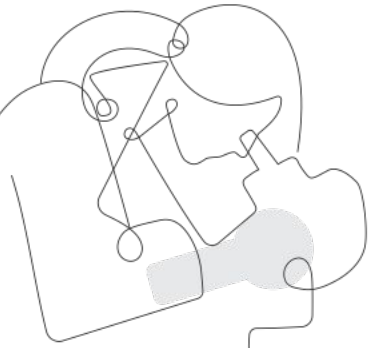
Do Now: *In the chat, share one new skill you and/or your students have learned this year during remote learning.*

Amplify Science

Unpacking Waves, Energy and Information for Hybrid Learning

Unit 4, Grade 4



LAUSD

4/x/2021

Presented by Your Name

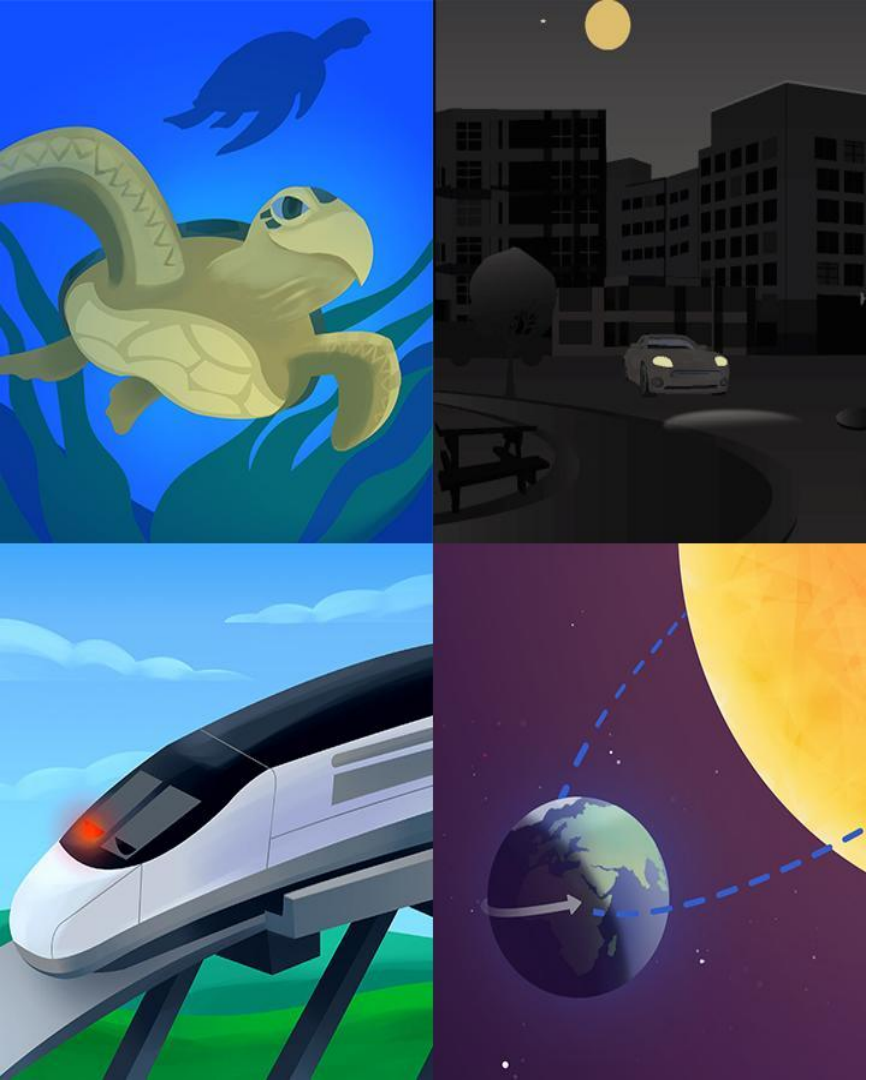
In a new tab, please log in to your Amplify Science account through Schoology.

Amplify.

Objectives

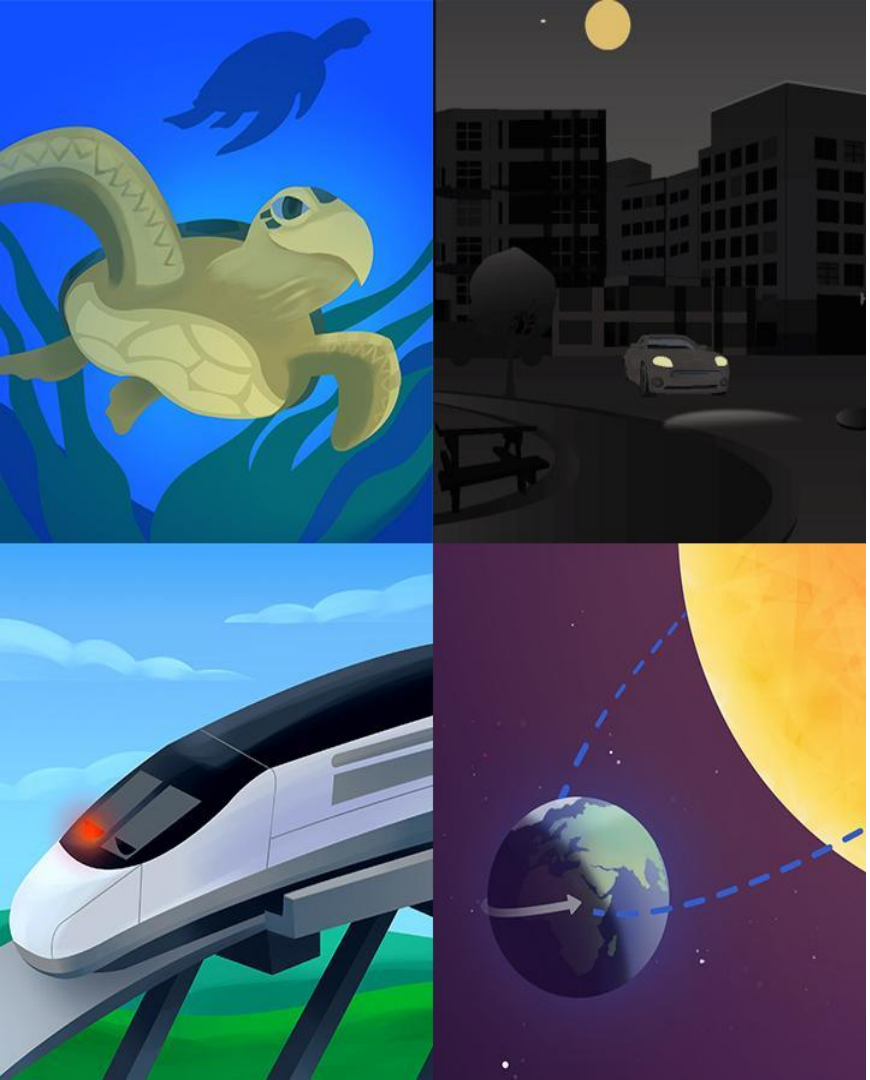
By the end of this workshop, you will be able to…

- Describe how students' conceptual understanding builds through the unit
- Explain how students figure out the phenomenon throughout the unit
- Make a plan for implementing Amplify Science within your class schedule and instructional format



Plan for the day

- **Framing the day**
  - Remote learning reflection
  - Revisiting the Amplify Approach
- **Phenomenon at the unit level**
  - Navigation refresher (standard curriculum)
  - Storyline and science concepts
  - Unit internalization work time
- **Planning to teach**
  - Navigation refresher (@Home resources)
  - Lesson walkthrough
  - Collaborative planning time
- **Closing**
  - Reflection & survey



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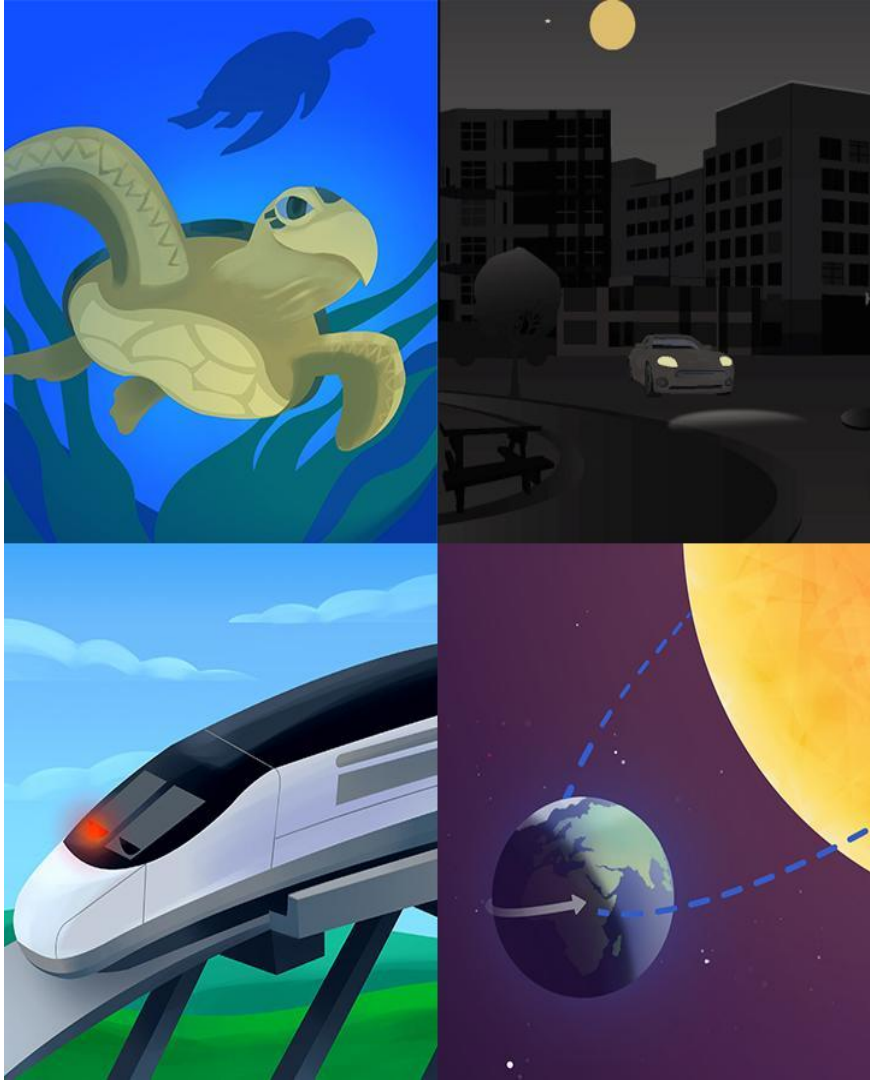
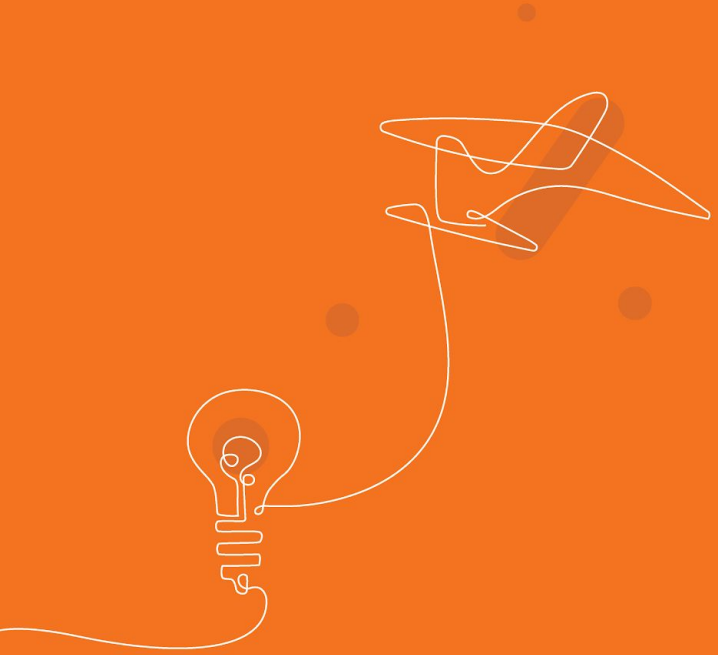
Opening reflection

Jamboard

Having taught Amplify Science in a remote setting, what **skills and/or practices** have you developed with your students that you can **leverage as your shift to hybrid learning?**





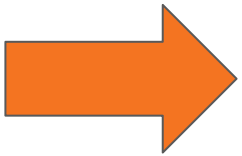
Key aspects of the Amplify Science instructional approach

Phenomenon-based instruction

A shift in science instruction

from learning about

(like a student)



to figuring out

(like a scientist)

Scientific phenomenon: An observable event in the natural world you can use science ideas to explain or predict

Coherent storylines

Chapter 1 Question

Which island's weather would be best for orangutans?

Chapter 2 Question

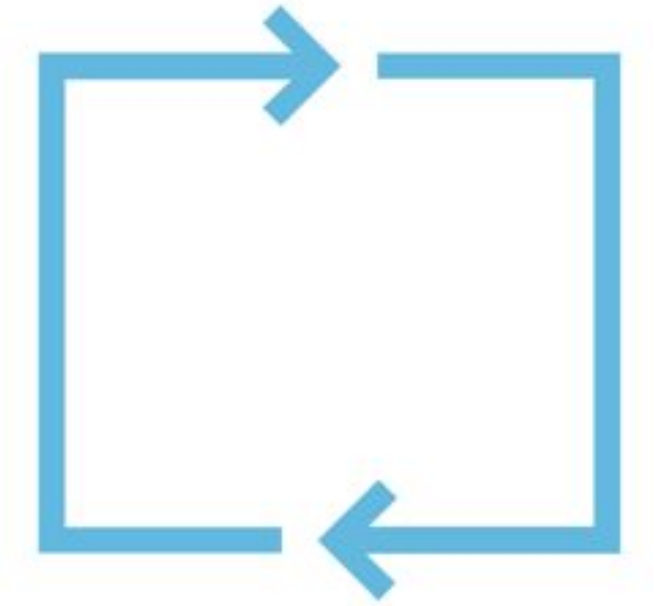
Which island's weather will continue to be best for orangutans?

22 Lessons

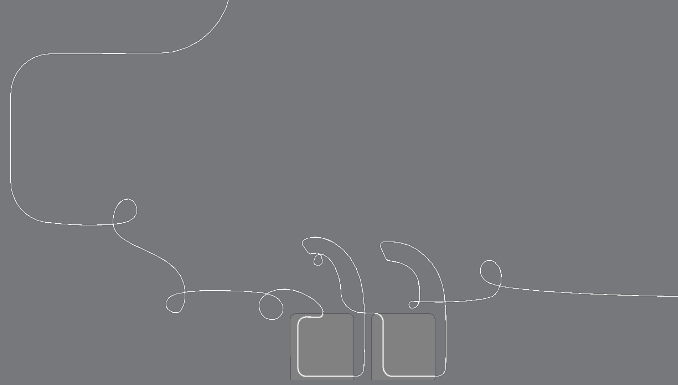
Weather and Climate

Multimodal learning

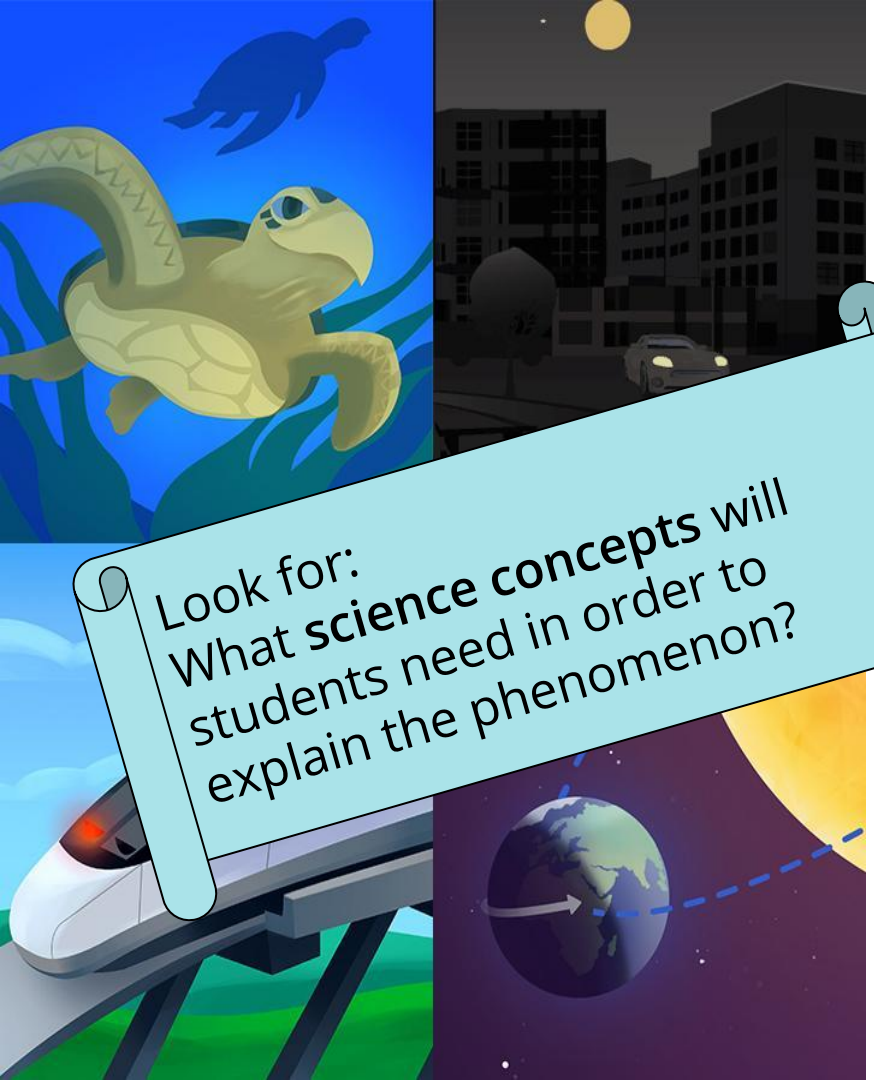
Gathering evidence over multiple lessons



Do,
Talk,
Read,
Write,
Visualize



Questions?



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Explaining the phenomenon: science concepts

Please respond in the chat

What **science concepts** do you think students need to understand in order to construct an explanation to explain where the orangutan reserve should be built?

WILDLIFE PROTECTION ORGANIZATION

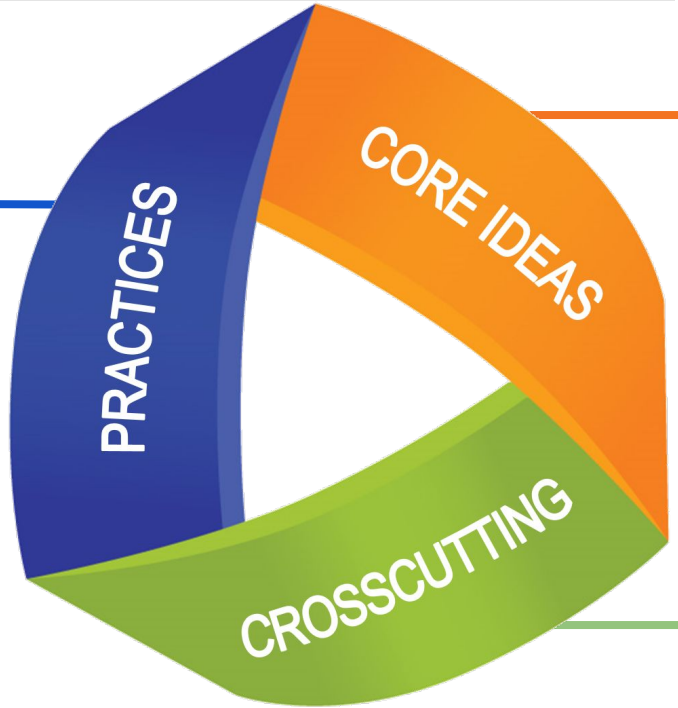
Which island's weather would be best for orangutans?

Next Generation Science Standards

Designed to help students build a cohesive understanding of science

What scientists do

Science and Engineering Practices



What scientists want to know

Disciplinary Core Ideas

How scientists think

Crosscutting Concepts

Key

Practices | Disciplinary Core Ideas | Crosscutting Concepts

Unit Level

Students learn to make weather measurements and make sense of them (scale, proportion, and quantity). They analyze a day, then a month, then a year of weather data for three fictional locations. Using the climate patterns of precipitation and temperature , students discover how to construct evidence-based arguments about which location would be the best habitat for an orangutan reserve, with a long-term climate (despite shorter-term changes) most similar to that of Borneo (stability and change), where orangutans live.

Navigation Temperature Check

Rate yourself on your comfort level accessing Amplify Science materials and navigating a digital curriculum.

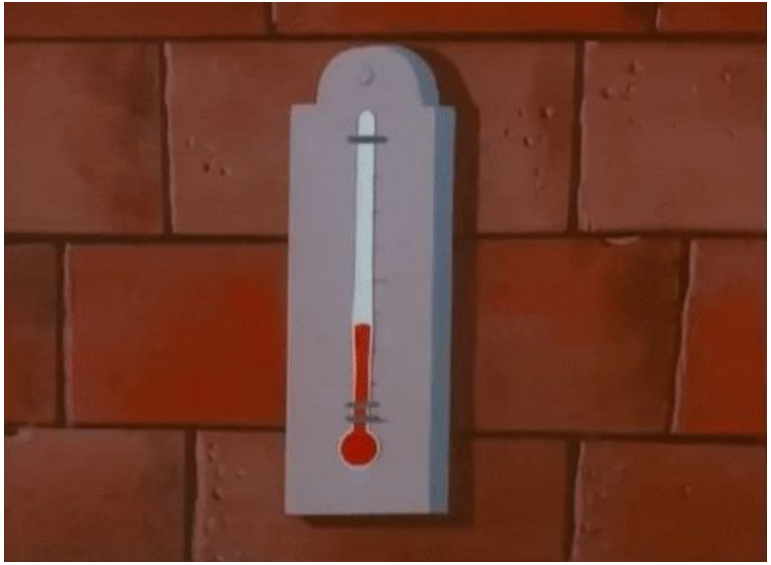
1 = Extremely Uncomfortable

2 = Uncomfortable

3 = Mild

4 = Comfortable

5 = Extremely Comfortable

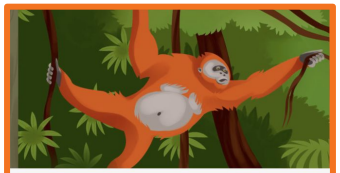


Unit

Chapters

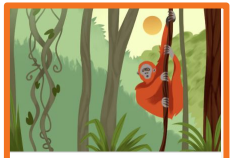
Lessons

Activities



22 Lessons

Weather and Climate



Chapter 1: Which island's weather would be best for orangutans?

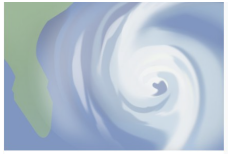
6 Lessons

Chapter 2: Which island's weather will continue to be best for orangutans?

5 Lessons

Chapter 3: Over many years, which island's weather will be best for...

7 Lessons



Chapter 4: How can the WPO prepare for natural hazards that might damage thei...

4 Lessons

Lesson 1.1:
Pre-Unit Assessment

Lesson 1.2:
Measuring Rainfall

Lesson 1.3:
Measuring Temperature

Lesson 1.4:
Sky Notebook

Lesson 1.5:
Making Sense of Weather Data

Lesson 1.6:
Writing Island Arguments

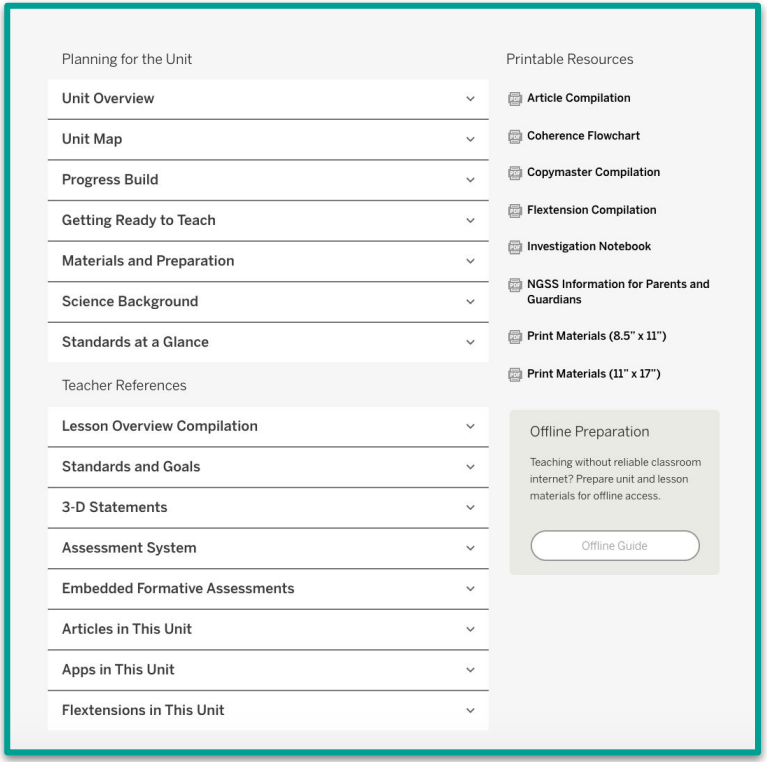
1 TEACHER-LED DISCUSSION
Introducing the Orangutan Reserve

T TEACHER
Introducing Weather

2 CLASS
Pre-Unit Assessment

3 TEACHER-LED DISCUSSION
Introducing Investigation Notebooks

Unit Guide Resources



Unit Guide resources

Once a unit is selected, select **JUMP DOWN TO UNIT GUIDE** in order to access all unit-level resources in an Amplify Science unit.

Planning for the unit

Unit Overview	Describes what's in each unit, the rationale, and how students learn across chapters
Unit Map	Provides an overview of what students figure out in each chapter, and how they figure it out
Progress Build	Explains the learning progression of ideas students figure out in the unit
Getting Ready to Teach	Provides tips for effectively preparing to teach and teaching the unit in your classroom
Materials and Preparation	Lists materials included in the unit's kit, items to be provided by the teacher, and briefly outlines preparation requirements for each lesson
Science Background	Adult-level primer on the science content students figure out in the unit
Standards at a Glance	Lists Next Generation Science Standards (NGSS) (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts), Common Core State Standards for English Language Arts, and Common Core State Standards for Mathematics

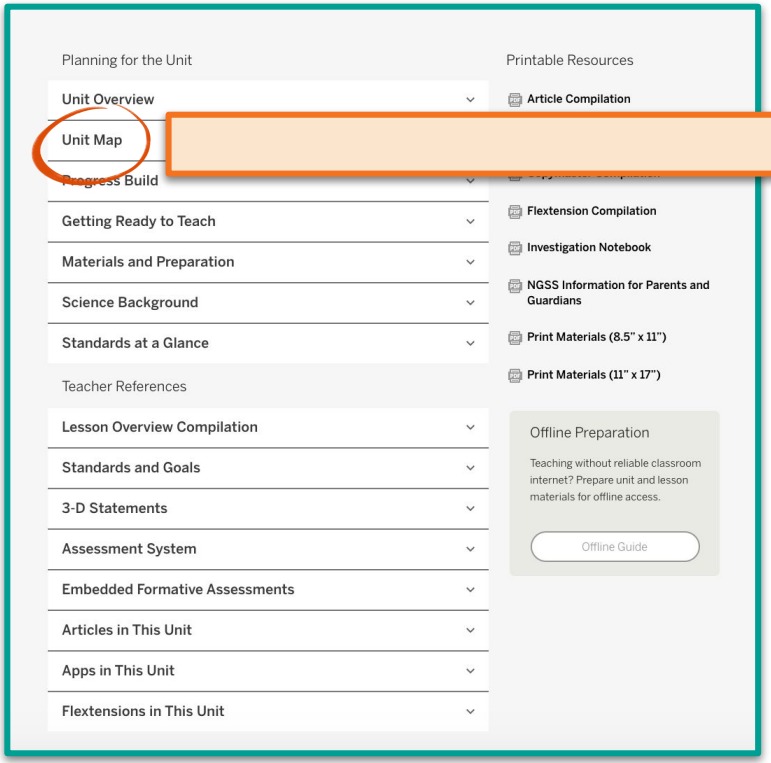
Teacher references

Lesson Overview Compilation	Lesson Overview of each lesson in the unit, including lesson summary, activity purposes, and timing
Standards and Goals	Lists NGSS (Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) and CCSS (English Language Arts and Mathematics) in the unit, explains how the standards are reached
3-D Statements	Describes 3-D learning across the unit, chapters, and in individual lessons
Assessment System	Describes components of the Amplify Science Assessment System, identifies each 3-D assessment opportunity in the unit
Embedded Formative Assessments	Includes full text of formative assessments in the unit
Books in This Unit	Summarizes each unit text and explains how the text supports instruction
Apps in This Unit	Outlines functionality of digital tools and how students use them (in grades 2-5)

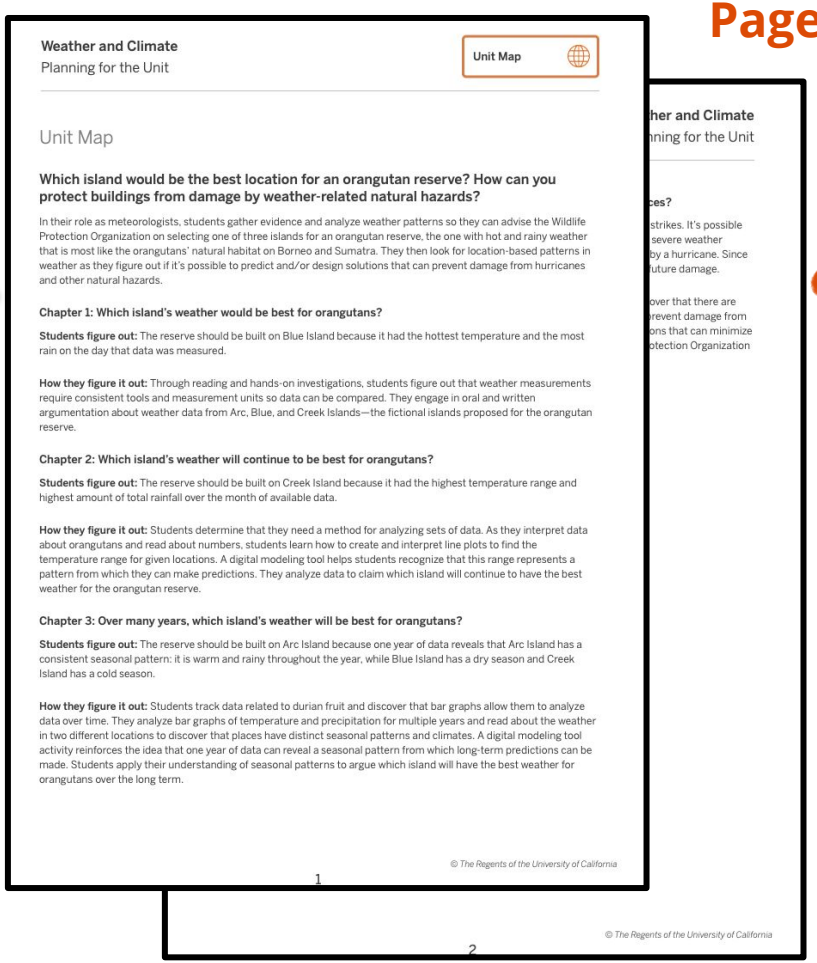
Printable resources

Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Glossary of unit vocabulary in multiple languages
Print Materials (8.5" x 11")	Digital compilation of printed cards (i.e. vocabulary cards, student card sets) provided in the kit
Print Materials (11" x 17")	Digital compilation of printed Unit Question, Chapter Questions, and Key Concepts provided in the kit

Unit Map



Pages 2-3



Weather and Climate
Planning for the Unit

Unit Map

Unit Map

Which island would be the best location for an orangutan reserve? How can you protect buildings from damage by weather-related natural hazards?

In their role as meteorologists, students gather evidence and analyze weather patterns so they can advise the Wildlife Protection Organization on selecting one of three islands for an orangutan reserve, the one with hot and rainy weather that is most like the orangutans' natural habitat on Borneo and Sumatra. They then look for location-based patterns in weather as they figure out if it's possible to predict and/or design solutions that can prevent damage from hurricanes and other natural hazards.

Chapter 1: Which island's weather would be best for orangutans?

Students figure out: The reserve should be built on Blue Island because it had the hottest temperature and the most rain on the day that data was measured.

How they figure it out: Through reading and hands-on investigations, students figure out that weather measurements require consistent tools and measurement units so data can be compared. They engage in oral and written argumentation about weather data from Arc, Blue, and Creek Islands—the fictional islands proposed for the orangutan reserve.

Chapter 2: Which island's weather will continue to be best for orangutans?

Students figure out: The reserve should be built on Creek Island because it had the highest temperature range and highest amount of total rainfall over the month of available data.

How they figure it out: Students determine that they need a method for analyzing sets of data. As they interpret data about orangutans and read about numbers, students learn how to create and interpret line plots to find the temperature range for given locations. A digital modeling tool helps students recognize that this range represents a pattern from which they can make predictions. They analyze data to claim which island will continue to have the best weather for the orangutan reserve.

Chapter 3: Over many years, which island's weather will be best for orangutans?

Students figure out: The reserve should be built on Arc Island because one year of data reveals that Arc Island has a consistent seasonal pattern: it is warm and rainy throughout the year, while Blue Island has a dry season and Creek Island has a cold season.

How they figure it out: Students track data related to durian fruit and discover that bar graphs allow them to analyze data over time. They analyze bar graphs of temperature and precipitation for multiple years and read about the weather in two different locations to discover that places have distinct seasonal patterns and climates. A digital modeling tool activity reinforces the idea that one year of data can reveal a seasonal pattern from which long-term predictions can be made. Students apply their understanding of seasonal patterns to argue which island will have the best weather for orangutans over the long term.

Applying conceptual understanding to explain the phenomenon

Use ideas from the Progress Build and Unit Map to make notes about the conceptual and explanatory builds in your unit.

	Science concepts	Explanation of the phenomenon
	Students figure out...	*So they can explain...*
Chapter 1	Students figure out that weather measurements require consistent tools and measurement units so data can be compared.	Orangutans would like Blue Island because it had the hottest temperature and the most rain.
Chapter 2		
Chapter 3		

Chapter 1: Which island's weather would be best for orangutans?

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Chapter 2	Students determine that they need a method for analyzing sets of data. As they interpret data about orangutans and read about numbers, students learn how to create and interpret line plots to find the temperature range for given locations.	Creek Island had the most consistent amount of rain and the highest temperature range.
Chapter 3		

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Chapter 3: Over many years, which island's weather will be best for orangutans?

Students figure out: The reserve should be built on Arc Island because one year of data reveals that Arc Island has a consistent seasonal pattern: it is warm and rainy throughout the year, while Blue Island has a dry season and Creek Island has a cold season.

Chapter 3	Bar graphs allow them to analyze data over time. They analyze bar graphs of temperature and precipitation for multiple years and read about the weather in two different locations to discover that places have distinct seasonal patterns and climates.	Arc Island has a consistent seasonal pattern of warmth and rain throughout the year. Blue Island has a dry season & Creek Island has a cold season.
Chapter 4		

Applying conceptual understanding to explain the phenomenon

Use ideas from the Progress Build and Unit Map to make notes about the conceptual and explanatory builds in your unit.

Chapter 4: How can the WPO prepare for natural hazards that might damage their offices?

Students figure out: Weather-related natural hazards include blizzards, hurricanes, and lightning strikes. It's possible to implement a variety of protective measures for buildings that can minimize damage from these severe weather events. The Wildlife Protection Organization's office building in Florida has already been damaged by a hurricane. Since this area also has a history of lightning strikes, students recommend solutions that could prevent future damage.

	Students determine that they need a method for analyzing sets of data. As they interpret data about orangutans and read about numbers, students learn how to create and interpret line plots to find the temperature range for given locations.	Creek Island had the most consistent amount of rain and the highest temperature range.
Chapter 3	Bar graphs allow them to analyze data over time. They analyze bar graphs of temperature and precipitation for multiple years and read about the weather in two different locations to discover that places have distinct seasonal patterns and climates.	Arc Island has a consistent seasonal pattern of warmth and rain throughout the year. Blue Island has a dry season & Creek Island has a cold season.
Chapter 4	Weather-related natural hazards can provide information to implement protective measures for buildings.	The Wildlife Protection Organization (WPO) gets solutions to prevent weather damage.

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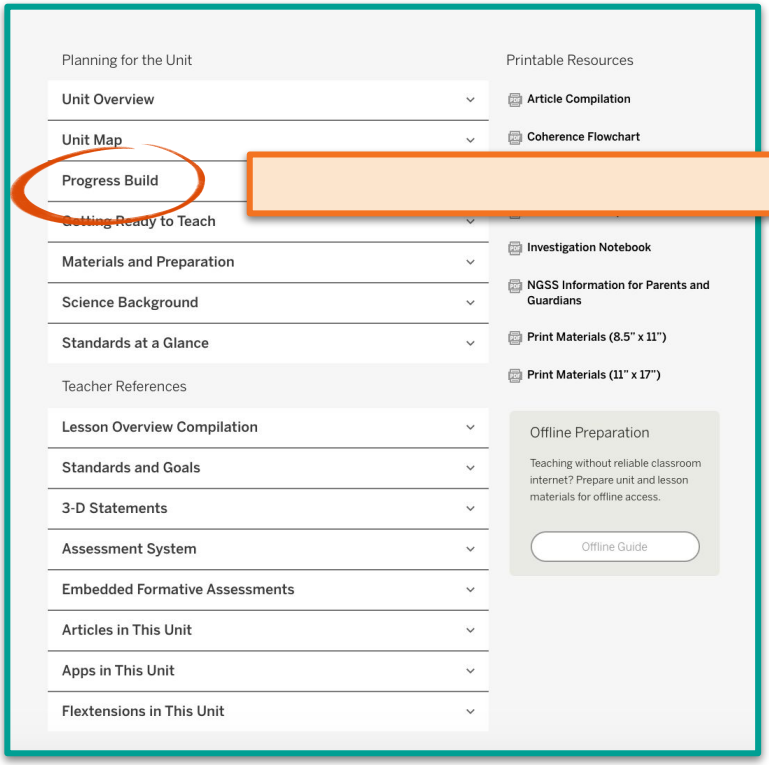
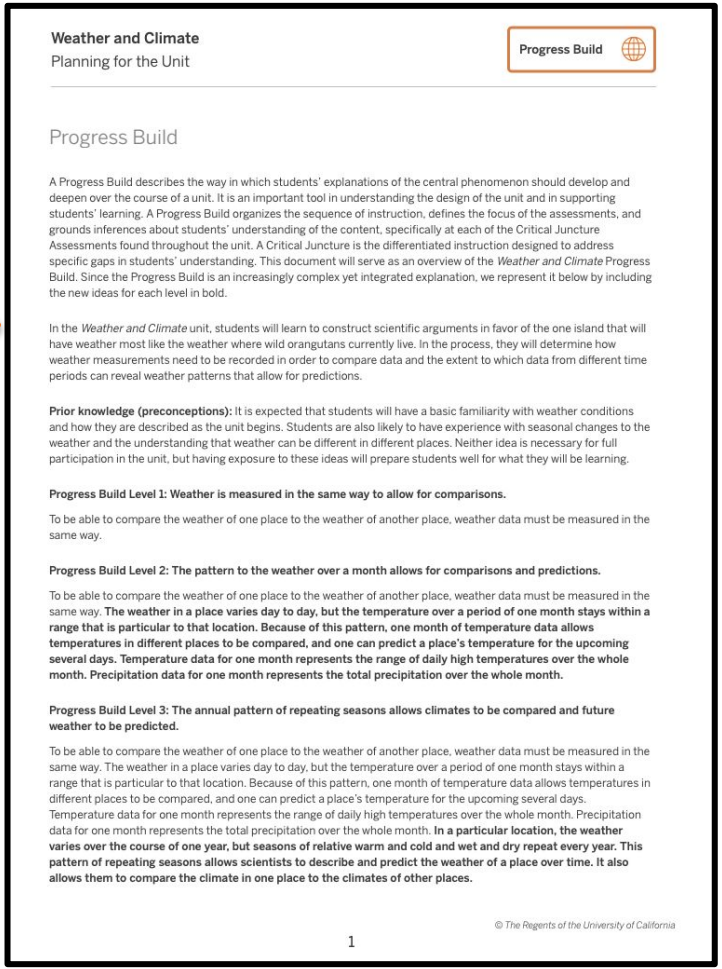
Progress Build





Weather and Climate
Planning for the Unit

Progress Build

Progress Build

A Progress Build describes the way in which students' explanations of the central phenomenon should develop and deepen over the course of a unit. It is an important tool in understanding the design of the unit and in supporting students' learning. A Progress Build organizes the sequence of instruction, defines the focus of the assessments, and grounds inferences about students' understanding of the content, specifically at each of the Critical Juncture Assessments found throughout the unit. A Critical Juncture is the differentiated instruction designed to address specific gaps in students' understanding. This document will serve as an overview of the *Weather and Climate* Progress Build. Since the Progress Build is an increasingly complex yet integrated explanation, we represent it below by including the new ideas for each level in bold.

In the *Weather and Climate* unit, students will learn to construct scientific arguments in favor of the one island that will have weather most like the weather where wild orangutans currently live. In the process, they will determine how weather measurements need to be recorded in order to compare data and the extent to which data from different time periods can reveal weather patterns that allow for predictions.

Prior knowledge (preconceptions): It is expected that students will have a basic familiarity with weather conditions and how they are described as the unit begins. Students are also likely to have experience with seasonal changes to the weather and the understanding that weather can be different in different places. Neither idea is necessary for full participation in the unit, but having exposure to these ideas will prepare students well for what they will be learning.

Progress Build Level 1: Weather is measured in the same way to allow for comparisons.

To be able to compare the weather of one place to the weather of another place, weather data must be measured in the same way.

Progress Build Level 2: The pattern to the weather over a month allows for comparisons and predictions.

To be able to compare the weather of one place to the weather of another place, weather data must be measured in the same way. **The weather in a place varies day to day, but the temperature over a period of one month stays within a range that is particular to that location. Because of this pattern, one month of temperature data allows temperatures in different places to be compared, and one can predict a place's temperature for the upcoming several days. Temperature data for one month represents the range of daily high temperatures over the whole month. Precipitation data for one month represents the total precipitation over the whole month.**

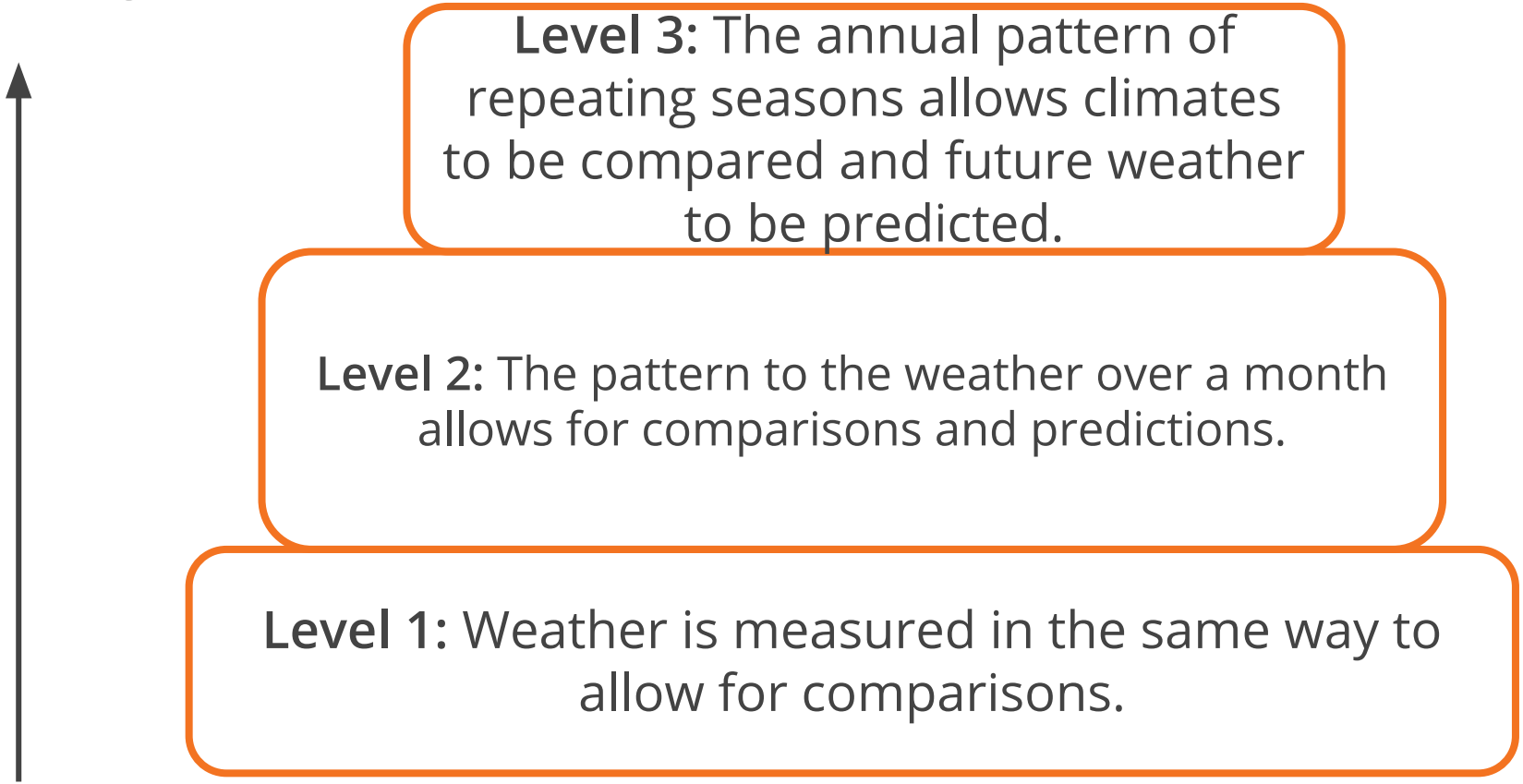
Progress Build Level 3: The annual pattern of repeating seasons allows climates to be compared and future weather to be predicted.

To be able to compare the weather of one place to the weather of another place, weather data must be measured in the same way. The weather in a place varies day to day, but the temperature over a period of one month stays within a range that is particular to that location. Because of this pattern, one month of temperature data allows temperatures in different places to be compared, and one can predict a place's temperature for the upcoming several days. Temperature data for one month represents the range of daily high temperatures over the whole month. Precipitation data for one month represents the total precipitation over the whole month. **In a particular location, the weather varies over the course of one year, but seasons of relative warm and cold and wet and dry repeat every year. This pattern of repeating seasons allows scientists to describe and predict the weather of a place over time. It also allows them to compare the climate in one place to the climates of other places.**

Page 4

Amplify.

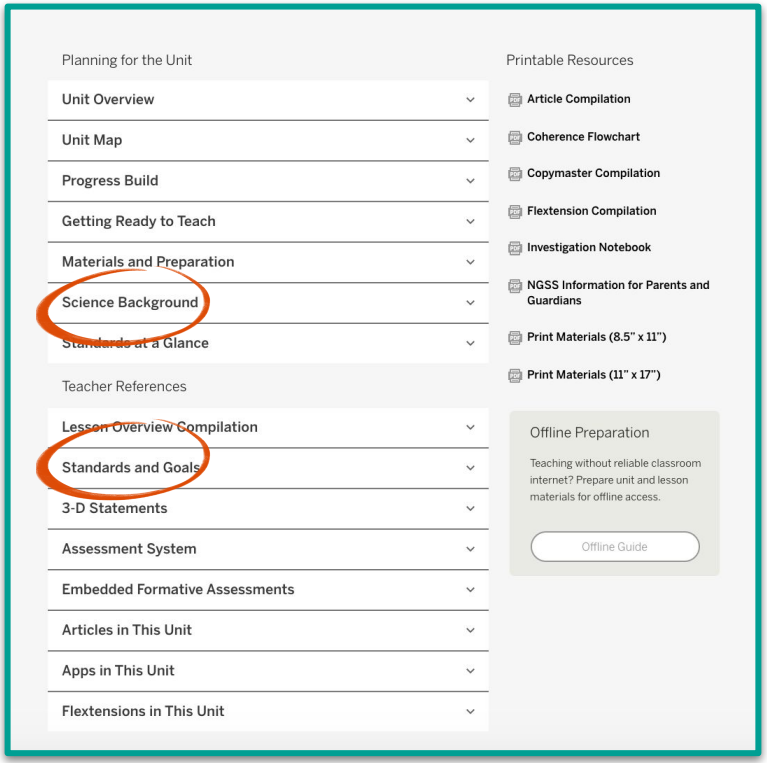
Progress Build



Additional science concept resources for teachers

Science Background:
Adult-level summary of unit science concepts

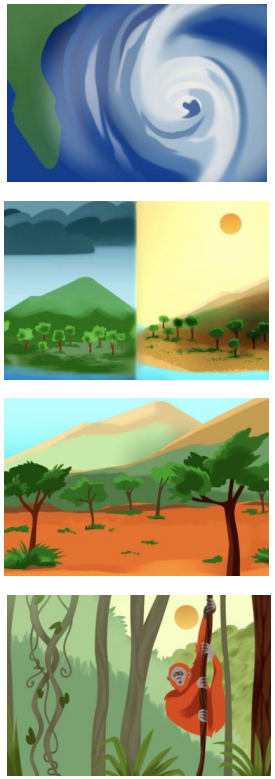
Standards and Goals:
Information about NGSS standards and how they're achieved in the unit



Key Takeaway

Conceptual build and explanatory build

Throughout the unit, students' conceptual understanding grows deeper, allowing their explanations of the phenomenon to become more complete and complex.



Level 3: The annual pattern of repeating seasons allows climates to be compared and future weather to be predicted.

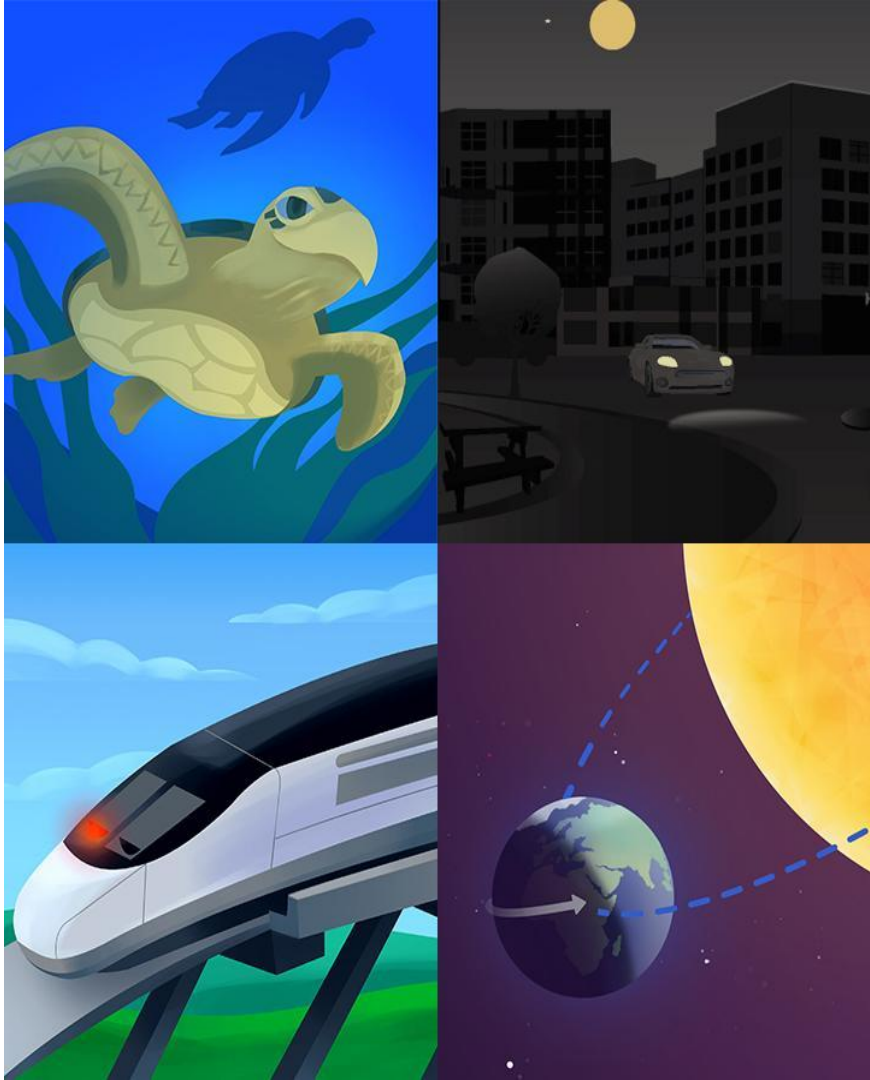
Level 2: The pattern to the weather over a month allows for comparisons and predictions.

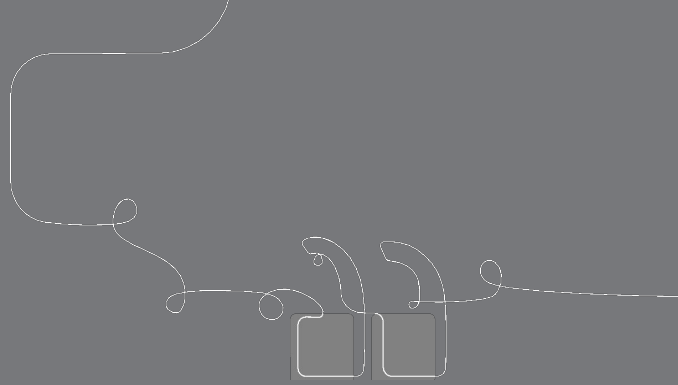
Level 1: Weather is measured in the same way to allow for comparisons.

Reflection

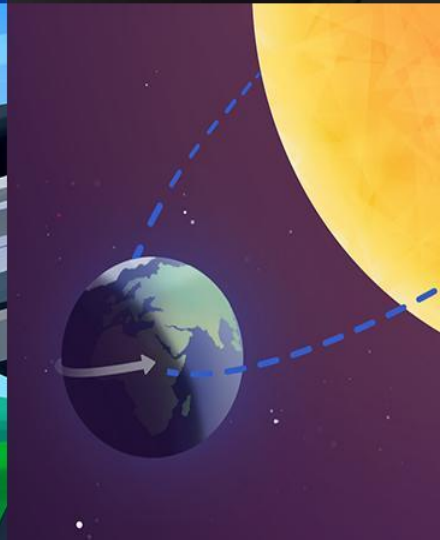
Jamboard

How will understanding the unit's **storyline** help you during **remote instruction**?





Questions?

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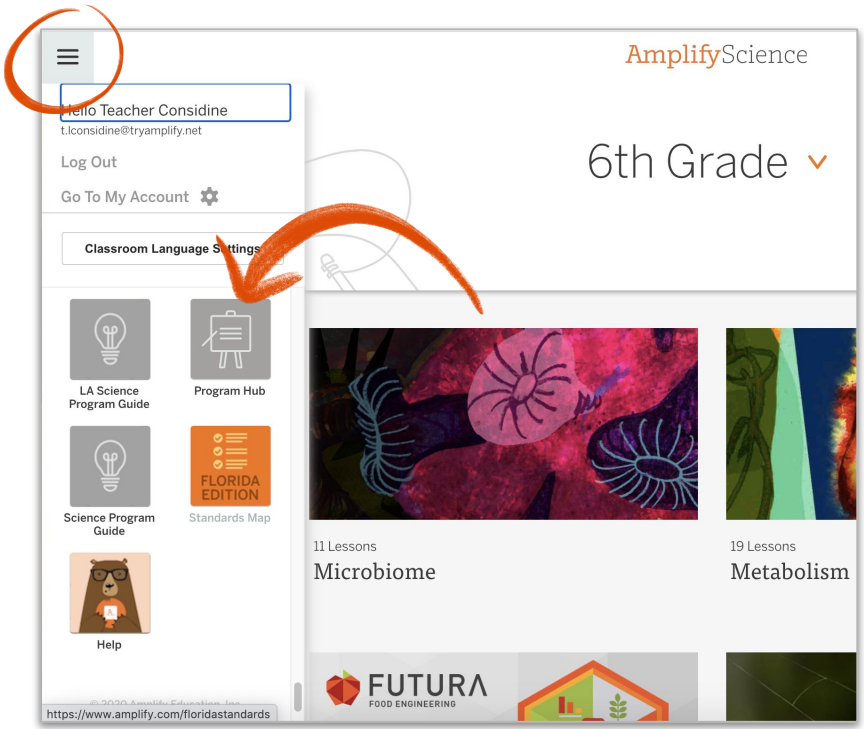
  - Reflection & survey

Accessing the Program Hub



Amplify Science@Home resources reference

Use this guide to keep track of the different resources available for remote and hybrid learning.

Instructional materials: Click Remote and hybrid learning resources, then select your grade level from the dropdown menu. Select your unit.	
@Home Unit resources: These will appear when you select your unit.	
Teacher Overview	General information for teaching with @Home Units, planning information, chapter and lesson outlines
Lesson Index	Lists the original Amplify Science lessons associated with each @Home lesson, and the Investigation Notebook pages, copymasters, and print materials associated with the @Home Unit Student Sheets
Family Overview	Information to send home to families to help them support students with remote learning
Student lesson materials for @Home Units	Printable or digital lessons condensed to be about 30 minutes long. You can access compilations of all student materials for your unit, or select from individual lessons.
@Home Video resources: After selecting your grade level and unit, select the @Home Videos tab below your unit title.	
@Home Video links	Links to video lessons that include all activities from the original units. Lesson playlists are on YouTube, and they autoplay in a playlist form.
Additional remote and hybrid instructional materials: These can be accessed from the tabs below your unit title.	
Hands-on investigations support	Videos of every unit's hands-on activities (note, these videos also appear in the student lesson materials).
Read-aloud videos	Link to a YouTube playlist of read-aloud videos of all books in your unit.
Orientation and Tutorials: Click Remote and hybrid learning resources, then select your grade from the dropdown menu. Click Orientation and Tutorials. You'll not only find videos to help you use the resources, but also videos you can share with students and caregivers.	

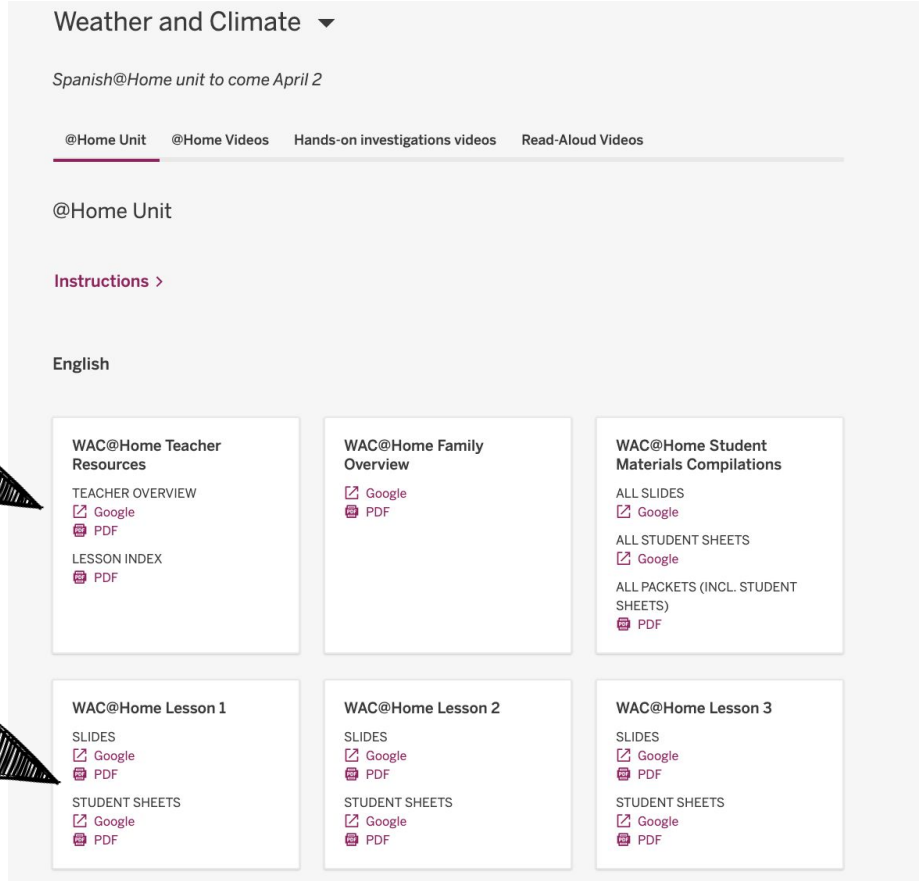
Program Hub work time

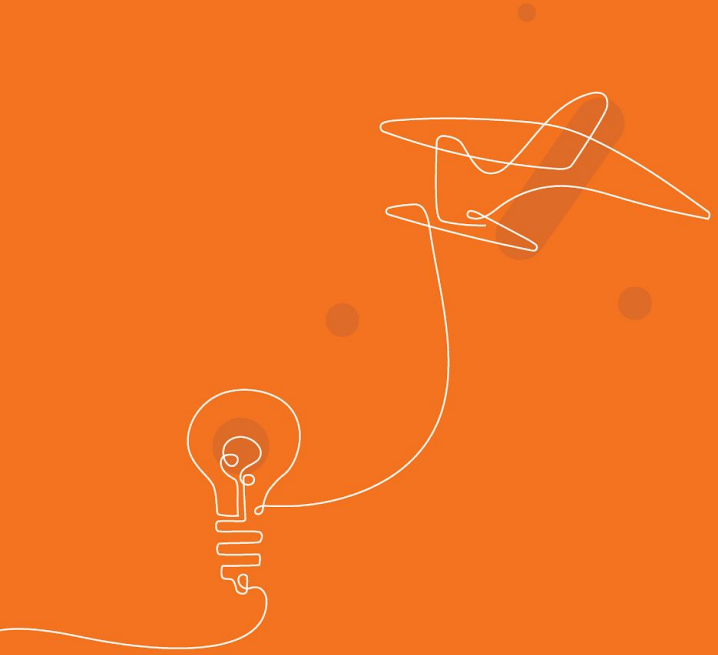
5 minutes

Navigate to the Program Hub. Open:

- Teacher Overview
- Lesson Index
- @Home Lesson 1
  - Slides- Google
  - Student Sheets- Google

If you have extra time, explore the other tabs.





Lesson Walkthrough

@Home Lesson 1

Adapted from: Amplify Science *Weather and Climate* Lesson 1.1

Key activities

- **Introducing the Orangutan Reserve:** Students are introduced to the unit, to the task of figuring out where to build an orangutan reserve, and to their role as meteorologists.
- **Talk:** Students watch a video of different weather conditions and work with a partner to discuss their observations.
- **Write:** Students write their initial thoughts about weather in response to questions the Wildlife Protection Organization has received from various people.

Weather and Climate

@Home Lesson 1

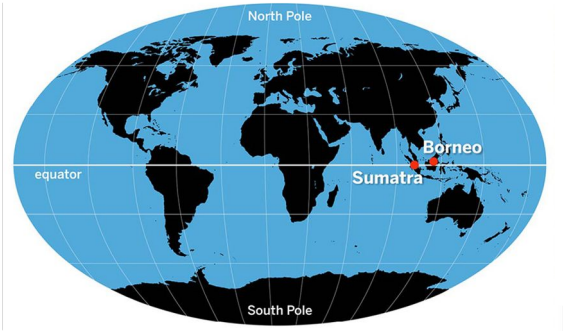
AmplifyScience

We are starting a new science unit called ***Weather and Climate*.**

We will be working with the **Wildlife Protection Organization** to help orangutans.

The Wildlife Protection Organization is an organization that works to protect wildlife around the world. Leaders of this organization have asked for our help on a project that will protect the very few remaining wild orangutans.

Where Orangutans Live



Observe these images, which show a map and and a photo of the place where orangutans live.

What does it **look like** in the area where orangutans live?

What do you see in the photo?

You probably observed that where orangutans live, it is very green and there are a lot of plants.

It is also very hot and very rainy where orangutans live. That is why so many different plants can grow.

In the wild, orangutans only live on the islands of Borneo and Sumatra. These are some of the **hottest, rainiest places** in the world.

There are places on Earth that are hotter than these islands and places that are rainier, but Borneo and Sumatra are special because of their **combination of heat and raininess.** There are **very few places on Earth** that have weather that is both **very hot and very rainy.**

Destroying the Forests

People are **destroying the rain forests** where orangutans live so they can plant oil palm trees.

Destroying the Forests

People sell the oil from palm trees for a lot of money.

Palm oil is used to make many things you buy at the grocery store: shampoo, toothpaste, bread, ice cream, cookies, crackers, soap for washing dishes and washing clothes, cooking oil, and more.

Oil palm trees

Rain forest

Palm trees are not places where orangutans can live.

Orangutans spend most of their time high up in **very tall forest trees** eating different kinds of ripe fruit and insects. As more palm trees are planted, **rain forest areas** where orangutans live are **cut down and burned.**

WILDLIFE PROTECTION ORGANIZATION

Which island's weather would be best for orangutans?

The Wildlife Protection Organization is going to **create a reserve** where orangutans will have what they need to survive. They've asked for our help **choosing an island** for the reserve.

WILDLIFE PROTECTION ORGANIZATION

Which island's weather would be best for orangutans?

The Wildlife Protection Organization has three islands in mind: Arc Island, Blue Island, and Creek Island. They have asked us to figure out which island's weather would be best (hottest and rainiest) for orangutans.

To help the Wildlife Protection Organization, we will be taking on the role of meteorologists.

What do you think **meteorologists** study?

What **tools** do they use in their work?

What do they **do?**

In the role of **meteorologists**, we can help the Wildlife Protection Organization select the **island** with the **best weather** for orangutans.

meteorologist

a scientist who studies and predicts weather

Glossary (continued)

pattern: something we observe to be similar over and over again
patrón: algo que observamos que sea similar una y otra vez

precipitation: water that falls to Earth as rain, snow, sleet, or hail
precipitación: agua que cae a la Tierra como lluvia, nieve, aguanieve o granizo

range: the span betwee
rango: el intervalo entre
en un grupo

seasons: times of year
estaciones: épocas del
son más comunes

temperature: how hot c
temperatura: qué tan c

visualize: to make a pic
sources
visualizar: hacer una in
fuentes

weather: what is happe
precipitation, temperatu
condiciones atmosféri
el cielo, incluyendo la p

Wea

Glossary

argument: the use of evidence to say why one idea is the best
argumento: el uso de evidencia para decir por qué una idea es la mejor

claim: a proposed answer to a question
afirmación: una respuesta propuesta para una pregunta

climate: the typical weather in a place over a long period of time
clima: las condiciones atmosféricas típicas de un lugar durante un largo periodo de tiempo

data: observations or measurements recorded in an investigation
datos: observaciones o mediciones apuntadas en una investigación

evaluate: to judge how useful or accurate something is
evaluar: juzgar qué tan útil o acertado es algo

evidence: information that supports an answer to a question
evidencia: información que respalda una respuesta a una pregunta

graph: a way of organizing numbers that can help you see patterns
gráfica: una manera de organizar números que te puede ayudar a ver patrones

measure: to use a tool to find out information such as how heavy, how big, how fast, or how hot or cold something is
medir: usar un instrumento para averiguar información tal como qué tan pesado, qué tan grande, qué tan rápido o qué tan caliente o frío es algo

meteorologist: a scientist who studies and predicts weather
meteorólogo/a: un/a científico/a que estudia y pronostica las condiciones atmosféricas

natural hazard: severe weather or another natural event that can cause damage
peligro natural: condiciones atmosféricas severas u otro evento natural que puede causar daño

Weather and Climate @Home Lesson 1

You have a **glossary** you can use if you need to find definitions for science words we are using.

In this unit, we are going to be learning about ideas that will help us understand this question:

Unit Question

How can meteorologists predict the weather for a particular place and time?

As meteorologists, we will start by thinking about the weather on Arc, Blue, and Creek Islands. For the next few lessons, we will investigate this question:

Chapter 1 Question

Which island's weather would be best for orangutans?

@Home Lesson 1

Adapted from: Amplify Science *Weather and Climate* Lesson 1.1

Key activities

- **Introducing the Orangutan Reserve:** Students are introduced to the unit, to the task of figuring out where to build an orangutan reserve, and to their role as meteorologists.
- **Talk:** Students watch a video of different weather conditions and work with a partner to discuss their observations.
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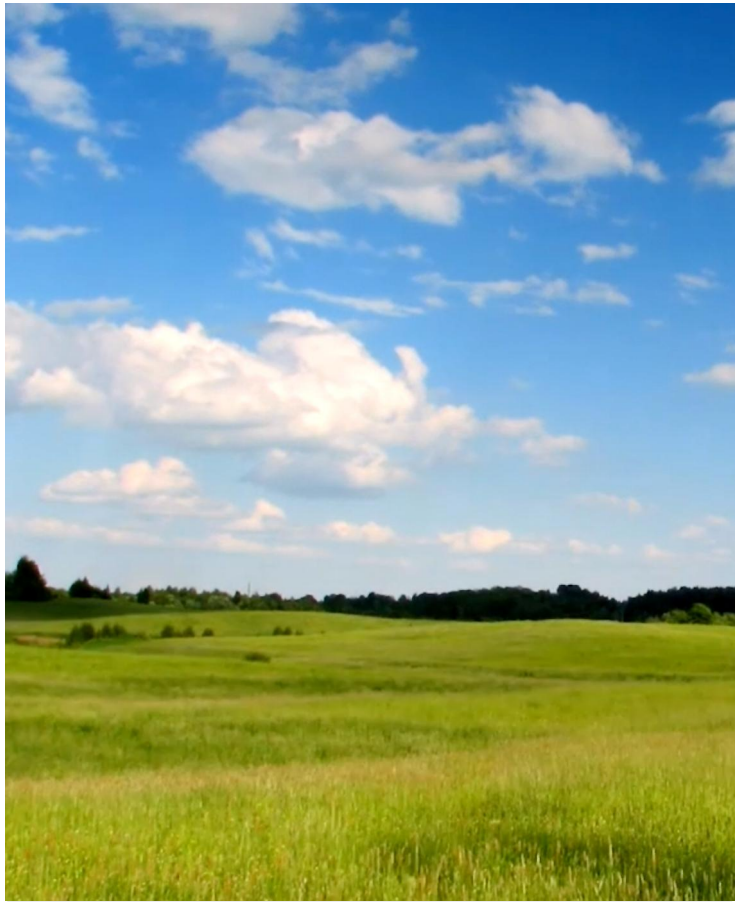
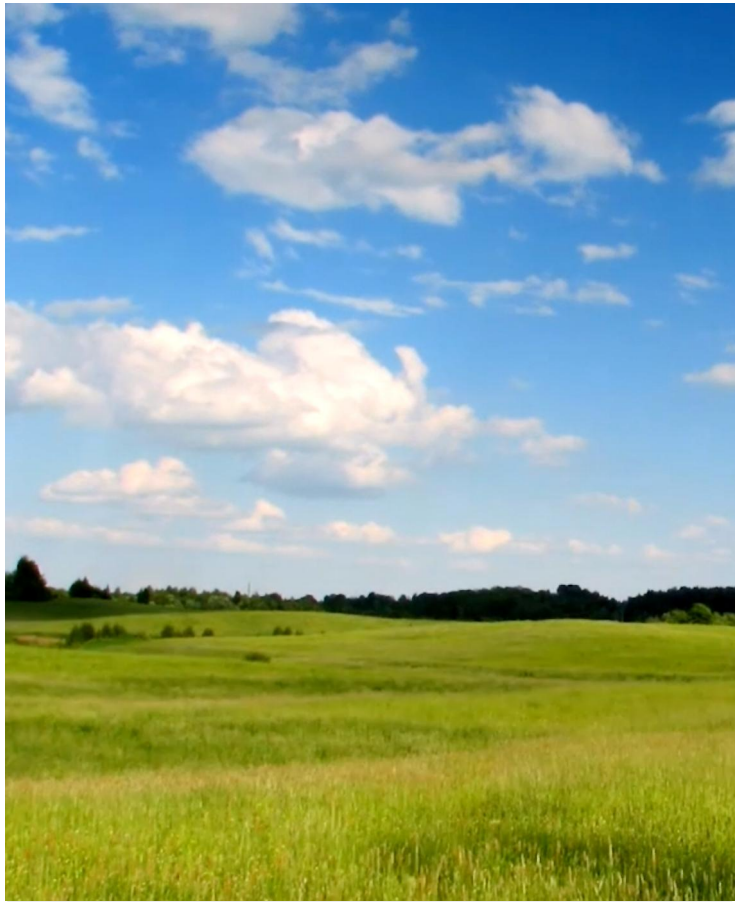


Next, you'll watch a video about weather. As you watch, think of ways to **describe what you see.** For example, if you observe sunny weather, you might think, "sunny" or "the sun."



Next, you'll watch a video about weather and talk with a partner.

You will need a **partner** for this. Your partner can be a family member, a friend or classmate on the phone, a stuffed animal, or even a pet!

Watch the video on the next slide.

As you watch, think of ways to describe what you see. For example, if you observe sunny weather, you might think, “sunny” or “the sun.”

Note: All videos in this @Home Unit can be viewed on a smartphone or any other connected device.

Using the print version? Watch the video here: **tinyurl.com/AMPWC-01**

Talk with your partner about the video.

What are some **things you observed about the weather** while you watched this video?

rain

snow

sleet

hail

You probably observed some things about weather like rain, snow, and hail.

These are all forms of **precipitation.**

Three forms of precipitation include **frozen water.**

This is the science meaning of the word precipitation:

precipitation

water that falls to Earth as rain, snow, sleet, or hail

What is the weather like outside today where you are?

What can you observe about the **temperature, precipitation,** and **wind?**

This is the end of the partner work in this lesson.

@Home Lesson 1

Adapted from: Amplify Science *Weather and Climate* Lesson 1.1

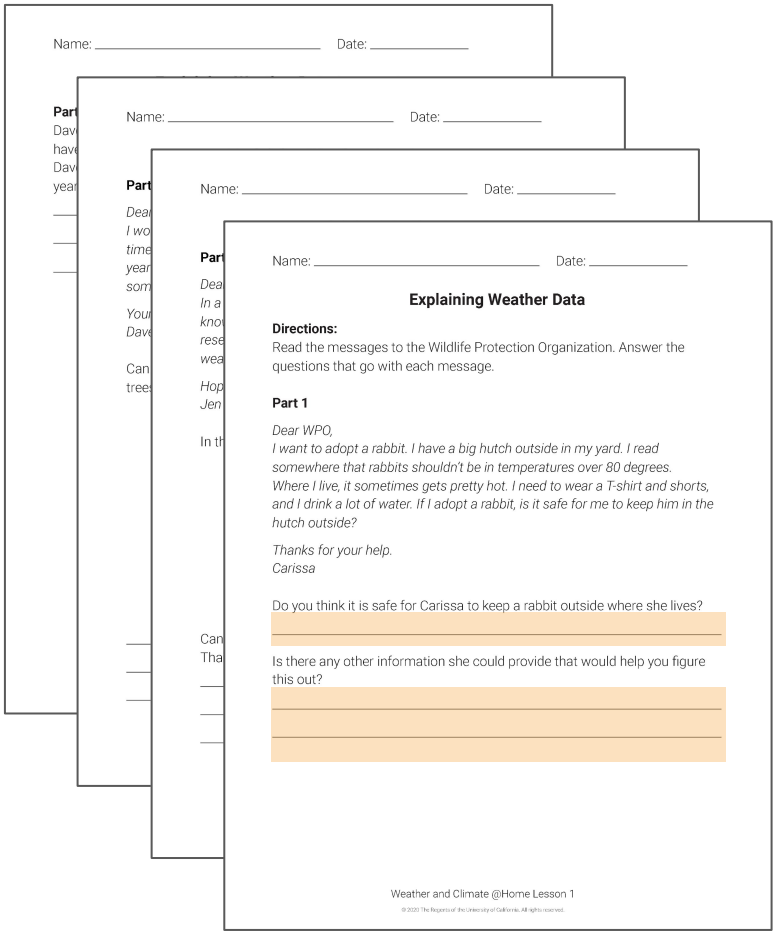
Key activities

- **Introducing the Orangutan Reserve:** Students are introduced to the unit, to the task of figuring out where to build an orangutan reserve, and to their role as meteorologists.
- **Talk:** Students watch a video of different weather conditions and work with a partner to discuss their observations.
- **Write:** Students write their initial thoughts about weather in response to questions the Wildlife Protection Organization has received from various people.

The Wildlife Protection Organization receives many emails from people who want to learn more about animals, plants, and weather.

Next, you will read some of the **messages** and you will try to answer some of their **questions**.

This is an opportunity to write your first ideas about weather. Don’t worry about being right or knowing everything about weather.



Find the Explaining Weather Data pages.

Answer the questions to explain your ideas.

End of @Home Lesson

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

Amplify.

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Adapted from: Amplify Science *Weather and Climate* Lesson 1.1

Key activities

- **Introducing the Orangutan Reserve:** Students are introduced to the unit, to the task of figuring out where to build an orangutan reserve, and to their role as meteorologists.
- **Talk:** Students watch a video of different weather conditions and work with a partner to discuss their observations.
- **Write:** Students write their initial thoughts about weather in response to questions the Wildlife Protection Organization has received from various people.

Ideas for synchronous or in-person instruction

While meeting, introduce the Orangutan's habitat, the problem students are asked to solve in the unit and students' role as meteorologists. Lead a discussion about what meteorologists study and how they work. If you have additional time, you may decide to also show students the video about weather and have students share their observations.

Suggestions for Online Synchronous Time

Online synchronous time

Online discussions: It's worthwhile to establish norms and routines for online discussions in science to ensure equity of voice, turn-taking, etc.

Digital tool demonstrations: You can share your screen and demonstrate, or invite your students to share their screen and think-aloud as they use a Simulation or other digital tool.

Interactive read-alouds: Screen share a digital book or article, and pause to ask questions and invite discussion as you would in the classroom.

Shared Writing: This is a great opportunity for a collaborative document that all your students can contribute to.

Co-constructed class charts: You can create digital charts, or create physical charts in your home with student input.

page 8

Questioning Strategies

Pages 9-10

- Questions to assess students' knowledge and skills
- Questions to promote student-to-student discourse
- Questions to guide student learning

Questioning Strategies for Grades 2–5

Overview of the Role of Open-Ended Questioning

Repeated opportunities for students to listen to and speak with others are essential for promoting deep thinking and learning in science. Meaningful teacher-initiated questions create a rich context for promoting open-ended student dialogue and discussion. The *Science Framework for California Public Schools* explains that "Simply providing opportunities to talk is not enough. Effective questioning can scaffold student thinking" (*California Science Framework*, 2016, Chapter 11, p. 21). The Framework suggests that "Teacher-initiated questions are key to helping students expand their communication, reasoning, arguments, and representation of ideas in science" (*California Science Framework*, 2016, Chapter 11, p. 21). The types of questions that teachers pose are instrumental in supporting student understanding. The Framework calls for more open-ended teacher questioning that "prompts and facilitates students' discourse and thinking" and less teacher questioning that prompts "students to seek a confirmatory right answer" (*California Science Framework*, 2016, Chapter 11, p. 6).

The Amplify Science Teacher's Guide is infused with opportunities for students to discuss their developing ideas in response to open-ended prompts. Questions to promote student thinking and discussion are purposefully built into the Teacher's Guide instructional steps and Teacher Support notes that surround all our hands-on and reading activities. In addition, all units include discourse routines (e.g., Shared Listening, Think-Draw-Pair-Share, Write and Share, Word Relationships) that provide opportunities for students to use focal unit vocabulary as they think and talk with partners and the class about their understanding of key science content and practices. Many of the On-the-Fly Assessment suggestions provided throughout each unit offer open-ended follow-up questions that can be used to probe student thinking and formatively assess student understanding of the content. In addition, each unit includes multiple opportunities for students to respond to open-ended questions through additional modalities (e.g., in writing, with diagrams, through a kinesthetic model).

While the prompts embedded in each of the opportunities mentioned above provide fertile ground for student discussion, continued use of flexible, open-ended questions is invaluable for assessing students' knowledge and skills, promoting student-to-student discourse, and guiding student learning. A collection of grade-appropriate questions follows that can be used for these purposes. You will also find a list of activity types included within the Amplify Science curriculum that are particularly conducive to the use of these questions. You may choose to print out these questions and activity types for reference throughout your instruction.

- Discussion of photographs and videos
- Discourse routines (e.g., Thought Swap, Think-Draw-Pair-Share)
- Science Practice Tool activities (modeling, sorting, graphing, diagramming, data)
- Simulation activities (grades 4–5)
- Evidence Card sorts
- Evidence Circles
- Roundtable Discussions

Hands-on Suggestions

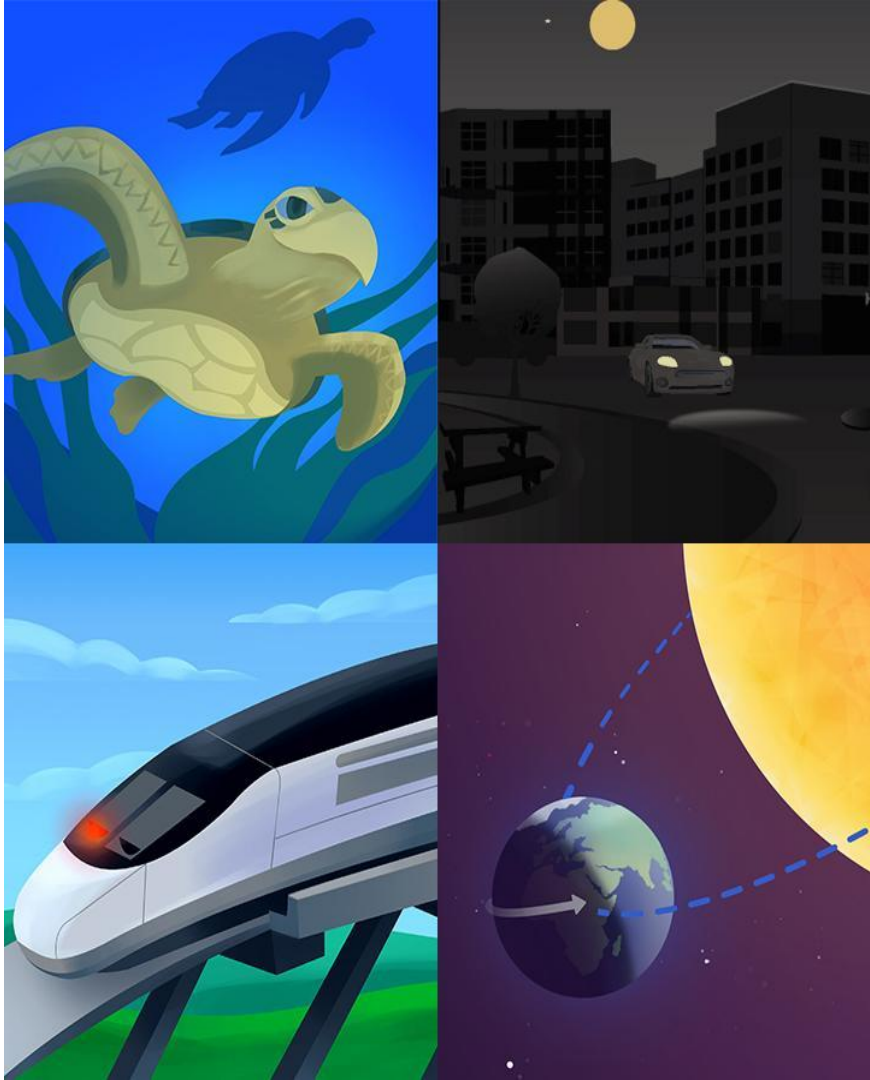
Grade 3 **Unit:** Weather and Climate Hands-On Investigation Video Playlist

Lesson	Activity	@Home Lesson	Activity Description	Suggested Modality	Reasoning	Teacher/Student Provided Materials	Consumable Materials	Non-Consumable Materials	LAUSD Replacement Materials
1.2	Measuring Rainfall	@Home lesson 2	Students explore how to measure rainfall in a way that allows them to compare different amounts of rain.	hands-on	This lets students figure out how to measure using different items as their measuring tool.	water	1 plastic 9 oz cups with 4 holes (Use compass point or scissors to poke 4 4mm holes into the bottom of each cup), 2 plastic 9 oz cups labeled X and Y, wooden stick	10 interlocking plastic cubes, large plastic rectangular container	3 9 oz cups per student, wooden stick
1.3	Measuring Temperature	@Home lesson 3	Students measure water temperature with thermometers and realize that thermometers provide data that you can compare	watch video	This requires multiple thermometers and the use of hot water. For safety purposes, this should be done with supervision.				
4.3	Preparing for Natural Hazards	Not covered in @ Home lessons	Students use simple materials to build fortified structures that are meant to withstand a hurricane	hands-on	This can be modified to test the structures students build at home. They would need supervision when it comes to using a hair dryer to represent hurricane winds. (This could also be done by having multiple people blow on the structure at the same time.)	2 pennies, 2 index cards, tape, glue, scissors, hair dryer	16 straws, 16 wooden sticks per student		16 straws, 16 wooden sticks per student

Reflection

Jamboard

How would you teach this lesson?
How might you include suggestions for online synchronous time and/or questioning strategies?



Multi-day planning, including planning for differentiation and evidence of student work

Day @Home Lesson 1

Minutes for science: 15 min

Instructional format:
- [x] Asynchronous
- [ ] Synchronous

Lesson or part of lesson:
Introduce, student role (meteorologist))n and unit context (slides 1-13) (Building an orangutan reserve)

Mode of instruction:
- [x] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [x] Students work independently using:
  - [ ] Printed @Home Slides
  - [x] Digital @Home Slides
  - [ ] @Home Videos

Students will...
View slides and learn about the orangutans that live on the islands of Borneo and Sumatra. They will learn about the destruction of the rainforests. Students will jot down initial ideas about the role of meteorologists.

Teacher will...
Assign slides 1-13 in Schoology and provide direction for students to jot down their ideas about the role of meteorologists.

Minutes for science: _____

Instructional format:
- [ ] Asynchronous
- [x] Synchronous

Lesson or part of lesson:

Mode of instruction:
- [ ] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [ ] Students work independently using:
  - [ ] Printed @Home Slides
  - [ ] Digital @Home Slides
  - [ ] @Home Videos

Students will...

Teacher will...

Multi-day planning, including planning for differentiation and evidence of student work

Day @Home Lesson 1

Minutes for science: 15 min.

Instructional format:
- [x] Asynchronous
- [ ] Synchronous

Lesson or part of lesson:
Introduce, student role (marine biologists)n and unit context (slides 1-13)

Mode of instruction:
- [x] Preview
- [ ] Review
- [ ] Teach full lesson live
- [ ] Teach using synchronous suggestions
- [x] Students work independently using:
  - [ ] Printed @Home Slides
  - [x] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
View slides and learn about the Blue Bay National Park and studying dolphin communication. Jot down initial ideas about dolphin communication.	Assign slides 1-15 in Schoology and provide direction for students to jot down their ideas about the unit problem to share when the class meets together.

Minutes for science: 30 min

Instructional format:
- [ ] Asynchronous
- [x] Synchronous

Lesson or part of lesson:
Summarize the introduction to the unit. Introduce the chapter question and vocabulary and glossary resource. Have students watch the video and discuss what they observed. (Slides 14-29)

Mode of instruction:
- [ ] Preview
- [ ] Review
- [ ] Teach full lesson live
- [x] Teach using synchronous suggestions
- [ ] Students work independently using:
  - [ ] Printed @Home Slides
  - [ ] Digital @Home Slides
  - [ ] @Home Videos

Students will...	Teacher will...
Discuss their initial ideas about what meteorologists do and the tools they use. Students discuss what they viewed in the weather video.	Introduce the unit question Present slides 14-20 View the video and lead a discussion. Direct students to jot their ideas on the Explaining weather data pages that is assigned in schoology. (student sheets @Home lesson 1) Have students read the email messages (on the google sheets) and write their ideas.

Look at the *Students will* columns. What are students working in the lesson(s) that you could collect, review, or provide feedback on?
See Some Types of Written Work in Amplify Science to the right for guidance.

If there isn't a work product listed above, do you want to add one? Make notes below.

Asynchronous: students jot down their initial ideas

Synchronous: discuss their ideas about weather after observing the video. (Use a schoology discussion board or jamboard)

Some Types of Written Work in Amplify Science

- Daily written reflections
- Homework tasks
- Investigation notebook pages
- Written explanations (typically at the end of Chapter)
- Diagrams
- Recording pages for Sim uses, investigations, etc

How will students submit this work product to you?
See the Completing and Submitting Written Work tables to the right for guidance on how students can complete and submit work.

Asynchronous: students jot initial ideas on paper or digitally to bring with them to the asynchronous lesson

Synchronous: Students will use the student sheets to record their observations and complete the pre unit assessment and submit through Schoology.

Completing Written Work	Submitting Written Work
• Plain paper and pencil (videos include prompts for setup) • (6-8) Student platform • Investigation Notebook • Record video or audio file describing work/answering prompt • Teacher-created digital format (Google Classroom, etc)	• Take a picture with a smartphone and email or text to teacher • Through teacher-created digital format • During in-school time (hybrid model) or lunch/materials pick-up times • (6-8) Hand-in button on student platform

How will you differentiate this lesson for diverse learners? (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)

Look at the *Students will* columns. What are students working in the lesson(s) that you could collect, review, or provide feedback on?
See Some Types of Written Work in Amplify Science to the right for guidance.

If there isn't a work product listed above, do you want to add one? Make notes below.

Asynchronous: students jot down their initial ideas

Synchronous: record observations of dolphin sounds.

Some Types of Written Work in Amplify Science

- Daily written reflections
- Homework tasks
- Investigation notebook pages
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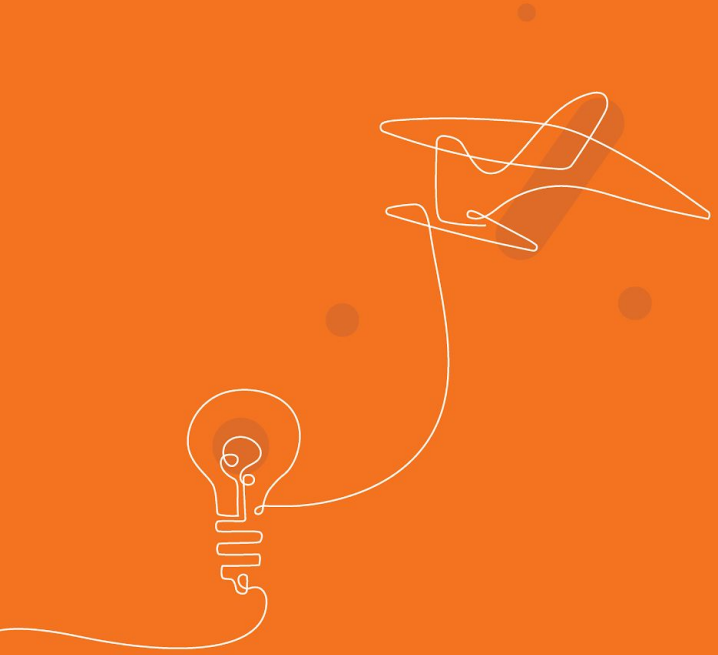
How will you differentiate this lesson for diverse learners? (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)

Supports:

- Encourage students to engage in student-to-student discussion
- Provide alternate means of expressing ideas (drawings, discussion boards, etc.)
- Provide students with the Multi-Language Glossary where appropriate, add images
- Leverage primary language for discussions
- Strategic grouping
- You may want to extend the lesson and provide more whole class time to talk about the video.



Collaborative Planning

Breakout groups

pages 13-16

Discussion prompts

Planning:

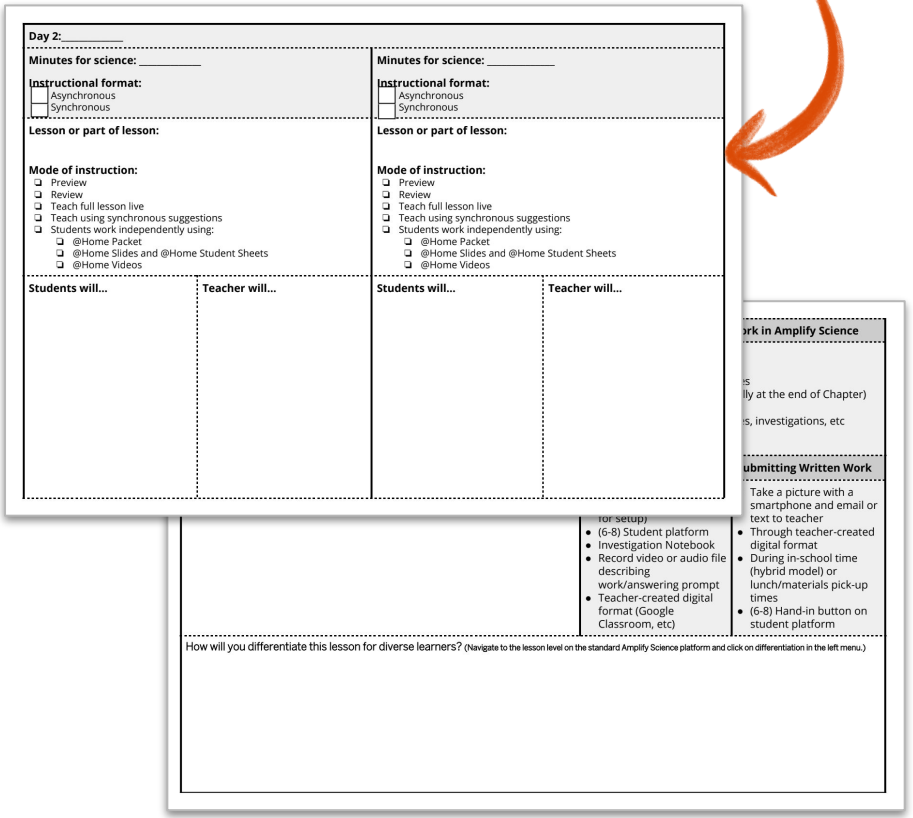
- Dig into the @Home Resources for your assigned lesson.

Student work:

- Discuss how you can collect evidence of student work

Differentiation:

- Consider how you might differentiate your lesson



Day 2:_____

Minutes for science: _____ Instructional format: ☐ Asynchronous ☐ Synchronous	Minutes for science: _____ Instructional format: ☐ Asynchronous ☐ Synchronous
Lesson or part of lesson: Mode of instruction: ❑ Preview ❑ Review ❑ Teach full lesson live ❑ Teach using synchronous suggestions ❑ Students work independently using: ❑ @Home Packet ❑ @Home Slides and @Home Student Sheets ❑ @Home Videos	Lesson or part of lesson: Mode of instruction: ❑ Preview ❑ Review ❑ Teach full lesson live ❑ Teach using synchronous suggestions ❑ Students work independently using: ❑ @Home Packet ❑ @Home Slides and @Home Student Sheets ❑ @Home Videos

Students will...	Teacher will...	Students will...	Teacher will...

rk in Amplify Science

lly at the end of Chapter)

s, investigations, etc

ubmitting Written Work

- Take a picture with a smartphone and email or text to teacher
- Through teacher-created digital format
- During in-school time (hybrid model) or lunch/materials pick-up times
- (6-8) Hand-in button on student platform

for setup)
- (6-8) Student platform
- Investigation Notebook
- Record video or audio file describing work/answering prompt
- Teacher-created digital format (Google Classroom, etc)

How will you differentiate this lesson for diverse learners? (Navigate to the lesson level on the standard Amplify Science platform and click on differentiation in the left menu.)

Breakout groups

pages 13-16

Please choose a person from your group to share out!

Planning:

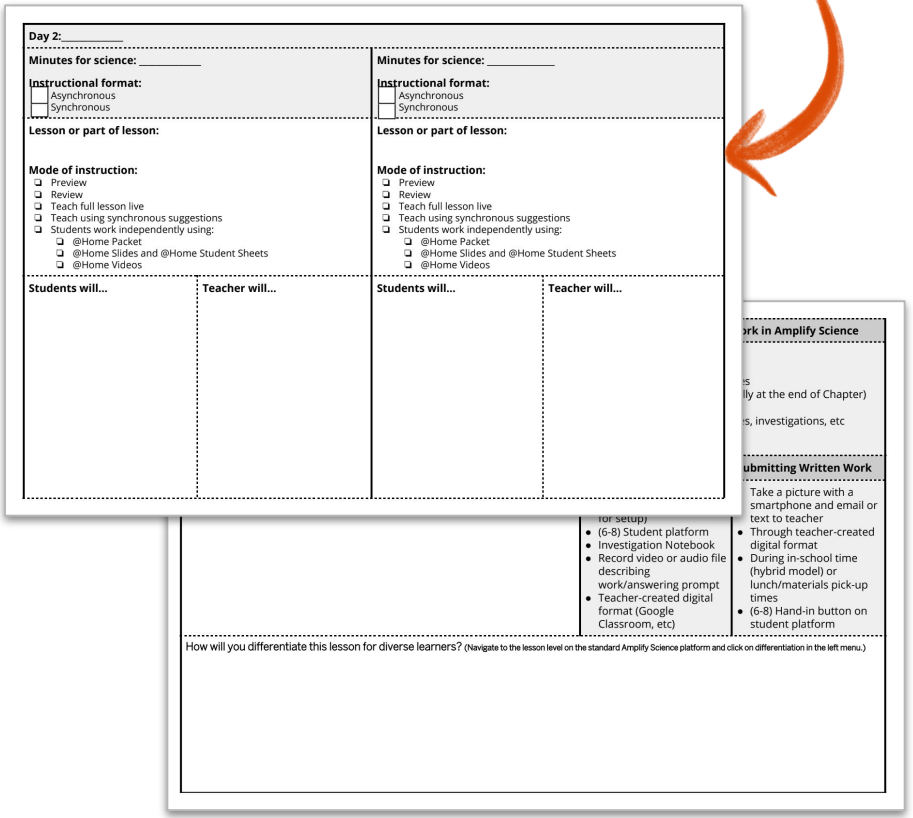
- What did you will prioritize for synchronous vs. asynchronous time?

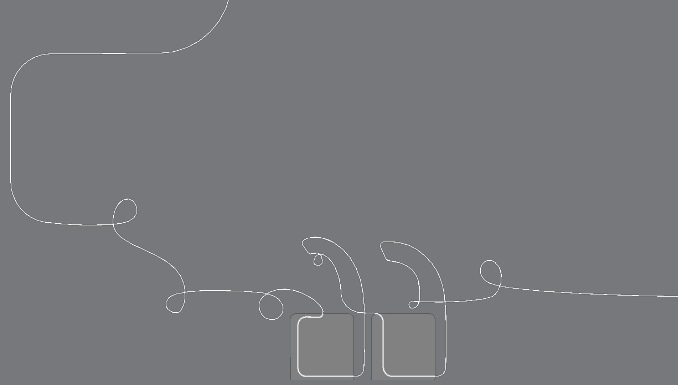
Student work:

- How do you plan to collect evidence of student work?

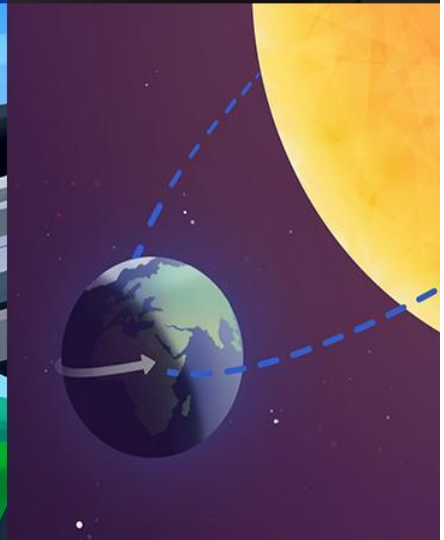
Differentiation:

- How do you plan to differentiate the lesson for diverse learners?





Questions?

Plan for the day

- **Framing the day**
  - Remote learning reflection
  - Revisiting the Amplify Approach
- **Phenomenon at the unit level**
  - Navigation refresher (standard curriculum)
  - Storyline and science concepts
  - Unit internalization work time
- **Planning to teach**
  - Navigation refresher (@Home resources)
  - Lesson walkthrough
  - Collaborative planning time
- **Closing**
  - Reflection & survey

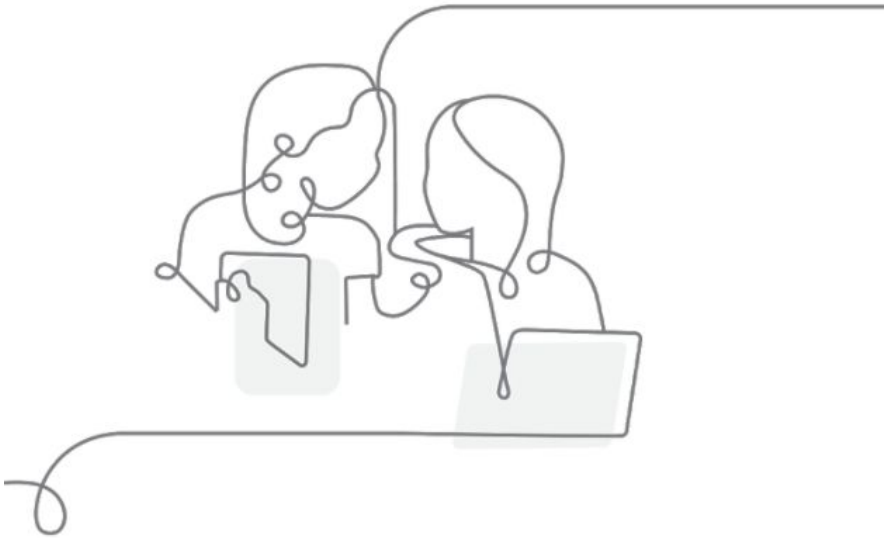
Head or hands reflection

Reflect independently, then volunteer to share

Based on our work today with the unit storyline and the role of evidence sources....

Head: What will you keep in mind while you plan?

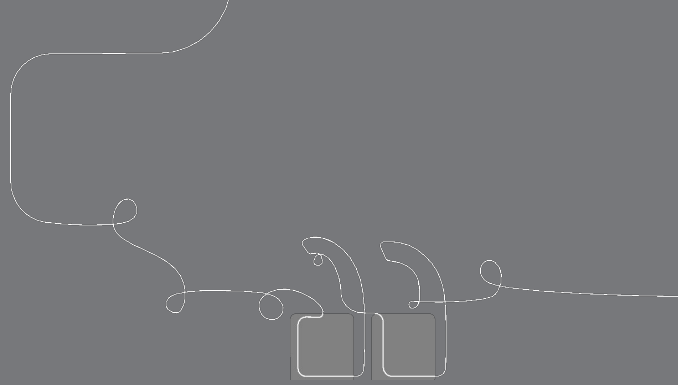
Hands: What will you do when you're teaching?



During this workshop did we meet our objectives?

Do you feel able to…

- Describe how students' conceptual understanding builds through the unit?
- Explain how students figure out the phenomenon throughout the unit?
- Make a plan for implementing Amplify Science within your class schedule and instructional format?

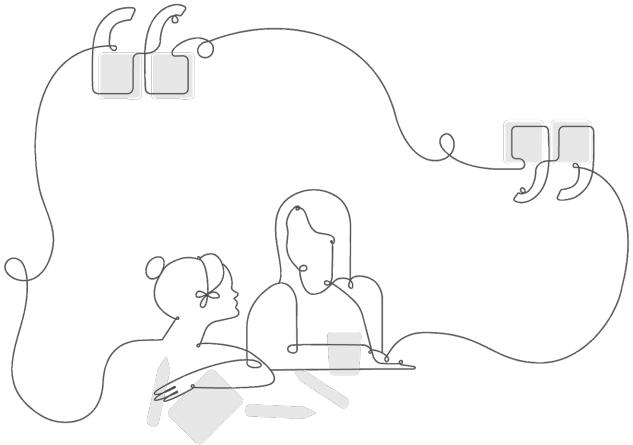


Final questions?

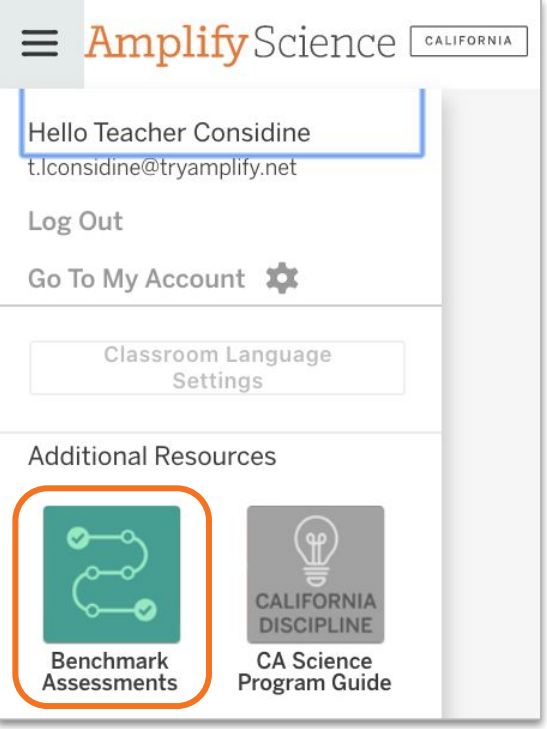
Upcoming LAUSD Office Hours

Twice Monthly on Thursdays, 4:30-5:30pm:

- April 8
- April 22
- May 13
- May 27



http://bit.ly/TK-6OfficeHours



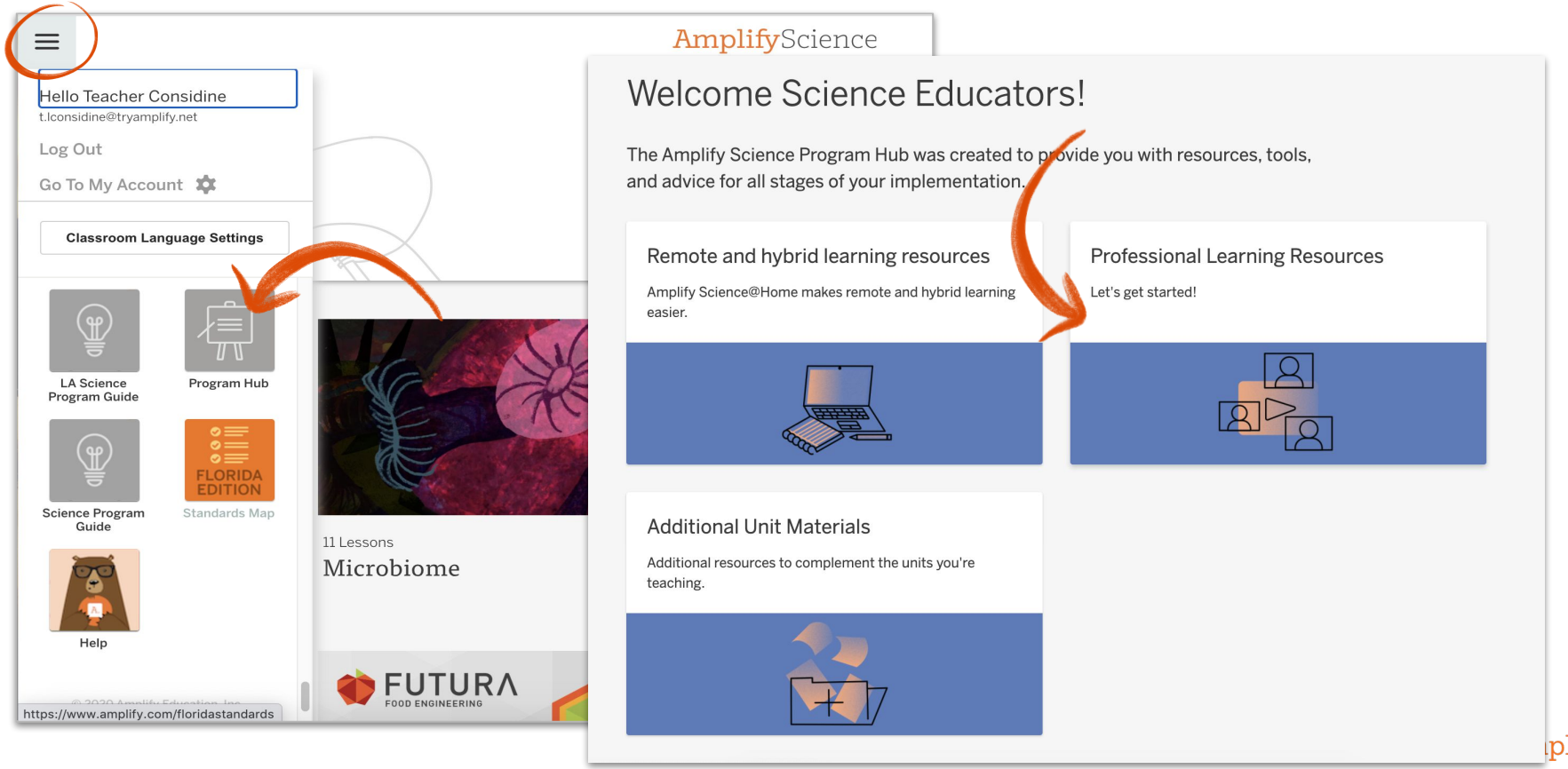
Benchmark Assessments

In conjunction with Amplify Science, teachers can administer benchmark assessments to evaluate students' progress toward meeting Next Generation Science Standards several times each school year.

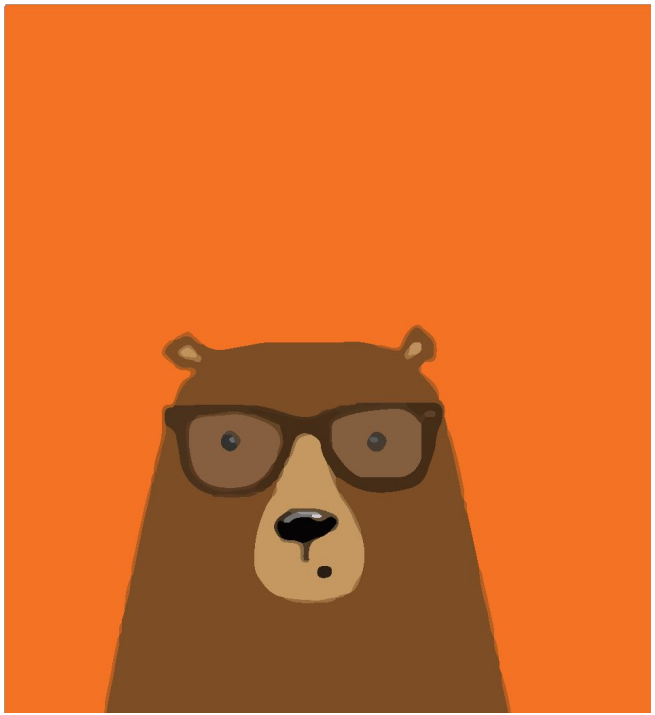
Designed to test all standards across grades 3-8. The assessment forms are paced to align with the Amplify Science curriculum sequence.

Benchmark Assessment Summary		
Grades 3-5	4 benchmarks per grade	14-15 items per form

Program Hub: Self Study Resources



Additional Amplify resources



Program Guide

Glean additional insight into the program's structure, intent, philosophies, supports, and flexibility.

https://cascience.wpengine.com/content/welcome-k-8/integrated-model/

Amplify Help

Find lots of advice and answers from the Amplify team.

my.amplify.com/help

Additional Amplify Support

Customer Care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-7PM EST.

scihelp@amplify.com

800-823-1969

Amplify Chat

When contacting the customer care team:

- Identify yourself as an Amplify Science user.
- Note the unit you are teaching.
- Note the type of device you are using (Chromebook, iPad, Windows, laptop).
- Note the web browser you are using (Chrome or Safari).
- Include a screenshot of the problem, if possible.
- Copy your district or site IT contact on emails.

Creating Assignments in Schoology

- Click Add Materials.
- Select Add Assignment.
- Fill out the Create Assignment form.
- Options. Use Options to turn on/off the following features: Use Individually Assign to only display the assignment to a specific member of the course or a grading group.
- Click Create to complete

LAUSD Shared Logins

AmplifyScience

Go to: my.amplify.com

A. Log In with Amplify

District Shared Logins		
Grade	**Username**	**Password**
Kindergarten	LAUSDscienceK	LAUSD1234
1	LAUSDscience1	LAUSD1234
2	LAUSDscience2	LAUSD1234
3	LAUSDscience3	LAUSD1234
4	LAUSDscience4	LAUSD1234
5	LAUSDscience5	LAUSD1234
6	LAUSDscience6	LAUSD1234
7	LAUSDscience7	LAUSD1234
8	LAUSDscience8	LAUSD1234