CCPS Science Unit Plan

Grade	6	**Subject**	Science	**Unit #**	4
Unit Name	Life as a Hydrologist		**Timeline**	4 weeks	
How to use the Framework	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.				
Unit Overview	The focus of this unit is the distribution and movement of Earth's water. The unit includes investigations into the mechanisms that drive the water cycle, the different phases or states that water will form, and the distribution of water on Earth's surface. The student will learn how solar heat, gravity, and the rotation of the Earth on its axis are the driving forces for both climate and the water cycle. The unit will also investigate how evaporation cleans and replaces Earth's freshwater water supply before precipitation returns it to the land surface. It will emphasize the limited nature of freshwater and why it must be conserved. Using an inquiry-based approach; students will use empirical evidence resulting from field and laboratory investigations to support scientific ideas of the movement of water in the water cycle. A concept from physical science is introduced in this unit that will be taught explicitly in 6th grade. In this unit, the students will understand the basic principles of heat energy and the role of heat energy in the state changes that occur in the water cycle. A second physical science concept of waves will be introduced during the study of ocean currents.				
3Dimensional Instruction					

GSE	Science and Engineering Practices	Crosscutting Concepts
S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth's processes. S6E3. a. Ask questions to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location. S6E3. b. Plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water. (Clarification statement: The water cycle should include evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff.) S6E3. c. Ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans.	• 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	• System and system models • Cause and effect • Patterns • Stability and change • Energy and matter • Scale, proportion, and quantity

	S6E3. d. Analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.		
NGSS Alignment	NGSS Alignment to Disciplinary Core Ideas.		
The Phenomenon Protocol			
Weekly Lesson Tasks **Teacher Notes**			

Week 1	
GSE: S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth's processes. S6E3. a. Ask questions to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.	**Focused Concept:** Water, the lifeblood of our planet, is distributed across Earth's surface in a variety of forms, each playing a crucial role in sustaining ecosystems and human life. Oceans dominate this distribution, containing approximately 97% of Earth's water, while freshwater sources like rivers, lakes, swamps, and groundwater together make up a mere 3%. A significant portion of this freshwater is trapped in glaciers and ice caps, accounting for about 2% of Earth's total water. Groundwater, found in aquifers beneath the surface, represents a vital resource for drinking water and agriculture, yet it constitutes less than 1% of the planet's water. By investigating these locations and understanding the relative proportions, we gain insights into the critical role water plays in shaping Earth's processes and the importance of managing this precious resource wisely. Evaporation Condensation Precipitation Groundwater Infiltration Hydrologic Cycle Transpiration Runoff Water Table Waves Current Tide ***The teacher will access Module: The Water Cycle - Lesson 1: Water in the Atmosphere for online instruction and assign activities used for the instructional week.***
SEP: **Asking Questions and Defining Problems**	**CCC:** **Scale, Proportion and Quantity; Systems and System Models**
Phenomenon: Anchoring Phenomenon ● Review the diagram below and start a driving question board: Water Stress By Country **Engaging Students in the Phenomenon** ● Show the diagram and use the See-Think-Wonder protocol to guide student thinking. Show the Ted Talk: Are we running out of water? ● After students share their initial ideas and questions, guide them toward these questions. ○ Why is water abundant in some places, but not in others? ○ Why do some places not have enough water? ○ Where in the world are people likely to not have enough water? **Why do clouds appear to disappear?**	**DQ:** How can water be both an abundant and scarce resource?

	Day 1	Day 2	Day 3	Day 4	Day 5
The students will be able to (SWBAT):	**SWBAT** ask questions to determine the location and composition of water on Earth's surface.	**SWBAT** create a chart or graph to communicate the relative proportions of water on Earth's surface.	**SWBAT** describes water distribution and ask questions about water distribution.	**SWBAT** ask questions to determine the location and composition of water on Earth's surface.	**SWBAT** create a chart or graph to communicate the relative proportions of water on Earth's surface.
Opening **The Teacher Will (TTW)** **Student Will (SW)** **See-Think-Wonder Protocol (STW)**	**(* Located in textbook)** **Science Probe: What happened to the puddle?** TTW use this science probe to assess students' prior knowledge of the lesson content and to identify possible preconceptions. **Engage: Encounter the Phenomenon: Water in the Atmosphere** Phenomenon: Why do clouds appear to disappear? Go Online - Watch *Head in the Clouds* to see the phenomenon in Action. (Individually or play the video as a whole class). SW records their thoughts on why the phenomenon occurs.	**(* Located in textbook)** TTW introduce the *STEM Module Project Science Challenge Dinosaurs and Dew* SW complete the *Start Thinking About It.*	TTW open the lesson with the Driving Question: How can water be both an abundant and scarce resource? Engage Students in the Phenomenon- Show the diagram and use the See-Think-Wonder protocol to guide student thinking. Show the Ted Talk: Are we running out of water? After students share their initial ideas and questions, guide them toward these questions. Why is water abundant in some places, but not in others? Why do some places not have enough water? Where in the world are people likely to not have enough water? TTW ask students to brainstorm where they	TTW review the anchoring phenomenon from the prior lesson. SW review the water distribution.	TTW review water distribution. Ocean World: Earth Globe Toss Game or, Discover Water: Blue Planet Choose one of these resources to help students understand the distribution of water on the earth: Where's the water? - this lab helps students understand drought and the distribution of water

			think water is found on Earth. SW write their responses on the whiteboard.		
Guided Practice/ Transition	**(* Located in textbook)** TTW introduce the project and present the goal for the students to develop and use a model of the water cycle after they complete lesson 1 and lesson 2. SW GO ONLINE Check out the interactive: Who drank my water? SW collaborate and brainstorm their thoughts on the phenomenon. TTW and SW record the responses on the board or chart paper.	**(* Located in textbook)** TTW explains the rubric for the project. Visual: TTW uses the *Visual Literacy Strategy*. **Explore and Explain** SW Go Online Interactive Presentation and complete activity: **Reading Essentials: Water in the Atmosphere**	Direct Instruction: Present a world map highlighting oceans, rivers, lakes, swamps, groundwater, aquifers, and ice. Discuss the relative proportions of water in these locations using the provided data. Divide students into small groups and assign each group a water source. Distribute chart paper and markers for group research presentations. Provide access to research materials and internet resources.	TTW review the water distribution. SW discuss water distribution and asks questions about water distribution. SW complete the worksheet Part 1 with a partner Worksheet: Explori…	TTW explain the expectation for the Water Distribution lab. SW engage in the discussion about the lab activity SW complete the lab Water Distribution …
Independent Practice	**(* Located in textbook)** SW complete the Module Pretest: The Water Cycle	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation: ***LessonSmart: Water in the Atmosphere***	Group Activity: Divide students into small groups and assign each group one of the water sources (oceans, rivers, lakes, swamps, groundwater, aquifers, ice).	SW complete the Water Distribution worksheet. SW work on group presentation and present their presentation to the class.	SW answer the lab follow-up questions. SW present their presentation on water distribution. SW work on group presentation and present their presentation to the class.

			SW work on the presentation for the next two days. TTW evaluate group presentations for understanding and accuracy.		
Assessment Summary	TOD: (Reflection) Explain the water cycle and how it contributes to the distribution and movement of water on Earth's surface. What are the key processes involved, and how do they interact?	TOD: (Writing Prompt) Describe the distribution of Earth's water across oceans, ice caps, glaciers, groundwater, lakes, rivers, and the atmosphere. How does the quantity of water in each location compare?	TOD: Using a world map, identify the major bodies of water (oceans, seas, large lakes) and significant ice-covered regions. What percentage of Earth's surface water is contained in these locations? TTW evaluate group presentations for understanding and accuracy.	TOD: (Reflection) Explain why freshwater is limited despite water covering approximately 71% of Earth's surface. Where is most of the freshwater found, and in what forms?	TOD: SW complete the work and review the lesson. SW provide peer feedback for the group projects.
Small Group Tasks (TBA)					

Week 2	
GSE: S6E3. b. Plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water. (Clarification statement: The water cycle should include evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff.)	**Focused Concept:** Understanding the water cycle requires investigating how the sun's energy drives atmospheric conditions that propel this vital process. By designing and conducting experiments, students can observe how solar energy causes evaporation, transforming water from rivers, lakes, and oceans into vapor. This vapor rises and cools, leading to condensation and the formation of clouds. Eventually, this condensed water falls back to Earth as precipitation, replenishing surface water sources and infiltrating the ground to become groundwater. Additionally, the cycle includes transpiration from plants, which releases water vapor into the atmosphere. Runoff, where excess water flows over land, completes this cycle, demonstrating the sun's indispensable role in fueling the continuous movement and

	transformation of water throughout Earth's systems. Water Cycle Atmospheric conditions Evaporation Condensation Precipitation Transpiration Infiltration Groundwater Runoff ***The teacher will access Module: The Water Cycle - Lesson 1: Water in the Atmosphere for online instruction and assign activities used for the instructional week.***
SEP: Planning and Carrying out Investigations	**CCC: Systems and Systems Models; Energy and Matter; Stability and Change**

Phenomenon: **What influences why and how quickly water "disappears?"** **How might a single drop of water travel from a cloud to a stream to an aquifer?**	**DQ:** How does water cycle into and through the atmosphere? How does water cycle on Earth's surface?

	Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
The students will be able to (SWBAT):	**SWBAT describes** the processes of the hydrologic cycle.	**SWBAT** describe the processes of the hydrologic cycle.	**SWBAT** explain the role of the sun's energy in the water cycle.	**SWBAT** explain the role of the sun's energy in the water cycle.	**SWBAT** plan and investigate to illustrate the role of the Sun's energy in the cycling of water.
Opening	**(* Located in textbook)** **Science Probe: What happened to the puddle?** TTW use this science probe to assess students' prior knowledge of the lesson content and to identify possible preconceptions.	TTW open the lesson by asking: What influences why and how quickly water disappears?	TTW open the lesson by reviewing the prior day's lesson	**(* Located in textbook)** **Revisit Science Probe: What happened to the puddle?** TTW use the science probe to assess student's prior knowledge of the lesson content Use the Sticky Bars Graph Strategy	**(* Located in textbook)** **Engage: Encounter the Phenomenon:** Phenomenon: How might a single drop of water travel from a cloud to a stream to an aquifer? SW watch the video *On the move* to see this phenomenon in action.

Guided Practice/Transition	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **CER: Explain the Phenomenon: Water in the Atmosphere** <u>Phenomenon: Why do clouds appear and disappear?</u> SW watch the video Head in the Clouds to see the phenomenon in action. SW reflect and brainstorm to complete the "Claim" section of the CER- TTW will provide students with Sentence Starters. **Read About:** 1. Where is water on Earth TTW assign a *Foldable* activity to allow students to take notes throughout the lesson.	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Read About**: 1. What influences why and how quickly water "disappears?" SW added notes to *Foldable* throughout the lesson. TTW direct students' attention to the photo. Have them circle and label the energy source that drives evaporation.	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Lab: Out of Thin Air** SW learn about the process of condensation and formation of clouds.	**(* Located in textbook)** **Evaluate** SW complete Go Online Interactive Presentation **Lesson Review: Water in the Atmosphere.** TTW review Lesson 1: Water in the Atmosphere	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Read About**: 1. Why do some clouds rain? SW added notes to *Foldable* throughout the lesson. TTW review the CER: Explain the Phenomenon
Independent Practice	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Lab: Into Thin Air** *Teacher can show a lab video of Into Thin Air*	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **3D Thinking**: What influences why and how quickly water "disappears?"	**(* Located in textbook)** **Explore and Explain** SW completes the analysis and conclusion questions. **Lab: What happens to temperature during a phase change?**	**(* Located in textbook** **Evaluate** Additional Resources **Reading Essentials: Water in the Atmosphere** SW add notes to their *foldable.*	**(* Located in textbook** **Explore and Explain** SW complete Go Online Interactive Presentation **Lab: Make it Rain** *Teacher can show a lab video of Make It Rain.*

	SW understand the relationship between thermal energy and the rate of evaporation. SW analyzes and interprets data to identify relationships and to provide evidence for the phenomenon of evaporation	**Read About:** 1. How else can water enter the atmosphere? SW add notes to their *foldable.*	**Read About:** 1. How can you get water to reappear? SW add notes to their *foldable.*		SW complete CER: Collect Evidence (A): Water on Earth's Surface SW refer back to the CER graphic organizer and record their evidence (A). TTW evaluate student responses for accuracy. **Investigation: Streaming By** SW observe the interaction between surface water and groundwater SW complete CER: Collect Evidence(B): Water on Earth's Surface What evidence have you discovered to explain how water moves along Earth's surface? SW refer back to the CER graphic organizer and record their evidence (B). TTW evaluate student responses for accuracy.
Assessment/Summary	**Explore and Explain** TOD: Define condensation and precipitation. What conditions are necessary for these processes to occur in the atmosphere?	**(* Located in textbook)** **Explore and Explain** TOD: SW complete **CER: Collect Evidence(A):** Water in the Atmosphere How else can water enter the atmosphere?	**(* Located in textbook)** **Explore and Explain** TOD: **3D Thinking**: How can you get water to "reappear?" Complete the questions for the **LAB: What happens to temperature during a**	**(* Located in textbook)** **Evaluate** TOD: **Lesson Check**: Water in the Atmosphere	**(* Located in textbook)** **Evaluate** TOD: **3D Thinking**: Where is water stored?

		SW refer back to the CER graphic organizer and record their evidence (A). TTW evaluate student responses for accuracy.	**phase change?**		
Small Group Tasks (TBA)					

Week 3	
GSE: S6E3.b. Plan and carry out an investigation to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water. (Clarification statement: The water cycle should include evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff.)	**Focused Concept:** Understanding the water cycle requires investigating how the sun's energy drives atmospheric conditions that propel this vital process. By designing and conducting experiments, students can observe how solar energy causes evaporation, transforming water from rivers, lakes, and oceans into vapor. This vapor rises and cools, leading to condensation and the formation of clouds. Eventually, this condensed water falls back to Earth as precipitation, replenishing surface water sources and infiltrating the ground to become groundwater. Additionally, the cycle includes transpiration from plants, which releases water vapor into the atmosphere. Runoff, where excess water flows over land, completes this cycle, demonstrating the sun's indispensable role in fueling the continuous movement and transformation of water throughout Earth's systems. Atmospheric conditions Water Cycle Cycling of water Groundwater Runoff Water Tower Hydraulic Efficiency Structural Efficiency Design Ingenuity ***The teacher will access Module: The Water Cycle - Lesson 1: Water in the Atmosphere for online instruction and assign activities used for the instructional week.***
SEP: Planning and Carrying out Investigations	**CCC: Systems and Systems Models; Energy and Matter; Stability and Change**
Phenomenon: **How might a single drop of water travel from a cloud to a stream to an aquifer?** Lesson Phenomenon: How engineers work to solve the challenges of a society, such as	**DQ:** Where is water stored? How do engineers work to solve the challenges of a society, such as delivering safe

delivering safe drinking water.			drinking water?		
	Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**
The students will be able to (SWBAT)	**SWBAT** explain the stages of the water cycle and understands where the water is stored.	**SWBAT** plan and investigate the water cycle.	**SWBAT** investigate the cycling of water.	**SWBAT** construct an explanation of the water cycle processes**.**	**SWBAT** review the water cycle processes.
Opening	**(* Located in textbook)** **Science Probe: Groundwater** TTW use this science probe to assess students' prior knowledge of the lesson content and to identify possible preconceptions. **Revisit the Encounter the Phenomenon** Phenomenon: How might a single drop of water travel from a cloud to a stream to an aquifer? TTW ask students to study the illustration. Do you think the movement of water underground is slow or fast? Explain.	**(* Located in textbook)** **Evaluate** TTW open with a STEM Module Project: Dinosaurs and Dew	TTW open the lesson with the Gizmo prior knowledge question: The water that comes out of your faucet at home used to be in the ocean. How did water get from the ocean to your water faucet?	TTW review the water cycle and explain the Mystery Water Drop Journey. **Mystery Water Drop Journey** TTW provide each student with a "Mystery Water Drop" card describing a different part of the water cycle (e.g., starting in the ocean, moving to the clouds, falling as rain). Have students read their cards and then share their water drop's journey with the class. This will help students visualize and discuss the different processes involved in the water cycle.	**Common Assessment 6 on Illuminate.** TTW review the water cycle processes.
Guided Practice/Transition	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About**: 1. Where is water stored? Groundwater Flow	**(* Located in textbook)** **Evaluate** Before begin planning their STEM Module Projects- identify any misconceptions TTW Explain the Module Project Rubric	TTW launch the GIZMO tool and use the warm-up model how to navigate the GIZMO tools. SW complete Water Cycle #1 and #2.	TTW explain the Water Cycle CER Task. SW read over the task.	TTW conduct a review game to prepare students for common assessment. SW completes the review activities

	3D Thinking: Where is water stored? TTW ask students to study the illustration. Do you think the movement of water underground is slow or fast? Explain.				
Independent Practice	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Investigation: Rivers of Ice** SW show how glaciers form and flow.	**(* Located in textbook)** **Evaluate** SW complete Project Plan **Lesson 2: Module Project: Dinosaurs and Dew** SW create their presentation.	SW complete part #3-6. Think and discuss: Water covers over two-thirds of Earth's surface. Yet water shortages are a major problem for many people around the world. Why do you think this is the case?	SW complete the CER. Copy of GA_6E3B_…	**Common Assessment 6 on Illuminate.**
Assessment/Summary	**(* Located in textbook)** **Evaluate** TOD: **Lesson Review**: Water on Earth's Surface (Summarize It)	**(* Located in textbook)** TOD: Revisit Science Probe: Groundwater	TOD SW complete the 5 question assessment on the bottom of the Gizmo digital simulation platform and summarize the Gizmo activity.	SW engage in academic discourse and present their CER for the water cycle.	TTW and SW review Common Assessment 6.
Small Group Tasks (TBA)					

Week 4	
GSE: **S6E3. c.** Ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans	**Focused Concept:** Exploring the world's oceans involves asking critical questions to uncover and communicate their vast complexity through graphs and maps. By examining the composition, students learn about the diverse elements and compounds, such as salts and minerals, that define ocean water. Investigating the location and subsurface topography reveals the intricate features hidden beneath the waves, including continental shelves, abyssal plains, and mid-ocean ridges. Utilizing graphs and maps, students can visualize these features, enhancing their understanding of how oceanic structures influence global processes like circulation patterns, marine habitats, and geological activity. This comprehensive approach not only highlights the oceans' physical characteristics but also underscores their essential role in Earth's dynamic systems. Ocean location Subsurface Topography

	Sonar Ocean Floor Mapping Mid-ocean Ridge Seamounts Continental Shelf Continental Slope Abyssal Plains Guyot ***The teacher will access Module: Dynamic Earth - Lesson 2: Development of a Theory for online instruction and assign activities used for the instructional week.***
SEP: Asking Questions	**CCC: Cause and Effect**
Phenomenon: **Why is there a huge underwater mountain range between South America and Africa?**	**DQ:** What can scientists "see" at the bottom of the sea?

	Day 16	Day 17	Day 18	Day 19	Day 20
The students will be able to (SWBAT)	**SWBAT** identify the location of Earth's oceans.	**SWBAT** ask questions to identify the composition, location, and subsurface topography of Earth's ocean.	**SWBAT** ask questions to identify the composition, location, and subsurface topography of Earth's oceans.	**SWBAT** analyze and interpret graphs and maps to describe ocean floor topography.	**SWBAT** review ocean composition, location, and ocean floor topography
Opening	TTW start with a discussion on the importance of oceans. Ask students what they know about the oceans and their roles in Earth's systems. Explain: Introduce the key concepts of the lesson:	**(* Located in textbook) Engage Encounter the Phenomenon: Development of a Theory** Phenomenon: Why is there a huge underwater mountain range between South America and Africa? SW watch the video *Under the Sea* SW complete the questions after the video	TTW show a video of the ocean floor Ocean Floor Features SW read *What can scientists "see" at the bottom of the sea?* TTW refer to TE to: Review Close Read Strategies	TTW go to the lesson library. Lesson 2 Web activity; Go further: Ocean Floor Brainpop video SW take the BrainPOP quiz after the video	**Common Assessment 7 on Illuminate.** TTW review concepts for ocean composition, location, and ocean floor floor topography

	The composition of ocean water (saltwater vs. freshwater).	TTW introduce the key concepts of the lesson: The locations of the major oceans. The subsurface topography of the ocean floor (continental shelves, slopes, abyssal plains, mid-ocean ridges, trenches)			
Guided Practice/Transition	TTW explain the Salinity Lab. Salinity Lab.pdf SW read the background information for the lab.	TTW introduce Mapping the ocean floor activity. Copy of Ocean Floo… Introduce Maps and Graphs: Show a physical or digital world map. Identify and label the five major oceans: Pacific, Atlantic, Indian, Southern, and Arctic.	**(* Located in textbook) Explore and Explain** SW Go Online Interactive Presentation **Lab: Simulating Sonar** SW model sonar mapping of the ocean. *Teacher can show a lab video of Fold Mountains.* Show the video procedure for the Lab Simulating Sonar. SW work in a group to prepare a model of the ocean floor	TTW will model how to complete the mapping of the ocean floor virtual lab Close Read Strategies Ocean Floor Virtual… TTW and SW complete part 1: Procedures.	TTW conduct a review game to prepare students for common assessment.

Independent Practice	SW complete the lab procedures. Salinity Lab.pdf	SW complete Ocean Topography … SW answer questions and fill in a blank world map with the location of the major oceans and key topographic features. SW complete part 1 section 2	**(* Located in textbook)** **Explore and explain** SW Go Online Interactive Presentation **Investigation: Under the Sea** SW interpret data on a map and identify features of the ocean floor. **Close Reading:** **Read a Scientific Text: Discovering the Mid-Ocean Ridge** SW critically read a scientific text and annotate highlighting on the discovery of mid-ocean ridge.	SW complete Ocean Floor Virtual… SW complete **Graph 1:** *Distance in Meters for each location* **Graph 2:** *Age of Rocks for each location* **Graph 3:** *Temperature for each location* *The teacher can decide the number of graphs to complete*	**Common Assessment 7 on Illuminate.**
Assessment/Summary	TOD: SW complete the summary questions and discusses the lab activity.	TOD: Ocean Topography … Identify and mark key topographic features: Continental shelf, continental slope, abyssal plain, Mid-ocean ridge, and trenches	TOD: SW complete the What are three concepts you learned today? What topographic features are found on the seafloor?	TOD: SW complete the Conclusion Questions of the. Ocean Floor Virtual…	TTW and SW review Common Assessment 7.
Small Group Tasks (TBA)					

Week 5					
GSE: S6E3. d. Analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.	**Focused Concept:** Understanding the dynamics of Earth's oceans requires analyzing and interpreting data to graphically represent the causes and effects of waves, currents, and tides. By examining factors such as wind patterns, the gravitational pull of the moon and sun, and the Earth's rotation, students can visualize how these elements drive the movement of water. Waves are primarily generated by wind, currents are shaped by global wind patterns and differences in water density, and tides result from the gravitational forces of the moon and sun. Through data analysis and graphical representations, students can uncover the intricate relationships between these forces and their significant impacts on marine and coastal environments, navigation, and climate systems. Waves Surface Currents Upwelling Deep-ocean currents Tides Neap Tides Spring Tides ***The teacher will access Module: Weather and Climate - Lesson 2: Atmospheric and Oceanic Circulation for online instruction and assign activities used for the instructional week.***				
SEP: Analyzing and Interpreting data	**CCC: Cause and Effect**				
Phenomenon: Duck Overboard Nike Shoes Tides	**DQ:** How did bath toys and Nike shoes help us understand ocean currents?				
	Day 21	**Day 22**	**Day 23**	**Day 24**	**Day 25**
The students will be able to (SWBAT)	**SWBAT** describe the causes and characteristics of ocean waves.	**SWBAT** describe the causes of ocean tides.	**SWBAT** explain the effects of ocean tides.	**SWBAT** -Describe the causes of currents in bodies of water and their effects on the land and organisms. -Explain how currents move water around the planet.	**SWBAT** -Describe the causes of currents in bodies of water and their effects on the land and organisms. -Explain how currents move water around the planet.

Opening	Waves TTW ask students to discuss in pairs what they know about waves and what causes them. Discuss the key points using visual aids and real-life examples. Misconception: Waves are only caused by wind	Day 1 of 2 Lesson TTW engage students by showing the phenomenon on slide 1. TIDES ACTIVITY SW completes the See-Think-Wonder	Day 2 of 2 Lesson **Tides Day 2** TTW engage students by showing the phenomenon on slide 1.	TTW introduce students to ocean currents. **Engage:** Show the video about Ducks Overboard about the spill of thousands of rubber bath toys. Ask the students to make a model of why they think the bath toys were found in different places around the world. After students share their initial ideas and questions, start a driving question board - what do students want to know? What do they wonder? How do ocean currents affect the movement of water around the globe? Where do you think the shoes washed ashore? How long did it take for the majority of the shoes to be recovered? Story of the Nike Shoe Spill (Ocean Currents) The epic journey of the Rubber Ducks	TTW review the concept of density. SW contrast the density of warm water with that of cold water, and freshwater with that of salt water.
Guided Practice/Transition	SW takes notes from the slides Waves Monitor student understanding through group discussions and questioning.	TTW Direct Instruction Presentation: Use visuals (diagrams, videos) to explain: TIDES ACTIVITY slides 4-17	Tides Gizmo Warm-up What is a tide? In the Gizmo, the pane on the left shows the position of the Earth and Moon. The Sun is far off in space to the left. The person standing on Earth	TTW model demonstration, hot and cold water are used to model. **Text Annotation Strategy** Have students read and annotate the following text: Article: 15 year journey of rubber ducks	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation: **Read About**: 1. Why do ocean waters flow? Upwelling **Lab:Predicting Whale**

	Create a graphical representation of the following: Wave sizes are affected by these three factors ❖ Wind speed ❖ Time/ Duration of the wind blowing ❖ Fetch- Distance the wind has to travel	Explain the mechanisms behind tidal cycles (spring and neap tides, tidal bulges).	represents the location of the fisherman shown at right. TTW review Close-Reading strategies	The teacher should facilitate the following process. Have the students follow the text protocol facilitation directions provided in the following strategy: 6-8 Information Ana… 6-8 Text Annotation … Ocean Current Modeling How do ocean currents work? - This video explains the different causes and effects of ocean currents	**Sightings Based on Upwelling** SW analyze a map of sea surface temperatures around Monterey Bay.
Independent Practice	SW explain using a graphical representation to determine how wind can affect the size of a wave.	SW complete the Review on slide 18 SW complete *Make Your Own TIde* slide 21	SW complete the GIZMO part B. SW Read about Tide GA_6E3D_WavesC…	**(* Located in textbook) Explore and Explain** SW Go Online Interactive Presentation **Lab: Moving Water** SW model the formation of density currents. *Teacher can show a lab video Moving Water.* **Read About:** 1. Why do ocean waters flow? Density Currents TTW assign a *Foldable* activity to allow students to take notes throughout the lesson.	**(* Located in textbook) Explore and Explain** SW complete the *Extension* of the Lab.
Assessment/Summary	TOD: Ask students to share their graphic representations	TOD: SW complete the Studyjam video Slide #25	TOD: SW complete the 5 question assessment on the bottom of the Gizmo digital	**(* Located in textbook) Explore and Explain** TOD:**3D THINKING:** Why do ocean waters flow?	TOD:

	with the class and explain their choices. Answer the following questions: What are waves? 1. What is moving in a wave? 2. Draw out 2 or 3 waves. Label the crest, trough, wavelength, and wave height 3. What are the 2 ways that waves can be created?		simulation and TTW review the Gizmo activity	Density Currents	SW complete the diagram and summarizes what they have learned.
Small Group Tasks (TBA)					

Week 6	
GSE: S6E3.d. Analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.	**Focused Concept:** Understanding the dynamics of Earth's oceans requires analyzing and interpreting data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems. By examining factors such as wind patterns, the gravitational pull of the moon and sun, and the Earth's rotation, students can visualize how these elements drive the movement of water. Waves are primarily generated by wind, currents are shaped by global wind patterns and differences in water density, and tides result from the gravitational forces of the moon and sun. Through data analysis and graphical representations, students can uncover the intricate relationships between these forces and their significant impacts on marine and coastal environments, navigation, and climate systems. Surface Currents Tides Waves Density Upwelling global winds ***The teacher will access Module: Weather and Climate - Lesson 2: Atmospheric and Oceanic Circulation for online instruction and assign activities used for the instructional week.***
SEP: Analyzing and Interpreting data	**CCC: Cause and Effect**

Phenomenon: Why is water off the coast of northern California typically colder than water further offshore?			**DQ:** What causes air and water to flow?		
	Day 26	**Day 27**	**Day 28**	**Day 29**	**Day 30**
The students will be able to (SWBAT)	**SWBAT** explain how currents move water around the planet.	**SWBAT** analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.	**SWBAT** analyze and interpret data to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems	**SWBAT** review Unit 4 assessment.	**SWBAT** complete an assessment for Unit 4.
Opening	**(* Located in textbook)** **Science Probe** **Moving Ocean Water** TTW use this science probe to assess students' prior knowledge of the lesson content and to identify possible preconceptions. **Engage: Encounter the Phenomenon: Atmospheric and Oceanic Circulation** Phenomenon: Why is water off northern California typically colder than water further offshore? SW watch the video *Seasons* to see this phenomenon in action and record their observations about the phenomenon.	TTW write on the board "You can use patterns to predict where an ocean current will flow." Ask students to explain why they agree or disagree with the statement. Provide students with a map that shows global ocean currents. Make sure students understand the currents shown, and can locate the oceans shown on the maps.	TTW asks: What global pattern does ocean currents form? SW work in pairs to review what they learned about surface currents, upwelling, and density currents. GO ONLINE: Have students go online to watch the animation individually, or watch it as a class.	TTW review Unit 4 Assessment Prep Presentation. Unit 4 Assessment P… TTW circulate around the room to observe students' progress and provide individual assistance as needed. If appropriate, pause the independent work briefly to address common questions or misconceptions noticed while circulating. Allow students to quietly discuss the material with a partner if they're stuck, promoting collaborative learning.	TTW review the expectation for the Unit 4 assessment.
Guided Practice/Transition	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Investigation: It's on the**	**(* Located in textbook)** **Explore and Explain** SW complete Go Online Interactive Presentation **Lab: Toys Ahoy**	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:**	TTW reviews Unit 4 Assessment Prep Presentation.	SW review Unit 4 Study guide groups.

	Surface SW observe a model of the formation of a surface current. TTW read aloud with students the paragraph on **Surface Currents** TTW have the students preview the boldface vocabulary terms on the page and use what they learned so far to predict their meaning.	SW use model to investigate factors affecting the motion of ocean currents. TTW have students study the data table: Explain the data table	1. What global pattern do ocean currents form? TTW assign a *Foldable* activity to allow students to take notes throughout the lesson.		
Independent Practice	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:** 1. Why do ocean waters flow: Upwelling. SW add to Foldable notes.	**(* Located in textbook)** **Explore and Explain** SW Go Online Interactive Presentation **Read About:** 1. Why do ocean currents flow in certain directions? SW add to Foldable notes.	**(* Located in textbook)** **Evaluate** Lesson Review: Atmospheric and Oceanic Circulation Complete the CER Copy of GA_6E3D_…	SW complete a review activity for Unit 4. Games Study Guide- created by the teacher	**Unit 4 Assessment**
Assessment/Summary	**(* Located in textbook)** **Explore and Explain** TOD: SW complete 3D Thinking: Why do ocean waters flow:? Upwelling	**(* Located in textbook)** **Explore and Explain** TOD: SW complete the 3D Thinking: Why do ocean currents flow in a certain direction? TTW ask: How could you model the pattern of movements of a gyre?	**(* Located in textbook)** **Evaluate** TOD: SW complete the Lesson Check: Atmospheric and Oceanic Circulation.	TOD: SW summarize what they learned and what they needed to study to be successful in the assessment.	TOD: SW complete a reflection on how they did on the assessment.
Small Group Tasks (TBA)					

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

Unit 4 Assessment Prep

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**
Water Distribution Lab LAB: Make it Rain LAB: Out of Thin Air LAB: Into Thin Air LAB Simulating Sonar. LAB: Toys Ahoy. **Ocean Floor Virtual Lab**	**Water Cycle** **Tides**	

Additional Resources/Tasks	
Supplemental Resources	Department of Science Guidance Document **NASA Climate Kids - Water Cycle**: NASA's Climate Kids website includes interactive games, activities, and articles about the water cycle, designed to engage and educate children. Link **USGS Water Science School - Water Cycle**: This website by the U.S. Geological Survey provides comprehensive information on the water cycle, including explanations, diagrams, and interactive features.Link

	Exploring Our Fluid Earth - Ocean Motion Curriculum: This curriculum by the Center for Microbial Oceanography: Research and Education (C-MORE) provides lesson plans, activities, and resources for teaching about ocean motion, waves, currents, and tides. Link