CCPS Science Unit Plan

<table>
<tr><td>Grade</td><td>6th</td><td>Subject</td><td>Science</td><td>Unit #</td><td>3</td></tr>
<tr><td>Unit Name</td><td colspan="2">Life as a Geologist</td><td>Timeline</td><td colspan="2">6 weeks</td></tr>
<tr><td>How to use the Framework</td><td colspan="5">This Framework should be used to implement daily science instruction. The resources and instructional strategies reflected in the Framework will provide a foundation for effective implementation and student mastery of standards. Please see the hyperlinked abbreviation document to ensure understanding of all abbreviations used with this framework.</td></tr>
<tr><td>Unit Overview</td><td colspan="5">In this unit, students will analyze the Earth's processes that are observed today and relate how they are similar to those that have occurred in the past. It will lead students to understand the effects produced by plate tectonics processes on geologic features on land and in the ocean. The unit will provide an understanding of characteristic geologic structures at three crustal boundaries and localized hot spots because of energy transfer within the mantle. The concept of earth cycles—long-term (plate movement) and short-term (volcanic eruptions, hydrothermal vents) will be analyzed. Students will understand how geysers and hydrothermal vents can become the input for renewable energy resources (geothermal energy). Students will experience how scientific knowledge is generated, specifically fossils as evidence for plate tectonic theory. Using an inquiry-based approach, students will use empirical evidence from field and laboratory investigations to support scientific ideas of the processes of organic matter preservation during soil formation, sediment deposition, and burial over time. A concept from physical science is introduced in this unit that will be taught explicitly in 7th grade. In this unit, the students will understand seismic waves are mechanical waves.</td></tr>
<tr><td>3Dimensional Instruction</td><td colspan="5">
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<tr><th>GSE</th><th>Science and Engineering Practices</th><th>Crosscutting Concepts</th></tr>
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<td>S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.

S6E5. a. Ask questions to compare and contrast the Earth's crust, mantle, inner and outer core, including temperature, density, thickness, and composition

S6E5. f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (Clarification statement: Include convergent, divergent, and transform boundaries.)

S6E5. g. Construct an argument using maps and data collected to support a claim of how fossils</td>
<td>• Asking questions (for science) and defining problems (for engineering)
• Obtaining, Evaluating, and Communicating Information
• Asking questions
• Planning and Carrying Out Investigations
• Analyzing and Interpreting Data
• Constructing Explanations and Designing Solutions
• Engaging in Argument from Evidence</td>
<td>• System and system models
• Cause and effect
• Patterns
• Stability and change
• Energy and matter
• Scale, proportion, and quantity</td>
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	show evidence of the changing surface and climate of the Earth.)		
NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas		
Weekly Lesson Tasks **Teacher Notes**			

Week 1					
GSE: **S6E5. a.** Ask questions to compare and contrast the Earth's crust, mantle, inner and outer core, including temperature, density, thickness, and composition.		**Focused Concept:** The interior of Earth has distinct layers including crust, mantle, and core. All of the layers vary in temperature, density, thickness, and composition**.** Asthenosphere Continental Crust Core Crust Inner Core Lithosphere Mantle Oceanic crust Outer core Convection Currents			
SEP: Asking Questions		**CCC: Cause and Effect; Structure and Function**			
Phenomenon: Scrat's Continental Crack-Up (Layers of the Earth) Scrat's Continental Crack Up Ice Age: Continental Drift | Ice Age 4: Scrat Continental Crack Up HD | Fox… Driving Question ○ What layers did you notice? ○ Which part(s) of Scrat's adventure are accurate? ○ Which part(s) of Scrat's adventure are inaccurate? TTW engage: Show the video from the link above. Use the See-Think-Wonder protocol to guide student thinking. After students share their initial ideas and questions, guide them toward these questions.		**DQ:** How are the layers of the Earth different from one another?			
	Day 1	**Day 2**	**Day 3**	**Day 4**	**Day 5**
The students will be able to (SWBAT)	**SWBAT** identify and describe Earth's layers including the crust, mantle, outer core, and inner core.	**SWBAT** identify and describe Earth's layers including the crust, mantle, outer core, and inner core.	**SWABT** ask questions to compare and contrast Earth's layers based on temperature, thickness, density, and composition	**SWABT** ask questions to compare and contrast Earth's layers based on temperature, thickness, density, and composition	**SWABT** ask questions to compare and contrast Earth's layers based on temperature, thickness, density, and composition

Opening **The Teacher Will (TTW)** **Student Will (SW)** **See-Think-Wonder Protocol (STW)**	TTW show a picture of the Earth's layers to the students and asks them to share what they already know about the Earth's crust, mantle, inner core, and outer core. SW complete the "K" and "W" sections of the KWL handout. (Attached in Assessments) Phenomenon: Scrat's Continental Crack Up Ice Age: Continenta… TTW engage: ● Show the video from the link above. Use the See-Think-Wonder protocol to guide student thinking. ● After students share their initial ideas and questions, guide them toward these questions. Driving Question ○ What layers did you notice? ○ Which part(s) of Scrat's adventure are accurate? ○ Which part(s) of Scrat's adventure are inaccurate?	Introduce key vocabulary terms and provide brief explanations for each layer. **Vocabulary Strategy: Four Square** Provide students with the graphic organizer (editable) or pdf handout, explaining its four sections: word, meaning, picture, and sentence. Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to work in collaborative groups. Actively monitor and facilitate small group discussions and review various artifacts (pictures, images, primary sources, charts) to build knowledge of the term. Have students collaborate to complete the four square strategy for the other vocabulary terms. Monitor student progress, sharing new ideas for class discussion, and help students distinguish essential from non-essential characteristics. Allow groups to share their thinking through academic dialogue and compare their completed task with members of other groups.	TTW encourage students to conduct a brainstorming session where students write down what they remember about the Earth's layers from previous lessons. Have students work in pairs to discuss and share their prior knowledge.	TTW review previously taught concepts: basic structure of the Earth's layers. TTW discuss the specific characteristics of the Earth's crust, mantle, inner core, and outer core. SW engage in a discussion on the importance of understanding the Earth's layers.	TTW encourage students to participate in a Think-Pair-Share ***Activity: Earth's Layer***s **Step 1:** Think Think about the differences between Earth's crust, mantle, inner core, and outer core. Consider aspects such as temperature, density, thickness, and composition. Discussion Questions: How does the temperature of the Earth's crust compare to the inner core? In what ways does the density of the mantle differ from the outer core? What are the major differences in composition between the Earth's crust and mantle? **Step 2:** Pair SW Pair up with a partner and share your thoughts on the questions posed in the "Think" section. TTW and SW discuss and compare your answers to gain a deeper understanding of the Earth's layers. ***Step 3***: Share Share your findings with the larger group. Each pair will present a summary of their discussions, highlighting key points of

					comparison and contrast between the Earth's crust, mantle, inner core, and outer core. TTW encourage questions and further discussions based on the shared information to enhance everyone's understanding of the topic.
Guided Practice/ Transition	TTW and SW model the layers of earth using clay. Instructions Procedure: Gather the materials: Play-Doh (different colors), ruler, thermometer. TTW explain the layers of the Earth: crust, mantle, outer core, inner core. SW use Play-Doh to model the Earth's layers based on their thickness and composition. SW measure and record the temperature of each layer using a thermometer. SW compare the density of each layer by observing how they interact when combined. DQ: How are the layers of the Earth different from one another?	SW work in pairs to create a Venn diagram comparing and contrasting two layers of the Earth. TTW encourage students to use the key vocabulary in their comparisons. Circulate the room to provide support and guidance as needed.	TTW divide students into small groups and assign each group a specific layer to create a poster with relevant information collected through research. TTW walk around the classroom to assess group work and provide immediate feedback on their understanding.	SW complete a STEMSCOPES -CER Scenario. Student Handout TTW monitor and facilitate the CER as students gather evidence to support their claim.	TTW review concepts. SW review concepts. Teacher Choice: Review Games and Review Activity

	TTW review the layers of earth. Earth's Layers PPT (Teacher Opt: Make lesson interactive using Curipod.com - input PPT) SW complete graphic organizer. Earth's Layers Graphic Organizer				
Independent Practice	SW complete a review of the Layers of the Earth. Earth's Layers Interior Structure Webquest Student Pages	SW complete My Earths Layers Foldable using the Layers of the Earth Forbes Article. Article Link Student Handout	TTW have students peer-review each other's posters and provide constructive feedback. SW conduct a group presentation where each group explains their poster and answers questions from their peers.	SW complete Layers of the Earth Summarizer handout. Student Handout	**Common Assessment 4**
Assessment Summary	TOD: Complete the "L" KWL. TTW review and provide feedback. After collecting student responses, review them to identify common misconceptions or areas of confusion. Provide feedback to students individually or as a class, addressing any	TOD: Reflection Compare and contrast all four layers of the Earth. (Reflection) TTW assess and evaluate the accuracy of students' comparison of temperature, density, thickness, and composition of each layer using key vocabulary terms.	TOD: Administer a quick quiz or worksheet where students compare and contrast the Earth's layers based on given criteria. Student Handout: Compare the Layers of the Earth (Teacher Choice) Assign a homework task where students research real-world examples that	TOD: 3-2-1 Summary TTW observe students' engagement and understanding during guided practice and independent practice activities. Provide feedback and assistance as needed.	TOD: SW answer the following questions: 1. What did you think about the assessment? 2. How well did you know the material? 3. What activities and tasks helped?

	misunderstandings and reinforcing key concepts. Use the formative assessment data to inform your instruction and tailor future lessons to address specific student needs.		demonstrate the impact of the Earth's layers on geology and natural phenomena.		
Small Group Tasks (TBA)					

Week 2	
GSE: **S6E5. f.** Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (*Clarification statement:* Include convergent, divergent, and transform boundaries.)	**Focused Concept:** Alfred Wegener proposed the theory of continental drift in 1912, beginning the development of the theory of plate tectonics. His proposal suggests the concept of Pangaea, where all continents were once attached in a single landmass. As time progressed, Pangaea broke apart and drifted to separate places. The shape of continents supports this theory as well as fossil evidence from different continents. Rock types, geographic structures, and climate patterns provided further evidence of the theory. However, at the time, since little evidence was provided to support how the landmasses moved, people did not accept the theory was discounted. Henry Hess, in 1960, used evidence to propose that the movement of the continents was a result of seafloor spreading. Hess proved Wegener's basic idea was correct and clarified the mechanism by which continents moved. The continents are attached to plates. These plates shift and change shape. The plates move relative to one another and appear to "float" on the asthenosphere. Convection currents are present in the mantle and are the cause of plate movement. The convection currents drag the plates along, which causes them to separate at certain plate boundaries and converge at other plate boundaries. Plate movement is very slow and minimal 1-15 com per year. Most of the earthquakes and volcanoes of the world occur along the boundaries of plates. The boundaries in which earthquakes and volcanoes occur are either convergent, divergent, or transform boundaries. Pangaea Fossils Continental Drift Theory of Plate Tectonics Convergent Boundary Divergent Boundary Earthquakes Faults Richter Scale Seafloor spreading Seismic waves Transform boundary ***The teacher will access Module: Dynamic Earth - Lesson 1: Moving Continents for online instruction and assign activities used for the instructional week.***

SEP: Constructing an Explanation		**CCC: Patterns; Cause and Effect; Systems and System Models; Energy and Matter; Stability and Change**			
Phenomenon: **Why is South America lopsided?**			**DQ:** How does the movement of tectonics plates form mountains and volcanoes and cause earthquakes? How are large mountain ranges formed on land? How do volcanic landscapes form? How do earthquakes affect Earth's surface**?**		
	Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
The students will be able to (SWBAT)	**SWBAT:** - Describe the three types of tectonic plate boundaries (transform, divergent, and convergent). -Describe how convection in the mantle causes lithospheric plate movement.	**SWBAT:** - Describe how boundaries can create major geological events and list examples. - Observe that a plate boundary is related to the type of plate interaction that occurs at that boundary.	**SWBAT:** -Describe how boundaries can create major geological events and list examples. -Observe that a plate boundary is related to the type of plate interaction that occurs at that boundary. -Construct an explanation of how the movement of lithospheric plates, called plate tectonics, is due to convection currents below the lithosphere, and can cause major geologic events such as earthquakes and volcanic eruptions	**SWBAT:** -Construct an explanation of how the movement of lithospheric plates, called plate tectonics, is due to convection currents below the lithosphere, and can cause major geologic events such as earthquakes and volcanic eruptions -Compare and contrast seismic waves (surface waves, p waves, and s waves).	**SWBAT** construct an explanation of how the movement of lithospheric plates is due to convection currents below the lithosphere.
Opening	**(* Located in textbook)** **Science Probe:** **Moving Plates** TTW use this science probe to assess students' prior knowledge of the lesson content and to identify possible preconceptions.	**(* Located in textbook)** DQ: How are large mountain ranges formed on land? TTW open lesson with question: How do you think large mountain ranges might	**(* Located in textbook)** DQ: How do volcanic landscapes form? TTW have students read the introductory paragraph and answer the following question: How big are volcanoes?	**(* Located in textbook)** DQ: How do earthquakes affect Earth's surface? TTW open lesson with question: What causes earthquakes? SW watch a video of an	**(* Located in textbook)** **Revisit Science Probe:** **Moving Plates** TTW open lesson and have students draw and label the three types of plate boundaries (convergent, divergent, transform) on a blank map.

	Engage: Encounter the Phenomenon: Shaping Earth's Surface <u>Phenomenon: Why is South America lopsided?</u> Go Online- Watch Two Terrains to see the phenomenon in Action TTW have a discussion to assess students' prior knowledge of plate tectonics and mountains. Have students study the map. What are some different features you see on the map? Have students brainstorm what type of plate motion would cause these different features. How do you think the movement of tectonic plates could cause these different features?	form?		earthquake in Action and See-Think-Wonder protocol to guide student thinking.	TTW review key vocabulary terms related to plate tectonics.
Guided Practice/Transition	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **CER: Explain the Phenomenon: Shaping Earth's Surface**. Go Online- Interactive Presentation SW reflect and brainstorm to complete the "Claim" section of the	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Lab: Fold Mountains** SW model the formation of folded mountains. *Teacher can show a lab video of Fold Mountains.* TTW show satellite photos of folded mountains such	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Investigation: Take Cover** SW use the model to describe how volcanoes change Earth's surface. TTW model an explosive volcanic eruption.	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Lab: Shake, Rattle, and Roll** SW examine and explore the cause of earthquake activity along faults. *Teacher can show a lab video of Shake, Rattle, and Roll.*	**(* Located in textbook)** **Evaluate** SW GO Online Interactive Presentation **Lesson Review: Shaping Earth's Surface**

	CER- TTW provide students with Sentence Starters. **Read About:** 1. What happens where Earth's plates meet? TTW and SW discuss different ways tectonics plates move relative to one another. TTW assign a *Foldable* activity to allow students to take notes throughout the lesson.	as the Appalachians. Have students identify regions of upward and downward folds.		SW model the build-up and release of stress along a fault. TTW review the concept of a geological fault.	
Independent Practice	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Lab: Living on the Edge** *Teacher can show a lab video of Living on the Edge.* SW examine various plate interactions and model different plate interactions. TTW divide students into groups and assign each student a part to perform. SW analyze and conclude. **Vocabulary Strategy: Vocabulary Connect Two Strategy** Provide students with the	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:** 1. How do large mountain ranges form on land? Fold Mountains 2. How do large mountain ranges form on land? Fault-Black Mountains 3. How do large mountain ranges form on land? Weathering and Erosion TTW assign a *Foldable* activity to allow students to take notes throughout	**(* Located in textbook)** **Explore and explain** SW Go Online Interactive Presentation **Close Reading:** **Read a Scientific Text: Volcanic Landscapes, Central Andres** SW critically read a scientific text and annotate highlighting the time scales for the geoscience processes of erosion and formation of volcanoes. (Refer to TE) **Read About:** 1. How do volcanic landscapes form? SW added notes to	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:** 1. How do earthquakes affect Earth's surface? 2. Besides plate motion, what else creates major features on Earth? SW added notes to *Foldable* throughout the lesson. SW complete CER: Collect Evidence (D): Shaping Earth's Surface Why does the western coast of South America	**(* Located in textbook)** **Evaluate** SW complete the following activities to review what they have learned in this lesson. **Lesson Check: Shaping Earth's Surface** **LearnSmart: Dynamic Earth** Teacher Choice: Plate Tectonics Comic Strip

	graphic organizer (editable) or pdf handout. Use a Think Aloud to demonstrate how to use the graphic organizer with one of the provided vocabulary words. Allow students to research the word using reference tools (google, research options, peer discussion, etc.). The teacher should model researching the word and using the information gathered to decide on another term that creates connections between the vocabulary word and another term/word.	the lesson.	*Foldable* throughout the lesson.	experience earthquakes? SW refer back to the CER graphic organizer and record their evidence (D).	
Assessment/Summary	**(* Located in textbook)** **Explore and Explain** TOD: SW complete CER: Collect Evidence (A): Shaping Earth's Surface What happens where two plates meet? SW refer back to the CER graphic organizer and record their evidence (A). TTW evaluate student responses for accuracy.	**(* Located in textbook)** **Explore and Explain** TOD: SW complete CER: Collect Evidence (B): Shaping Earth's Surface How did the Andes form? SW refer back to the CER graphic organizer and record their evidence (B). TTW evaluate student responses for accuracy.	**(* Located in textbook)** **Explore and Explain** TOD: SW complete CER: Collect Evidence (C): Shaping Earth's Surface How did the volcanic peaks in the Andes form? SW refer back to the CER graphic organizer and record their evidence (D). TTW evaluate student responses for accuracy.	**(* Located in textbook)** **Evaluate** *TOD: CER: Revised Claim and Reasoning: The Cycling of Earth's Materials* SW completed the revised claim and reasoning. TTW evaluate student responses for accuracy.	**Common Assessment 5 on Illuminate**
Small Group Tasks (TBA)					

Week 3					
GSE: S6E5. f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (*Clarification statement:* Include convergent, divergent, and transform boundaries.) S6E5. g. Construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth.)	**Focused Concept:** The fossil record is the documentation of fossils that have been discovered. It includes information such as when the organisms lived, the preserved shape of various organisms, and gives an idea about the environment that an organism lived in. One of the big things that the fossil record provides is evidence of how life and environmental conditions have changed throughout the history of Earth. The many layers of sedimentary rock help to confirm the history of changing Earth. The history of the Earth does not always show the oldest layer of the bottom because of the constant folding. breaking, and uplift of layers of the earth. Pangaea Fossils Continental Drift Theory of Plate Tectonics Convergent Boundary Divergent Boundary Earthquakes Faults Richter Scale Seafloor spreading Seismic waves Transform boundary Fossil Evidence ***The teacher will access Module: Dynamic Earth - Lesson 1: Moving Continents for online instruction and assign activities used for the instructional week.***				
SEP: Constructing an argument using evidence	**CCC: Cause and Effect**				
Phenomenon: **Why do South America and Africa have matching coastlines?**			**DQ:** How do rocks provide evidence that continents move? How do fossils provide evidence that continents move? What was missing?		
	Day 11	Day 12	Day 13	Day 14	Day 15
The students will be able to (SWBAT)	**SWBAT:** observe that a plate boundary is related to the type of plate interaction that occurs at that boundary.	**SWBAT:** construct an argument using maps and data collected to support the claim that fossils provide evidence of the changing surface and climate of the earth.	**SWBAT:** construct an argument using scientific evidence to support the Theory of Continental Drift.	**SWBAT:** -Construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing	**SWBAT:** construct an argument using scientific evidence to support the Theory of Continental Drift and Pangaea.

				surface and climate of the Earth. -Describe the different types of fossils and how they form.	
Opening	TTW open the lesson by asking students to complete the Gizmo Prior Knowledge Questions. SW discuss their response as a class.	**(* Located in textbook)** **Science Probe:** **Earth's Motion** TTW use this science probe to assess students' prior knowledge of the lesson content and to identify possible preconceptions. **Engage: Encounter the Phenomenon:** **Moving Continents** <u>Phenomenon: Why do South America and Africa have matching coastlines?</u> Go Online- Watch *Moving Continents* to see the phenomenon in Action TTW have a discussion to assess students' prior knowledge of plate tectonics and mountains.	**(* Located in textbook)** DQ: How do rocks provide evidence that continents move? TTW open the lesson by asking students to review what they have learned from the previous lesson: Alfred Wegener and Continental Drift. SW read the opening paragraph about Wegner and continental drift. TTW discuss the Greek meaning of Pangaea "all the Earth".	**(* Located in textbook)** DQ: How do fossils provide evidence that continents move? TTW open the lesson by showing students images of different fossils and asking them to discuss what they know about fossils and what they can infer about the Earth's history from them.	**(* Located in textbook)** **Revisit Science Probe:** **Earth's Motion** DQ: What was missing? SW reflection on how through thinking has changed about Earth's Motion.
Guided Practice/Transition	TTW review four types of plate boundaries - describe each plate interaction. TTW introduce the Gizmo and demonstrate its basic operations.	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **CER: Explain the Phenomenon: Moving Continents**	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Lab: Reconstructing Pangaea**	**(* Located in textbook)** **Explore and Explain** TTW access volcanoes.usgu.gov/about/edu/dynamicplanet/wegener for puzzle pieces worksheet, titled "fossil Evidence" and the map	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Investigation: Wegener's Thorn**

	SW complete Plate Tectonics Gizmo Warm-Up. Teacher Guide: Plate Tectonics Student Handout PDF Student Handout Google Doc	SW reflect and brainstorm to complete the "Claim" section of the CER- TTW will provide students with Sentence Starters. **Investigation: A Surprising Fit** SW identify how the shape of South America and Africa fit together like puzzle pieces.	SW uses modern geological features to reconstruct a map of the supercontinent Pangaea. TTW facilitate the lab and remind students to cut carefully in order to preserve details in each coastline.	legend, titled "Wegener's Puzzling Evidence" for students. SW complete Go Online Interactive Presentation **Lab: Reconstructing Gondwana** SW use fossil evidence to reconstruct Gondwana out of current landmasses. SW analyze and conclude after completion of a lab discussion as a class.	SW learn more about Alfred Wegener's continental drift hypothesis. TTW have students watch the video *What was missing?* SW discuss what they learned from the video as a class. TTW have students read the introductory paragraph and answer the following question: Why do you think scientists were skeptical of Wegener's hypothesis?
Independent Practice	SW complete Plate Tectonics -Student Exploration **Activity A** : Transform B **Activity B**: Convergent B **Activity C**: Seduction Zone **Activity D**: Divergent B TTW monitor and facilitate the Gizmo.	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Investigation: The Continental Drift Hypothesis** SW learn about Alfred Wegener's continental drift hypothesis. TTW show Wegner's Hypothesis. SW discuss what they learned from the video.	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:** 1. How do rocks provide.. Evidence from Rock formations 2. How do rocks provide.. Evidence from Glacial Features 3. How do rocks provide… Evidence from Coal Deposits TTW assign a *Foldable* activity to allow students to take notes throughout the lesson.	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:** 1. How do fossils provide evidence that continents move? SW added notes to *Foldable* throughout the lesson. SW complete CER: Collect Evidence(D): Moving Continents What fossil evidence is similar between South America and Africa?	**(* Located in textbook)** **Evaluate** Lesson Review: Moving Continents SW analyze and summarize relationship maps Pangaea and Gondwana.

			SW complete CER: Collect Evidence(B/C): Moving Continents What do similar rocks tell you about South America and Africa?(B) Do South America and Africa share other geologic similarities? (C) SW refer back to the CER graphic organizer and record their evidence (B/C).	SW refer back to the CER graphic organizer and record their evidence (D). SW work in pairs to create a visual representation (poster, infographic) illustrating how fossils provide evidence of Earth's changing surface and climate. They should use specific examples and data to support their claims.	
Assessment/Summary	TOD:(Writing Prompt) Explain how plate tectonics can lead to specific geologic events. SW conducts peer evaluation sessions where students provide feedback to each other on their explanations of plate tectonics.	**(* Located in textbook) Explore and Explain** TOD: SW complete CER: Collect Evidence(A): Moving Continents What does the fit of South America and Africa suggest? SW refer back to the CER graphic organizer and record their evidence (A).	**(* Located in textbook) Explore and Explain** TOD: SW complete 3-D Thinking: How do rocks provide evidence that continents move? TTW evaluate student responses for accuracy.	TOD: (Reflection) complete a short argumentative paragraph using their visual representation as evidence to support their claim about Earth's changes based on fossils. They will also peer-review each other's work. TTW evaluate student understanding of how fossils demonstrate the changing surface and climate of the Earth.	**(* Located in textbook) Evaluate** *TOD: CER: Revised Claim and Reasoning: The Cycling of Earth's Materials* SW completed the revised claim and reasoning. TTW evaluate student responses for accuracy.
Small Group Tasks (TBA)					

Week 4	
GSE:	**Focused Concept:** Review Week - Unit Assessment

S6E5. a. Ask questions to compare and contrast the Earth's crust, mantle, inner and outer core, including temperature, density, thickness, and composition S6E5. f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (*Clarification statement:* Include convergent, divergent, and transform boundaries.) S6E5. g. Construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth.)	Asthenosphere Continental Crust Core Crust Inner Core Lithosphere Mantle Oceanic crust Outer core Pangaea Fossils Continental Drift Theory of Plate Tectonics Convergent Boundary Divergent Boundary Earthquakes Faults Richter Scale Seafloor spreading Seismic waves Transform boundary Fossil Evidence

Phenomenon: **Review Week - Unit Assessment in Illuminate**			**DQ:** **Review Week- Unit Assessment**		
	Day 16	Day 17	Day 18	Day 19	Day 20
The students will be able to (SWBAT)	**SWBAT** -Explain the theory of continental drift. Fit the landmasses together to form an ancient supercontinent called Pangaea. -Use several types of evidence (fossils, rocks, glaciers) to revise their model of Pangaea.	**SWBAT** explore how plate tectonics results in some of the most dramatic landforms and geologic events on Earth.	**SWBAT** -Draw plate boundaries on a map and learn that more scientific data is needed to more accurately locate certain boundaries. -Compare the features on a map that fits on a sphere with the same features on a more standard flat, two-dimensional, map to learn how our standard maps are distorted towards the poles.	**SWBAT** describe the different types of fossils and how they form.	**SWBAT** construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth.

Opening	TTW open the lesson asking students complete Gizmo Prior Knowledge Questions. SW discuss their response as a class.	TTW open lesson review previous taught concept. TTW engage students in a discussion about the Earth's structure. Use visual aids to demonstrate plate movement. TTW administer short quiz to check understanding.	TTW open the lesson reviewing plate boundaries and interactions at each boundary. SW complete **Rumors** routine and jot down their responses to a prompt.	TTW show students pictures of different fossils and asks them to share what they know about fossils. SW share ideas generating a Discussion Board that will drive instruction. TTW and SW discuss the importance of fossils in understanding Earth's history and climate changes.	TTW open the lesson to prompt students critical thinking asking the following question: How do plate tectonics influence not only geologic events like earthquakes and volcanic eruptions but also shape the landscape and biodiversity of regions around the world? SW use the **Domino Discover** routine to have a class discussion.
Guided Practice/Transition	TTW review and explain the theory of Continental Drift. TTW introduce the Gizmo and demonstrate its basic operations. SW complete Building Pangaea Gizmo Warm-Up. Teacher Guide: Building Pangaea Student Handout Google Doc	TTW introduce and assign Pivot Interactive Activities: Plate Boundaries and Interactions with Concord Consortium TTW instruct students how to access and navigate for Concord Consortium's Seismic Explorer Simulation. SW use two simulations from Concord Consortium to explore plate tectonics. TTW and SW complete Part 1: Background about Plate Tectonics as a whole group.	TTW introduce Plate Tectioncs Tennis Ball Globe activity where students will create a mini globe that shows Earth's plates. SW examine plate boundaries, continents, and oceans on a map and globe. SW examine divergent, convergent, and transform plate boundaries. Student Material • Student Plate Tectonics Tennis Ball Globe handout • Simplified Plate Tectonics Map (not colored) • Old tennis ball • White glue • Coloring items—pencils,	TTW introduce Project Based Learning Task. (Task instructions can be found in the 'Independent Practice' section below for Thursday and Friday.) SW complete the following task: 1. **Research and Data Collection** 2. **Analysis of Fossil Record** 3. **Constructing Your Argument** 4. **Visual Representation** TTW introduce the concept of using data to support claims about fossils. Explain how maps and data are used by scientists to gather evidence about the	SW continue working and finalizing the project. Encourage students to discuss their observations and make connections between the fossils and the locations.

			markers, sharp crayons • Scissors Plate Tectonics Tennis Ball Globe (p.15). Access Link	past. TTW facilitate a class discussion on the patterns students observed in the fossil locations. Have students work in small groups to examine the maps and identify patterns or trends in fossil locations. Fossil Record Project (Duration 1-2 days) SW gather information from maps and data to support a claim about how fossils provide crucial evidence.	
Independent Practice	SW complete Plate Tectonics -Student. **Activity A** : Solving the puzzle **Activity B:** Fossil and rock evidence **Activity C**: Ancient ice sheets TTW monitor and facilitate the Gizmo.	SW complete the following Part (s) of the Plate Boundaries and Interaction: Part 2: Continental vs Oceanic Crust Part 3a: Convergent Boundaries - Oceanic and Continental Part 3b: Convergent Boundaries - Oceanic Part 3c: Convergent boundaries- Continental Part 4: Divergent Boundaries Part 5: Transform Boundaries	SW draw plate boundaries on a map and learn that more scientific data are needed to more accurately locate certain boundaries. SW compare the features on a map that fits on a sphere with the same features on a more standard flat, two-dimensional, map to learn how our standard maps are distorted towards the poles.	SW complete the following task as they complete their project. **1. Research and Data Collection** Gather maps showing past and present locations of continents, as well as climate data from different time periods. Collect information on various types of fossils found in different regions and time periods. **2. Analysis of Fossil Record** Examine how fossils of plants and animals have changed over geological	SW complete the following task as they complete their project. **3. Constructing Your Argument** Develop a claim about how fossils provide evidence of the Earth's changing surface and climate. Use the data collected to support your claim, citing specific examples from the fossil record. **4. Visual Representation** Create visual aids such as charts, graphs, or maps to illustrate your findings. SW present their claims to the class, explaining the evidence they used to

				time. Identify patterns in the distribution of fossils based on climate and geographic location.	support them. TTW facilitate a class discussion on the various claims made and the evidence provided. TTW assess student understanding by asking probing questions about the connections between the evidence and the claims.
Assessment/Summary	TOD: (Reflection) Write a short reflection on what they learned about the movement of continents and how it relates to the theory of Pangaea. TTW evaluate student responses for accuracy. Provide feedback to students individually or as a class, addressing any misunderstandings and reinforcing key concepts. SW receive the Unit 3 Study Guide to complete and prepare for Unit 3 assessment.	TOD: (Reflection) Recap the interactions at different boundaries. or 3-2-1 Summary	TOD: SW completes the five-question assessment on Plate Tectonics and Pangaea. TTW allow time for students to ask questions and clarify any doubts.	TOD: SW summarize and reflect on the significance of the fossil record in understanding Earth's history. Consider how changes in climate and geography have influenced the evolution and distribution of species. Provide feedback to students individually or as a class, addressing any misunderstandings and reinforcing key concepts.	**Unit 3 Assessment on Illuminate.**
Small Group Tasks (TBA)					

Assessment Prep

Prepare students for assessment by reviewing the following Assessment Prep Presentation.

Provide the following guidance:
Ask the students to use what they know about the tasks completed to answer the provided assessment prep question.

- What is the question asking you?
- What do you know about the vocabulary or concept in the question?
- Is this question similar to any investigations or tasks we've completed?
- How can what you've done help you answer this question?
- Just view the assessment question: What is the question asking you?

Guide students to think about how their experience connects to the question.
Using the answer choices provided, ask the students the following:

- Identify a wrong answer: How do I know this answer is incorrect?
- Identify the right answer: How do we know this answer is correct?

Allow the students time to discuss in collaborative groups.

TEACHER NOTE: If students struggle with the question, review it the next day. Do not rush to the next question; instructional time is the only time they have to prepare for the end-of-year assessment.

Labs / Investigations		
Mandatory Labs	**Explore Learning Gizmo**	**Pivot Interactives/Phet**
Lab: Fold Mountains p.102-103 Lab: Shake, Rattle, and Roll p.112-113 Lab: Reconstructing Pangaea p.64-65	Plate Tectonics Building Pangaea	Plate Tectonics: Plate Boundaries and Interactions with Concord Consortium Plate Tectonics: Convergent Boundaries (MS) - Optional

Additional Resources/Tasks	
Supplemental Resources	Department of Science Guidance Document www.pearsonrealize.com : The Big Fossil Hunt Journey to the Center of Earth: Earth's Structure (This site contains several activities and links to other sites.) https://serc.carleton.edu/dig_blueprints/units/center_earth.html

	Earthquakes Living Lab: https://www.teachengineering.org/activities/view/csm_platetectonics_activity1 Earthquakes Living Lab – Designing for Disaster: https://www.teachengineering.org/activities/view/csm_designingfordisaster_activity1 Measuring Lava Flow: https://www.teachengineering.org/activities/view/ucla_lava_activity01