



*What We Do Here Shapes the World*

**Science  
Curriculum  
3<sup>rd</sup> Grade**

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# DISTRICT MISSION AND GOALS

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## **District Mission:**

Our mission is to provide a quality educational experience that results in the development of socially responsible life-long learners.

## **District Goals:**

### **Goal 1: Environment and Culture**

The District will maintain a safe and positive school environment where students, parents, employees, and community members feel welcomed and engaged.

### **Goal 2: Academics**

The District's academic programs will take the learning experience beyond state and federal standards in an effort to provide college and career readiness for all students.

### **Goal 3: Professional Learning**

The District will provide professional learning opportunities that allow staff to achieve a higher level of proficiency.

### **Goal 4: Resources and Operations**

The District will effectively manage its resources and operations to maximize the learning potential for all students.

# PROFILE OF A GRADUATE

LOS FRESNOS CONSOLIDATED INDEPENDENT SCHOOL DISTRICT

## PROFILE of a GRADUATE

### *Future-ready innovative thinkers and leaders* ✓



- Evaluate various sources of information and use sound reasoning when making decisions.
- Solve problems using logic, critical thinking, and deductive reasoning.
- Collaborate with others to build consensus and solve problems.
- Demonstrate perseverance and resilience.
- Embrace technology and creative solutions to everyday problems.



### *Effective communicators* ✓



- Listen and respond respectfully and empathetically.
- Confidently adapt their communication style to the audience.
- Use various medias to engage in productive and positive dialogue.
- Collaborate with others to engage in courageous conversations.



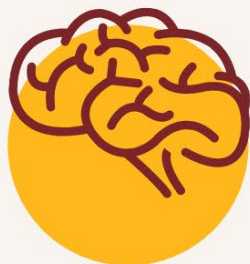
### *Conscientious citizens* ✓



- Exhibit self-discipline, honesty, kindness, and integrity.
- Serve the community as role models and through volunteerism.
- Embrace diversity and cultural awareness.
- Value and participate in the democratic process.



### *Life-long learners* ✓



- Commit to continuous improvement.
- Demonstrate mastery of required curriculum and skills.
- Prepare for college and workforce opportunities.
- Develop personal and professional goals that lead to a healthy, balanced lifestyle.



# CONTENT VISION AND CHARACTERISTICS

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## **Content Vision:**

Our LFCISD science curriculum will spark curiosity, encourage higher level thinking, and foster problem solving skills. Our curriculum will allow learners the opportunity to gain an appreciation and understanding of science while learning about real world scenarios and applying their science knowledge to the local and global community. Our students will conduct a variety of labs and experiments, both qualitative (observed) and quantitative (measured), in order to predict patterns or trends, collect and analyze data, draw conclusions, and present their findings through a variety of ways. Through these diverse, challenging, and interdisciplinary learning experiences our students will explore and discover the world around them. We hope to prepare these young scientists to be successful in the future while igniting and fostering their natural curiosity and love of science.

## **Content Characteristics:**

**Teacher Behaviors:** Teachers are lifelong learners and will strive to better their craft in various dimensions including planning, instruction, and professional responsibilities. Teachers will be expected to:

- Establish, communicate, and maintain clear expectations for student behavior and academic success with all stakeholders
- Get to know their students' strengths and weaknesses to build strong, healthy relationships throughout the school year in order to better advocate for their students
- Plan clear, well-organized, and sequential lessons that reflect best practices, are aligned to state standards, and keep students engaged
- Integrate various forms of technology and media regularly into their lessons
- Provide differentiated and challenging lessons for both struggling and advanced students with opportunities for all students to achieve academic success
- Continuously provide consistency, support, and guidance throughout the student's learning journey through scaffolding techniques and probing questions
- Emphasize the scientific method and lab safety during hands-on lab experiences

# CONTENT VISION AND CHARACTERISTICS

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- Create collaborative opportunities for students to learn through problem/project-based learning and/or interdisciplinary units where students research and evaluate various sources of information to make informed decisions
- Regularly measure student progress both informally and formally and use the data to adjust and provided scaffolded instruction
- Provide students with various opportunities to show evidence of their learning in both written and oral forms through individual and cooperative grouping
- Take ownership of their own learning by actively seeking new research-based strategies, searching for new learning opportunities, collaborating with peers and colleagues, and reflecting on their own practice

**Student Behaviors:** Students are active participants in their learning of science. Students will learn science content, vocabulary, and process skills through engaging, practical, hands-on experiences that encourage curiosity, questioning, higher-level thinking, and problem solving. Students will be expected to:

- Use scientific practices to conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices
- Safely and effectively use a variety of tools and science equipment
- Collect data, analyze their findings, make inferences, and form conclusions about their lab investigations
- Communicate science information and lab results effectively as they apply socioemotional skills
- Collaborate thoughtfully with peers in pairs, small groups, and large groups
- Actively broaden their scientific knowledge through exploration and discovery
- Unite with the teacher in shared learning experiences
- Solve problems using logic, critical thinking, and deductive reasoning
- Ask questions when a topic is unclear
- Develop personal goals that lead to a healthy, balanced lifestyle

**Environment:** The science classroom environment should foster a welcoming space where students feel safe to exercise their curiosity and take risks while asking questions that lead to a pursuit of answers and thoughts about what has been discovered. The science classroom environment will be expected to:

- Emphasize safety first

## CONTENT VISION AND CHARACTERISTICS

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- Be dynamic and engaging for all learners
- Involve student-centered hands-on activities, labs, project-based learning, and stations
- Stress vocabulary through a variety of instructional strategies including word walls, interactive notebooks, visuals, prefixes/suffixes, cognates
- Embrace equity and be inclusive of all learners
- Be organized
- Incorporate digital technology
- Welcome flexible seating as students work both cooperatively with others and individually
- Include cross-curricular connections through investigations and assignments that give students deep conceptual understandings



# COURSE OVERVIEW DOCUMENTS

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**Course Overview:** In Grade 3, students learn that the study of science uses appropriate tools and safe practices in planning and implementing investigations, asking and answering questions, collecting data by observing and measuring, and using models to support scientific inquiry about the natural world. Within the physical environment, students recognize that patterns, relationships, and cycles exist in matter. Students will investigate the physical properties of matter and will learn that changes occur. They explore mixtures and investigate light, sound, and thermal energy in everyday life. Students manipulate objects by pushing and pulling to demonstrate changes in motion and position. Within the natural environment, students investigate how the surface of Earth changes and provides resources that humans use. As students explore objects in the sky, they describe how relationships affect patterns and cycles on Earth. Students will construct models to demonstrate Sun, Earth, and Moon system relationships. Within the living environment, students explore patterns, systems, and cycles within environments by investigating characteristics of organisms, life cycles, and interactions among all components of the natural environment. Students examine how the environment plays a key role in survival. Students know that when changes in the environment occur organisms may thrive, become ill, or perish. The study of elementary science includes planning and safely implementing classroom and outdoor investigations using scientific practices, analyzing information, making informed decisions, and using tools to collect and record information while addressing the content and vocabulary in physical, earth, and life sciences. The district encourages the facilitation of classroom and outdoor investigations for at least 60% of instructional time.

## TEA Documents:

- [TEA Texas Essential Knowledge and Skills \(TEKS\)](#): This TEA webpage provides information on the state standards for what students should know and be able to do for this course.

## Lead4ward Documents:

- [Lead4ward TEKS Snapshot](#): This is a PDF file that color coordinates and divides the readiness, supporting, and process standards for each grade level and content area. (Click on grade level/content under Snapshot)
- [Lead4ward Academic Vocabulary](#): This document shows important vocabulary for concept development, including new and previously introduced words. (Click on grade level/content under Academic Vocab)

## COURSE OVERVIEW DOCUMENTS

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- [Lead4ward Instructional Strategies Playlist](#): This document provides descriptions of instructional strategies to engage learners, provide practice without penalty, encourage interaction among students, and see and hear students' thinking across contents. (Located on the Instructional Tools tab)
- [Lead4ward Field Guides](#): The Field Guides for Teachers succinctly organizes the information teachers and PLCs need to effectively plan meaningful instruction for students. These are purchased for every campus by the district and require login information. Please do not print, as documents are frequently updated.
- [Lead4ward Learning Videos](#): These are short videos that explain how to use the resources listed above. (Click on the Learning Videos tab)

# YEAR-AT-A-GLANCE (YAG)

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The YAG informs all stakeholders of the learning concepts presented throughout this course. Teachers use this overview to create daily lessons that meet the unique needs of their students.

Units	Modules
<b>1 Organisms &amp; Environments</b>	1 Lab Safety & Tools
	2 Environments
	3 Food Chains
	4 Environmental Changes
	5 PLTW-Stability & Motion: Science of Flight
	6 Life Cycles
	7 Animal & Plant Adaptations
	8 Organisms & Environments Unit Review
<b>2 Earth &amp; Space</b>	1 Soil
	2 Rapid Changes to Earth's Surface
	3 Natural Resources
	4 Sun
	5 Weather
	6 Sun, Earth, & Moon and Planets
	7 Earth & Space Unit Review
<b>3 Force, Motion, &amp; Energy</b>	1 PLTW-Stability & Motion: Forces & Interactions
	2 Forms of Energy
	3 Force, Motion, & Energy Unit Review
<b>4 Matter &amp; Energy</b>	1 Physical Properties and States of Matter
	2 Physical Changes of Matter
	3 Mixtures
	4 Matter & Energy Unit Review
<b>5 Anchoring Our Learning</b>	1 Spiral Review
	2 Areas of Focus

## SCOPE AND SEQUENCE

The recommended duration of lessons is less than the number of days in the school year in order to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the LFCISD Curriculum documents. *One day is equivalent to the number of minutes [on the LFCISD Instructional Schedule].*

<b>Units</b>	<b>Modules</b>	<b>TEKS</b>	<b>Duration</b>
<b>1 Organisms &amp; Environments</b>	1 Lab Safety & Tools	3.1A, 3.4A	5 days
	2 Environments	3.9A	10 days
	3 Food Chains	3.9B	5 days
	4 Environmental Changes	3.9C	5 days
	5 PLTW-Stability & Motion: Science of Flight	3.6B	10 days
	6 Life Cycles	3.10B	10 days
	7 Animal & Plant Adaptations	3.10A	10 days
	8 Organisms & Environments Unit Review	Spiral	5 days
<b>2 Earth &amp; Space</b>	1 Soil	3.7A	5 days
	2 Rapid Changes to Earth's Surface	3.7B	5 days
	3 Natural Resources	3.7C	5 days
	4 Sun	3.8B	5 days
	5 Weather	3.8A	5 days
	6 Sun, Earth, & Moon and Planets	3.8C, 3.8D	5 days
	7 Earth & Space Unit Review	Spiral	5 days
<b>3 Force, Motion, &amp; Energy</b>	1 PLTW-Stability & Motion: Forces & Interactions	3.6B, 3.6C	10 days
	2 Forms of Energy	3.6A	5 days
	3 Force, Motion, & Energy Unit Review	Spiral	5 days
<b>4 Matter &amp; Energy</b>	1 Physical Properties and States of Matter	3.5A, 3.5B	10 days
	2 Physical Changes of Matter	3.5C	10 days
	3 Mixtures	3.5D	5 days
	4 Matter & Energy Unit Review	Spiral	5 days
<b>5 Anchoring Our Learning</b>	1 Spiral Review	Spiral	10 days
	2 Areas of Focus	Spiral	20 days

# INSTRUCTIONAL UNITS

## Unit I: Organisms & Environments

(12 Weeks)

### Unit Description:

In Unit I, students will learn about organisms and environments. Students will observe and describe the physical characteristics of a variety of environments while understanding how physical characteristics of environments support populations and communities of plants and animals within an ecosystem. Students will learn about food chains and describe the flow of energy. Students will build on previous knowledge and describe what happens to living organisms when changes occur to the environment. Students will begin building a foundation of knowledge focused on plant and animal adaptations. Students will focus on the life cycles of plants and animals.

### Mastery Learning Objectives:

- **Understand** and **describe** patterns, cycles, systems, and relationships within the environments
- **Understand** that organisms undergo similar life processes and have structures that help them survive within their environments
- ELPS: The students will develop their receptive and expressive skills. (reading, writing, speaking, and listening)

### Essential Questions:

- What environmental changes or events could cause an animal population to perish or move?
- What environmental changes or events could cause an animal population to thrive?
- What would happen if half of the amount of grass on Earth suddenly died?
- Compare the lady beetle's life cycle to the frog's life cycle.
- Explain whether or not all life cycles the same.
- How is a plant life cycle usually different from an animal life cycle?
- What are some structures that help an animal survive?
- What are some structures that help plants survive?
- Explain why an animal from the Arctic would not survive in the desert. Why would an animal from the desert not survive in the Arctic?

# INSTRUCTIONAL UNITS

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## Real World/Cross-Curricular Connections:

- **Art Connection: Ecosystems Mural**
  - Place students in small groups.
  - Ask them to choose an ecosystem and create a colorful mural of that ecosystem.
  - Remind students to populate the ecosystem with appropriate plants and animals as well as nonliving features.
- **Writing Connection: Write a Narrative**
  - Invite students to write a narrative from the point-of-view of an animal.
  - Encourage them to include description of the animal's place in the food chain and to reference predator-prey relationships.
- **Social Studies Connection: Research the State Flower**
  - Have students research our state flower, the bluebonnet, and write down several facts about the flower, including information about its life cycle.
- **Social Studies Connection: Research the State Small Mammal: Armadillo**
  - The armadillo has adaptive traits that helps it survive - both physical and behavioral. Have students research and share with class. See [Example](#).
- **Writing Connection: Compare the life cycles of two organisms.**
  - Describe the life cycles of 2 organisms using a [Venn Diagram](#).

# INSTRUCTIONAL UNITS

<b>Module 1 of 8 (5 Days): Lab Safety &amp; Tools</b>	
<b>TEKS</b> <small>(R) Readiness, (S) Supporting, (P) Process</small>	<p><b>3.1A demonstrate</b> safe practices as described in the Texas Education Agency-approved safety standards during classroom and outdoor investigations using safety equipment as appropriate, including safety goggles or chemical splash goggles, and gloves (P)</p> <p><b>3.4A collect, record, and analyze</b> information using tools, including cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances, graduated cylinders, beakers, spring scales, hot plates, meter sticks, magnets, collecting nets, notebooks, and Sun, Earth, and Moon system models; timing devices, and materials to support observation of habitats of organisms such as terrariums and aquariums (P)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>describe</b> tools that are used to enhance the ability to make observations</li> <li>● <b>list</b> possible reasons for differences in measurements between groups</li> <li>● <b>record</b> observations accurately and in appropriate ways</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may not understand how to design an investigation.</li> <li>● Students may not recognize the need to collect a variety of data (numbers, images, and written text).</li> <li>● Students may create questions that cannot be answered by the investigation.</li> <li>● Students may use science tools inappropriately, unsafely, or inaccurately.</li> <li>● Students may not understand the difference between data and evidence.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• Read all directions carefully.</li><li>• Always follow teacher directions.</li><li>• Follow safety procedures at all times.</li><li>• Dress appropriately for investigations.</li><li>• Dispose of waste carefully.</li><li>• Report spills or accidents immediately to teacher.</li><li>• Keep your work area clean.</li><li>• Wash hands after completing investigations.</li><li>• Each tool serves an important role during investigations.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Focus on how to design investigations, scaffolding previous learning and use of evidence to create explanations for natural phenomena.</li><li>• Present a variety of investigation opportunities where students are active participants.</li><li>• Minimize teacher demonstrations.</li><li>• Move beyond “recipe” labs.</li><li>• Have students collaborate to generate questions, determine a method to investigate and make observations, collect data, and analyze results.</li><li>• Provide access to grade-appropriate scientific tools.</li><li>• Provide regular opportunities for students to choose science tools to collect data.</li><li>• Use instructional strategies that help students understand content.</li><li>• Model thinking for students.</li><li>• Encourage wonder.</li><li>• Provide daily opportunities for student-to-student discourse to process new learning.</li></ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"><li>• TX Fusion*</li><li>• STEMscopes*</li><li>• Interactive notebook</li><li>• YouTube</li></ul>



# INSTRUCTIONAL UNITS

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## Academic Vocabulary

\*new to grade level

- Aquariums
- Beakers
- Cameras\*
- Celsius thermometers\*
- Chemical splash goggles
- Classroom investigation
- Collecting nets
- Computers
- Graduated cylinders\*
- Hand lenses
- Hot plates\*
- Magnets
- Meter sticks\*
- Metric rulers\*
- Notebooks
- Outdoor investigation
- Pan balances
- Rain gauges
- Safety
- Safety goggles
- Spring scales\*
- Sun, Earth, Moon models\*
- Terrariums
- Timing devices
- Wind vanes

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- TX Fusion Safety in Science & How Do Scientists Use Tools?
  - Teacher will read pp. xxiii-xxiv and review both indoor and outdoor safety rules.
  - Teacher will guide class through [pp. 17-26](#) discussing uses for different tools.
- [STEMscopes Tool Cards](#)
  - Teacher will show students pictures of tools and give short descriptions of uses.
  - Teacher can create one or two anchor chart(s) with the pictures and descriptions as students are led through different examples.
  - **EB**-Pictures and titles are available in Spanish for those students who need support.
- [YouTube Videos](#)
  - Teacher will share video(s) of choice with students.
  - Students will work in partners or groups to create posters of what they feel are the two most important rules/safety procedures during investigations.
  - Posters should include graphics and written explanations.
  - Students will orally share these posters with the class.
- [TX Fusion Virtual Lab How Can You Measure Length?](#) (login required)
  - Teacher and students will work through digital lesson.
  - Class will first review tools followed by a deeper look into measuring length/distance.
  - Students can record learning on [Digital Lesson Companion sheet](#).

**GT/SPED/EB**-Differentiated Inquiry TE 30A Students can work at different levels to practice measurement skills.

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. How do safety goggles keep us safe during science investigations?  
(Safety goggles keep us safe by...)
2. Why should you wash your hands during science investigations?  
(You should wash your hands because...)
3. What is the most important safety rule?  
(I think the most important safety rule is \_\_\_\_\_ because...)
4. What should you do if you observe someone not being safe in science?  
(If I observed someone not being safe in science, I would...)
5. What science tool would help us observe an object closely?  
(I could use a \_\_\_\_\_ to observe an object closely.)
6. How could you use a piece of string to measure length?  
(I could use a piece of string to measure length if I...)
7. Name and describe two tools used to measure length.  
(Two tools used to measure length are...)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- [STEMscopes Safety Practices](#)
  - o Students will answer open-ended questions about safety contracts and outdoor investigations.
- [Take It Home! TE 26](#)
  - o Option 1-Students will interview an adult about how he or she uses measurement at home or work.
  - o Option 2-Students will help prepare a meal at home using correct measurements.
  - o Students can write a short paragraph about what they learned or did for their option.

# INSTRUCTIONAL UNITS

Module 2 of 8 (10 Days): Environments	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.9A <b>observe</b> and <b>describe</b> the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> and <b>explain</b> the term ecosystem</li> <li>● <b>define</b> and <b>explain</b> the term population</li> <li>● <b>define</b> and <b>explain</b> the term community</li> <li>● <b>describe</b> aquatic environments (pond, marshland, swamp, stream, river, and ocean environments)</li> <li>● <b>describe</b> terrestrial environments (desert, grassland, temperate forest, rain forest)</li> <li>● <b>explain</b> how plants and animals are dependent upon each other in their environments</li> </ul> <ul style="list-style-type: none"> <li>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may confuse populations and communities.</li> <li>● Students may not understand how the nonliving physical characteristics of an environment play a role in supporting life within an ecosystem.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• The physical characteristics of an environment include living and nonliving components.</li><li>• Living components of an environment are plants and animals.</li><li>• Nonliving components of an environment are air, water, soil, rocks, and sunlight.</li><li>• A population is all of the same living organisms in the same area.</li><li>• A community is all of the interacting populations in the same area.</li><li>• Both living and nonliving components support life in an ecosystem by providing basic needs.</li><li>• Use real-world connections starting with ecosystems near us to discuss physical characteristics of environments.</li><li>• Use a variety of visuals, so students can observe living and nonliving components of environments/ecosystems.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Plan/choose activities and investigations where students can learn about the physical characteristics of a variety of environments. Perhaps start with ecosystems near you.</li><li>• Provide opportunities for students to connect academic vocabulary, real-world examples, and classroom activities.</li><li>• Provide opportunities for students to be able to compare/contrast between populations (i.e. same species living in the same area/ecosystem) and communities (i.e. different species living in the same area/ecosystem).</li><li>• Show a variety of visuals where students can observe and describe the living and nonliving components of environments/ecosystems.</li></ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"><li>• TX Science Fusion*</li><li>• STEMscopes*</li><li>• Carson Dellosa Interactive Notebook</li><li>• <a href="http://www.pbskids.org">www.pbskids.org</a> site</li><li>• <a href="http://pinterest.com">pinterest.com</a></li><li>• Lead4Ward Strategy</li></ul>

# INSTRUCTIONAL UNITS

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## Academic Vocabulary

\*new to grade level

- Aquatic\*
- Community\*
- Drought\*
- Ecosystem\*
- Environment\*
- Flood\*
- Interaction
- Interdependence
- Perish\*
- Physical Characteristics
- Population\*
- Species\*
- Support
- Survive
- Terrestrial\*
- Thrive\*

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- Texas Science Fusion: Active Reading in Student Edition (may take more than 1 day) pp. 433-448.
  - Remind students that in Active Reading, they will study pictures or graphic organizers, circle or box unfamiliar words, and use the questions in the margins to help them understand the concepts presented.
  - Point out vocabulary words and help students identify context clues to be able to understand the meaning of the words.
- Go on a Nature Walk around the school yard to make observations.
  - Have students take a pencil, data sheet on clipboard (if available) or journal, hand lens.
  - Teacher Prep: scout out the school yard for possible areas where students can sit and make observations.
  - Remind students that they will be observing using some of their senses: hearing, sight, and smell. It may be best to refrain from touching and certainly no tasting.
  - Guide students to create a T-Chart with headings of “Living” and “Nonliving”. Students will sit and observe living and nonliving things in the environment.
  - They will list, sketch and label their observations.
  - Upon returning to the classroom, discuss student results. What types of interdependence were observed?
- Anchor Charts (using concepts learned from their Nature Walk)
  - Place a chart on the classroom wall with the overarching concept “Environments” listed in the center.
  - Students add ideas to the anchor chart as the unit progresses, linking skills, topics, examples, details, images, and clarifying information to the chart.
  - Students transfer the anchor chart information to their journals.
- Reproduce a landscape picture that has multiple animals living in a tropical habitat with a water source and distribute one to each team.
  - Give each team a different colored marker that can be used to write responses on large paper.
  - Divide each team paper into a T Chart with “Living” on the left and “Nonliving” on the right.
  - Team recorders have 10 minutes to list their team’s responses to all of the living things and nonliving elements they can find in that picture.
  - At the end of that time period, all pictures are posted for students to do a gallery walk and then discuss the results.
  - Emphasize the interdependence of all parts of an environment. Ask the students, “What would happen if one of those animals or the water source were

# INSTRUCTIONAL UNITS

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destroyed?” Lead students to understand that interdependence is vital in an environment.

- STEMscopes Intervention-Guided Practice Activity (Students will choose an animal and search for its basic needs within the pretend ecosystem in the classroom.)
  - Teacher Prep a day before: Cut out several sets of the [Activity Cards](#) and place them in obvious places around the room.
  - Welcome the students into a new ecosystem called “Classroom.”
  - Ask students to pretend to be an animal of their choice.
  - Distribute the [Student Handout](#) to each student. Have students record their chosen animal on the Student Handout.
  - Explain to the students that they will look around the room for one food card, one water card, one shelter card, one space card, and one air card as they try to meet their basic needs within the classroom ecosystem.
  - Give students time to search for the hidden cards. Once all 5 cards have been found, students should complete the activity page.
  - Discuss with students how they (as animals) are dependent upon their environments, both the living and nonliving things. When all have found their cards, come back together as a total class and have the students share the rest of their work with the group.
  
- [Carson Dellosa Interactive Notebook “Animal Habitats”](#)
  - Discuss what habitats are. Students should understand that just like humans, animals must live in places where their needs must be met in order to survive.
  - Guide students to assemble the Animal Habitats foldable (see pg. 26).
  - Students will match the animal with the habitat. Have students write a sentence under the flap that explains why an animal lives in a particular habitat.
  
- [Texas Fusion Digital Lesson](#) (login required)
  - This can be assigned to individual students, as a small group, or as a guided lesson with the entire class.
  
- [Feed the Dingo: An Ecosystem Game](#)
  - Students can use this site as a review after learning about interactions between living and nonliving things.
  - Students will have to make decisions about providing enough food for the various organisms. This site may also be assigned in Google Classroom.



# INSTRUCTIONAL UNITS

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**SPED**-Think, Pair, Share. After the students have had time to read and discuss the content, group them with a partner to think, pair, and share the following question: Question: How does an environment help organisms to survive? Wait, time to THINK! PAIR with your partner. On the board, write the Stem: The environment helps organisms survive because \_\_\_\_\_. SHARE using the sentence stem written on the board.

**EB**-Use TE pp. 431L and 431M to help students with vocabulary, enhancing understanding and developing knowledge, and reading support. (TE page numbers can be found by clicking “Go to page” in middle of toolbar across the top)

## [Linguistic Accommodations](#)

**GT**-STEMscopes Acceleration Tab-[Project Based Learning](#)--Students will create a public service announcement raising awareness about one endangered species, including how it became endangered and how we can help the species survive. Students will present their plans to the class in a three-minute presentation. They may use posters, PowerPoint, poem, skit, or a brochure.

# INSTRUCTIONAL UNITS

## Checking for Understanding

1. What are ecosystems?  
(Ecosystems are \_\_\_\_.)
2. What is in an ecosystem?  
(An ecosystem has \_\_\_\_.)
3. Explain the term “population”.  
(Population is \_\_\_\_.)
4. Explain the term “community”.  
(Community is \_\_\_\_.)
5. What does terrestrial mean? Give some examples of terrestrial areas.  
(Terrestrial means \_\_\_\_\_. Some examples of terrestrial areas are \_\_\_\_.)
6. How do plants and animals depend on each other in an ecosystem?  
(Plants and animals \_\_\_\_.)
7. What types of items do you have in your environment?  
(In my environment, I have \_\_\_\_.)
8. What are some ways you interact with some items in your environment?  
(Some ways I interact with my environment are \_\_\_\_.)
9. What is a habitat?  
(A habitat is \_\_\_\_.)
10. Give examples of how the physical characteristics in an environment support the populations and communities that live there.  
(The physical characteristics in an environment \_\_\_\_\_. For example, \_\_\_\_\_.)
11. Why do you think that animals and plants live in the environments where they live?  
(I think plants and animals \_\_\_\_.)
12. What types of plants live in a desert environment? A rainforest?  
(In a desert, you will find \_\_\_\_\_. In a rainforest, you will \_\_\_\_\_.)
13. Explain why a cactus would find it difficult to survive in a rainforest.  
(A cactus would not survive because \_\_\_\_\_.)
14. What types of plants and animals live in a mountain environment? Why do you think those types of living organisms would be found there?  
(In a mountain environment, you can find \_\_\_\_\_. You can find them there because \_\_\_\_\_.)
15. What are some differences between oceans and lakes?  
(Some differences are \_\_\_\_\_.)

[Learning Intentions for Emergent Bilinguals](#)

# INSTRUCTIONAL UNITS

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## Sample Assessment Items

- **Schoolyard Study**

- Conduct an outdoor investigation to learn about the populations and communities found in the schoolyard. With a group, select an area of the schoolyard to survey. For each organism found in the group's area, write the name, illustrate the organism, and estimate its population on the data table. Then write a short paragraph explaining how the schoolyard supports the organisms found there.

[Data Table](#)

- **Comparing Two Ecosystems**

- Form student groups and have students research two different ecosystems (example: Hawaii and Alaska, desert and rainforest) and their contrasting physical characteristics and the organisms that inhabit those two regions. Direct students to research the type of environment each area has and what organisms live there. Have students write a short paragraph explaining how the environments support living organisms. Student groups should include a poster with illustrations to support their research.

# INSTRUCTIONAL UNITS

<b>Module 3 of 8 (5 Days): Food Chains</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.9B <b>identify</b> and <b>describe</b> the flow of energy in a food chain and <b>predict</b> how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> and <b>explain</b> the term food chain</li> <li>● <b>explain</b> that energy moves up a food chain</li> <li>● <b>explain</b> that all food chains are made up of producers, consumers, and decomposers</li> <li>● <b>explain</b> that some animals are herbivores, some are carnivores, and others are omnivores</li> <li>● <b>explain</b> the relationship between predators and prey</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may not understand that food chains illustrate energy relationships and that the arrows represent the way the energy is being transferred from one living organism to another.</li> <li>● Students may only recognize the immediate effects when part of a food chain is removed rather than understanding that all organisms can be impacted.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>● Energy that moves through a food chain originally comes from the Sun.</li> <li>● Plants get their energy from the Sun, and animals get their energy from plants and other organisms.</li> <li>● Removal of an organism from a food chain can affect other organisms.</li> </ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"> <li>● Provide a variety of food chain scenarios for students to explore.</li> <li>● Emphasize how the flow of energy from one living organism to another occurs.</li> <li>● Provide opportunities for students to explore a variety of food chains and discuss what might happen to living organisms if part of the food chain is removed.</li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● TX Fusion*</li> <li>● STEMscopes*</li> <li>● Interactive Notebook</li> <li>● Lead4Ward Strategy</li> <li>● Student Manipulative</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Carnivore*</li> <li>● Community*</li> <li>● Consumer</li> <li>● Decomposer*</li> <li>● Ecosystem</li> <li>● Energy transfer</li> <li>● Food Chain</li> <li>● Herbivore*</li> <li>● Interdependence</li> <li>● Omnivore*</li> <li>● Organism</li> <li>● Population*</li> <li>● Predator</li> <li>● Prey</li> <li>● Producer</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- TX Fusion Science
  - Read TE pp.449 “What is a food chain?” Unit 10 Lesson 3. to introduce the lesson. (skip page 450, paragraph 2-photosynthesis)
  - Use the title “What is a food chain?” on page to have students brainstorm the definition of “food chain”.
  - Students can brainstorm individually or with their elbow partner. Students can follow along in their student book.
  - Use student pages 449-451 to discuss producers, photosynthesis, and what a plant needs in order to survive.
  - Have students fill in the chart on p. 451. Use student book pp. 452-453 to discuss and explain vocabulary words: consumer, herbivore, omnivore, carnivore, decomposer, predator, prey.
  - Explain the relationship between the organisms in the food chain. Point out examples of energy flow.
  - Discuss what would happen if one of the producers or consumers were missing from the chain.
- **STEMscopes**
  - [Food Chain cards](#) activity in Engage tab.
  - Students can use Think-Pair-Share to create food chains with pictures.
    - In Think-Pair-Share students will (1) **think** individually about how to create a food chain with the pictures provided, and (2) **share** ideas with classmates.
  - Students will work together to solve a problem or answer a question after looking at the pictures.
  - Have students discuss how a change in the ecosystem would affect the flow of energy.
- **Carson Dellosa Science Interactive Notebooks "Food Chains"**
  - Lead a discussion with students as to what a food chain is.
  - Help them understand that a food chain begins with the sun because it actually provides energy for the plants (producers).
  - Have two students model a food chain with the first one representing the sun and the second one the producer.
  - Ask students to continue the food chain by representing more consumers that may come next in the food chain.
  - Now, explain to students that they will be constructing a food chain model using the pictures and strips on page 23.
  - Guide students to cut out and assemble the food chain pieces on page 23. Have them place the pieces on their journal before gluing them.
  - Discuss the flow of energy. Point out that the arrows indicate the flow of energy. Have students glue the pieces in their journal.

# INSTRUCTIONAL UNITS

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- Using the model as a guide, students will draw a food chain that includes people as predators.

**SPED-STEM**scopes Elaborate tab-Use “Concept Review Game” to review concepts taught.

**EB-TE** pp. 450, 452, and 457. Use activities on these pages to help students recognize word families (store-a place to shop). Use pictures to help students understand how energy flows in a food chain.

[Linguistic Accommodations](#)

**GT**-Use the [virtual lab](#) in Fusion Student Resources for those students who are able to be self-directed. \*Clever Login required

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. Where does energy from a food chain begin?  
(Energy from a food chain begins \_\_\_\_.)
2. In a food chain, how is the energy passed from one organism to the next one?  
(In a food chain, energy \_\_\_\_.)
3. What are producers?  
(Producers are \_\_\_\_.)
4. Why are plants called producers?  
(Plants are called producers because \_\_\_\_.)
5. What do plants need in order to make food?  
(Plants need \_\_\_\_\_ in order to make food)
6. What are consumers?  
(Consumers are \_\_\_\_.)
7. What is the difference between an herbivore, carnivore, and omnivore?  
(The difference between an herbivore, carnivore, and omnivore is \_\_\_\_.)
8. What is the job of a decomposer in the food chain?  
(The job of a decomposer is to \_\_\_\_.)
9. How does energy flow in a food chain?  
(In a food chain, energy flows \_\_\_\_.)
10. What do the arrows in a food chain represent?  
(The arrows represent \_\_\_\_.)
11. What is the difference between a predator and prey?  
(The difference between prey and predator is \_\_\_\_.)
12. How would an increase in the frog population in a pond affect the pond ecosystem?  
(An increase in the frog population in a pond would \_\_\_\_.)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- [TX Fusion p. 460 Take It Home](#) (TE page can be found by clicking “Go to page” in middle of toolbar across the top)
  - o Students will make a list of foods they eat at home and identify those crops they eat.
  - o They may ask family members to add to the list.
  - o They will then research where they come from (local or far away).



# INSTRUCTIONAL UNITS

<b>Module 4 of 8 (5 Days): Environmental Changes</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.9C <b>describe</b> environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>explain</b> that ecosystems are fragile and that environmental changes can negatively impact things</li> <li>● <b>explain</b> that natural events such as fire, erosion, drought, flood, disease, and organisms can affect habitats</li> <li>● <b>explain</b> that people can cause events and also cause pollution of air, water, and land habitats</li> <li>● <b>explain</b> what people can do to conserve habitats and help plants and animals survive</li> </ul> <ul style="list-style-type: none"> <li>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may think all changes that occur to an ecosystem are negative.</li> <li>● Students may not understand that some changes occur rapidly (floods), while others occur over a longer period of time (drought).</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>• Natural events (floods, droughts, forest fires) have major impacts on living organisms.</li> <li>• Some natural events cause living organisms to perish or die.</li> <li>• Some natural events cause living organisms to thrive or do well.</li> <li>• Some natural events cause living organisms to be displaced and have to move or relocate.</li> <li>• Nature often finds balance when environments change.</li> </ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"> <li>• Plan/choose activities and investigations where students can observe and describe what happens to living organisms during natural events such as floods and drought.</li> <li>• Facilitate conversations on how the impacts vary depending on the severity of the event and the living organism itself and that some events happen rapidly, while others are slow changes to the environment.</li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>• TX Science Fusion*</li> <li>• STEMscopes*</li> <li>• Carson Dellosa Interactive Notebook</li> <li>• Lead4Ward Strategies</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>• Change</li> <li>• Drought*</li> <li>• Environment*</li> <li>• Environmental Change*</li> <li>• Flood*</li> <li>• Interdependence</li> <li>• Organism</li> <li>• Perish*</li> <li>• Species*</li> <li>• Temperature</li> <li>• Thrive*</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- [STEMscopes Engage activity](#) (Clever Login Required)
  - Prior to students' arrival, remove ordinarily needed materials for the beginning of class from students' viewpoints. (Examples: Journals, pencils, pencil sharpener, a few chairs, etc.) Don't tell students!
  - Start normal class procedures as though nothing is different. Don't answer questions about the location of materials. Instead, instruct students to complete normal procedures. Two minutes is generally long enough.
  - Lead students to understand with the following questions: What was different about this morning (or this class period)? Did the change make your life better or worse? How did the removal of the supplies affect your routine? How would it have been different if your supplies had been available? How is this experience related to what happens in a natural environment? What do organisms have to do when they experience environmental changes?
  - Afterward, return needed materials to the classroom and students.
  
- Texas Science Fusion
  - Begin p. 463
  - Have students study the picture of the prairie dog. Lead students to brainstorm and make observations about what has occurred in the area.
  - Encourage students to be active readers and circle, underline or box words that may be unfamiliar. Point out cause and effect signal words such as "because", "if", "so", and "thus".
  - Continue reading to p. 471 guiding students to draw conclusions about how the changes in the environment have affected living things.
  - Have students help create an anchor chart listing events that occur in an ecosystem to cause changes (fires, earthquakes, floods, droughts, etc.)
  - Then classify them as natural or manmade. Students can make a small anchor chart and glue it into their journal.
  
- Texas Science Fusion Inquiry Flipchart p. 59
  - Take 3 cups and plant a small plant in each cup.
  - Review what plants need to thrive (soil, water, sunlight, air, space).
  - Follow instructions on Flipchart to see what happens when too much water is given to two of the plants.
  - Students should conclude that even though water is necessary for plants to thrive, too much can be harmful.
  
- Use "[Changes in Our Ecosystem](#)" free foldable activity.
  - After reviewing and discussing how changes in an environment affects help students assemble the foldable according to the instructions.

# INSTRUCTIONAL UNITS

- Inside the flaps, students will write a sentence or two about how the event or activity impacts the environment.

**SPED-**Pair up students with a classmate to review vocabulary words and context.

**EB-TE** p.[431M](#) (TE page numbers can be found by clicking “Go to page” in middle of toolbar across the top) Use the activities on these pages to provide support with vocabulary. Students can also illustrate causes and effects of environmental changes and decide whether natural forces, animals, or people are responsible for those changes. Encourage the use of a bilingual dictionary to pre-teach key content words as they skim the text.

### [Linguistic Accommodations](#)

**GT-TE** p. [464](#) “Challenge” (TE page numbers can be found by clicking “Go to page” in middle of toolbar across the top) Choose an animal and describe how it and its environment would be affected by a major change, such as a wind storm, hurricane, flood, or fire.

## Evidence of Learning

### Checking for Understanding

1. What does perish mean?  
(Perish means \_\_\_\_.)
2. What does thrive mean?  
(Thrive means \_\_\_\_.)
3. What are some reasons an animal population can change?  
(An animal population can change because \_\_\_\_.)
4. What type of weather event(s) can change an ecosystem?  
(A type of weather event that can change an ecosystem is \_\_\_\_.)
5. What happens when an environment changes?  
(When an environment changes, then \_\_\_\_.)
6. How does fire affect a forest ecosystem?  
(A fire can \_\_\_\_.)
7. What is the difference between a flood and a drought?  
(A flood \_\_\_\_ and a drought \_\_\_\_.)
8. What do animals do when the plants they depend on for food die out because of drought?  
(When their food is gone because of drought, animals will \_\_\_\_.)
9. How does a living organism impact their environment in a positive way?  
(A living organism can impact an environment in a positive way by \_\_\_\_.)

# INSTRUCTIONAL UNITS

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## Learning Intentions for Emergent Bilinguals

### **Sample Assessment Items**

- **The Lorax Cause and Effect Activity**
  - Read Dr. Seuss’s “The Lorax” to students.
  - Have students summarize the story.
  - Lead students to find instances of cause and effect.
  - Hand out the [cause and effect cards](#), 1 set per student group.
  - Place the cards face up in the center of the group.
  - Students will take turns selecting a cause card and locate the matching effect card.
  - Students will justify their choice to their teammates.
  - When students are finished playing, discuss results as an entire class.
  - **Challenge:** Place the cause and effect cards in sequential order according to “The Lorax” book.
  
- **[Lead4Ward Environmental Changes Strategies](#) Pair-Square-Share**
  - Students are organized into partners and work collaboratively to describe changes where some organisms may survive, perish, or move.
  - Student pairs stand up to find another pair to form a square and share their work.
  - Students compare/contrast their responses, evaluate the accuracy, and justify which is more accurate.
  - They may revise their original response based on their discussions.
  - Teacher will clarify/verify.
  
- **Mix-Freeze-Group (Musical)**
  - Play music while students mix around the room.
  - Stop music and say, “Freeze!” so students will freeze wherever they are in the room.
  - Say, “Group!” and ask students to stop and turn to the person closest to them to form a partnership.
  - As partners, students will write or illustrate the effects of droughts to organisms that may thrive, perish, or move.
  - Teacher will clarify/verify.

# INSTRUCTIONAL UNITS

<b>Module 5 of 8 (10 Days):                      PLTW-Stability &amp; Motion: Science of Flight</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.6B <b>demonstrate</b> and <b>observe</b> how position and motion can be changed by pushing and pulling objects such as swings, balls, and wagons (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>identify</b> a push or a pull on an object</li> <li>● <b>describe</b> the motion and stability of an object with balanced forces and unbalanced forces</li> <li>● <b>use</b> appropriate tools strategically</li> <li>● <b>demonstrate</b> collaboration through effective communication</li> <li>● <b>document</b> work in an organized notebook</li> <li>● <b>explain</b> findings and justify evidence-based conclusions with others</li> <li>● <b>engage</b> in and maintain positive interactions and relationships with other children and adults</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Refer to “Possible Student Misconceptions” found in the online PLTW teacher guide for each part of the module (Activity 1, Activity 2, Activity 3, Project, &amp; Problem).</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<ul style="list-style-type: none"> <li>● Air is all around us. We know that air can hold up heavier-than-air objects, such as kites, gliders, and airplanes, but how does it do that? What forces act on an airplane or glider? Students use aerodynamic concepts to explain how the motion of air and other forces act on gliders and other aircraft. Gliders and other aircraft use wings to develop the lift needed to fly. Wing shapes, sometimes called airfoils, provide lift. Wings must have the proper angle of attack—the angle at which a wing meets the flow of air. Because of their design, the airfoils can overcome gravity acting on the aircraft. Research and testing have shown that a wing with a streamlined shape and a body or fuselage that is streamlined can help overcome drag. In this module, students design, build, and test an experimental model glider as they learn about the forces involved in flight. In addition, students apply the engineering design process to the problem of airlifting supplies to a remote area.</li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● PLTW*</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Aircraft*</li> <li>● Balanced*</li> <li>● Design process</li> <li>● Drag*</li> <li>● Forces</li> <li>● Fuselage*</li> <li>● Gliders*</li> <li>● Gravity*</li> <li>● Horizontal stabilizer*</li> <li>● Lift*</li> <li>● Scientific inquiry process</li> <li>● Stability* (stable)</li> <li>● Thrust*</li> <li>● Unbalanced*</li> <li>● Weight*</li> <li>● Wings*</li> </ul>

# INSTRUCTIONAL UNITS

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<b>Instruction and Student Engagement</b>	<ul style="list-style-type: none"><li>• Refer to online PLTW teacher guide for complete lessons</li></ul> <p><a href="#">Linguistic Accommodations</a></p>
<b>Evidence of Learning</b>	<p><b>Checking for Understanding</b></p> <ol style="list-style-type: none"><li>1. In what ways do forces impact our world? (Forces impact our world by...)</li><li>2. How do balanced and unbalanced forces affect aircraft flight? (Forces affect aircraft flight by...)</li><li>3. How can a step-by-step process help you design or improve a solution to a problem? (A step-by-step process can help design or improve a solution to a problem by...)</li></ol> <p><a href="#">Learning Intentions for Emergent Bilinguals</a></p> <p><b>Additional Checking for Understanding Activities</b></p> <ul style="list-style-type: none"><li>• Conclusion Questions at the end of each activity</li></ul> <p><b>Sample Subunit Assessment Items</b></p> <ul style="list-style-type: none"><li>• Check for Understanding at the conclusion of the PLTW module</li></ul>



# INSTRUCTIONAL UNITS

Module 6 of 8 (10 Days): Life Cycles	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.10B <b>investigate</b> and <b>compare</b> how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> the term life cycle and explain that different plants have different life cycles</li> <li>● <b>explain</b> that in flowering plants, flowers help plants reproduce</li> <li>● <b>explain</b> that in flowering plants, seeds are held in fruits; in coniferous plants, seeds are held in cones</li> <li>● <b>explain</b> that pollination must occur for flowering plants to produce seeds</li> <li>● <b>describe</b> ways that seeds can be dispersed</li> <li>● <b>explain</b> that plants do not always reproduce through seeds</li> <li>● <b>define</b> the term life cycle and explain that all life cycles include birth or hatching, growth and development, maturity, and reproduction</li> <li>● <b>explain</b> that different animals have different life cycles</li> <li>● <b>describe</b> the difference between complete and incomplete metamorphosis</li> <li>● <b>explain</b> that reproduction results in diversity in a species: while offspring often look much like their parents, they do not look exactly the same</li> </ul> <ul style="list-style-type: none"> <li>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may not understand that life cycles are unique to certain organisms.</li> <li>● Students may not understand that even though an organism has changed its appearance it is still the same organism.</li> </ul>

# INSTRUCTIONAL UNITS

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<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• Organisms undergo observable changes during their life cycles, including birth, growth, development, reproduction, and death.</li><li>• We can compare the life cycles of various plants and animals.</li><li>• Some animals, such as frogs and lady beetles, pass through distinctly different life stages with very different appearances. Most plants, such as tomato plants, develop from seeds into small plants that resemble the adult form.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Provide examples of the stages of plant and animal life cycles for students to compare and contrast.</li><li>• Plan/design instruction to show plant and animal life cycles through a variety of media.</li></ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"><li>• TX Science Fusion*</li><li>• STEMscopes*</li><li>• Carson Dellosa Science Interactive Notebook</li><li>• Lead4Ward</li><li>• FREE TpT resource</li></ul>

# INSTRUCTIONAL UNITS

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## Academic Vocabulary

\*new to grade level

- Adult Plant
- Complete metamorphosis\*
- Egg
- Flower
- Frog
- Froglet\*
- Fruit
- Germinate
- Incomplete metamorphosis\*
- Lady Beetle\*
- Larva
- Life Cycle
- Metamorphosis\*
- Pollination
- Pupa
- Reproduce
- Seed
- Seedling
- Stage\*
- Tadpole\*

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- Texas Science Fusion Unit 11 Lesson 1
  - Begin to actively read SE pp. [485-487](#)
  - Remind students that when active reading they should be circling or underlining unfamiliar words and making notes about what they've read. This will help them remember what they have read.
- Texas Science Fusion Flipchart "[Make It Germinate](#)" p. 61 (5 days). (Can be conducted any time before or during the lesson).
  - Students will explore how the functions of plants allow them to survive in a particular environment.
  - A day ahead, prepare the materials for the activity as listed on the flipchart.
  - After planting the seeds in three different cups, they will be placed in three different locations: a dark closet, a freezer, a fridge.
  - Have students make predictions as to what the results will be.
  - Students will write down their observations. Continue to observe the seeds' progress over five days and record observations.
  - At the end of five days, discuss the results with students. Help them write a conclusion for their observations.
- Texas Science Fusion Unit 11 Lesson 2-SE pp. [495-501](#).
  - Continue reading actively.
  - Students should focus on how plants and animals have an organized life cycle that are patterns, NOT necessarily the terms "complete metamorphosis" and "incomplete metamorphosis".
- STEMscopes [Engage Activity](#) (1-2 days)
  - Students will dissect seeds to investigate life cycles.
  - A day ahead, presoak lima bean and pinto bean seeds in water.
  - Students will open a seed and investigate what is inside.
  - Record observations in the journal. Label the drawing.
  - Students will compare lima bean and pinto bean seeds.
  - Record observations in the journal. Label the drawing.
  - Discuss the similarities and differences between the two seeds.
- [Carson Dellosa Interactive Notebooks "Life Cycles"](#)
  - Have students share their ideas on plant and animal life cycles.
  - Ask if all life cycles are the same. Ask if plant and animal life cycles are the same. Ask how they are different.
  - Introduce the life cycle activity. Instruct students using the directions on pg. 20 to assemble.

# INSTRUCTIONAL UNITS

- o Once assembled, compare the similarities and the differences between the plant life cycle and animal life cycle.
- o Have students attach it to their journals.
- Texas Science Fusion Flipchart “[Model a Life Cycle](#)” p. 62. (Can be conducted any time before or during the lesson).
  - o Students will select an animal and research its life cycle.
  - o Students may use the internet, library books, or other resources to gather information.
  - o Follow the instructions on the Flip Chart page to assemble.
  - o Students will exchange finished models and share their finished project with others.
- STEMscopes Acceleration Tab “[Science Art: Life Cycle Glove](#)”
  - o Students will create a life cycle of a plant, insect, amphibian, or mammal.
  - o Students will research the organism of their choice to find out what the life cycle is.
  - o Allow students to be creative and use beads, tissue, or craft materials of their choice.
  - o Display finished products.
- STEMscopes Intervention Tab-Guided Practice-”[Clay Organism Models](#)“
  - o Students will use clay to create life cycle models of various organisms.
  - o Display finished projects. Conduct a gallery walk.
  - o Students will make observations of each of the models and take notes of the different life cycles.
  - o Then they will describe the similarities and differences observed.

**SPED-**STEMscopes Elaborate Tab “[Concept Review Game](#)” (login required)  
Students will review vocabulary and concepts.

**EB-**Use Language Acquisition Strategies [TE p.483L-483M](#) to help students with figurative language, homonyms, visual, contextual, linguistic support, and coordinating conjunctions.

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

**GT**-Farmers rely on a strong knowledge of plants and plants' life cycles to make their living. Have students research farming with special emphasis on the information farmers have to learn about plants to ensure that their crops are healthy. Have students select a particular crop and find out more about its life cycle and important conditions for growing that crop.

Evidence of Learning

## Checking for Understanding

1. What is a life cycle?  
(A life cycle is \_\_\_\_.)
2. Are all life cycles the same? Explain.  
(All life cycles are \_\_\_\_ because \_\_\_\_.)
3. Where do seeds come from?  
(Seeds come from \_\_\_\_.)
4. What is the purpose of a flower?  
(The purpose of a flower is to \_\_\_\_.)
5. What does reproduce mean?  
(Reproduce means \_\_\_\_.)
6. How many times can a life cycle repeat?  
(A life cycle can repeat \_\_\_\_.)
7. What is pollination?  
(Pollination is \_\_\_\_.)
8. What is germination?  
(Germination is \_\_\_\_.)
9. How does producing fruit help the plant reproduce?  
(Producing fruit \_\_\_\_.)
10. What are the stages of the frog life cycle?  
(The frog has \_\_\_\_\_ stages: \_\_\_\_\_.)
11. How many stages are in the lady beetle's life cycle?  
(There are \_\_\_\_ stages: \_\_\_\_\_.)
12. Which organisms have similar life cycles?  
(\_\_\_\_ have similar life cycles since they have \_\_\_\_ stages.)
13. Which organisms have different life cycles?  
(\_\_\_\_ have different life cycles since they have \_\_\_\_ stages.)

[Learning Intentions for Emergent Bilinguals](#)

# INSTRUCTIONAL UNITS

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## Evidence of Learning

### Sample Assessment Items

- [Life Cycle Poster](#)
  - Have students work in groups of three or four to create a poster diagramming the stages of the plant life cycle.
  - Students may choose to depict the tomato plant from the lesson pages, or another plant.
  - Make sure they show all of the stages of the cycle and use a cyclical format.
  - Encourage students to be colorful and creative.
  - Hang up their posters around the room to remind them of the stages of the plant life cycle.
- Life Cycle Puppet Show
  - Many ponds must be drained for construction projects. Often there are frog eggs almost ready to hatch.
  - Create a puppet show that explains the process of the life cycle of frogs.
  - Describe the habitat needed for a frog to have a successful life cycle.
  - Explain what the environment would need for all of the different frog life cycle stages.

# INSTRUCTIONAL UNITS

<b>Module 7 of 8 (10 Days): Animal &amp; Plant Adaptations</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.10A <b>explore</b> how structures and functions of plants and animals allow them to survive in a particular environment (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> and <b>explain</b> the term adaptation</li> <li>● <b>define</b> and <b>explain</b> the term camouflage</li> <li>● <b>define</b> and <b>explain</b> the term mimicry</li> <li>● <b>explain</b> how adaptations help plants and animals survive in their environment</li> <li>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may not understand how living organisms have special structures and functions in order for them to survive in their environment.</li> <li>● Students may think living organisms can quickly adapt or change in order to survive.</li> </ul>



# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• The structures of plants and animals are adapted to particular environments.</li><li>• Structures of some animals, such as the blubber of seals or the fur of rabbits, help some animals survive in cold weather conditions.</li><li>• Structures, such as the waxy coating of a cactus or the presence of spines instead of leaves, help some plants survive in hot, dry conditions.</li><li>• Provide a variety of media so students can connect learning to real-world applications.</li><li>• Plan activities where students can explore plants and animals in a variety of environments to discuss features helpful for survival.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Plan/choose activities where students can explore plants and animals in a variety of environments and discuss what makes their features unique and helpful for survival.</li><li>• Provide a variety of media (visuals, videos, books) in order for students to connect what they are learning to real-world applications.</li><li>• Provide opportunities for students to observe and record their learning, and to justify thinking.</li></ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"><li>• TX Science Fusion*</li><li>• STEMscopes*</li><li>• Interactive Notebook</li><li>• Lead4Ward</li><li>• Pinterest</li></ul>

# INSTRUCTIONAL UNITS

<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"><li>● Adaptation*</li><li>● Behavior*</li><li>● Camouflage*</li><li>● Environment</li><li>● Function*</li><li>● Hibernate*</li><li>● Instinct*</li><li>● Learned Behavior*</li><li>● Migrate*</li><li>● Mimicry*</li><li>● Movement</li><li>● Protection</li><li>● Structure*</li><li>● Survive*</li></ul>
<b>Instruction and Student Engagement</b>	<ul style="list-style-type: none"><li>● Texas Science Fusion Lesson 4 “<a href="#">What are Structural Adaptations??</a>” <a href="#">digital lesson</a> (login required)<ul style="list-style-type: none"><li>○ This can be done individually, as a small group, or an entire class.</li><li>○ Students may use the Digital Lesson Companion Sheet to guide them during the lesson.</li></ul></li><li>● Texas Science Fusion <a href="#">Flip-Chart p. 64</a><ul style="list-style-type: none"><li>○ Teacher will provide different colored construction paper sheets, nature magazines (or students can draw their own pictures of animals).</li><li>○ Students are to draw a picture of an animal that would be hard to see against their chosen color.</li><li>○ They will tape or glue their picture to their construction paper.</li><li>○ Students are to write a caption for their picture.</li><li>○ Guide them to answer the questions on the flipchart.</li><li>○ Next, lead students to make up and draw a plant or animal that has an adaptation.</li><li>○ Describe the structure. Explain how it helps the organism survive in its environment.</li></ul></li></ul>

# INSTRUCTIONAL UNITS

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- Carson Dellosa Interactive Science Notebook [“Plant Adaptations”](#)
  - Guide students through the steps to assemble the page in their journal (see pg. 14 sample).
  - Students will cut out and glue the “What happens when...” section and three scenes on the second three flap section.
  - They will create a stacked flap book below the title. Under the flap, complete the scene by drawing the plant and how it would grow in order to adapt to the situation. Next, cut out the flower flap book. Under each petal tell how the adaptation helps the plant.
  
- Carson Dellosa Interactive Science Notebook [“Animal Adaptations.”](#)
  - Guide students in assembling the notebook page in their journal.
  - Place students in groups of four. Students will discuss the adaptations animals have for finding food, escaping predators, and keeping warm.
  - Students will cut out both flap books. Attach them side by side in their journal.
  - They will cut out the small strips of adaptations and place them under the appropriate flap.
  - Students may write more adaptations under each flap.
  
- Texas Science Fusion Lesson 5 Virtual Lab [“How Can We Model a Physical Adaptation?”](#) (login required)
  - Use the digital lesson to learn how physical adaptations can help an organism survive in its environment.
  - Students will use a virtual investigation to model a physical adaptation and how it survives.
  - Students can use the [Digital Sheets](#) to answer questions posed in the digital lesson.
  - This lesson can be used for individual students, for small groups, or as an entire class lesson.
  
- Lead4Ward Strategy #1 [Picture It](#)
  - Students are provided with a visual of plants and animals (Picture 1).
  - Students identify the structure and function of each animal or plant that allow them to survive in their environment.
  - Students write or illustrate the information in their journal.
  - Students get a partner to share their information and justify the ideas that they wrote or illustrated.

# INSTRUCTIONAL UNITS

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- STEMscopes Acceleration Tab-Science Art-”[Adaptation Vest](#)”
  - Students will make a vest that can be worn to adapt to a different environment.
  - Use the Student Handout to provide instructions for the students.
  - Students can present their vest to a partner, group, or class.
- Pinterest [Matching Activity](#)
  - Teacher will prep the cards with pictures of animal adaptations and the matching adaptation sheet.
  - Students may be grouped individually, in pairs, or groups of 3-4.
  - Students will study the animal picture and match it to the adaptation on the adaptation sheet.
  - Monitor the students as they work cooperatively.
  - The teacher can provide an answer key for self-checking or choose to review the answers with the entire class.

**SPED**-STEMscopes Elaborate Tab-[Concept Review Game](#) (login required) Students may use this game to review key terms and concepts.

**EB**-Use [Extra Support for Vocabulary and Concepts](#) for help in understanding any unfamiliar words or the content of the lesson.

## [Linguistic Accommodations](#)

**GT**-STEMscopes Elaborate Tab [Extension Tab-”Camouflage](#)” An adaptation for survival is camouflage where an animal looks just like another animal or looks like the habitat in which it lives. Students can find images of the incredible creatures on the internet. Allow the students to produce a multimedia presentation in color with their research results.

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. What is an animal or plant structure?  
(Structures are \_\_\_\_.)
2. What is meant by function?  
(Function means \_\_\_\_.)
3. What is adaptation?  
(An adaptation is \_\_\_\_.)
4. What are some structures and functions of plants that allow them to survive in their environment?  
(Some structures and functions of plants that help them survive \_\_\_\_.)
5. What are some structures and functions of animals that allow them to survive in cold weather?  
(Some structures and functions of animals that help them survive are \_\_\_\_.)
6. Explain the function of a plant or animal part.  
(The function of a giraffe's neck is to reach the leaves in the treetops.)
7. How does thick fur help an animal survive?  
(The thick fur helps by \_\_\_\_.)
8. Why do plants and animals need adaptations?  
(Plants and animals need adaptations \_\_\_\_.)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- STEMscopes Acceleration Tab-[Project Based Learning](#)-Students will explore how structures and functions of plants and animals allow them to survive in a particular environment by creating a model of a “new organism and writing a report to explain the decisions they made when creating it. The students will present their model and report to the class in a three-minute presentation. (Login required)
- STEMscopes Evaluate Tab-Concept Builder-“[Feature a Creature](#)”-Use materials to create one make-believe creature and one plant that can survive in a particular environment. Use one index card to write a description of your make-believe creature and explain how it uses adaptations to survive in that environment. Use another index card to write a description of your plant and explain how it uses adaptations to survive in your environment. Attach the index cards to the bottom of your display using a stapler or glue. Share your environment, make-believe creature, and plant picture with a classmate and discuss.

# INSTRUCTIONAL UNITS

## Module 8 of 8 (5 Days): Organisms & Environments Unit Review

<b>TEKS</b> <small>(R) Readiness, (S) Supporting, (P) Process</small>	<p>3.9A <b>observe</b> and <b>describe</b> the physical characteristics of environments and how they support populations and communities of plants and animals within an ecosystem (R)</p> <p>3.9B <b>identify</b> and <b>describe</b> the flow of energy in a food chain and <b>predict</b> how changes in a food chain affect the ecosystem such as removal of frogs from a pond or bees from a field (S)</p> <p>3.9C <b>describe</b> environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations (S)</p> <p>3.10B <b>investigate</b> and <b>compare</b> how animals and plants undergo a series of orderly changes in their diverse life cycles such as tomato plants, frogs, and lady beetles (S)</p> <p>3.10A <b>explore</b> how structures and functions of plants and animals allow them to survive in a particular environment (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>• <b>understand</b> and <b>describe</b> patterns, cycles, systems, and relationships within the environments</li> <li>• <b>understand</b> that organisms undergo similar life processes and have structures that help them survive within their environments</li> <li>• Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>• Refer to previously discussed misconceptions presented for each module.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Real-World/Cross-Curricular Connections</b></p> <ul style="list-style-type: none"> <li>● <b>Art Connection: Ecosystems Mural</b> <ul style="list-style-type: none"> <li>○ Place students in small groups.</li> <li>○ Ask them to choose an ecosystem and create a colorful mural of that ecosystem.</li> <li>○ Remind students to populate the ecosystem with appropriate plants and animals as well as nonliving features.</li> </ul> </li> <li>● <b>Writing Connection: Write a Narrative</b> <ul style="list-style-type: none"> <li>○ Invite students to write a narrative from the point-of-view of an animal.</li> <li>○ Encourage them to include description of the animal's place in the food chain and to reference predator-prey relationships.</li> </ul> </li> <li>● <b>Social Studies Connection: Research the State Flower</b> <ul style="list-style-type: none"> <li>○ Have students research our state flower, the bluebonnet, and write down several facts about the flower, including information about its life cycle.</li> </ul> </li> <li>● <b>Social Studies Connection: Research the State Small Mammal: Armadillo</b> <ul style="list-style-type: none"> <li>○ The armadillo has adaptive traits that helps it survive - both physical and behavioral. Have students research and share with class. See <a href="#">Example</a>.</li> </ul> </li> <li>● <b>Writing Connection: Compare the life cycles of two organisms.</b> <ul style="list-style-type: none"> <li>○ Describe the life cycles of 2 organisms using a <a href="#">Venn Diagram</a>.</li> </ul> </li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● TX Fusion*</li> <li>● STEMscopes*</li> <li>● Lead4Ward</li> <li>● Student Manipulatives</li> <li>● YouTube</li> <li>● Carson Dellosa Interactive Notebooks</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Refer to previously discussed academic vocabulary presented for each module.</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

### Additional Activities 3.1A/3.4A

- TX Fusion Unit 1 Lesson 2 pp. 15-16, Inquiry Flipchart p. 4
- TX Fusion Unit 1 Lesson 4 pp. 27-29, Inquiry Flipchart p. 10
- [Interactive Notebook: What Do Scientists Do?](#)

### Additional Activities 3.9A

- [Lead4Ward Strategies](#)
- [Environment videos](#)
- **State Park Environments**
  - All Texas state parks have websites that describe specific landforms and organisms that inhabit that environment.
  - Assign partners to one of those state parks.
  - They will create and share a poster that summarizes the nonliving and living members of that environment and why that park would be interesting to visit.
  - Be sure to alert students that these park environments are delicate and are often affected by severe weather or fires. If a park has had any problems, those are usually described on the website and would be important for students to include on their poster.
- [STEMscopes Content Connections](#) (video online)
- [Interactive Notebook: Ecosystems](#)
- [Student Manipulative: 3-Way Match](#)

### Additional Activities 3.9B

- Science Fusion p. 459
- [Use Food Chains digital lesson](#) 4 (in Teacher Resources) as a class, small group, or individually to reinforce/review content on what food chains are. (Clever Login Required)
- View Content Connections Video in STEMscopes **Explain** tab “Food Chains” to help students understand what food chains are.
- Use TX Fusion Flipchart pg. 58 to have students complete a food chain activity.
- [Food Chain Anchor Chart](#)
- [Food Chain Necklace](#)
- [Lead4Ward Strategies](#)
- [Student Manipulative: Food Chain Card Sort](#)
- [Food Chain Videos](#)



# INSTRUCTIONAL UNITS

## **Additional Activities 3.9C**

- STEMscopes Acceleration Tab Science Applied activity “[How Dry I Am](#)”
  - Students will create an information kit that can identify if an area is experiencing a drought.
    - 1) In the kit, explain the changes that occur during a drought.
    - 2) Include how it can affect plants, animals, and people.
    - 3) Suggest ways to lessen the effects of droughts.
- [Interactive Notebook](#)
- [Videos](#)

## **Additional Activities 3.6B**

- TX Fusion Unit 5 Lesson 1 pp. 209-211 and pp. 216-217
- STEMscopes [3.6B](#)
- Interactive Notebook [3.6B](#)
- Student Manipulatives [3.6B](#)
- Lead4Ward Strategies [3.6B](#)

## **Additional Activities 3.10B**

- Research a State Flower
  - Every U.S. state has adopted a flower that is found in the state and is a source of pride for residents of that state.
  - Have students research the state flower and write down several facts about the flower, including information about its life cycle.
  - Have students share pictures and their findings with the class.
- [Lead4Ward](#) Choose and Chat
  - Present a [frog life cycle visual](#).
  - Ask students to display a hand signal to reflect their understanding (thumbs up-I completely understand, thumbs to the side-I kind of understand, thumbs down-I need more information)
  - Students evaluate their understanding, choose a signal, and then chat with a partner about the following: Explain parts of the life cycle they understand; identify parts of the life cycle they do not understand; ask one clarifying question.
  - Repeat the same process with the tomato life cycle.
- [Student Manipulative: Venn Diagram Life Cycles](#)

# INSTRUCTIONAL UNITS

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## **Additional Activities 3.10A**

- [Adaptation Videos](#)
- [Student Manipulative Venn Diagram](#)
- [STEMscopes Science Today](#)
- **Question the Creator**

After the students have had time to create a plant and an animal that will survive in the environment provided to them, give them some time to play a game called “Question the Creator. Combine students with partners who had opposite environments so they can discuss the questions listed below. Remind them they need to give each other listening time. Why do you think the structures you gave your plant will help it survive in your type of environment? What do you think would happen if we switched animals? Would my animal survive in your environment? Why would my animal die in your environment?

- **Lead4Ward [Strategy #2 Frayer Model](#)**

Teacher will provide students with the visual organizer (see second slide after this). Students will complete the chart with four sections which hold a definition, characteristics/facts, illustration, and examples or non-examples of the following terms.

- adaptation
- structure
- function
- environment

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. What environmental changes or events could cause an animal population to perish or move?  
(An environmental change that could cause an animal population to perish would be...)
2. What environmental changes or events could cause an animal population to thrive?  
(An environmental change that could cause an animal population to thrive would be...)
3. What would happen if half of the amount of grass on Earth suddenly died?  
(If half of the amount of grass on Earth suddenly died....)
4. Compare the lady beetle's life cycle to the frog's life cycle.  
(The life cycle of a frog and a lady beetle are...)
5. Explain whether all life cycles the same.  
(Animal life cycles are....)
6. How is a plant life cycle usually different from an animal life cycle?  
(Plant and animal life cycles are usually different from each other because....)
7. What are some structures that help an animal survive?  
(Some structures that help animals survive are...)
8. What are some structures that help plants survive?  
(Some structures that help plants survive are....)
9. Explain why an animal from the Arctic would not survive in the desert. Why would an animal from the desert not survive in the Arctic?  
(An animal from the Arctic would not survive in the desert because...)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- [Unit 1 Assessment](#): Organisms and Environments. [Student Answer Document](#). Teacher [Key](#).
- [Project: Science Applied](#). Use rubric.

# INSTRUCTIONAL UNITS

## Unit II: Earth & Space

(7 Weeks)

### Unit Description:

In Unit II, students will learn about Earth and space. Students explore how soil is formed. Students must first understand that soil is a mixture of rock and minerals, organic matter, water, and air. Students investigate rapid changes to the Earth through volcanic eruptions, earthquakes, and landslides. Students learn that natural resources can be useful in our everyday lives. They also learn about the conservation of natural resources. Students explore what the Sun is made of and how it provides light and thermal energy for our planet. Students learn about the planets and their position in the solar system in relation to the Sun. Students learn about the relationship between the Sun, Earth, and Moon. Students connect the important ideas of weather from previous grade levels and begin to collect information that can be used to identify weather patterns in the area in which they live.

### Mastery Learning Objectives:

- **Understand** that Earth's surface constantly changes
- **Understand** how Earth's natural resources are used and can be conserved
- **Understand** patterns on Earth and in the sky
- **ELPS:** The students will develop their receptive and expressive skills. (reading, writing, speaking, and listening)

### Essential Questions:

- What is soil? How is it formed?
- Why do you think types of soil vary around the world?
- Why is soil important to plants, animals, and people?
- What natural forces can quickly change Earth's surface?
- What are natural resources?
- Why are natural resources useful?
- How can we conserve resources?
- Which characteristic does each planet in Earth's solar system share?
- What is at the center of Earth's solar system?
- What is the order of the planets in order from distance to the sun?
- How are inner planets different from outer planets?

# INSTRUCTIONAL UNITS

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## Real World/Cross-Curricular Connections:

- What natural resources can be found at home? At school?
- Why is conserving resources important?
- Have students create a short skit on ways to conserve natural resources and present it.
- Have students collect soil samples from their backyard and school playground and compare the properties of each.
- Have students create a picture dictionary for the key terms in this lesson. Students write a definition and draw a picture to illustrate each word.
- Have students write a short story about soil from the perspective of a worm. Students should include details about what the worm sees in the soil and how the worm helps the soil. Include illustrations in the story.
- Have students use pictures from magazines or draw illustrations and create a mural of renewable resources and nonrenewable resources.
- Have students that design a poster promoting responsible use of natural resources.
- Have students create percussion musical instruments using everyday objects from the classroom or from home.
- Research Earth Day with a partner and present findings to classmates.
- Have students research the names of the eight planets and determine the origin of each of them.
- Have students create a model of the sun and the eight planets in our solar system.
- Have students research to find Native American stories that explain the origin of seasons. Students will share their findings with classmates.
- Have students research Native American stories that explain the phases of the moon. Students will retell the story in their own words and create illustrations for their story.
- Have students create an original mnemonic device for the planet order.

# INSTRUCTIONAL UNITS

Module 1 of 7 (5 Days): Soil	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.7A <b>explore</b> and <b>record</b> how soils are formed by weathering of rock and the decomposition of plant and animal remains. (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> and <b>explain</b> the term soil</li> <li>● <b>identify</b> soil as a natural resource</li> <li>● <b>explain</b> how soil is formed by weathering of rock and decomposing plant and animal remains</li> <li>● <b>describe</b> and <b>compare</b> various types of soil, sand, silt, and clay</li> <li>● <b>explain</b> that topsoil is a byproduct of subsoil and bedrock</li> <li>● <b>explain</b> why soil is important for plant growth</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may think that all soils have the same composition.</li> <li>● Students may confuse weathering and erosion.</li> <li>● Students may not understand that soil formation is a slow process of change over time.</li> <li>● Students should understand that soils are made up of a variety of natural materials and that it is not just dirt.</li> <li>● Students might think that dead plants and animals are not part of the formation of soil, but, in fact, decomposed remains allow nutrient cycling to occur and are a part of soil formation.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• Weathering is the process that breaks down Earth’s rocks into smaller and smaller pieces over time.</li><li>• Soils are made up of small pieces of weathered rock.</li><li>• Soil contains many substances including decomposed plant and animal remains.</li><li>• The materials in soil, or soil type, are different in different areas.</li><li>• Provide students opportunities for hands-on experiences with investigations, models, and demonstrations.</li><li>• Provide students with multimedia such as videos to support conceptual understanding.</li><li>• Students may have the misconception that all soils have the same composition.</li><li>• Students may not understand that the formation of soil is a slow process over time.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Provide opportunities for students to have hands-on experiences with investigations, models, and demonstrations of how soil is formed.</li><li>• Allow students to explore, communicate, and justify their understandings of the formation of soil through varied formats such as class discussions and science notebooks.</li><li>• Vary instruction with videos, diagrams, models, demonstrations, and investigations to help conceptual development.</li><li>• Show examples of how plants can cause weathering of rock. The term “mechanical” is not a vocabulary term for Grade 3, but it is appropriate to introduce how plants cause weathering.</li><li>• Provide opportunities for students to examine many different soil samples during hands-on labs.</li></ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"><li>• TX Science Fusion*</li><li>• STEMscopes*</li><li>• Soil Challenger Activity</li><li>• Lead4Ward Instructional Strategies</li><li>• Carson Dellosa Interactive Notebook</li></ul>

# INSTRUCTIONAL UNITS

<p><b>Academic Vocabulary</b> <small>*new to grade level</small></p>	<ul style="list-style-type: none"><li>• Clay</li><li>• Decomposition*</li><li>• Humus</li><li>• Nutrients</li><li>• Plant and animal remains</li><li>• Sand</li><li>• Silt</li><li>• Soil</li><li>• Soil formation*</li><li>• Weathering*</li></ul>
<p><b>Instruction and Student Engagement</b></p>	<ul style="list-style-type: none"><li>• Texas Fusion Science Teacher Resources Unit 7 Lesson<ul style="list-style-type: none"><li>◦ <a href="#">Video lesson “What is soil?”</a> either as an entire class guiding lesson or for individual students to review the lesson on soil. <b>*Clever Login Required</b></li></ul></li><li>• Texas Fusion Inquiry <a href="#">Flipchart</a> p. 43 <b>*Clever Login Required</b><ul style="list-style-type: none"><li>◦ Demonstrate to students how soil is formed.</li><li>◦ Ask students to brainstorm what events in nature may have an effect on soil formation.</li><li>◦ Guide students to understand that water, wind, and ice can bring changes to soil. Introduce activity following flipchart.</li><li>◦ Have students illustrate and label their observations as they conduct the activity.</li></ul></li><li>• STEMscopes-Acceleration-Science Art-Soil Soup Recipe Card<ul style="list-style-type: none"><li>◦ After studying about the formation of soil, students will create a soil soup recipe card with ingredients, directions, and a drawing of the soil soup. <b>*Clever Login Required</b></li></ul></li><li>• STEMscopes Engage-Starters-Activity #1.<ul style="list-style-type: none"><li>◦ Teacher Prep: use a variety of colored soaps or crayons, prepare shaving from these ahead of time and place in sandwich bags. These bags will be distributed to students before beginning activity.</li><li>◦ Have all students add their shavings to a bowl.</li><li>◦ Relate the mixture to the formation of soil in that soil is made up of pieces of weathered rock.</li><li>◦ Ask students what else they have seen that might make up soil. <b>*Clever Login Required</b></li></ul></li></ul>



# INSTRUCTIONAL UNITS

- Texas Fusion (2-3 days) [TE pp. 320-325](#) \*Clever Login Required
  - Ask students what they know about soil.
  - Write their ideas on chart paper or board. Explain to students that they will be participating in Active Reading.
  - Explain that this means they will be looking for information about main ideas on soil.
  - Guide students to create a word web on their paper. In the inner circle, they will write the word “soil”.
  - As they read, they will be adding words that are related to soil in the outer circles. They may also draw pictures or illustrations.
  - Point out and circle/underline any unfamiliar words as you read.
  - Call students’ attention to the diagram on p. 323. Allow students to discuss the information used on the diagram.
  - Introduce the soil particle size anchor chart. Have students make one to add to their notes. Model particle size using 3 balls of different sizes (baseball, golf ball, marble) or fruit (grapefruit, tangerine, grape) to help students understand the particle size differences.
  - Help students make the connection to the information on pp. 324-325.
- STEMscopes-Engage-Starters-Activity #2.
  - Bring a few different plants to class, or go outside where students can see trees or plants.
  - Ask students what happens when these plants die. They do not pile up; they decompose!
  - Have students imagine what it would be like if trees did not decompose and then, identify the decomposed plant and animal remains as a component of soil.
  - Provide students with a craft stick or popsicle stick and have them observe a small patch of soil outside on the playground area or other area on school grounds. \*Clever Login Required

**SPED**-Students will be given a [puzzle template](#). You may use STEMscopes Guided Practice. They will create jigsaw puzzles to illustrate that soil is made up of different substances. They may use their notes, the internet, and their textbook to create their puzzle. \*Clever Login Required

**GT**-Read about [compost](#). Have students research composting-what it is, how it benefits the soil, how to design a compost bin. \*Clever Login Required

# INSTRUCTIONAL UNITS

**EB-Texas Fusion Science p. 320** for vocabulary support. Students will draw a word web on their notes. They will write the vocabulary word in the middle circle. As they read the lesson, they should write words that relate to that vocabulary word in the outer circles.

## [Linguistic Accommodations](#)

### Evidence of Learning

#### **Checking for Understanding**

1. What is soil made of?  
(Soil is made of \_\_\_\_.)
2. How long does it take soil to form?  
(It takes soil \_\_\_\_.)
3. How do you think soil forms?  
(Soil forms \_\_\_\_.)
4. What is weathering? How does it help form soil?  
(Weathering is \_\_\_\_\_. It helps form soil by \_\_\_\_\_.)
5. What can cause weathering?  
(Weathering can be caused by \_\_\_\_\_.)
6. What happens when rock is weathered intensely over a long period of time?  
(When rock is weathered over a long period of time \_\_\_\_\_.)
7. Why is soil important?  
(Soil is important because \_\_\_\_\_.)
8. Is all soil the same? Explain.  
(No, all soil is not the same because \_\_\_\_\_.)
9. Would you expect to find the same type of soil in a desert and a rainforest? Why or why not?  
(No, the desert and rainforest do not have the same type of soil because \_\_\_\_\_.)
10. How do plants and animals become part of the soil?  
(Plants and animals \_\_\_\_\_.)
11. Can you tell where a soil sample came from?  
(You can tell where a soil sample came from by \_\_\_\_\_.)

## INSTRUCTIONAL UNITS

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12. Name three layers of soil.  
(Three layers of soil are \_\_\_\_.)
13. Why is topsoil so fertile?  
(Topsoil is fertile because \_\_\_\_.)
14. Why do scientists use particle size to classify soil?  
(Scientists use particle size because \_\_\_\_.)
15. How do animals use soil?  
(Animals use soil \_\_\_\_.)
16. How do plants get nutrients from soil?  
(Plants get nutrients from soil \_\_\_\_.)
17. Can all plants use the same type of soil? Explain.  
(Plants cannot use the same type of soil because \_\_\_\_.)
18. What is compost?  
(Compost is \_\_\_\_.)
19. How long does it take compost to develop?  
(It takes compost \_\_\_\_.)
20. What types of materials can you compost?  
(It takes compost \_\_\_\_.)
21. What types of materials shouldn't you compost and why?  
(Some items you should not compost are \_\_\_\_\_ because \_\_\_\_\_.)

### [Learning Intentions for Emergent Bilinguals](#)

#### **Sample Assessment Items**

- “[What's in soil?](#)” poster: Teacher Prep- a day ahead, obtain some soil from the school yard, some paper plates or napkins, a craft stick, a hand lens, an index card, and baby wipes (optional-wet paper towels will work as well). Obtain enough soil for each student to have a small sample (spoonful). Place a small cup of the soil sample with a plastic spoon in the cup. Students will serve a small portion on the plate or napkin and use the craft stick to explore. Students will then make a list on their index card. Hand students a white sheet of construction paper. Students will then create an illustration of what they discovered in their soil sample. Display their illustrations for others to see.

# INSTRUCTIONAL UNITS

<b>Module 2 of 7 (5 Days): Rapid Changes to Earth's Surface</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.7B <b>investigate</b> rapid changes in the Earth's surface such as volcanic eruptions, earthquakes, and landslides (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>explain</b> how fires, landslides, and floods affect living things</li> <li>● <b>describe</b> how volcanoes, earthquakes, floods, and landslides can affect Earth's surface</li> <li>● <b>explain</b> what causes earthquakes and volcanic eruptions</li> <li>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may not understand how volcanoes, earthquakes, and landslides affect land and living organisms.</li> <li>● Students may misunderstand what types of natural events cause rapid changes (e.g. earthquakes, tsunamis, volcanic eruptions, landslides).</li> <li>● Students should understand that not all changes to Earth's surface happen quickly.</li> <li>● Students might think that these rapid changes are always disasters, but remind student they are a natural part of Earth's cycles, and sometimes make way for other environments or organisms to establish in a new area.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>● Large forces can change the Earth’s surface rapidly.</li> <li>● Volcanic eruptions and earthquakes can cause rapid changes on Earth’s surface such as creating new land, making cracks in the crust, or changing landforms.</li> <li>● Landslides can cause rapid change to Earth’s surface such as rocks and debris falling from a rock face.</li> <li>● Plan investigations where students can use hands-on investigations to model rapid changes.</li> </ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"> <li>● Provide learning experiences where students can observe changes to the Earth’s surface after an event such as an earthquake, volcanic eruption, or landslide. Draw before and after illustrations/diagrams in their science notebooks to record the process.</li> <li>● Plan/choose investigations where students can participate in hands-on investigations where these processes can be modeled.</li> <li>● Choose a variety of stimuli for students to analyze, interpret, draw conclusions, and justify their thinking.</li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● TX Science Fusion*</li> <li>● STEMscopes*</li> <li>● Carson Dellosa District Interactive Notebooks</li> <li>● Lead4Ward Instructional Strategies</li> <li>● Student Manipulative</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Climate</li> <li>● Earthquake*</li> <li>● Erupt*</li> <li>● Landform</li> <li>● Landslide*</li> <li>● Natural hazard</li> <li>● Natural resource</li> <li>● Physical environment</li> <li>● Volcano*</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- STEMscopes-Engage-Starters- “Who Am I?” activity
  - Provide one index card to pairs of students that says “Earthquake, “Volcano, or “Landslide”.
  - One partner views the card (and keeps what is on the card a secret) and the other partner tries to guess which of Earth’s forces his/her partner has in hand.
  - The partner with the card must phrase the statements as descriptive sentences, such as, “I can make the Earth’s surface move.
  - The partner can then guess, “Are you an earthquake?”
  - Model the game first, then give student pairs shuffled stacks of cards to continue the game.
  - Guide students in creating an anchor chart that describes the forces that rapidly change Earth’s surface. They will add it to their notes in their science journal.

**\*Clever login required**
- Texas Science Fusion [Interactive Digital Lesson](#) **\*Clever Login Required**
  - Help students have a visual representation of forces that change Earth’s landforms rapidly. It can be used individually, in a small group, or as a total group.
  - Pause and check for understanding as needed.
  - [Lead4ward 3-2-1 Summary](#) to have students review and explain the content.
  - Students will find a partner and state three facts they learned, two inferences they can make using the stem “I think \_\_\_ means \_\_\_”, and one conclusion they can draw using the stem “It’s important to know this because \_\_\_.”
  - Students can continue this activity once more with a new partner.
- Texas Science Fusion [Flipchart p. 40](#). **\*Clever Login Required**
  - Follow procedures for creating a volcano model.
  - Have students discuss safety procedures to follow before beginning this activity. Students will build a volcano using the materials listed on the flipchart.
- STEMscopes Intervention tab “Guided Practice-RAFT cards activities.”
  - A RAFT is an activity that the students complete by picking a RAFT card at random and creating a product that is specifically tailored to that RAFT. RAFT stands for R: Role (Who the student is) A: Audience (To whom the student is talking) F: Format (What product they are making) T: Topic (What topic they are discussing).
  - Allow students to use books and the Internet to explore concepts further, if needed.
  - The markers (or crayons or colored pencils), cardstock, and poster board should

# INSTRUCTIONAL UNITS

be used as part of the RAFT product.

- o The students should understand that volcanoes, landslides, floods, and earthquakes cause rapid changes to Earth's surface.

**\*Clever Login Required**

- Carson Dellosa Interactive Notebook Science Grade 3 "[Changes to Earth's Surface](#)" pp. 64-65.
  - o Complete the Introduction activity with a cookie in a plastic container.
  - o Explain that the cookie will represent a boulder.
  - o Place the cookie in a container and seal it tightly.
  - o Have students try shaking the cookie and container.
  - o Explain that this is weathering. It brings about changes to Earth's surface.
  - o Next, give students the notebook page "Changes to Earth's Surface".
  - o Give instructions to students. Explain that the word "processes" means changes.
  - o Students will be assembling the foldable and matching the strips under the correct flap.
  - o Students will attach it in their journal or a construction paper sheet.

**SPED-STEMscopes Elaborate Tab-[Concept Review Game](#)** (login required) Assign Concept Review Game to help students review vocabulary words and concepts.

**EL-Use TE p. [255K](#)** to help students with expressions that signal differences (on the other hand, different from, and unlike), sequence words, and causes and effects.

**\*Clever Login Required**

**GT-Have students create a special news report that focuses on one force in nature that causes rapid changes to Earth. Students may use Flipgrid or SeeSaw formats to create their video. Students should include vocabulary words and science content to explain the processes. The videos will be presented to their classmates.**

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. What forces can rapidly change Earth's surface?  
(Some forces that can rapidly change Earth's surface are \_\_\_\_\_.)
2. What is an earthquake?  
(An earthquake is \_\_\_\_\_.)
3. What is a volcanic eruption?  
(A volcanic eruption is \_\_\_\_\_.)
4. What is a landslide?  
(A landslide is \_\_\_\_\_.)
5. How do fires, earthquakes, volcanic eruptions, and landslides affect living things?  
(Fires, earthquakes, volcanic eruptions, and landslides affect living things by \_\_\_\_\_.)
6. How do earthquakes, volcanic eruptions, and landslides change the surface of the land?  
(Earthquakes change the land by \_\_\_\_\_. Volcanic eruptions change the land by \_\_\_\_\_. Landslides change the land by \_\_\_\_\_.)
7. What other forces quickly change the land?  
(Other forces that rapidly change the land are \_\_\_\_\_.)
8. What role does gravity play in volcanic eruptions, landslides and earthquakes?  
(Gravity's role is \_\_\_\_\_.)
9. Why do some areas have earthquakes more often than others?  
(Some areas have earthquakes more often than others because \_\_\_\_\_.)
10. Why do some volcanoes ooze slowly while others explode?  
(Some volcanoes ooze slowly because \_\_\_\_\_. Others explode because \_\_\_\_\_.)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- Students will select a natural force (flooding, earthquakes, tsunamis, tornadoes, hurricanes) and research information about what it is, what can cause it, and where it can occur. Then look for an occurrence in the present day (internet news or newspapers) and create a poster, diorama, or PowerPoint that includes the information researched. Be prepared to present it to classmates.
- STEMscopes-Acceleration-[Science Art](#)-students will create a mini puppet theater and give a news report on one of Earth's forces.



# INSTRUCTIONAL UNITS

<b>Module 3 of 7 (5 Days): Natural Resources</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.7C <b>explore</b> the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> and explain the term natural resources</li> <li>● <b>identify</b> air, water, plants, animals, soil, and fossil fuels as natural resources</li> <li>● <b>identify</b> resources that are used as sources of energy, including sunlight, water, wind, coal, oil, natural gas, and wood</li> <li>● <b>define</b> and identify renewable resources, reusable resources, and nonrenewable resources</li> <li>● <b>explain</b> the importance of conserving resources</li> <li>● <b>identify</b> air, land, and water pollution</li> <li>● <b>explain</b> ways to protect resources, including reusing, recycling, and reducing.</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may think all resources can easily be replenished.</li> <li>● Students may not understand that there are various ways to help conserve natural resources.</li> <li>● Students might think that not all resources are worth conserving and need to be reminded that it is wise to conserve all resources.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>● Natural resources, such as oil, coal, metals, rocks, soil, air, water, plants, and animals, come from the Earth.</li> <li>● Characteristics of natural resources make them useful such as the fibers of cotton to produce cloth or the strength of wood to make furniture.</li> <li>● Natural resources can be conserved by using less, by recycling, and by reusing.</li> <li>● Provide students with many examples of natural resources for them to understand and connect to everyday life.</li> <li>● Students may have the misconception that resources can easily be replenished.</li> <li>● Students may not understand how to help conserve natural resources.</li> </ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"> <li>● Provide students with various examples of natural resources for them to understand and connect to how they benefit everyday life.</li> <li>● Give students opportunities to identify tangible ways to conserve resources.</li> <li>● Plan scenarios, discussions, or activities that help students understand the impacts of the lack of concentration.</li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● TX Science Fusion*</li> <li>● STEMscopes*</li> <li>● AIMS</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Conservation</li> <li>● Conserve</li> <li>● Natural resource</li> <li>● Product</li> <li>● Resource</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- Texas Fusion Science
  - Introduce natural resource unit by using [Flipchart “Polluted Plants”](#) pg. 41 activity ([TE p. 301D](#)). **\*Clever Login Required**
  - Students will plant grass seeds in three different cups of soil.
  - They will then water them with one of three types of water: clean water, salty water, and oily water.
  - Students will observe and record daily progress of the plants.
  - At the end of ten days they will determine how each type of water affected the plants and share their results and observations with classmates.
  
- Texas Fusion Science [Student book pp.301-307](#) to actively read information about natural resources.
  - During active reading, students will underline unfamiliar words, important information and graphics.
  - Teacher will discuss reading with the class. **\*Clever Login Required**
  
- Texas Science Fusion
  - Introduce conservation of resources using Fusion Student Resources Unit 7 Lesson 2 [Virtual Lab](#) activity either as a whole class or individually assigned. Use Virtual Lab Data Sheet or [Digital Lesson Companion](#) to have students complete questions posed in the virtual lab. **\*Clever Login Required**
  
- STEMscopes in Acceleration Tab “[Science Art Resource Super Heroes](#)” activity to reinforce conservation.
  - Students will design and draw a costume for a Resource Boy or Resource Girl who encourages using resources responsibly.
  
- AIMS “[Rocks and Minerals as Resources](#)” activity to teach how rocks and minerals are used as resources in everyday life.
  - Gather some objects as listed in activity.
  - Students will work in groups of 3-4 to identify the properties of each object and make a list of how the object is used using the recording sheet provided.
  - Students will think of as many ways the item may be used.
  - They may add to their lists items they see on the playground, in the cafeteria, and at home.

SPED-STEMscopes Explain tab-Use [Picture Vocabulary](#) and [Science Rock Natural Resources](#) song to review vocabulary and concept. **\*Clever Login Required**

# INSTRUCTIONAL UNITS

	<p><b>GT</b>-You may choose to have GT students lead the <a href="#">Flipchart pg. 42</a> activity and present their findings to the class. *Clever login required</p> <p><b>EB</b>-Vocabulary Cards and visuals are available in <a href="#">TE Unit Level Resources</a> in Teacher Support tab. Students can draw an illustration for each of the vocabulary words. *Clever login required</p> <p><a href="#">Linguistic Accommodations</a></p>
<b>Evidence of Learning</b>	<p><b>Checking for Understanding</b></p> <ol style="list-style-type: none"><li>1. What are natural resources? (Natural resources are...)</li><li>2. What are some natural resources that come from the earth? (Some natural resources that come from the earth are...)</li><li>3. How would you classify natural resources? (I could classify natural resources as...)</li><li>4. How are renewable and nonrenewable resources alike and how are they different? (Renewable and nonrenewable resources are alike... They are also different...)</li><li>5. Name some things you use at home that come from natural resources. (Some things I use at home that come from natural resources are...)</li><li>6. Name some things you use that do not come from nature? (Some things I use that do not come from nature are...)</li><li>7. What does conserve mean? (Conserve means to...)</li><li>8. What does useful mean? (Useful means...)</li><li>9. Explain the importance of conserving natural resources. (Conserving natural resources is important because...)</li><li>10. How would you design a plan to conserve natural resources? (To help conserve natural resources, we could...)</li><li>11. What do you think would happen if no one ever planted new trees? (If no one ever planted new trees, then...)</li><li>12. What other resources have many uses? (Some other resources that have many uses are...)</li></ol> <p><a href="#">Learning Intentions for Emergent Bilinguals</a></p>

# INSTRUCTIONAL UNITS

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## Sample Assessment Items

- **Natural Resources at Home:** Have students look around their home, indoors and outdoors, for items that came from natural resources. Students can have their parents help in creating a list of items and the resource from which it came. Students can bring the list and share it with their classmates.
- **Conservation of Resources:** Have students think about ways we can conserve resources. Discuss “Reduce, Reuse, Recycle” and what it means when conserving natural resources. Group students into 3-4 per group. Students will make observations both at school and at home. They will then gather their observations about what they observed and put together a PowerPoint presentation, brochure, poster, skit, news report, or role playing on the importance of conservation of natural resources.
- **[Natural Resources Tree](#):** Create the trunk and branches of a tree using brown butcher paper. Place it in the hallway outside the classroom door. Students will bring in pictures of items that come from natural resources that they cut from magazines, internet printouts, or drawings to add to the branches of the resource tree.

# INSTRUCTIONAL UNITS

Module 4 of 7 (5 Days): Sun	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.8B <b>describe</b> and <b>illustrate</b> the Sun as a star composed of gases that provides light and thermal energy (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>describe</b> the sun as a star</li> <li>● <b>explain</b> that stars emit energy in the form of light and heat</li> <li>● <b>compare</b> the number of stars that can be seen when using a telescope to the number of stars that can be seen when not using a telescope</li> <li>● <b>explain</b> how distance from Earth affects a star’s appearance</li> <li>● <b>describe</b> properties of the stars, including size, color, and brightness</li> <li>● <b>explain</b> that energy from the sun can affect the temperature of objects</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may think that the Sun is a star and the Earth is a planet.</li> <li>● Students may not know the locations of the Sun and Earth in the solar system.</li> <li>● Students should understand that the thermal energy from the Sun is critical to systems on Earth.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>● The sun is a star in our solar system</li> <li>● The sun is composed of gases</li> <li>● The sun provides light energy for Earth</li> <li>● The sun provides thermal (heat) energy for Earth</li> <li>● Students need to understand how the sun affects Earth (use real-world connections)</li> <li>● Students need to understand the locations of the sun and Earth (use visual models and videos to support abstract concept)</li> </ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"> <li>● Provide opportunities for students to see video footage of the Sun to make real-world connections and facilitate guided discussions on their observations.</li> <li>● Vary stimuli (models and visuals) to extend thinking and foster conceptual connections.</li> <li>● Provide opportunities to describe and illustrate the Sun.</li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● Texas Fusion*</li> <li>● STEMscopes*</li> <li>● BrainPop Español*</li> <li>● YouTube</li> <li>● Lead4Ward Strategy</li> <li>● Quizziz</li> <li>● Flipgrid</li> <li>● Mackinvia</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Inner planet*</li> <li>● Model*</li> <li>● Moon</li> <li>● Orbit*</li> <li>● Outer planet*</li> <li>● Planet* (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune)</li> <li>● Relationship*</li> <li>● Rotate/rotation</li> <li>● Solar system*</li> <li>● Star</li> <li>● Sun</li> <li>● Thermal energy</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- Sun Interactive Journal
  - Guide students to complete Sun Intro [Notes KWL](#) to activate prior knowledge, preview vocabulary, and review lesson objectives. Glue in journal. Teacher may create a class KWL anchor chart with students' help and input.
  - Guide students to complete the Sun Interactive Journal [Notes 1](#) or [Interactive Journal 2](#) and Fill in Sun [Fun Facts](#).
  - Watch YouTube video [Outer Space: "I'm So Hot", the Sun Song](#) 1:59 minutes
    - Students discuss STEMscopes [vocabulary](#) and may glue in journal.
  - EBs [Extra Support Vocabulary cards](#).
- TX Fusion What Are the Sun and Stars? Lesson 3
  - Watch BrainPOPJr. video [The Sun](#)
  - Guide students through Unit 9: Lesson 3 pages 397-399, 402-403
  - Skip Unit 8: Lesson 1 pages 343-354, no longer part of SE
  - GT [Digital Lesson](#) available through Think Central. **\*Clever Login Required**
- Sun Collaborative Activity
  - Watch YouTube video [Sun Facts for Kids](#) 10:31 min.
  - Create an anchor chart with students' input. [Sun Anchor Chart Example](#)
  - [Sun cards](#): Kagan- Think-Pair-Share: Print one set of cards per group. With their teams, students select one card. Everyone gets Think Time. After 30 seconds, students turn to partners and share their responses, thus allowing time for both rehearsal and immediate feedback on their ideas. Teacher calls on volunteers to share responses. Repeat for next cards.
  - **SPED** Provide extra wait time or assign 2 cards instead of 4.
  - **GT**- Use Flipgrid or Seesaw to record and share responses.
- Collaborative Team Activities
  - Watch YouTube video [Here Comes the Sun](#) 3:03 minutes
  - Call on one student to be the "guesser" to stand in front of the class. Student will face classmates and may not turn around to see classroom screen. Display one vocabulary word for the rest of the class "actors" to see. Class/actors will act out the word. Student guesser will guess the term the class is acting out.
  - **SPED/EB** Review [Sun Key Concepts](#). Optional: students paste Key Concepts in journal.
  - Students work with their team to complete STEMscopes Reading Science [The Sun: Important to Our Earth](#).



# INSTRUCTIONAL UNITS

- STEMscopes Sun Passage
  - Watch YouTube video [All About the Sun for Kids](#) 4:56 minutes
  - Students complete STEMscopes [Fill-in-the-Blank Sun Passage](#) to define the Sun as a star made up of gases and to describe that The Sun produces light and thermal energy. This may also be assigned online via STEMscopes [classroom](#).  
**\*Clever Login Required**
  - **EB-**Use bilingual dictionary, cognates, visuals in journal, and native language support.

## [Linguistic Accommodations](#)

### **Checking for Understanding**

1. Why does the sun appear larger and brighter than other stars?  
(The Sun appears large and bright because...)
2. What is the Sun composed of?  
(The Sun is composed of...)
3. What types of energy do we get from the Sun?  
(We get \_\_\_\_ and \_\_\_\_ energy from the sun.)
4. Why is the Sun important to Earth?  
(The Sun is important to Earth because...)
5. One way the sun gives off energy is in the form of light. How does this light affect living things on Earth?  
(Light energy affects living things on Earth by...)
6. What would happen if Earth was closer/farther to the Sun?  
(If Earth was closer/farther to the Sun...)
7. How can you imagine the Sun looks from Mars or Jupiter?  
(I can imagine that the Sun looks... from Mars/Jupiter.)

## [Learning Intentions for Emergent Bilinguals](#)

### **Sample Assessment Items**

- Sun Brochure
  - Students create a brochure to share facts about the Sun using student [checklist/guidelines](#). Students may use [this](#) format or create their own.
- Sun Flipgrid Video
  - Students record a video using Flipgrid to share what they learned about the Sun. See example [Flipgrid Sun Video Example](#). Use [Flipgrid Video Rubric](#) to score. Coding lab teacher can assist with learning more about how to use Flipgrid.

# INSTRUCTIONAL UNITS

Module 5 of 7 (5 Days): Weather	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.8A <b>observe, measure, record, and compare</b> day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> and <b>explain</b> the term weather</li> <li>● <b>explain</b> that the Sun is the source of energy that drives the water cycle</li> <li>● <b>explain</b> that the atmosphere is made up of the air that surrounds Earth</li> <li>● <b>describe</b> various types of severe weather</li> <li>● <b>describe</b> how to measure specific weather conditions: wind direction, air temperature, amount of precipitation, and type of precipitation</li> </ul> <ul style="list-style-type: none"> <li>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may confuse weather instruments and their purposes.</li> <li>● Students may think the weather has the same pattern in all geographic locations.</li> <li>● Students may think that temperature is the only weather condition that is easily measured, but remind students that other conditions, such as rainfall and wind direction, can be measured using scientific tools.</li> <li>● Students may not fully appreciate the danger posed by all forms of severe weather.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• Weather conditions can change from day to day.</li><li>• We can use tools such as rain gauges, wind vanes, and thermometers to gather weather information.</li><li>• We can use charts, tables, and graphs for recording and comparing weather data.</li><li>• Use a variety of visuals during instruction.</li><li>• Make real-world connections to meteorologists.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Provide opportunities to use tools to measure weather conditions</li><li>• Provide opportunities for students to learn about weather patterns through measuring with appropriate scientific instruments, recording data, making predictions on future short-term weather</li><li>• Plan opportunities for students to be able to make logical comparisons using local weather, locations across the state, and locations across the nation</li><li>• Use a variety of visuals during instruction (e.g., weather map, charts/tables, graphs, weather forecasts) so students have relevant, real-time data to understand weather</li><li>• Make real-world connections to scientists through learning about meteorologists.</li></ul>
<b>Materials/Resources</b> <small>*available in Spanish</small>	<ul style="list-style-type: none"><li>• TX Science Fusion*</li><li>• STEMscopes*</li><li>• Interactive Notebook</li><li>• BrainPOP Español</li><li>• YouTube</li><li>• Lead4Ward</li><li>• Flipgrid</li></ul>

# INSTRUCTIONAL UNITS

<p><b>Academic Vocabulary</b> <small>*new to grade level</small></p>	<ul style="list-style-type: none"><li>• Atmosphere</li><li>• Cloud cover</li><li>• Degrees Celsius °C</li><li>• Degrees Fahrenheit °F</li><li>• Precipitation</li><li>• Rain gauge</li><li>• Temperature</li><li>• Thermometer</li><li>• Weather</li><li>• Wind</li><li>• Wind vane*</li></ul>
<p><b>Instruction and Student Engagement</b></p>	<ul style="list-style-type: none"><li>• Weather Introduction<ul style="list-style-type: none"><li>○ <a href="#">Building Background</a>: Activate students’ prior knowledge by reading Amy’s story together.</li><li>○ <b>EB</b> as you read paragraph one, and Amy’s clothes are described, list them or draw them on the board. Encourage students to copy in their journals. Discuss what happened and why Amy had to change her clothes.</li><li>○ Students discuss and glue <a href="#">Weather Picture Vocabulary cards</a> in journal.</li><li>○ <b>EBs</b> <a href="#">Spanish Picture Vocabulary cards</a> available.</li></ul></li><li>• BrainPOP Weather Introduction<ul style="list-style-type: none"><li>○ Watch Weather <a href="#">Video</a> to learn about the atmosphere, temperature, humidity, moisture, fog, clouds, rain, snow, hail, sleet, and pressure. (3:40 minutes)</li><li>○ <b>EB</b> Closed captioning feature available.</li><li>○ Guide students through BrainPOP’s Review Quiz. Teacher and students read questions together. Teacher provides Think Time. In teams, students choose an answer. Selected team representatives share answers. Check and discuss.</li><li>○ <b>SPED</b> Provide extra time. Question/answer choices read aloud available.</li><li>○ In groups of 4, students complete BrainPOP’s <a href="#">Weather Vacation</a> activity. Students imagine they have to pack for a week-long vacation to different locations. Using the internet and the current local weather conditions as a guide, make a list of items you’ll want to bring. Take turns deciding what to pack. Students may also complete this activity <a href="#">online</a>. <b>*Clever Login Required</b></li></ul></li></ul>

# INSTRUCTIONAL UNITS

- TX Fusion Alignment
  - Guide students through Unit 8: Lesson 2 pages 357-358, 360-361, 364-368
  - Skip page 359, types of clouds not the SE
  - Skip pages 362-363, clothing and activities for weather (2<sup>nd</sup> grade SE)
  - Pages 364-365, clarify difference between extreme weather and everyday weather
  - Inquiry Flipchart page 46 (can be conducted at any time before or during the lesson)
  - Unit 8: Lesson 3 pages 369-370 Inquiry Flipchart page 47
  - **GT** digital lesson available through Think Central.
  - **SPED/EBs** [Review Weather Key Concepts](#). Optional: students paste Key Concepts in journal.
  
- STEMscopes Daily Weather
  - Take students outside (in groups or as a class) and allow them to record the daily temperature, rainfall, and wind speed and direction on their recording sheets.
  - Discuss student behavior and class expectations prior to taking the class outside.
  - This will be done for 5 days. The days do not have to be consecutive.
  - You may choose to make observations at different times of the day to see differences.
  - Students will record the daily weather conditions using [STEMscopes Student Journal](#) graphic organizer or interactive journal [graphic organizer](#).
  - Project [School Name](#) Reports the Weather-Groups take turns reporting the day's weather to the class using their daily findings and STEMscopes Student Journal notes. Encourage students to use [The Weather Channel official website](#) for Current US Weather Maps: temperature surface, precipitation.
  
- What Does a Meteorologist Do?
  - [YouTube video: Weather 101 for Kids](#) Meteorologist JD Rudd explains a few basics about weather and describes his job as a meteorologist. (5:33 minutes)
  - Use [Meteorologist Anchor Chart](#) example to discuss how meteorologists use math, science, reading, writing, and social studies in their jobs.
  - Kagan-Showdown: Challenge teams to complete [Weather Tools](#).
  - Students independently complete the first challenge and record their response on their own paper.
  - When the Showdown captain calls, "Showdown!" teammates all share their own answers. Teammates either tutor or discuss, then celebrate.
  - Continue for the other 4 challenges.

# INSTRUCTIONAL UNITS

- Lead4Ward Strategy-Commit and Toss Game
  - Students write one word that describes today's weather.
  - Students then crumple their paper into a ball and toss it randomly across the classroom.
  - Students pick up 2 different balls and toss them, too. On the 4<sup>th</sup> ball, students open the paper to read, discuss, and record a new word to the original response.
  - Teacher clarifies and verifies.
  - Group students through [Student Manipulatives Four Corners Weather](#).

## [Linguistic Accommodations](#)

### **Checking for Understanding**

1. What is Earth's atmosphere?  
(Earth's atmosphere is a layer of ...)
2. What tools can we use to gather weather information?  
(Weather information can be gathered with...)
3. How can we record weather data?  
(We can record weather data by...)
4. What tool shows wind direction?  
(The tool that shows wind direction is called...)
5. What are some reasons to measure weather?  
(We need to measure weather because...)
6. How does a thermometer work?  
(A thermometer is a tube filled with...)
7. Why are thermometers so useful?  
(Thermometers are very useful because...)
8. What types of words do we use to describe the weather?  
(Some words we use to describe weather are...)
9. Why do we care about the weather? Why is the weather important?  
(Knowing about the weather is important because...)
10. How can you measure the amount of precipitation during a rainstorm?  
(To measure the amount of precipitation during a rainstorm we need to...)
11. Why do meteorologists track the weather?  
(Meteorologists track the weather because...)
12. Why do you think weather changes so often?  
(Weather changes often because...)
13. How do you explain the rise in temperature between morning and noon and the decline in temperature in the evening?  
(In the morning, our weather is \_\_\_ because \_\_\_. Then in the evening, the weather becomes \_\_\_ because \_\_\_.)

# INSTRUCTIONAL UNITS

## Evidence of Learning

14. Why is weather different in different parts of the world?  
(Weather is different in different parts of the world because...)
15. What is your favorite kind of weather? Why?  
(My favorite kind of weather is \_\_.)
16. Predict tomorrow's weather.  
(I think tomorrow's weather will be...)

### [Learning Intentions for Emergent Bilinguals](#)

#### **Sample Assessment Items**

- [STEMscopes Make Your Own Rain Gauge](#)
  - At home, students follow STEMscopes instructions to make their own rain gauge to be able to tell how much rain, hail, or snow falls at home.
- **Drama –Weather Interviews**
  - In pairs students work together to write interview questions and answers for a TV weather program. After practice, they present the interview to the class.
- **TX Fusion Flipchart**
  - S.T.E.M. Flipchart page 48 Design It: Build a Wind Streamer
- **Weather Conditions in choose a city.**
  - Ask students to think of one city in the world that they would like to visit. Identify the city's location in the map. Students will use the internet to find the weather conditions for their selected city for a 3-day period and record the weather conditions in the table below. Share answers using Flipgrid or with teammates. [Rubric](#).
- **STEMscopes Favorite Type of Weather**
  - Give each student a copy of the [Draw and Explain](#) handout. Tell students to draw their favorite type of weather. Have students complete their drawing in the box provided and label the parts of their drawing. Have students use the lines provided to explain what their picture is showing and describe how it illustrates the topic. Students will share their Draw and Explain handout with class or using Flipgrid.
- **Severe Weather**
  - Choose one type of severe weather to research: tornado, hurricane, blizzard, flood. Students create a presentation for class detailing where they happen, why they happen, and the damage they do.

# INSTRUCTIONAL UNITS

## Module 6 of 7 (5 Days): Sun, Earth, & Moon and Planets

**TEKS**  
(R) Readiness, (S) Supporting, (P) Process

3.8C **construct** models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions (S)

3.8D **identify** the planets in Earth's solar system and their position in relation to the Sun (R)

\*Process standards will be integrated with content standards, so students develop a deeper understanding of science.

[English Language Proficiency Standards](#)

**Content and Language Objectives**

*The Learner Will:*

- **explain** how Earth's rotation is responsible for the day and night cycle
- **describe** how Earth's revolving around the sun is responsible for the seasons
- **explain** how the motion of Earth and the moon cause observable cycles in nature
- **collect** and **analyze** information using a Sun-Earth-moon system model
- **describe** the orbits of Earth and the moon
- **identify** the major components of the solar system
- **describe** the characteristics of planets in the solar system
- **compare** and **contrast** the inner and outer planets
  
- Student linguistic accommodations should reflect listening, speaking, reading, and writing. [Learning Intentions for Emergent Bilinguals](#)



# INSTRUCTIONAL UNITS

<b>Misconceptions</b>	<ul style="list-style-type: none"><li>• Students may think that the Earth is the largest planet and is at the center of the solar system.</li><li>• Students may not understand the Earth, Moon, and Sun’s location in the solar system.</li><li>• Students may not understand the size of the Earth, Moon, and sun in relation to each other.</li><li>• Students may confuse the terms rotation (rotate) and orbit.</li><li>• Students may think that all the planets are the same size, but remind students of the enormity of space and the relative size of other planets and Sun compared to Earth.</li><li>• Students may not know the size, position, and distance of planets in the solar system.</li><li>• Students may think that all planets are lined up as they travel around the Sun due to many diagrams showing them in a line.</li><li>• Students may not know the order of the planets.</li></ul>
<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"><li>• Models can be used to represent the Moon orbiting Earth and Earth orbiting the Sun.</li><li>• Each of the planets in our Solar System orbit the Sun.</li><li>• The closest planet to the Sun is Mercury, followed by Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.</li></ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"><li>• Plan for students to construct models of the Earth, Moon, and Sun.</li><li>• Give students opportunities to compare the models with the real objects and identify similarities and differences.</li><li>• Provide opportunities for students to understand rotate, revolve, and orbit in relation to how the Earth and Moon move in our solar system.</li><li>• Plan/choose hands-on activities where students can learn about basic facts of planets and their position from the Sun.</li><li>• Provide opportunities for students to build models of the solar system. Discuss the benefits and limitations of these models.</li><li>• Vary stimuli during instruction to provide opportunities for students to make meaningful connections.</li><li>• Vary stimuli during instruction (pictures, models, illustrations) so students see a variety of visuals when learning about the solar system.</li></ul>

# INSTRUCTIONAL UNITS

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<b>Materials/Resources</b> <small>*available in Spanish</small>	<ul style="list-style-type: none"><li>● TX Science Fusion*</li><li>● STEMscopes*</li><li>● Interactive Notebook</li><li>● BrainPOP Español*</li><li>● YouTube</li><li>● Lead4Ward Strategy</li></ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"><li>● Earth</li><li>● Inner planet*</li><li>● Model*</li><li>● Moon</li><li>● Orbit*</li><li>● Outer planet*</li><li>● Planet</li><li>● Planet (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune)</li><li>● Relationship*</li><li>● Rotate/rotation</li><li>● Solar system*</li><li>● Star</li><li>● Sun</li></ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- Sun, Earth, & Moon Relationship
  - Watch [Sun, Earth, and Moon animation Video](#) showing a simple animation of the Earth and Moon moving around the Sun. (0:39 minutes)
  - [Interactive Journal](#)-Students color, journal and then cut out the Sun, the Earth, and the moon to show how the Earth and the Moon orbit the Sun.
  
- TX Fusion Unit 9 Lesson 1
  - Watch YouTube: [Earth's Rotation & Revolution: Crash Course Kids](#) to discuss Earth's rotation and revolution. (4 Minutes)
  - Guide students through pages 380-382. (only read first paragraph on pg. 382)
  - Key concepts for 3<sup>rd</sup> grade: rotation and revolution.
  - Rotation: spinning on axis: Earth rotates once every day/24 hrs.
  - Revolution: moving around another object: Earth revolves around the Sun (365 days/one year)
  - Moon revolves around the Earth (28 days/one month)
  - 3<sup>rd</sup> grade SE does NOT discuss Day and Night Pattern, Seasons, & Moon Phases. Skip pages 384-396A.
  - Define rotation and revolution in [journal, option 2](#)
  - Place students into groups of three and give them signs to hang from their necks or index cards taped to their shirts. Each student will represent the Sun, the Moon, or the Earth. They will use the information they gathered through the lesson to use their body to show the path of the Moon and the Earth around the Sun.
  - Independently, students complete [Key Concept 1 STEMscopes Cloze-ing In On Science Sun, Earth, and Moon](#)
  - When students finish, students share through Kagan Mix-Pair-Share: The class "mixes" until the teacher stops the music. Students find a partner to share their answers. Repeat as needed.
  
- Planets in Our Solar System
  - Watch BrainPOP Jr. [Planets](#) video.
  - In teams, students take [BrainPOP's Easy/Hard Solar System Quiz](#).
  - SPED Online [Easy/Hard Solar System Quiz](#) accessible to students with disabilities. Students are read questions and answer choices. **\*Clever Login Required**
  - Students complete [Solar System Interactive Journal](#): Students glue the names of the planets on to the front of the flaps in the order they are from the Sun. Under each flap, guide students to write facts about the planet.
  - SPED/EBs Review [Space Key Concepts](#). Optional: students paste Key Concepts in journal.
  - [Planets I have Who Has Game](#)

# INSTRUCTIONAL UNITS

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- TX Fusion Units 4-5
  - Watch [Solar System Video](#) showing the 8 planets of the Solar System orbiting the Sun.
  - Discuss that as we move out from Mercury, Venus, Earth and Mars, towards the gas giant planets of the outer Solar System, each of the planets take longer to orbit the Sun.
  - Guide students through Unit 4 Lesson 9-Guide students through pages 409-413.
  - Guide students through Unit 5 Lesson 9-Guide students through pages 423-424.
  - GT Online lesson available through Think Central.
  - Independently, students complete [Key Concept 2 STEMscopes Close-ing In On Science Solar System](#).
  - When students finish, students share through Kagan Mix-Pair-Share: The class “mixes” until the teacher stops music. Students find a partner to share their answers. Repeat as needed.
  
- Planet Team Activities
  - [Planets Song](#)-Students move around the room singing/dancing to the Planets song video. At the end of the video, students make groups of 3-4 for the next 2 activities.
  - Students use [Planet Video QR Codes](#) to watch videos to find information on each of the 8 planets. Record information in their journals.
  - ELs [Solar System video in Spanish](#)
  - [Solar System Quizizz](#)-Students review solar system facts with 18 question online quiz.
  - [T/F Exit Ticket](#)-Students write a True/False question about the lesson. They mix around the room to find a partner to assess.

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. How can we remember the order of the planets from the Sun?  
(We can remember the order of the planets by saying...)
2. What is found in the center of our Solar System?  
(\_\_ is at the center of our Solar System.)
3. Listen in order, what are the planets?  
(The 8 planets are...)
4. What do we call the four planets closest to the Sun?  
(The first 4 planets closest to the Sun are called...)
5. By what are the inner and outer planets separated?  
(The inner and outer planets are separated by...)
6. How are the planets alike? How are they different?  
(Some planets have similar...and some planets have different...)
7. What is the relationship between moons and their planets?  
(The relationship between moons and their planets is...)
8. How is Earth different from all the other planets?  
(Earth is different from all the other planets because...)
9. Which is the most interesting planet?  
(The most interesting planet is \_\_ because...)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- Planet Research
  - Students choose a planet to research.
  - Let students show what they learned creatively. Here are [72 fun and creative ways](#) for your students to show what they know.
- Planet Riddle
  - Students choose a planet to write a riddle giving 3 clues/facts about it. Try solving classmates' riddles. See [samples](#).
- BrainPOP Jr. Mobile
  - Students construct a [Solar System Mobile](#) sharing one interesting fact about each planet. Display in the classroom using hangers.
- BrainPOP Jr. Venn Diagram
  - Students create a [Venn Diagram](#) to compare Earth with another planet. [Online Venn Diagram](#) available. **\*Clever Login Required**

# INSTRUCTIONAL UNITS

<b>Module 7 of 7 (5 Days): Earth &amp; Space Unit Review</b>	
<b>TEKS</b> <small>(R) Readiness, (S) Supporting, (P) Process</small>	<p>3.7A <b>explore</b> and <b>record</b> how soils are formed by weathering of rock and the decomposition of plant and animal remains. (R)</p> <p>3.7B <b>investigate</b> rapid changes in the Earth’s surface such as volcanic eruptions, earthquakes, and landslides (S)</p> <p>3.7C <b>explore</b> the characteristics of natural resources that make them useful in products and materials such as clothing and furniture and how resources may be conserved (S)</p> <p>3.8A <b>observe, measure, record, and compare</b> day-to-day weather changes in different locations at the same time that include air temperature, wind direction, and precipitation (S)</p> <p>3.8B <b>describe</b> and <b>illustrate</b> the Sun as a star composed of gases that provides light and thermal energy (R)</p> <p>3.8C <b>construct</b> models that demonstrate the relationship of the Sun, Earth, and Moon, including orbits and positions (S)</p> <p>3.8D <b>identify</b> the planets in Earth’s solar system and their position in relation to the Sun (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>• <b>Understand</b> that Earth’s surface constantly changes</li> <li>• <b>Understand</b> how Earth’s natural resources are used and can be conserved</li> <li>• <b>Understand</b> patterns on Earth and in the sky</li> <li>• Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li> </ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>• Refer to previously discussed misconceptions presented for each module.</li> </ul>

# INSTRUCTIONAL UNITS

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<b>Content Connections</b>	<ul style="list-style-type: none"> <li>● Math: Shapey Alie: Geometry               <ul style="list-style-type: none"> <li>○ A <a href="#">special letter</a> arrives from outer space. It is from a strange, but friendly, alien named Shapey. His mother’s birthday is coming up soon, and he wants to give her a picture portrait of himself as a gift. He needs help to make it. Students use their artistic and mathematical skills creating and manipulating shapes to make <a href="#">portraits</a> according to the description Shapey provides.</li> </ul> </li> <li>● Reading Connection               <ul style="list-style-type: none"> <li>○ Read “Rally for Recycling” by Lisa Bullard and Joh Wes Thomas. AR #144098</li> </ul> </li> <li>● Social Studies: Research Planet Names               <ul style="list-style-type: none"> <li>○ Have students look up the names of the eight planets to determine the origin of each of them.</li> </ul> </li> </ul>
<b>Materials/Resources</b> <small>*available in Spanish</small>	<ul style="list-style-type: none"> <li>● TX Science Fusion*</li> <li>● STEMscopes*</li> <li>● Interactive Notebook</li> <li>● BrainPOP Español*</li> <li>● YouTube</li> <li>● Lead4Ward Strategy</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Refer to previously discussed academic vocabulary presented for each module.</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

### Additional Activities 3.7A

- [Soil Videos](#)
- [Soil Anchor Chart](#)
- [Earthworm Project: STEMscopes](#)
- [Lead4Ward Instructional Strategies](#)
- [Interactive Notebook-Soil](#)
- Soil Hunt-Lead children on a “Soil Hunt” around the school yard (playground, gymnasium. Have students look for ways soil is used. Return to class and have students draw ways they saw soil being used. Include a short paragraph that explains the picture they drew. Post student pictures outside in the hallway.
- Use [Soil Challenger activity](#). Students will take a cup of playground soil and separate it using a colander and white paper. Gently shake the soil in the colander over the white paper until nothing else falls from the colander. Place the remaining soil in the colander in a cup. Place the soil on the white paper back into the colander and continue shaking gently over the white paper until nothing else falls out. Place the remaining soil in the colander in a second cup. Repeat the process one more time. Have students study the soil in the three cups. Discuss the soil particle sizes and composition. Students may illustrate their observations on their journals or data sheet.

### Additional Activities 3.7B

- [Texas Science Fusion TE p. 294](#) Have students prepare a family plan for emergency preparedness. **\*Clever login required**
- [Student Manipulative Vocabulary Train](#)-Teacher Prep ahead of time: Use the vocabulary train to match word to definition. When completed, this will form a train (engine pulling cars). May be used individually, in pairs, or groups of 3 or 4.
- [Rapid Changes to Earth videos](#)

### Additional Activities 3.7C

- TX [Fusion Inquiry Flipchart pg. 42](#) activity along with Inquiry Lesson [pp. 317-318](#). Students will keep track of how much paper is used over a period of three weeks. Students will record data, construct graphs, and evaluate results. **\*Clever login required**
- STEMscopes Elaborate lab: “[Virtual Investigation-Resources](#).” Assign Virtual Investigation to students independently. Students will complete the activity. **\*Clever Login Required**
- STEMscopes Evaluate tab: “[Concept Builder](#)”. Students will create a mobile showing ways to conserve natural resources. **\*Clever Login Required**
- AIMS “[Resources Relatives](#)” activity.
- [Anchor Chart 1](#)



# INSTRUCTIONAL UNITS

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- [Anchor Chart 2](#)
- [Interactive Notebook](#)
- [Lead4Ward Instructional Strategies](#)
- [Resources Videos](#)
- [Student Manipulative Vocab Train](#)

## **Additional Activities 3.8B**

- [Quizizz](#) What Are the Sun and Stars?
- STEMscopes Concept Review [Game](#) \*Clever Login Required
- Stemscores [The Sun Math Connections](#)
- Mackinvia Digital Book-[The Sun](#) by Lynn M. Stone (3<sup>rd</sup> Grade AR Book #125428) \*Clever Login Required
- [Lead4Ward](#)

## **Additional Activities 3.8A**

- [STEMscopes Science Rock Weather Video Lyrics](#) video found on STEMscopes
- [STEMscopes Weather Concept Review Game](#) \*Clever Login Required
- [STEMscopes Weather Virtual Investigation](#) \*Clever Login Required
- [STEMscopes Writing Science Weather Forecast](#)
- [Walk Around Paragraph](#)

## **Additional Activities 3.8C & 3.8D**

- STEMscopes eScopedia-[Space](#) Activity \*Clever Login Required
- Content Connections Video. Students complete order of the planets using [CCV Student Handout](#) or online through [STEMscopes classroom](#). \*Clever Login Required
- [Planet Song for Song/Solar System](#)
- [Solar System Video](#)
- [Solar System Student Manipulatives](#)
- [Study Jams](#): A Day on Earth Video explains Earth's rotation around the Sun and the Moon's rotation around the Earth.
- [Lead4Ward 3.8C](#)
- [Lead4Ward 3.8D](#)

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. What characteristics of wood make it so useful?  
(Wood is a very useful resource because...)
2. Which characteristic does each planet in Earth's solar system share?  
(The planets in the solar system...)
3. What is at the center of the Earth's solar system?  
(\_\_\_ is at the center of the solar system.)
4. How are inner planets different from outer planets?  
(The inner and outer planets are different because...)
5. What is the order of the planets in order from distance to the Sun?  
(The order of the planets is...)
6. What are some ways to reduce the amount of paper we use?  
(To reduce the amount of paper we use, we can...)
7. What are natural resources?  
(Natural resources are...)
8. Which natural resource is most furniture made of?  
(Most furniture is made of...)
9. What does conserve mean?  
(Conserve means...)
10. What natural forces can quickly change Earth's surface?  
(Some natural forces that can quickly change Earth's surface are...)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- [Unit 2 Assessment: Earth and Space. Student answer document.](#) Teacher Answer [Key](#).
- Science Applied Slip Sliding Away [Project](#). Use Rubric

# INSTRUCTIONAL UNITS

## Unit III: Force, Motion, & Energy (4 Weeks)

### Unit Description:

In Unit III, students will learn about force, motion, and energy. Students begin to see the connection between the forms of energy and their usefulness in the world around them. Students begin to understand what happens to objects when force is applied. They observe that an object can change positions, and the motion of the object can be altered. Students observe how objects behave when the force of magnetism is applied. Students understand how gravity is a force that pulls objects toward each other.

### Mastery Learning Objectives:

- **Understand** forms of energy in everyday life
- **Understand** that forces cause change and can change an object's position and motion
- ELPS: The students will develop their receptive and expressive skills. (reading, writing, speaking, and listening)

### Essential Questions:

- What form of energy allows you to see the world around you?
- What form of energy is most important to you? Why?
- What do you think life would be like with no sound energy?
- When students look at a computer screen, they are using what kind of energy produced by the screen?
- What form of energy is used to turn the handle of the pencil sharpener to sharpen a pencil in a classroom?
- What type of energy does an oven produce to bake a cake?
- What two things might you do in a day that use the following forms of energy: sound, light, mechanical, and thermal.
- Which form of energy comes from movement?
- What types of jobs would use mechanical energy?

# INSTRUCTIONAL UNITS

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## Real World/Cross-Curricular Connections:

- Writing Connection: [Forms of Energy](#)
- [Math Connection](#): Mechanical, light, sound, and thermal energy are useful in everyday life. Heat energy helps us cook food and keeps us warm. Mechanical energy relates to movement. Light and sound energy helps us communicate and share information.
- Reading Connection: Read “Many Ways to Move: A Look at Motion” by Jennifer Boothroyd on Epic. [Other books](#) ideas available through STEMscopes. **\*Clever Login Required**
- Social Studies: Watch YouTube video to learn about the [Life of Alexander Graham Bell: A Great Inventor](#)

# INSTRUCTIONAL UNITS

<b>Module 1 of 3 (10 Days):                      PLTW-Stability &amp; Motion: Forces &amp; Interactions</b>	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.6B <b>demonstrate</b> and <b>observe</b> how position and motion can be changed by pushing and pulling objects (S)</p> <p>3.6C <b>observe</b> forces such as magnetism acting on objects (S)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>use</b> scientific reasoning to ask questions, <b>make</b> observations, and <b>investigate</b> ideas to acquire knowledge and solve problems</li> <li>● <b>understand</b> the effect of forces on the stability and motion of an object</li> <li>● <b>compare</b> and <b>contrast</b> simple machines and compound machines</li> <li>● <b>collaborate</b> effectively on a diverse and multidisciplinary team</li> <li>● <b>communicate</b> effectively for specific purposes using the appropriate platform, tool, format, or digital media</li> <li>● <b>practice</b> ethical behavior in all settings</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Refer to “Possible Student Misconceptions” found in the online PLTW teacher guide for each part of the module (Activity 1, Activity 2, Activity 3, Project, and Problem).</li> </ul>
<b>Content Connections</b>	<ul style="list-style-type: none"> <li>● Students explore, design, sketch, and build both simple and compound machines that demonstrate the use of forces. They test the force of magnets and explore the interaction of the magnetic poles. Students use the skills and knowledge gained in the module to solve an open-ended, real-world problem. Students work through this module on Stability and Motion, forces and interactions and engage in hands-on experiences and use a step-by-step process to solve problems.</li> </ul>

# INSTRUCTIONAL UNITS

<b>Materials/ Resources</b>	<ul style="list-style-type: none"><li>• PLTW*</li></ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"><li>• Attract</li><li>• Compound machine*</li><li>• Effort force*</li><li>• Force</li><li>• Friction</li><li>• Inclined plane*</li><li>• Interactions*</li><li>• Lever*</li><li>• Magnet</li><li>• Magnetism</li><li>• Pull</li><li>• Pulley*</li><li>• Push</li><li>• Repel</li><li>• Resistance force*</li><li>• Scientific inquiry process</li><li>• Screw*</li><li>• Simple machine*</li><li>• Wedge*</li><li>• Wheel and axle*</li></ul>
<b>Instruction and Student Engagement</b>	<ul style="list-style-type: none"><li>• Refer to online PLTW teacher guide for complete lessons</li></ul> <p><a href="#"><u>Linguistic Accommodations</u></a></p>

# INSTRUCTIONAL UNITS

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## Evidence of Learning

### Checking for Understanding

1. What is force?  
(Force is...)
2. What is an interaction?  
(An interaction is...)
3. What is friction?  
(Friction is...)
4. In what way do forces impact your daily life?  
(Forces impact our daily life...)
5. How do machines make life easier?  
(Machines help make our life easier...)
6. How does a lever help you lift a heavy weight?  
(A lever helps us by...)
7. How does a wheel and axle make it easier to move a load?  
(A wheel and axle help us...)
8. How does a pulley system make it easier to move a load?  
(A pulley system makes it easier to move a load by...)
9. How can a step-by-step process help you design or improve a solution to a problem?  
(A step-by-step process can help us design or improve a solution by...)
10. How can you apply what you have learned to your life?  
(I can apply what I have learned...)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- Check for Understanding at the conclusion of the PLTW module

# INSTRUCTIONAL UNITS

Module 2 of 3 (5 Days): Forms of Energy	
<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	<p>3.6A <b>explore</b> different forms of energy, including mechanical, light, sound, and thermal in everyday life (R)</p> <p>*Process standards will be integrated with content standards, so students develop a deeper understanding of science.</p> <p><a href="#">English Language Proficiency Standards</a></p>
<b>Content and Language Objectives</b>	<p><i>The Learner Will:</i></p> <ul style="list-style-type: none"> <li>● <b>define</b> energy</li> <li>● <b>explain</b> the difference between potential and kinetic energy</li> <li>● <b>identify</b> types of energy people use</li> <li>● <b>give</b> examples of ways energy can <b>cause</b> motion or <b>create</b> change</li> </ul> <p>● Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></p>
<b>Misconceptions</b>	<ul style="list-style-type: none"> <li>● Students may struggle to identify the types of energy present in everyday life, as well as scenarios they have not experienced or observed.</li> <li>● Students may struggle to differentiate between light and thermal energy.</li> <li>● Students may think that energy always stays the same, but remind students it can change from one form to another.</li> </ul>



# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<p><b>Key Concepts</b></p> <ul style="list-style-type: none"> <li>• Mechanical, light, sound, and thermal energy are useful in everyday life.</li> <li>• Thermal energy helps cook food and keeps us warm in winter, while mechanical energy is associated with movement.</li> <li>• Use the term thermal energy consistently when discussing heat.</li> <li>• Light and sound energy help us communicate and share information.</li> <li>• Students should be provided hands-on and real-world connections to discuss different forms of energy.</li> <li>• Students may have difficulty distinguishing between thermal and light energy.</li> </ul> <p><b>Instructional Implications</b></p> <ul style="list-style-type: none"> <li>• Provide hands-on investigations and real world connections with the different forms of energy.</li> <li>• Use the term thermal energy consistently and accurately when addressing heat.</li> <li>• Provide opportunities for students to observe, discuss, and justify their thinking about the many uses of energy.</li> <li>• Provide opportunities for students to explore how they are using energy during regular activities.</li> <li>• Provide students with opportunities to understand that energy can exist in many forms; and notice that those differences can be observed.</li> </ul>
<b>Materials/Resources</b> <small>*available in Spanish</small>	<ul style="list-style-type: none"> <li>• TX Science Fusion*</li> <li>• STEMscopes*</li> <li>• Interactive Notebook</li> <li>• BrainPOP Español*</li> <li>• YouTube</li> <li>• Lead4Ward Strategy</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Light energy</li> <li>• Mechanical energy*</li> <li>• Sound energy</li> <li>• Thermal energy</li> </ul>

# INSTRUCTIONAL UNITS

## Instruction and Student Engagement

- TX Fusion Unit 4: Lessons 1-3 and 5.
  - Lesson 1: page 149, pages 152-155. Do not complete pages 150-151, mechanical energy should be learned simply as energy of an object due to motion. Students do NOT need to master potential and kinetic energy.
  - Lesson 2: pages 161-171
  - Lesson 3: pages 173-174 Inquiry Flipchart page 26
  - Lesson 5: pages 192-195
  - **GT** Digital Lesson available through Think Central
  - Students complete [STEMscopes CLOZE-ing in on Science](#) with a partner.
  - Allow students to share their illustrations after everyone is finished.
  
- Forms of energy Stations
  - **SPED/EBs** Review [Forms of Energy Key Concepts](#) Optional: students paste Key Concepts in journal.
  - [Science Station Cards](#)-quick-to-set-up stations to help students explore energy. Set up each center with the materials listed and each station's direction card. Students record information in journals.
  - **SPED** Before beginning stations, review the forms of energy with students. Students use their interactive journal notes to make observations. Provide sentence stems if needed.
  - Next, guide each small group of students to rotate through the stations, completing each activity before moving to the next station. After students rotate through all the centers, discuss with students each form of energy.
  
- I Have...Who Has? Forms of Energy Game
  - Students play I Have Who Has [Student Manipulative Game](#) as teacher guides. Optional: students sit in a circle on the floor facing each other.
  - Distribute one card to each student. If there are extra cards, distribute the extras to strong students in the beginning and to random students as the class becomes more familiar with the deck.
  - As you distribute the cards, encourage students to begin thinking about what the question for their card might be so that they are prepared to answer.
  - When all cards are distributed, select the student with the starter card to begin. Play continues until the game loops back to the original card.
  - After students are comfortable with this game format, consider using a stopwatch to time the class game. Record the time on the board so that students try each game to beat their current best time. This practice encourages student to stay attentive and prompts student to practice basic facts so that the class time improves.

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. What sense do you use to detect light energy?  
(We use our sense of ... to detect light energy.)
2. What sense do you use to detect thermal energy?  
(We use our sense of...to detect thermal energy.)
3. What sense do you use to detect sound energy?  
(We use our sense of...to detect sound energy.)
4. Can you identify other examples of light, thermal, and sound energy in our classroom?  
(Other examples of light/thermal/sound energy in the classroom are...)
5. What kind of energy would you observe if you turned on a television?  
(If I turned on a television, I would observe...)
6. How are light, thermal, and sound energy alike? How are they different?  
(Light, thermal, and sound energy are alike/different because...)
7. Could you invent a musical instrument that would produce more than one form of energy? How?  
(I can invent a...that produces different forms of energy by...)
8. Why do you think sounds are used so often for alerts and warnings?  
(I think sounds are used as alerts because...)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- Energy Inventions
  - Tell students they are toy inventors. They need to invent a new toy that produces light, sound, and heat. They should give it a name and be ready to tell what it does.
- Scavenger Hunt
  - Students can go on a scavenger hunt around the school building to find different forms of energy. The students or the teacher can pick an object, and then the class can decide what kind of energy it has. The teacher can use a digital camera to take pictures of each object and then post them in the classroom on a graphic organizer.
- Show and Tell
  - Students bring an object from home and share with the class what form of energy it has. They can also make a Flipgrid video. Use [Rubric](#) to score video.

## INSTRUCTIONAL UNITS

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- Light Energy Collage
  - Students use a poster board or large piece of butcher paper, scissors, glue sticks, and old magazines to scan the magazines for pictures of anything that makes light or has lights (Sun, lamps, flashlights, fire, candles, billboards, car lights, etc.). Individually or in teams, students make a collage out of the cut images. Post final products and discuss what they found.

# INSTRUCTIONAL UNITS

## Module 3 of 3 (5 Days): Force, Motion, & Energy Unit Review

<b>TEKS</b> (R) Readiness, (S) Supporting, (P) Process	3.6A <b>explore</b> different forms of energy, including mechanical, light, sound, and thermal in everyday life (R) 3.6B <b>demonstrate</b> and <b>observe</b> how position and motion can be changed by pushing and pulling objects (S) 3.6C <b>observe</b> forces such as magnetism acting on objects (S)  *Process standards will be integrated with content standards, so students develop a deeper understanding of science.  <a href="#">English Language Proficiency Standards</a>
<b>Content and Language Objectives</b>	<i>The Learner Will:</i> <ul style="list-style-type: none"><li>• <b>understand</b> forms of energy in everyday life</li><li>• <b>understand</b> that forces cause change and can change an object’s position and motion</li> <li>• Student linguistic accommodations should reflect listening, speaking, reading, and writing. <a href="#">Learning Intentions for Emergent Bilinguals</a></li></ul>
<b>Misconceptions</b>	<ul style="list-style-type: none"><li>• Refer to previously discussed misconceptions presented for each module.</li></ul>

# INSTRUCTIONAL UNITS

<b>Content Connections</b>	<ul style="list-style-type: none"> <li>● Language Arts Connection-TX Fusion TE p. 200A: Investigate “Hot” Expressions. Many English colloquial expressions involve the idea of heat. Share expressions, such as “drop something like a hot potato, hot-headed, in hot water, on the hot seat, a hot tip”. Have students use available resources to find what the expressions mean and, if possible, what the origins were. Have them use some of the expressions in sentences.</li> <li>● Writing Connection: <a href="#">Forms of Energy</a></li> <li>● <a href="#">Math Connection</a>: Mechanical, light, sound, and thermal energy are useful in everyday life. Heat energy helps us cook food and keeps us warm. Mechanical energy relates to movement. Light and sound energy helps us communicate and share information.</li> <li>● Reading Connection: Read “Many Ways to Move: A Look at Motion” by Jennifer Boothroyd on Epic. <a href="#">Other books</a> ideas available through STEMscopes. <b>*Clever Login Required</b></li> <li>● Social Studies: Watch YouTube video to learn about the <a href="#">Life of Alexander Graham Bell: A Great Inventor</a></li> </ul>
<b>Materials/Resources</b>	<ul style="list-style-type: none"> <li>● TX Science Fusion*</li> <li>● STEMscopes*</li> <li>● YouTube</li> <li>● PLTW*</li> </ul>
<b>Academic Vocabulary</b> <small>*new to grade level</small>	<ul style="list-style-type: none"> <li>● Refer to previously discussed academic vocabulary presented for each module.</li> </ul>

# INSTRUCTIONAL UNITS

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## Instruction and Student Engagement

### **Additional Activities 3.6B**

- TX Fusion [3.6B](#)
- STEMscopes [3.6B](#)
- Interactive Notebook [3.6B](#)
- Student Manipulatives [3.6B](#)
- Lead4Ward Strategies [3.6B](#)

### **Additional Activities 3.6A**

- Forms of Energy Concept Review Game
- YouTube [Types of Energy: Light, heat, Water, electrical and Wind Video](#)
- BrainPOP Jr. [Sound Energy Video](#)
- BrainPOP Jr. [Heat Energy Video](#)
- BrainPOP Jr. [Light Energy Video](#)
- [Lead4Ward Instructional Strategies](#)

[Linguistic Accommodations](#)

# INSTRUCTIONAL UNITS

## Evidence of Learning

### Checking for Understanding

1. What form of energy allows you to see the world around you?  
(I use...energy to see the world around me.)
2. What form of energy is most important to you? Why?  
(The most important form of energy for me is...)
3. What would life be like with no sound energy?  
(Without sound energy....)
4. When students look at a computer screen, they are using what kind of energy produced by the screen?  
(Computer screens use...energy.)
5. What form of energy is used to turn the handle of the pencil sharpener to sharpen a pencil in a classroom?  
(Pencil sharpeners use...energy in a classroom.)
6. What type of energy does an oven produce to bake a cake?  
(Ovens use...energy to bake a cake.)
7. List two things you might do in a day that use the following forms of energy: sound, light, mechanical, and thermal.  
(An example of...energy is....)
8. Which form of energy comes from movement?  
(... energy comes from movement.)
9. What types of jobs would use mechanical energy?  
(Some jobs that use mechanical energy are...)
10. What type of energy are you using when you ride your bike?  
(I use...energy when riding my bike.)

### [Learning Intentions for Emergent Bilinguals](#)

### Sample Assessment Items

- [Unit 3: Force, Motion, & Energy Assessment](#). [Student answer document](#). Teacher Answer [Key](#).
- Forms of Energy Anchor Chart: Students choose one of the forms of energy and make an anchor chart. They can work in groups or with a partner. [Rubric](#).