safe.</p>	<p><b>K.2A</b> Ask questions about organisms, objects, and events observed in the natural world.</p>
<p><b>LESSON 2</b></p> <p><u>Have you ever watched a storm?</u></p>		<p><b>K.8A</b> Observe and describe weather changes from day to day and over seasons</p>	<p>Students <b>create a simple tool</b> that allows them to observe how hard the wind is blowing. <b>They use this tool to observe weather changes</b> and ask questions about other ways to forecast the weather.</p>	<p><b>K.2C</b> Collect data and make observations using simple tools.</p> <p><b>K.3C</b> Explore that scientists investigate different things in the natural world and use tools to help in their investigations.</p>
<p><b>LESSON 3</b></p> <p><u>How many different kinds of weather are there?</u></p>		<p><b>K.8A</b> Observe and describe weather changes from day to day and over seasons</p> <p><b>K.8C</b> Observe, describe, and illustrate objects in the sky such as the clouds, Moon, and stars, including the Sun.</p>	<p>Students <b>obtain information through observations of the weather</b>. They communicate the information by acting as weather watchers and creating drawings of the weather conditions.</p>	<p><b>K.2D</b> Record and organize data and observations using pictures, numbers, and words.</p>

## Animal Needs

### Animal Secrets



Kindergarten | TEKS K.9

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u><a href="#">Why do woodpeckers peck wood?</a></u></p>		<p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.</p>	<p>Students obtain information through virtual observations of different animal behaviors. They <b>use this evidence to explain that one of the basic needs of animals is food.</b></p>	<p><b>K.4B</b> Use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.</p>
<p><b>LESSON 2</b></p> <p><u><a href="#">Where do animals live?</a></u></p>		<p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.</p>	<p>Students obtain information through media about how different animal homes are built. They <b>use this evidence to explain that animals need shelter.</b></p>	<p><b>K.4B</b> Use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.</p>
<p><b>LESSON 3</b></p> <p><u><a href="#">How can you find animals in the woods?</a></u></p>		<p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.</p>	<p>Students obtain information through virtual observations of different animal behaviors. They <b>use this evidence to explain that one of the basic needs of animals is shelter.</b></p>	<p><b>K.4B</b> Use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.</p>
<p><b>LESSON 4</b></p> <p><u><a href="#">How do animals make their homes in the forest?</a></u></p>		<p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.</p>	<p>Students <b>take a nature walk to look for evidence of animal homes.</b></p>	<p><b>K.4B</b> Use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.</p>

## Plant Needs & Life Cycle

### Plant Secrets

Kindergarten | TEKS K.9 & K.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How do plants and trees grow?</u></p>		<p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.</p> <p><b>K.10C</b> Identify ways that young plants resemble the parent plant.</p> <p><b>K.10D</b> Observe changes that are part of a simple life cycle of a plant: seed, seedling, plant, flower, and fruit.</p>	Students <b>carry out an investigation to determine the basic needs of plants.</b> They use observations to identify ways that <b>young plants resemble the parent plant and how the plant changes as it proceeds through its life cycle.</b>	<p><b>K.2B</b> Plan and conduct simple descriptive investigations.</p> <p><b>K.2C</b> Collect data and make observations using simple tools.</p>
<p><b>LESSON 2</b></p> <p><u>Why would you want an old log in your backyard?</u></p>		<p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals and air, water, nutrients, sunlight, and space for plants.</p>	Students <b>obtain evidence of living organisms</b> by virtually keeping watch of a log and the living things that visit it.	<p><b>K.4B</b> Use the senses as a tool of observation to identify properties and patterns of organisms, objects, and events in the environment.</p>

MINI-LESSON

+

LAB

**TEKS K.10B**

What's the biggest apple in the world?



MINI-LESSON

+

LAB

**TEKS K.10A**

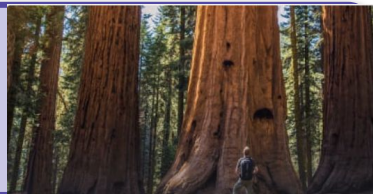
Why do leaves change color in the fall?



MINI-LESSON

**TEKS K.10B**

What's the biggest tree in the world?



MINI-LESSON

**TEKS K.10A**

Why don't all trees lose their leaves in the fall?



## 1st Grade Planning Guide

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## Heating & Cooling

### Sunny Skies


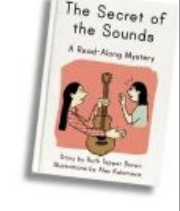

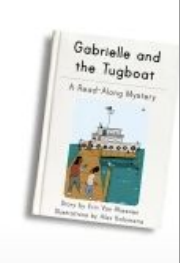
1st Grade | TEKS 1.5

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How could you walk barefoot across hot pavement without burning your feet?</u></p>		<p>1.5B Predict and identify changes in materials caused by heating and cooling.</p>	<p>Students <b>make observations of the pavement heating up</b> after being warmed by the Sun. Then, <b>they design a solution to build a shade structure</b> that can reduce the warming effect of sunlight.</p>	<p>1.3A Identify and explain a problem and propose a solution.</p>
<p><b>LESSON 2</b></p> <p><u>How could you warm up a frozen playground?</u></p>		<p>1.5B Predict and identify changes in materials caused by heating and cooling.</p>	<p>Students <b>carry out an investigation to test which materials can redirect the light and heat</b> of sunlight.</p>	<p>1.2C Collect data and make observations using simple tools.</p>
<p><b>LESSON 3</b></p> <p><u>Why does it get cold in winter?</u></p>		<p>1.5B Predict and identify changes in materials caused by heating and cooling.</p>	<p>Students <b>construct an explanation for why marshmallows melt</b> in one car and not in another car. Then, they conduct a virtual investigation to determine that the warmth of the Sun is the cause of the melted marshmallows.</p>	<p>1.2A Ask questions about organisms, objects, and events observed in the natural world.</p>

## Sound Energy

### Sounds & Communication


1st Grade | TEKS 1.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><a href="#">How do they make silly sounds in cartoons?</a></p>		<p><b>1.6A</b> Identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life.</p>	<p>Students <b>explore how to make different sounds with everyday objects</b>. They construct an explanation that objects vibrate when they make a sound, and if the vibration stops, the sound stops as well.</p>	<p><b>1.2C</b> Collect data and make observations using simple tools.</p>
<p><b>LESSON 2</b></p> <p><a href="#">Where do sounds come from?</a></p>		<p><b>1.6A</b> Identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life.</p>	<p>Students <b>create three different sound makers</b> and construct an explanation about where the vibrations are happening in each sound experiment.</p>	<p><b>1.2C</b> Collect data and make observations using simple tools.</p>
<p><b>LESSON 3</b></p> <p><a href="#">How could you send a secret message to someone far away?</a></p>		<p><b>1.6A</b> Identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life.</p>	<p>Students are presented with the problem that they need to send a message at night, without using noise. They <b>design a solution to create a color-coded message system and communicate with light signals</b>.</p>	<p><b>1.3A</b> Identify and explain a problem and propose a solution.</p>
<p><b>LESSON 4</b></p> <p><a href="#">How do boats find their way in the fog?</a></p>		<p><b>1.6A</b> Identify and discuss how different forms of energy such as light, thermal, and sound are important to everyday life.</p>	<p>Students <b>obtain information about light and sound signals</b>. They analyze different sounds with their eyes closed to determine which type of sound they hear.</p>	<p><b>1.2A</b> Ask questions about organisms, objects, and events observed in the natural world.</p>

## Sources of Water

### Work of Water

1st Grade | TEKS 1.7

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u><a href="#">If you floated down a river, where would you end up?</a></u></p>		<p><b>1.7B</b> Identify and describe a variety of natural sources of water, including streams, lakes, and oceans.</p>	<p>Students develop a model of the Earth's surface and use it to discover an important principle about how rivers work: <b>rivers flow downhill, from high places to low places.</b></p>	<p><b>1.2B</b> Plan and conduct simple descriptive investigations.</p> <p><b>1.3B</b> Make predictions based on observable patterns.</p>

**MINI-LESSON**

**TEKS 1.7B**

[How deep does the ocean go?](#)



**MINI-LESSON**

**TEKS 1.7B**




[What's at the bottom of the ocean?](#)



## Weather & Seasonal Changes

### Circle of Seasons


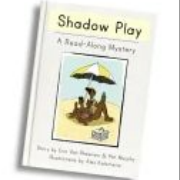

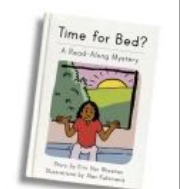
1st Grade | TEKS 1.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How do you know what to wear for the weather?</u></p>		<p><b>1.8A</b> Record weather information, including relative temperature such as hot or cold, clear or cloudy, calm or windy, and rainy or icy.</p>	<p>Students <b>track the weather daily and analyze the data by collecting, recording, and sharing their observations</b> to observe patterns of weather changing throughout the day and from day-to-day.</p>	<p><b>1.2D</b> Record and organize data using pictures, numbers, and words.</p> <p><b>1.2C</b> Collect data and make observations using simple tools.</p>
<p><b>LESSON 2</b></p> <p><u>What will the weather be like on your birthday?</u></p>		<p><b>1.8C</b> Identify characteristics of the seasons of the year and day and night.</p>	<p>Students <b>obtain and evaluate information</b> in a series of unnamed drawings of each season. They <b>use these clues to identify characteristics of each season</b>.</p>	<p><b>1.2D</b> Record and organize data using pictures, numbers, and words.</p> <p><b>1.3B</b> Make predictions based on observable patterns.</p>
<p><b>LESSON 3</b></p> <p><u>Why do birds lay eggs in the spring?</u></p>		<p><b>1.8C</b> Identify characteristics of the seasons of the year and day and night.</p> <p><b>1.9C</b> Gather evidence of interdependence among living organisms such as energy transfer through food chains or animals using plants for shelter.</p>	<p>Students identify the reasons why birds lay eggs in the spring. Then, they develop a bird nest model and <b>use this model as evidence for how animals use plants to protect their young</b>.</p>	<p><b>1.2E</b> Communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations.</p>

## Objects in the Day Sky

### Sun & Shadows

1st Grade | TEKS 1.8





Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Could a statue's shadow move?</u></p>		<p><b>1.8B</b> Observe and record changes in the appearance of objects in the sky such as the Moon and stars, including the Sun.</p>	<p>Students <b>observe how shadows change as time passes, or as the Sun moves across the sky.</b> They analyze how to move a light source to change the shape and direction of shadows, constructing an explanation of what causes a shadow to move.</p>	<p><b>1.2E</b> Communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations.</p>
<p><b>LESSON 2</b></p> <p><u>What does your shadow do when you're not looking?</u></p>		<p><b>1.8B</b> Observe and record changes in the appearance of objects in the sky such as the Moon and stars, including the Sun.</p>	<p>Students <b>conduct an investigation to gather information about how their shadow changes throughout the day.</b></p>	<p><b>1.3B</b> Make predictions based on observable patterns.</p>
<p><b>LESSON 3</b></p> <p><u>How can the Sun help you if you're lost?</u></p>		<p><b>1.8B</b> Observe and record changes in the appearance of objects in the sky such as the Moon and stars, including the Sun.</p> <p><b>1.8C</b> Identify characteristics of the seasons of the year and day and night.</p>	<p>Students <b>develop a Sun Finder, a model of the Sun's movement across the sky.</b> They use this model to reason about how the Sun can help guide them during the day.</p>	<p><b>1.2C</b> Collect data and make observations using simple tools.</p>
<p><b>LESSON 4</b></p> <p><u>Why do you have to go to bed early in the summer?</u></p>		<p><b>1.8B</b> Observe and record changes in the appearance of objects in the sky such as the Moon and stars, including the Sun.</p> <p><b>1.8C</b> Identify characteristics of the seasons of the year and day and night.</p>	<p>Students <b>obtain information about the seasonal patterns</b> of sunrise and sunset.</p>	<p><b>1.3B</b> Make predictions based on observable patterns.</p>

# 1st Grade: Organisms & Environments

## Animal Structures & Young Animals

### Animal Superpowers

1st Grade | TEKS 1.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b>  <a href="#">Why do birds have beaks?</a>		<p><b>1.10A</b> Investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats.</p> <p><b>1.9C</b> Gather evidence of interdependence among living organisms such as energy transfer through food chains or animals using plants for shelter.</p>	Students <b>investigate how different bird beaks are well suited for eating different kinds of food.</b> They construct an explanation about which beak would help a particular bird survive in a particular environment.	<p><b>1.2B</b> Plan and conduct simple descriptive investigations.</p> <p><b>1.2C</b> Collect data and make observations using simple tools.</p>
<b>LESSON 2</b>  <a href="#">Why do baby ducks follow their mother?</a>		<b>1.10C</b> Compare ways that young animals resemble their parents.	Students <b>obtain information about the behaviors of animal parents</b> that help their offspring survive.	<b>1.4B</b> Measure and compare organisms and objects using non-standard units.
<b>LESSON 3</b>  <a href="#">Why are polar bears white?</a>		<b>1.10A</b> Investigate how the external characteristics of an animal are related to where it lives, how it moves, and what it eats.	Students model how <b>camouflage helps moths survive in certain environments, but not in others</b> by carrying out an investigation with differently patterned paper moths.	<b>1.2E</b> Communicate observations and provide reasons for explanations using student-generated data from simple descriptive investigations.
<b>LESSON 4</b>  <a href="#">Why do family members look alike?</a>		<b>1.10C</b> Compare ways that young animals resemble their parents.	Students <b>use observations of animal parents and their offspring to construct an explanation about young plants and animals being similar, but not identical, to their parents.</b>	<b>1.4B</b> Measure and compare organisms and objects using non-standard units.

MINI-LESSON

+

LAB

**TEKS 1.10A**

[What is the biggest spider in the world?](#)



MINI-LESSON

**TEKS 1.10A**

[Why do penguins have wings if they can't fly?](#)





# 1st Grade: Organisms & Environments

## Parts of Plants

### Plant Superpowers

1st Grade | TEKS 1.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b> <a href="#">Why don't trees blow down in the wind?</a>		<b>1.10B</b> Identify and compare the parts of plants. <b>1.8D</b> Demonstrate that air is all around us and observe that wind is moving air.	Students <b>identify the parts of plants such as roots, branches, and leaves</b> . They evaluate these plant parts and apply that information to <b>design an umbrella that won't blow down in the wind</b> .	<b>1.3A</b> Identify and explain a problem and propose a solution.
<b>LESSON 2</b> <a href="#">What do sunflowers do when you're not looking?</a>		<b>1.10B</b> Identify and compare the parts of plants.	Students learn how plants respond to light. They <b>conduct an investigation to compare how the parts of a plant respond to light</b> .	<b>1.2C</b> Collect data and make observations using simple tools.

MINI-LESSON

+

LAB

**TEKS 1.10B**

[How do flowers bloom in the spring?](#)



## 2nd Grade Planning Guide

[Kindergarten Planning Guide](#) | [Grade 1 Planning Guide](#) | [Grade 2 Planning Guide](#)  
[Grade 3 Planning Guide](#) | [Grade 4 Planning Guide](#) | [Grade 5 Planning Guide](#)

### Grade Level Pacing Guides

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Table of Contents				
Matter & Energy	Earth & Space	Earth & Space	Organisms & Environments	Organisms & Environments
TEKS 2.5	TEKS 2.7	TEKS 2.8	TEKS 2.9 & 2.10	TEKS 2.9 & 2.10
Material Properties, Heating & Cooling	Earth Materials & Natural Resources	Objects in the Night Sky	Animal Needs, Behaviors, & Life Cycles	Plant Needs & Environments



## Material Properties, Heating, & Cooling

### Material Magic


2nd Grade | TEKS 2.5

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Why do we wear clothes?</u></p>		<p><b>2.5A</b> Classify matter by physical properties, including relative temperature, texture, flexibility, and whether material is a solid or liquid.</p>	<p>Students <b>investigate the different properties of matter and use those properties to design and build</b> a hat that protects them from the sun.</p>	<p><b>2.2A</b> Ask questions about organisms, objects, and events during observations and investigations.</p> <p><b>2.3A</b> Identify and explain a problem and propose a task and solution for the problem.</p>
<p><b>LESSON 2</b></p> <p><u>Can you really fry an egg on a hot sidewalk?</u></p>		<p><b>2.5B</b> Compare changes in materials caused by heating and cooling.</p>	<p>Students <b>conduct an investigation of different materials in order to determine which are best suited</b> for allowing people to handle hot items.</p>	<p><b>2.2B</b> Plan and conduct descriptive investigations.</p> <p><b>2.2D</b> Record and organize data using pictures, numbers, and words.</p>
<p><b>LESSON 3</b></p> <p><u>Why are so many toys made out of plastic?</u></p>		<p><b>2.5B</b> Compare changes in materials caused by heating and cooling.</p> <p><b>2.5C</b> Demonstrate that things can be done to materials such as cutting, folding, sanding, and melting to change their physical properties.</p>	<p>Students <b>conduct an investigation of different materials in order to determine</b> which are most and least easily melted.</p>	<p><b>2.2B</b> Plan and conduct descriptive investigations.</p> <p><b>2.2D</b> Record and organize data using pictures, numbers, and words.</p>
<p><b>LESSON 4</b></p> <p><u>What materials might be invented in the future?</u></p>		<p><b>2.5D</b> Combine materials that when put together can do things that they cannot do by themselves, such as building a tower or a bridge, and justify the selection of those materials based on their physical properties.</p>	<p>Students <b>design a new invention that takes advantage of the unique properties</b> of a futuristic material.</p>	<p><b>2.2E</b> Communicate observations and justify explanations using student-generated data from simple descriptive investigations.</p>
<p><b>LESSON 5</b></p> <p><u>Could you build a house out of paper?</u></p>		<p><b>2.5C</b> Demonstrate that things can be done to materials such as cutting, folding, sanding, and melting to change their physical properties.</p> <p><b>2.5D</b> Combine materials that when put together can do things that they cannot do by themselves, such as building a tower or a bridge, and justify the selection of those materials based on their physical properties.</p>	<p>Students <b>construct an evidence-based account</b> of how a structure built of paper can be disassembled and rebuilt in new ways.</p>	<p><b>2.2C</b> Collect data from observations using scientific tools.</p> <p><b>2.3A</b> Identify and explain a problem and propose a task and solution for the problem.</p>

## Earth Materials & Natural Resources

### Rocks & Natural Resources

2nd Grade | TEKS 2.7

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><a href="#">Why is there sand at the beach?</a></p>		<p><b>2.7A</b> Observe, describe, and compare rocks by size, texture, and color.</p>	<p>Students investigate the effects of rocks tumbling in a river. Based on their observations, they construct an explanation for why <b>rocks on the top of mountains are much bigger than the sand at the beach.</b></p>	<p><b>2.2B</b> Plan and conduct descriptive investigations.</p> <p><b>2.2E</b> Communicate observations and justify explanations using student-generated data from simple descriptive investigations.</p>

**MINI-LESSON**

**TEKS 2.7B**

[Why is the ocean salty?](#)



**MINI-LESSON**

**TEKS 2.7C**

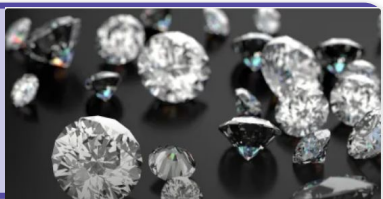
[Where does metal come from?](#)



**MINI-LESSON**

**TEKS 2.7C**

[How are diamonds made?](#)



**MINI-LESSON**

**TEKS 2.7C**



[How is gold made?](#)



## Objects in the Night Sky

### Star & Moon Patterns

2nd Grade | TEKS 2.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><a href="#">Why do the stars come out at night?</a></p>		<p><b>2.8C</b> Observe, describe, and record patterns of objects in the sky, including the appearance of the Moon.</p>	<p>Students develop and use a model of the Big Dipper in the night sky. After conducting a simple investigation, students <b>construct an explanation for why stars are only visible in the night sky.</b></p>	<p><b>2.2E</b> Communicate observations and justify explanations using student-generated data from simple descriptive investigations.</p> <p><b>2.3B</b> Make predictions based on observable patterns.</p>
<p><b>LESSON 2</b></p> <p><a href="#">How can stars help you if you get lost?</a></p>		<p><b>2.8C</b> Observe, describe, and record patterns of objects in the sky, including the appearance of the Moon.</p>	<p>Students <b>observe that groups of stars in the sky form a pattern: constellations.</b> Even though the Big Dipper changes its spot in the sky in different seasons, it always points to the North Star.</p>	<p><b>2.2A</b> Ask questions about organisms, objects, and events during observations and investigations.</p>

**MINI-LESSON**

**TEKS 2.8C**

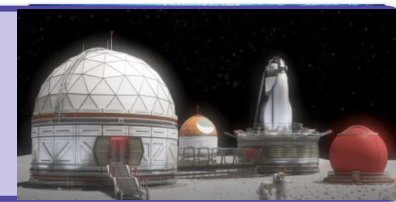
[Who created the constellations?](#)



**MINI-LESSON**

**TEKS 2.8C**

[What would it be like to live on the Moon?](#)



**MINI-LESSON**

**TEKS 2.8C**

[Why does the Moon turn blood red during a lunar eclipse?](#)



**MINI-LESSON**

**TEKS 2.8C**




[How often do eclipses happen?](#)



## Animal Needs, Behaviors, & Life Cycles

### Animal Adventures

2nd Grade | TEKS 2.9 & 2.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b> <a href="#">How many different kinds of animals are there?</a>		<b>2.10A</b> Observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs.	Students examine how scientists <b>organize animals into groups based on their characteristics.</b>	<b>2.2F</b> Compare results of investigations with what students and scientists know about the world.  <b>2.4B</b> Measure and compare organisms and objects.
<b>LESSON 2</b> <a href="#">Why do frogs say “ribbit”?</a>		<b>2.10A</b> Observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs.	Students identify frogs based on their unique calls and use that information to <b>determine the level of biodiversity within multiple habitats.</b>	<b>2.2F</b> Compare results of investigations with what students and scientists know about the world.  <b>2.4B</b> Measure and compare organisms and objects.
<b>LESSON 3</b> <a href="#">How could you get more birds to visit a bird feeder?</a>		<b>2.9C</b> Compare the ways living organisms depend on each other and on their environments such as through food chains.  <b>2.10A</b> Observe, record, and compare how the physical characteristics and behaviors of animals help them meet their basic needs.	Students investigate which kinds of birds are likely to visit a bird feeder based on what they eat and <b>design and build a prototype bird feeder that attracts a specific type of bird.</b>	<b>2.3A</b> Identify and explain a problem and propose a task and solution for the problem.

**MINI-LESSON** + **LAB**

**TEKS 2.10C**

[Are butterflies the only animals that start out as caterpillars?](#)



**MINI-LESSON** + **LAB**

**TEKS 2.9B**

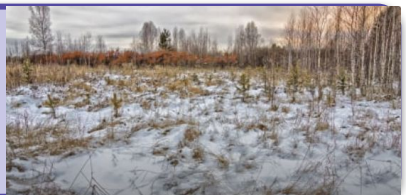
[Why do bears hibernate?](#)



**MINI-LESSON**

**TEKS 2.9B**

[Where do bugs go in winter?](#)



**MINI-LESSON**

**TEKS 2.9B**






[Why do animals come back after going to warm places in winter?](#)



## Plant Needs & Environments

### Plant Adventures

2nd Grade | TEKS 2.9 & 2.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How did a tree travel halfway around the world?</u></p>		<p><b>2.9A</b> Identify the basic needs of plants and animals.</p> <p><b>2.10B</b> Observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant.</p>	Students observe how <b>different types of plants produce different types of seeds</b> in the process of reproduction.	<b>2.2A</b> Ask questions about organisms, objects, and events during observations and investigations.
<p><b>LESSON 2</b></p> <p><u>Could a plant survive without light?</u></p>		<p><b>2.9A</b> Identify the basic needs of plants and animals.</p> <p><b>2.10B</b> Observe, record, and compare how the physical characteristics of plants help them meet their basic needs such as stems carry water throughout the plant.</p>	Students <b>conduct an investigation to determine that plants need water and light to grow.</b>	<p><b>2.2B</b> Plan and conduct descriptive investigations.</p> <p><b>2.2E</b> Communicate observations and justify explanations using student-generated data from simple descriptive investigations.</p>
<p><b>LESSON 3</b></p> <p><u>Why do trees grow so tall?</u></p>		<b>2.9B</b> Identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things.	Students <b>observe that plants require light</b> in order to fully grow and be healthy.	<b>2.3B</b> Make predictions based on observable patterns.
<p><b>LESSON 4</b></p> <p><u>Should you water a cactus?</u></p>		<b>2.9B</b> Identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things.	Students <b>observe that different plants require different amounts of light and water.</b>	<b>2.3B</b> Make predictions based on observable patterns.
<p><b>LESSON 5</b></p> <p><u>Where do plants grow best?</u></p>		<b>2.9B</b> Identify factors in the environment, including temperature and precipitation, that affect growth and behavior such as migration, hibernation, and dormancy of living things.	Students practice thinking like gardeners, <b>considering what plants need</b> and how a simple habitat can change over time.	<b>2.2A</b> Ask questions about organisms, objects, and events during observations and investigations.

## 3rd Grade Planning Guide

[Kindergarten Planning Guide](#) | [Grade 1 Planning Guide](#) | [Grade 2 Planning Guide](#)  
[Grade 3 Planning Guide](#) | [Grade 4 Planning Guide](#) | [Grade 5 Planning Guide](#)

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TEKS 3.5 & 3.6	TEKS 3.6	TEKS 3.7	TEKS 3.8	TEKS 3.9 & 3.10	TEKS 3.10
Forces, Motion, & Magnets	Energy in Everyday Life	Rapid Changes to Earth's Surface	Solar System, Sun, & Planets	Animals & Ecosystems	Structures & Behaviors of Organisms

## Forces, Motion, & Magnets

### Invisible Forces


3rd Grade | TEKS 3.5 & 3.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b> <u>How could you win a tug-of-war against a bunch of adults?</u>		<b>3.6B</b> Demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.	Students <b>develop a mental model of the nature of forces and motion and use that model to explain the behavior of an elastic jumper.</b>	<b>3.2A</b> Plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world.
<b>LESSON 2</b> <u>What makes bridges so strong?</u>		<b>3.6B</b> Demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.	Students <b>develop and design a bridge to be as strong as possible while working with limited materials.</b>	<b>3.3B</b> Represent the natural world using models and identify their limitations, including size, properties, and materials.
<b>LESSON 3</b> <u>How can you go faster down a slide?</u>		<b>3.6B</b> Demonstrate and observe how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons.	Students <b>plan and carry out investigations of the behaviors of different materials as they slide past one another.</b>	<b>3.2D</b> Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.  <b>3.2E</b> Demonstrate that repeated investigations may increase the reliability of results.
<b>LESSON 4</b> <u>What can magnets do?</u>		<b>3.5A</b> Measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float.  <b>3.6C</b> Observe forces such as magnetism and gravity acting on objects.	Students <b>investigate the properties of magnets and the fact that they exert forces that act at a distance.</b>	<b>3.2A</b> Plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world.
<b>LESSON 5</b> <u>How can you unlock a door using a magnet?</u>		<b>3.6C</b> Observe forces such as magnetism and gravity acting on objects.	Students <b>investigate magnetic attraction and repulsion, and design a magnetic lock in the hands-on lab.</b>	<b>3.3B</b> Represent the natural world using models and identify their limitations, including size, properties, and materials.

## Energy in Everyday Life

Explore Energy

3rd Grade | TEKS 3.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u><a href="#">How is your body similar to a car?</a></u></p>		<p><b>3.6A</b> Explore different forms of energy, including mechanical, light, sound, and thermal in everyday life.</p>	<p>Students learn about stored energy and about the relationship between motion and energy. Students build models of an amusement park ride and discover <b>how energy can be stored in materials. Stored energy can be converted to speed.</b></p>	<p><b>3.3B</b> Represent the natural world using models and identify their limitations, including size, properties, and materials.</p> <p><b>3.2D</b> Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.</p>

**MINI-LESSON**

**TEKS 3.6A**

[How do phones work?](#)



**MINI-LESSON**

**TEKS 3.6A**

[How do batteries work?](#)



**MINI-LESSON**

**TEKS 3.6A**

[How do things glow in the dark?](#)



**MINI-LESSON**

**TEKS 3.6A**

[What causes the Northern Lights?](#)








## Rapid Changes to Earth's Surface

*Volcanoes, Earthquakes, & Landslides*

3rd Grade | TEKS 3.7

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Could a volcano pop up where you live?</u></p>		<p><b>3.7B</b> Investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.</p>	<p>Students use coordinates to develop a map of volcanoes to discover a pattern of where volcanoes exist on Earth. <b>Students identify the pattern of volcanoes in the "Ring of Fire."</b></p>	<p><b>3.2D</b> Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.</p> <p><b>3.2C</b> Construct maps, graphic organizers, simple tables, charts, and bar graphs using tools and current technology to organize, examine, and evaluate measured data.</p>
<p><b>LESSON 2</b></p> <p><u>Why do some volcanoes explode?</u></p>		<p><b>3.7B</b> Investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.</p>	<p>Students investigate the properties of thin and thick lava by attempting to create air bubbles. Students realize that <b>thick lava will cause a volcano to explode, while thin lava will not.</b></p>	<p><b>3.2A</b> Plan and implement descriptive investigations, including asking and answering questions, making inferences, and selecting and using equipment or technology needed, to solve a specific problem in the natural world.</p>
<p><b>LESSON 3</b></p> <p><u>How could you survive a landslide?</u></p>		<p><b>3.7B</b> Investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.</p>	<p>Students generate multiple possible solutions to protect homes from a landslide. Students realize that there are <b>many causes for the erosion that causes rocks to fall in landslides.</b></p>	<p><b>3.2F</b> Communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.</p>

**MINI-LESSON**

**TEKS 3.7B**



How do earthquakes happen?



## Solar System, Sun, & Planets

### The Solar System

3rd Grade | TEKS 3.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b>  <u>What are the wandering stars?</u>		<b>3.8D</b> Identify the planets in Earth's solar system and their position in relation to the Sun.	Students learn that planets look like stars, but don't move like them. The apparent movement of planets is caused by both the Earth's spin and the planets' movement around the Sun. <b>Students use a model of the solar system to learn the order of the planets and their relative distance from the Sun, and each other.</b>	<b>3.3B</b> Represent the natural world using models such as volcanoes or the Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials.
<b>LESSON 2</b>  <u>Could there be life on other planets?</u>		<b>3.8B</b> Describe and illustrate the Sun as a star composed of gases that provides light and thermal energy.	Students discover that the Earth is in the "Goldilocks Zone" — a distance from the Sun with the right amount of light and heat for life to exist. Students evaluate other solar systems, comparing their stars to our Sun. Based on their analysis, <b>students plan a space mission to a planet with conditions similar to those on Earth.</b>	<b>3.2D</b> Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.

#### MINI-LESSON

#### TEKS 3.8D

Why is Mars red?



#### MINI-LESSON

#### TEKS 3.8D

Is Pluto a planet?



#### MINI-LESSON

#### TEKS 3.8D




Why isn't Pluto a major planet anymore?



## Animals & Ecosystems

Food Chains, Life Cycles, & Animal Structures

3rd Grade | TEKS 3.9 & 3.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><b>NEW</b></p> <p><u>Why would a wild animal visit a playground?</u></p>		<p><b>3.9A</b> Observe and describe the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem.</p>	<p>Students <b>observe animals, plants, and the physical characteristics</b> of two different habitats. They analyze this information to create an understanding of how the living and nonliving parts of a habitat support the animals that live there.</p>	<p><b>3.4A</b> Collect, record, and analyze information using tools and materials to support observation of habitats of organisms.</p>
<p><b>LESSON 2</b></p> <p><u>Why would a hawk move to New York City?</u></p>		<p><b>3.9B</b> Identify and describe the flow of energy in a food chain and predict how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field.</p>	<p>Students construct models of food chains by linking cards discovering that <b>different interrelationships exist between organisms</b>.</p>	<p><b>3.3B</b> Represent the natural world using models such as volcanoes or the Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials.</p> <p><b>3.2F</b> Communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.</p>
<p><b>LESSON 3</b></p> <p><u>What's the best way to get rid of mosquitoes?</u></p>		<p><b>3.10B</b> Investigate and compare how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles.</p>	<p>Students obtain and evaluate information about mosquitoes from different sources. <b>They analyze and interpret information about the mosquito life cycle</b> to reduce the number of mosquitoes that live in a certain area.</p>	<p><b>3.2D</b> Analyze and interpret patterns in data to construct reasonable explanations based on evidence from investigations.</p> <p><b>3.2F</b> Communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.</p>

MINI-LESSON

+

LAB

**TEKS 3.10A**



How do polar animals survive the cold?



## Structures & Behaviors of Organisms

### Human Body & the Brain

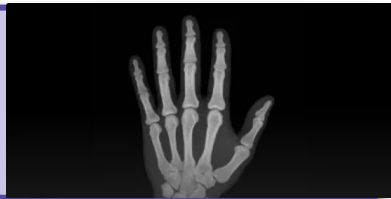
3rd Grade | TEKS 3.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u><a href="#">Why do our biceps bulge?</a></u></p>		<p><b>3.10A</b> Explore how structures and functions of plants and animals allow them to survive in a particular environment.</p>	Students construct a model of the human hand to explain how <b>muscles pull on bones to create movement</b> .	<p><b>3.3B</b> Represent the natural world using models such as volcanoes or the Sun, Earth, and Moon system and identify their limitations, including size, properties, and materials.</p>
<p><b>LESSON 2</b></p> <p><u><a href="#">How does your brain control your body?</a></u></p>		<p><b>3.10A</b> Explore how structures and functions of plants and animals allow them to survive in a particular environment.</p>	Students investigate how their own brain works by testing their reflexes. They discover that <b>the brain receives information from the senses, processes the information, and sends signals to the muscles to enable movement</b> .	<p><b>3.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>

**MINI-LESSON** + **LAB**

**TEKS 3.10A**

[Why does our skeleton have so many bones?](#)



**MINI-LESSON** + **LAB**

**TEKS 3.10A**

[What would happen if you didn't have a skull?](#)



**MINI-LESSON** + **LAB**

**TEKS 3.10A**

[How does the heart pump blood?](#)



**MINI-LESSON**

**TEKS 3.10A**

[Why do we sweat when we play sports?](#)



## 4th Grade Planning Guide

[Kindergarten Planning Guide](#) | [Grade 1 Planning Guide](#) | [Grade 2 Planning Guide](#)  
[Grade 3 Planning Guide](#) | [Grade 4 Planning Guide](#) | [Grade 5 Planning Guide](#)

### Grade Level Pacing Guides

The Pacing Guide is a resource to support your year-long planning. The units can be taught in any order. In most units, the lessons build on one another. Therefore, we strongly recommend the lessons within each unit are taught in the sequence they are presented. Extensions are available for each lesson and offer an opportunity for students to continue their science content learning. They include assessments and a curated collection of additional activity suggestions, online resources, project ideas, and readings.

### Mystery Science - TEKS Alignment

Mystery Science is aligned to the Science Texas Essential Knowledge and Skills (TEKS). Each lesson (exploration & hands-on lab) is designed to take one hour per week. Mini-lessons are 5-minute videos that answer K-5 student questions and can be used as a jumping off point to engage learners for a full lesson planned by the teacher. Each TEKS statement is color-coded to indicate the following:

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Not identified by TEA as part of the assessed curriculum

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Force, Motion, & Energy	Force, Motion, & Energy	Earth & Space	Earth & Space	Earth & Space	Organisms & Environments
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Sound Energy & Communication	Motion Energy & Gravity	Earth's Resources & Slow Changes	Weather & The Water Cycle	Patterns of the Sun, Moon, & Stars	Plant Traits & Structures

## Sound Energy & Communication

### Waves of Sound



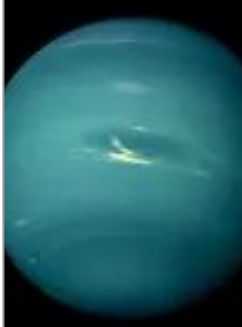
4th Grade | TEKS 4.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u><a href="#">How far can a whisper travel?</a></u></p>		<p><b>4.6A</b> Differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal.</p>	<p>Students investigate sound energy using paper cup telephones. Students figure out that <b>sound is a vibration that can travel through a medium.</b></p>	<p><b>4.2B</b> Plan and implement descriptive investigations, including asking well defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.</p>
<p><b>LESSON 2</b></p> <p><u><a href="#">What would happen if you screamed in outer space?</a></u></p>		<p><b>4.6A</b> Differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal.</p>	<p>Students construct a model of sound vibrations to explain how <b>air is a medium that sound vibrations travel through.</b></p>	<p><b>4.3B</b> Represent the natural world using models and identify their limitations, including accuracy and size.</p>
<p><b>LESSON 3</b></p> <p><u><a href="#">Why are some sounds high and some sounds low?</a></u></p>		<p><b>4.6A</b> Differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal.</p>	<p>Students make observations of vibrations and sound waves to discover that <b>high pitch sounds vibrate faster and have short wavelengths and low pitch sounds vibrate slower and have long wavelengths.</b></p>	<p><b>4.2D</b> Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.</p>

## Motion Energy & Gravity

### Energy & Motion





4th Grade | TEKS 4.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>What makes roller coasters go so fast?</u></p>		<p><b>4.6A</b> Differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal.</p>	<p>Students build a model of a roller coaster and carry out an investigation using marbles. Students learn that <b>lifting an object up stores energy in the object. When the object falls, that stored energy is released. They realize that energy is transferred when objects collide.</b></p>	<p><b>4.3B</b> Represent the natural world using models and identify their limitations, including accuracy and size.</p>
<p><b>LESSON 2</b></p> <p><u>Why is the first hill of a roller coaster always the highest?</u></p>		<p><b>4.6A</b> Differentiate among forms of energy, including mechanical, sound, electrical, light, and thermal.</p>	<p>Using a model roller coaster, students conduct an investigation to determine that a hill's height determines the amount of energy stored in a marble at the top of the hill. <b>Students figure out that the greater the height of an object, the more energy it stores and the faster it will move when released or dropped.</b></p>	<p><b>4.3B</b> Represent the natural world using models and identify their limitations, including accuracy and size.</p>
<p><b>LESSON 3</b></p> <p><u>Why is gravity different on other planets?</u></p>		<p><b>4.6D</b> Design a descriptive investigation to explore the effect of force on an object such as a push or a pull, gravity, friction, or magnetism.</p>	<p>Using mathematics and computational thinking, students calculate how high they could jump on planets and moons that have stronger or weaker gravity than Earth. <b>Students analyze and interpret this data to construct an explanation for why the amount of gravity is different on other planets.</b></p>	<p><b>4.2A</b> Plan and implement descriptive investigations, including asking well defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.</p> <p><b>4.2B</b> Collect and record data by observing and measuring, using the metric system, and using descriptive words and numerals such as labeled drawings, writing, and concept maps.</p>

## Earth's Resources & Slow Changes

### Earth's Systems

4th Grade | TEKS 4.7





Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How much water is in the world?</u></p>		<p><b>4.7C</b> Identify and classify Earth's renewable resources, including air, plants, water, and animals, and nonrenewable resources, including coal, oil, and natural gas, and the importance of conservation.</p>	<p>Students analyze and interpret data from world maps to determine the relative amounts of fresh, salt, and frozen water. Students figure out that while the Earth has a lot of water, <b>most of Earth's water is not fresh or accessible.</b></p>	<p><b>4.2C</b> Construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data.</p>
<p><b>LESSON 2</b></p> <p><u>When you turn on the faucet, where does the water come from?</u></p>		<p><b>4.7C</b> Identify and classify Earth's renewable resources, including air, plants, water, and animals, and nonrenewable resources, including coal, oil, and natural gas, and the importance of conservation.</p>	<p><b>Students learn that most people get their fresh water from underground sources.</b> Students determine the best place to settle a new town by considering features of the landscape and the characteristics of the plants that thrive there.</p>	<p><b>4.2B</b> Collect and record data by observing and measuring, using the metric system, and using descriptive words and numerals such as labeled drawings, writing, and concept maps.</p>
<p><b>LESSON 3</b></p> <p><u>Will a mountain last forever?</u></p>		<p><b>4.7B</b> Observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice.</p>	<p>Students make observations of the effects of weathering to discover that <b>rocks will become rounded and break into small pieces when they tumble down a mountain.</b></p>	<p><b>4.2A</b> Plan and implement descriptive investigations, including asking well defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.</p>
<p><b>LESSON 4</b></p> <p><u>Where does energy come from?</u></p>		<p><b>4.7C</b> Identify and classify Earth's renewable resources, including air, plants, water, and animals, and nonrenewable resources, including coal, oil, and natural gas, and the importance of conservation.</p>	<p>Students evaluate the <b>advantages and disadvantages of wind, water, and solar energy to power a town.</b> Students obtain and evaluate information about the needs of each source of energy and analyze and interpret data about the town's resources.</p>	<p><b>4.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>



## Weather & The Water Cycle

### Stormy Skies

4th Grade | TEKS 4.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<b>LESSON 1</b>  <a href="#">Where do clouds come from?</a>		<b>4.8B</b> Describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process.	Students obtain and combine information that <b>water can change from liquid to gas, but that it is always made of tiny drops. Clouds are made of water that has evaporated.</b>	<b>4.2A</b> Plan and implement descriptive investigations, including asking well defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.
<b>LESSON 2</b>  <a href="#">How can we predict when it's going to storm?</a>		<b>4.8A</b> Measure, record, and predict changes in weather.	Students make observations of clouds and <b>develop a tool to make predictions about what kind of weather might happen next.</b>	<b>4.2D</b> Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.
<b>LESSON 3</b>  <b>NEW</b> <a href="#">Where do flash floods happen?</a>		<b>4.8A</b> Measure, record, and predict changes in weather.	Students <b>use a model (i.e. a map) of Texas to examine the different factors that contribute to flash floods.</b> They use this to predict where flash floods are most likely to happen.	<b>4.2C</b> construct simple tables, charts, bar graphs, and maps using tools and current technology to organize, examine, and evaluate data.
<b>LESSON 4</b>  <a href="#">How can you keep a house from blowing away in a windstorm?</a>		<b>4.8A</b> Measure, record, and predict changes in weather.	Students <b>design and build solutions that reduce the hazards associated with strong winds that could damage buildings.</b>	<b>4.2E</b> Perform repeated investigations to increase the reliability of results.

### MINI-LESSON

#### TEKS 4.8A




[Why are tornadoes so hard to predict?](#)



## Patterns of the Sun, Moon, & Stars

*Sun, Moon, & Stars*

4th Grade | TEKS 4.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u><a href="#">How can the Sun tell you the season?</a></u></p>		<p><b>4.8C</b> Collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time.</p>	<p>Students examine photos taken at different times of year and figure out the time of year that each photo was taken. <b>Students discover that the Sun's path changes with the seasons, as does the time of sunrise and sunset.</b> The Sun is always highest in the sky at noon, but that height changes with the season.</p>	<p><b>4.2D</b> Analyze data and interpret patterns to construct reasonable explanations from data that can be observed and measured.</p>
<p><b>LESSON 2</b></p> <p><u><a href="#">Why do the stars change with the season?</a></u></p>		<p><b>4.8C</b> Collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time.</p>	<p>Students build a model of the universe and use it to explain why different stars are visible at different times of year. <b>Using evidence from this model, students make an argument that supports the claim that the Earth orbits the Sun.</b></p>	<p><b>4.3B</b> Represent the natural world using models and identify their limitations, including accuracy and size.</p>
<p><b>LESSON 3</b></p> <p><u><a href="#">How does the Moon change shape?</a></u></p>		<p><b>4.8C</b> Collect and analyze data to identify sequences and predict patterns of change in shadows, seasons, and the observable appearance of the Moon over time.</p>	<p>Students use a physical model of the Sun and Moon to investigate how the Moon's phase relates to its position relative to the Sun. <b>Students notice that the Moon's phases repeat in a predictable pattern.</b></p>	<p><b>4.3B</b> Represent the natural world using models and identify their limitations, including accuracy and size.</p>

## Plant Traits & Structures

### Power of Flowers

4th Grade | TEKS 4.9 & 4.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Why do plants grow flowers?</u></p>		<p><b>4.10A</b> Explore how structures and functions enable organisms to survive in their environment.</p>	<p>Students <b>model the structure and function of flower parts that are responsible for creating seeds.</b></p>	<p><b>4.3B</b> Represent the natural world using models and identify their limitations, including accuracy and size.</p>
<p><b>LESSON 2</b></p> <p><u>Why do plants give us fruit?</u></p>		<p><b>4.10A</b> Explore how structures and functions enable organisms to survive in their environment.</p>	<p>Students <b>explore the function of fruits in plants and practice classification.</b></p>	<p><b>4.2A</b> Plan and implement descriptive investigations, including asking well defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.</p>
<p><b>LESSON 3</b></p> <p><u>Why are some apples red and some green?</u></p>		<p><b>4.10B</b> Explore and describe examples of traits that are inherited from parents to offspring such as eye color and shapes of leaves and behaviors that are learned such as reading a book and a wolf pack teaching their pups to hunt effectively.</p>	<p>Students <b>explore how human beings have developed fruits with specific traits through selection.</b></p>	<p><b>4.2B</b> Collect and record data by observing and measuring, using the metric system, and using descriptive words and numerals such as labeled drawings, writing, and concept maps.</p>
<p><b>LESSON 4</b></p> <p><u>How could you make the biggest fruit in the world?</u></p>		<p><b>4.10B</b> Explore and describe examples of traits that are inherited from parents to offspring such as eye color and shapes of leaves and behaviors that are learned such as reading a book and a wolf pack teaching their pups to hunt effectively.</p>	<p>Students <b>investigate how human beings have modified plants based on our knowledge of how plants change from generation to generation.</b></p>	<p><b>4.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>
<p><b>LESSON 5</b></p> <p><u>What do plants eat?</u></p>		<p><b>4.9A</b> Investigate that most producers need sunlight, water, and carbon dioxide to make their own food, while consumers are dependent on other organisms for food.</p>	<p>Students conduct an investigation and interpret data and figure out that <b>water and air account for a plant's weight.</b></p>	<p><b>4.2A</b> Plan and implement descriptive investigations, including asking well defined questions, making inferences, and selecting and using appropriate equipment or technology to answer his/her questions.</p>

## 5th Grade Planning Guide

[Kindergarten Planning Guide](#) | [Grade 1 Planning Guide](#) | [Grade 2 Planning Guide](#)  
[Grade 3 Planning Guide](#) | [Grade 4 Planning Guide](#) | [Grade 5 Planning Guide](#)

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Properties of Matter & Mixtures	Light Energy	Mechanical, Electrical, Light, & Thermal Energy	Landforms	Climate & The Water Cycle	Earth's Rotation	Ecosystem Interactions	Fossils & Past Environments	Animal Traits

## Properties of Matter & Mixtures

### Chemical Magic



5th Grade | TEKS 5.5

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Are magic potions real?</u></p>		<p><b>5.5D</b> Identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving salt in water or adding lemon juice to water.</p>	<p>Students observe that a salt and vinegar solution will turn a dull penny shiny again indicating that <b>substances can change other substances.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p>
<p><b>LESSON 2</b></p> <p><u>Could you transform something worthless into gold?</u></p>		<p><b>5.5D</b> Identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving salt in water or adding lemon juice to water.</p>	<p>Students coat a steel nail in copper by placing it into the solution that dissolved bits of the penny. Students realize that <b>substances can change to become particles too small to be seen, but they still exist.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p>
<p><b>LESSON 3</b></p> <p><u>What would happen if you drank a glass of acid?</u></p>		<p><b>5.5A</b> Classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy.</p>	<p>Students figure out that <b>acids are very reactive substances.</b> Students investigate reactions between different substances to determine how known acids react with other materials.</p>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>
<p><b>LESSON 4</b></p> <p><u>What do fireworks, rubber, and silly putty have in common?</u></p>		<p><b>5.5A</b> Classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy.</p>	<p>Students combine different substances together to discover that <b>chemical reactions can create new substances.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.2D</b> Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.</p>
<p><b>LESSON 5</b></p> <p><u>Why do some things explode?</u></p>		<p><b>5.5A</b> Classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy.</p>	<p>Students investigate and model the reaction between baking soda and vinegar. They figure out that <b>gases are made of particles too small to be seen.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>

## Light Energy

Lights & Colors

5th Grade | TEKS 5.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><a href="#">What do people who are blind see?</a></p>		<p><b>5.6C</b> Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.</p>	Students develop a working model of an eye. They use the model to reason about how <b>light reflects off an object and into the eye, helping an organism process information from the environment.</b>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 2</b></p> <p><a href="#">How can some animals see in the dark?</a></p>		<p><b>5.6C</b> Demonstrate that light travels in a straight line until it strikes an object and is reflected or travels through one medium to another and is refracted.</p>	Students use their eye model to discover that <b>the pupil controls the amount of light let into the eye. In the dark, pupils get larger to let in more light.</b>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>

MINI-LESSON

+

LAB

**TEKS 5.6C**

[How is a rainbow made?](#)



MINI-LESSON

+

LAB

**TEKS 5.6C**



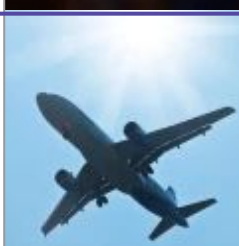
[Why is snow white?](#)



## Mechanical, Electrical, Light, & Thermal Energy

### Forms of Energy



5th Grade | TEKS 5.6

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Could you knock down a building using only dominoes?</u></p>		<p><b>5.6A</b> Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.</p> <p><b>5.6D</b> Design a simple experimental investigation that tests the effect of force on an object.</p>	Students experiment with ways to store and release energy, creating the beginning of a chain reaction machine with a lever and a ramp. <b>Students figure out that a domino standing on end is storing energy, only requiring a small amount of energy (a tiny push) to release the stored energy.</b>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p>
<p><b>LESSON 2</b></p> <p><u>Can you build a chain reaction machine?</u></p>		<p><b>5.6A</b> Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.</p> <p><b>5.6D</b> Design a simple experimental investigation that tests the effect of force on an object.</p>	Students continue to build a chain reaction machine — <b>identifying a goal, brainstorming and testing multiple ideas, and determining an optimal solution.</b> The chain reaction machine uses multiple components to transfer energy from one part to the next.	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.2D</b> Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.</p>
<p><b>LESSON 3</b></p> <p><u>What if there were no electricity?</u></p>		<p><b>5.6B</b> Demonstrate that the flow of electricity in closed circuits can produce light, heat, or sound.</p>	Students design a flashlight with an on/off switch, using batteries, flights, and tin foil. Students figure out that <b>electricity can be transformed to other forms of energy, such as movement, light, and heat.</b>	<p><b>5.2E</b> Demonstrate that repeated investigations may increase the reliability of results.</p> <p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>
<p><b>LESSON 4</b></p> <p><u>How long did it take to travel across the country before cars and planes?</u></p>		<p><b>5.6A</b> Explore the uses of energy, including mechanical, light, thermal, electrical, and sound energy.</p> <p><b>5.6D</b> Design a simple experimental investigation that tests the effect of force on an object.</p>	Students build a paper spinner and conduct an investigation to explain how heat makes things move. Students realize that <b>heat energy can be transformed into motion energy using a turbine.</b>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.2E</b> Demonstrate that repeated investigations may increase the reliability of results.</p>

## Landforms

### Slow Changes to Earth's Surface

5th Grade | TEKS 5.7

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>What's strong enough to make a canyon?</u></p>		<p><b>5.7B</b> Recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, or ice.</p>	<p>Students create a model landform and investigate <b>how some Earth events can occur quickly, while others occur slowly.</b></p>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 2</b></p> <p><u>How can you stop a landslide?</u></p>		<p><b>5.7B</b> Recognize how landforms such as deltas, canyons, and sand dunes are the result of changes to Earth's surface by wind, water, or ice.</p>	<p>Students <b>compare multiple solutions for preventing erosion.</b></p>	<p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>

**MINI-LESSON**

**TEKS 5.7A**

What's the best place to look for dinosaur fossils?









## Climate & The Water Cycle

### Watery Planet



5th Grade | TEKS 5.5 & 5.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Why are some places always hot?</u></p>		<p><b>5.8A</b> Differentiate between weather and climate.</p>	<p>Students <b>obtain and combine information to describe the different climate regions of the world.</b></p>	<p><b>5.2D</b> Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.</p> <p><b>5.2G</b> Construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information.</p>
<p><b>LESSON 2</b></p> <p><b>NEW</b></p> <p><u>How much salt is in the ocean?</u></p>		<p><b>5.5C</b> Demonstrate that some mixtures maintain physical properties of their ingredients such as iron filings and sand and sand and water.</p> <p><b>5.5D</b> Identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving salt in water or adding lemon juice to water.</p>	<p>Students create a model ocean to <b>observe how salt seems to completely vanish when dissolved in water.</b> Students measure and graph quantities to provide evidence that the salt is still in the solution, even though we can't see it.</p>	<p><b>5.2C</b> Collect and record information using detailed observations and accurate measuring.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 3</b></p> <p><u>Can we make it rain?</u></p>		<p><b>5.8B</b> Explain how the Sun and the ocean interact in the water cycle.</p>	<p>Students create a model of the ocean and sky to investigate how temperature influences evaporation and condensation. Students figure out that <b>higher ocean temperatures lead to more evaporation, thus leading to more rain.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 4</b></p> <p><u>How can you save a town from a hurricane?</u></p>		<p><b>5.8B</b> Explain how the Sun and the ocean interact in the water cycle.</p>	<p>Students define the problem that a town needs protection from flooding. They design solutions using different types of flood protection. Students realize that <b>flooding is caused by severe rainfall generated by hurricanes.</b> Hurricanes are created where ocean temperatures are warm.</p>	<p><b>5.2F</b> Communicate valid conclusions in both written and verbal forms.</p> <p><b>5.2G</b> Construct appropriate simple graphs, tables, maps, and charts using technology, including computers, to organize, examine, and evaluate information.</p>

## Earth's Rotation

Sun, Earth, & Moon

5th Grade | TEKS 5.8

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>How fast does the Earth spin?</u></p>		<p><b>5.8C</b> Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.</p>	<p>Students model the rotation of the Earth and investigate why the Sun looks like it's moving across the sky. Using evidence they gathered in the investigation, <b>students build a model that explains how the Earth's rotation around its own axis causes the Sun to appear to rise and set.</b></p>	<p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 2</b></p> <p><u>Who set the first clock?</u></p>		<p><b>5.8C</b> Demonstrate that Earth rotates on its axis once approximately every 24 hours causing the day/night cycle and the apparent movement of the Sun across the sky.</p>	<p>Students make a shadow clock (sundial) and investigate how the direction and length of shadows change with the position of the light shining on the sundial. <b>Students realize that the Sun's position in the sky can be used to tell the time of day.</b></p>	<p><b>5.2D</b> Analyze and interpret information to construct reasonable explanations from direct (observable) and indirect (inferred) evidence.</p>

**MINI-LESSON**

**TEKS 5.8C**

Why do places have different times?



**MINI-LESSON**

**TEKS 5.8D**

Is Earth the only planet with life?



**MINI-LESSON**

**TEKS 5.8D**

What is the Moon made of?



**MINI-LESSON**

**TEKS 5.8D**





How close could an astronaut get to the Sun?



## Ecosystem Interactions

### Ecosystems and Food Webs




5rd Grade | TEKS 5.9

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><a href="#"><u>Why did the dinosaurs go extinct?</u></a></p>		<p><b>5.9B</b> Describe the flow of energy within a food web, including the roles of the Sun, producers, consumers, and decomposers.</p>	<p>Students develop a model of a dinosaur food web. Students realize that <b>blocking the sun's energy would have disastrous effects on the organisms that rely on this energy</b> in the food web and cause the extinction of some entire species.</p>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 2</b></p> <p><a href="#"><u>Where do fallen leaves go?</u></a></p>		<p><b>5.9A</b> Observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components.</p>	<p>Students conduct an investigation to test how mold grows under different conditions to decompose food. Students realize that <b>decomposers, like mold, break down and consume dead plant material.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.2E</b> Demonstrate that repeated investigations may increase the reliability of results.</p>
<p><b>LESSON 3</b></p> <p><a href="#"><u>Do worms really eat dirt?</u></a></p>		<p><b>5.9A</b> Observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components.</p>	<p>Students make observations of worms to realize that <b>worms act as decomposers to eat dead matter in an ecosystem and cycle nutrients into the soil.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p> <p><b>5.2E</b> Demonstrate that repeated investigations may increase the reliability of results.</p>
<p><b>LESSON 4</b></p> <p><a href="#"><u>Why do you have to clean a fish tank but not a pond?</u></a></p>		<p><b>5.9A</b> Observe the way organisms live and survive in their ecosystem by interacting with the living and nonliving components.</p> <p><b>5.9C</b> Predict the effects of changes in ecosystems caused by living organisms, including humans, such as the overpopulation of grazers or the building of highways.</p>	<p>Students develop a model of a pond ecosystem and realize that <b>interrelationships exist between decomposers, plants, and animals.</b> Students discover that each organism must be in balance for the pond ecosystem to function.</p>	<p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>

## Fossils & Past Environments

### Animals Through Time

5th Grade | TEKS 5.9

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>Where can you find whales in the desert?</u></p>		<p><b>5.9D</b> Identify fossils as evidence of past living organisms and the nature of the environments at the time using models.</p>	<p>Students explore the idea that the rock under our feet sometimes contains fossils, and investigate how these <b>fossils reveal changes in habitats through time.</b></p>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 2</b></p> <p><u>How do we know what dinosaurs looked like?</u></p>		<p><b>5.9D</b> Identify fossils as evidence of past living organisms and the nature of the environments at the time using models.</p>	<p>Students learn how <b>we can infer what the outside of an animal looked like by using clues about their skeleton.</b></p>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>
<p><b>LESSON 3</b></p> <p><u>Can you outrun a dinosaur?</u></p>		<p><b>5.9D</b> Identify fossils as evidence of past living organisms and the nature of the environments at the time using models.</p>	<p>Students learn how <b>fossilized animal tracks can tell us a great deal about the animals that left them.</b></p>	<p><b>5.2A</b> Describe, plan, and implement simple experimental investigations testing one variable.</p>

**MINI-LESSON**

**TEKS 5.9D**





Were dragons ever real?



## Animal Traits

### Inherited and Acquired Traits

5th Grade | TEKS 5.10

Learning Sequence		TEKS Readiness & Supporting Standards	What Students Figure Out in this Lesson	TEKS Process Standards
<p><b>LESSON 1</b></p> <p><u>What kinds of animals might there be in the future?</u></p>		<p><b>5.10B</b> Differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle.</p>	Students analyze the traits of parent dogs and their offspring, constructing an explanation about <b>which traits a puppy gets from each parent.</b>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>
<p><b>LESSON 2</b></p> <p><u>Can selection happen without people?</u></p>		<p><b>5.10A</b> Compare the structures and functions of different species that help them live and survive in a specific environment such as hooves on prairie animals or webbed feet in aquatic animals.</p> <p><b>5.10B</b> Differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle.</p>	Students <b>compare the structures of lizards that live on an island.</b> They simulate multiple generations of these lizards, and analyze and interpret the data to understand how these structures aid in their survival.	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p> <p><b>5.3B</b> Draw or develop a model that represents how something that cannot be seen works or looks.</p>
<p><b>LESSON 3</b></p> <p><u>Why do dogs wag their tails?</u></p>		<p><b>5.10B</b> Differentiate between inherited traits of plants and animals such as spines on a cactus or shape of a beak and learned behaviors such as an animal learning tricks or a child riding a bicycle.</p>	Students observe animals that live in groups in order to <b>obtain, evaluate, and communicate information about animal social behavior.</b> Students use evidence to show how animals form groups to help them survive.	<p><b>5.2F</b> Communicate valid conclusions in both written and verbal forms.</p>
<p><b>LESSON 4</b></p> <p><u>How long can people (and animals) survive in outer space?</u></p>		<p><b>5.10A</b> Compare the structures and functions of different species that help them live and survive in a specific environment such as hooves on prairie animals or webbed feet in aquatic animals.</p>	Students measure and compare their own physical traits (arm strength, balance, and height) and <b>analyze the information to construct an explanation for how the environment can influence traits.</b>	<p><b>5.3A</b> Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.</p>