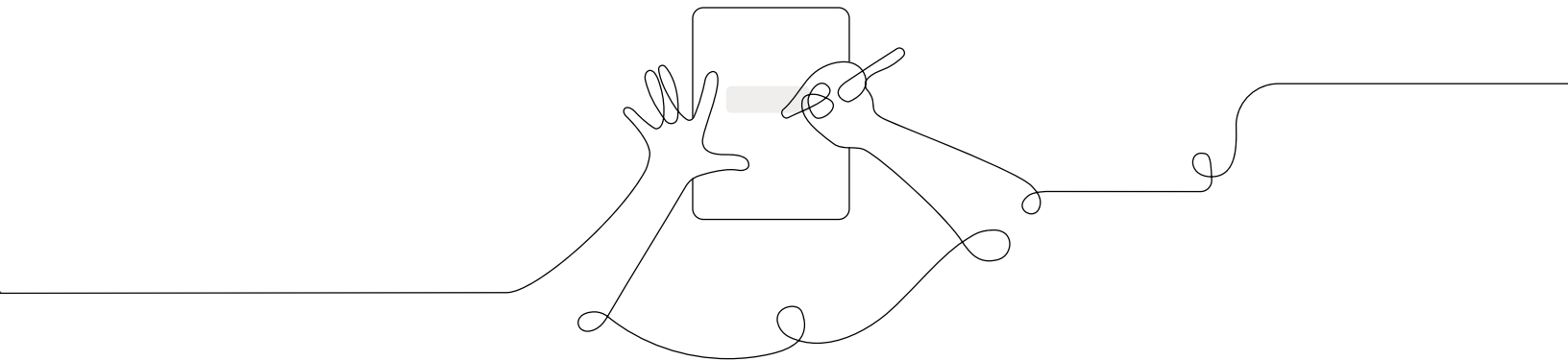


Participant Notebook

Grade 7: Geology on Mars
Guided Unit Internalization with @Home
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 NGSS Standards (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) standards 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
Articles 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 6-8)
Flexextensions in This Unit	Summarizes information about the Hands-On Flexextension lesson(s) in the unit

Printable resources

Coherence Flowcharts	Visual representation of the storyline of the unit
Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Flexextension Compilation	Compilation of all copymasters for Hands-on Flexextension lessons throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Unit vocabulary words in 10 languages
NGSS Information for Parents and Guardians	Information for parents about the NGSS and the shifts for teaching and learning
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 Chapter Questions and Key Concepts provided in the kit



Unit Map

How can we search for evidence that other planets were once habitable?

Evidence that water was once present on a planet is evidence that the planet may once have had living organisms. In their role as student planetary geologists working to investigate the planet Mars, students investigate whether a particular channel on Mars was caused by flowing water or flowing lava. Along the way, students engage in the practices and ways of thinking particular to planetary geologists, and learn to consider a planet as a system of interacting sub-systems.

Chapter 1. What geologic process could have formed the channel on Mars?

Students figure out: Earth, Mars, and other rocky planets can be thought of as systems. These systems are made up of interacting spheres that can include the geosphere, atmosphere, hydrosphere, and biosphere. When landforms on different rocky planets look similar, it is evidence that they may have been formed by the same geologic process. The channel on Mars may have been caused by flowing water or flowing lava.

How they figure it out: They examine cards with information about interacting spheres on the rocky planets of our solar system. They observe photographs of similar features on Mars and Earth. They are introduced to scientific argumentation and practice with an everyday example.

Chapter 2. How can we gather more evidence about whether lava or water formed the channel on Mars?

Students figure out: Scientists can use models to test their ideas and get evidence about processes in the natural world that are difficult to observe. Landforms can provide evidence about the past because they remain after the geologic processes that formed them stop happening. Models represent the natural processes being investigated in important ways, but they are not exactly the same. Models of channels formed by water and models of channels formed by lava each have similarities with the channel on Mars.

How they figure it out: They read about how scientists model processes on rocky planets. They observe how flowing water creates channels using a stream table model, and they test ideas using the stream table model. They observe a video of a melted wax model representing how flowing lava can form a channel.

Chapter 3. How can we decide which geologic process formed the channel on Mars?

Students figure out: The channel on Mars was probably formed by water. The rover *Curiosity* found rocks near the channel that were made up of many smaller rocks. On Earth, the type of rock that is made of smaller rocks is found near channels made by water. On Earth, rocks found in or near channels made by flowing lava are made up of just one type of rock because they are made of hardened lava.

How they figure it out: They evaluate the quality of evidence about the channel on Mars, including new evidence about rocks found in the channel. They are introduced to reasoning as a part of scientific argumentation and connect evidence to a claim about the channel.

Guided Unit Internalization Planner

Part 1: Unit-level internalization

Unit title:

What is the phenomenon students are investigating in your unit?	
Unit Question:	Student role:
By the end of the unit, students figure out ...	
What science ideas do students need to figure out in order to explain the phenomenon?	

Guided Unit Internalization

Part 1: Unit-level internalization

Unit title: Geology on Mars

What is the phenomenon students are investigating in your unit?

There is a channel on the surface of Mars.

Unit Question:

How can we search for evidence that other planets were once habitable?

Student role:

Planetary Geologists

By the end of the unit, students figure out ...

The channel on Mars was probably formed by water. The rover *Curiosity* found rocks near the channel that were made up of many smaller rocks. On Earth, the type of rock that is made of smaller rocks is found near channels made by water. On Earth, rocks found in or near channels made by flowing lava are made up of just one type of rock because they are made of hardened lava.

What science ideas do students need to figure out in order to explain the phenomenon?

Earth, Mars, and other rocky planets can be thought of as systems. These systems are made up of interacting spheres that can include the geosphere, atmosphere, hydrosphere, and biosphere. Scientists can use models to test their ideas and get evidence about processes in the natural world that are difficult to observe. On Earth, the type of rock that is made of smaller rocks is found near channels made by water.

Geology on Mars @Home Lesson Index

The Amplify Science@Home Units are versions of Amplify Science units adapted for use in a remote learning or hybrid learning situation. To help you plan instruction, below we have listed the @Home Lessons alongside the Amplify Science unit's Lesson(s) from which they come.

Index: @Home Unit Lessons and corresponding *Geology on Mars* Lessons

@Home Lesson	Adapted from Amplify Science <i>Geology on Mars</i>
@Home Lesson 1	Lessons 1.1 and 1.2
@Home Lesson 2	Lesson 1.2
@Home Lesson 3	Lessons 1.1 and 1.2
@Home Lesson 4	Lesson 2.1
@Home Lesson 5	Lessons 2.1 and 2.2
@Home Lesson 6	Lessons 2.2 and 2.3
@Home Lesson 7	Lessons 3.1 and 3.2
@Home Lesson 8	Lessons 3.2 and 3.3
@Home Lesson 9	Lesson 3.4

The student sheets and packets used in @Home units are original or modified versions of the unit's Amplify Science Investigation notebook pages or copymasters. When necessary, new pages were also created. In the following table we have outlined the @Home Student Sheet and Packet page titles and their origins.

Index: @Home Student Sheets/Packets and corresponding *Geology on Mars* materials

@Home Lesson	Student Sheet/Packet page title	Investigation Notebook page, copymaster, or print material
1	<i>Geology on Mars</i> Glossary	Pgs. 57–58
2	Signs of Habitability on Mars	Pg. 8
3	Observing the Surface of Earth	Pg. 12
3	Reflecting on How Planetary Geologists Get Evidence	Pgs. 16–17
3	Argumentation Resources	New, based on Argumentation Wall materials
3	Chapter 1 @Home Science Wall	New, based on Classroom Wall materials
4	Introducing Active Reading	Pg. 21
4	"Investigating Landforms on Venus"	Article
5	Second Read of "Investigating Landforms on Venus"	Pg. 26
6	Chapter 2 @Home Science Wall	New, based on Classroom Wall materials
7	Recording Your Completed Evidence Gradient	Pg. 45
8	Reasoning About Evidence from Mars	Pgs. 50–51
8	Writing a Scientific Argument About the Channel on Mars	Pg. 54

Day _____			
Minutes for science: _____		Minutes for science: _____	
Instructional format: <ul style="list-style-type: none"><input type="checkbox"/> Asynchronous<input type="checkbox"/> Synchronous		Instructional format: <ul style="list-style-type: none"><input type="checkbox"/> Asynchronous<input type="checkbox"/> Synchronous	
Lesson or part of lesson:		Lesson or part of lesson:	
Mode of instruction: <ul style="list-style-type: none"><input type="checkbox"/> Preview<input type="checkbox"/> Review<input type="checkbox"/> Teach full lesson live<input type="checkbox"/> Teach using synchronous suggestions<input type="checkbox"/> Students work independently using:<ul style="list-style-type: none"><input type="checkbox"/> Printed @Home Slides<input type="checkbox"/> Digital @Home Slides<input type="checkbox"/> @Home Videos		Mode of instruction: <ul style="list-style-type: none"><input type="checkbox"/> Preview<input type="checkbox"/> Review<input type="checkbox"/> Teach full lesson live<input type="checkbox"/> Teach using synchronous suggestions<input type="checkbox"/> Students work independently using:<ul style="list-style-type: none"><input type="checkbox"/> Printed @Home Slides<input type="checkbox"/> Digital @Home Slides<input type="checkbox"/> @Home Videos	
Students will...	Teacher will...	Students will...	Teacher will...

<p>Look at the <i>Students will</i> columns. What are students working in the lesson(s) above that you could collect, review, or provide feedback on? See Some Types of Written Work in Amplify Science to the right for guidance.</p> <p>If there isn't a work product listed above, do you want to add one? Make notes below.</p>	<p>Some Types of Written Work in Amplify Science</p> <ul style="list-style-type: none"> • Daily written reflections • (6-8) Homework tasks • (K-5) Investigation notebook pages • Written explanations (typically at the end of Chapter) • Diagrams • Recording pages for Sim uses, investigations, etc 	
<p>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.</p>	<p>Completing Written Work</p> <ul style="list-style-type: none"> • 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) 	<p>Submitting Written Work</p> <ul style="list-style-type: none"> • 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
<p>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.)</p>		

Day _____			
Minutes for science: _____		Minutes for science: _____	
Instructional format: <ul style="list-style-type: none"><input type="checkbox"/> Asynchronous<input type="checkbox"/> Synchronous		Instructional format: <ul style="list-style-type: none"><input type="checkbox"/> Asynchronous<input type="checkbox"/> Synchronous	
Lesson or part of lesson:		Lesson or part of lesson:	
Mode of instruction: <ul style="list-style-type: none"><input type="checkbox"/> Preview<input type="checkbox"/> Review<input type="checkbox"/> Teach full lesson live<input type="checkbox"/> Teach using synchronous suggestions<input type="checkbox"/> Students work independently using:<ul style="list-style-type: none"><input type="checkbox"/> Printed @Home Slides<input type="checkbox"/> Digital @Home Slides<input type="checkbox"/> @Home Videos		Mode of instruction: <ul style="list-style-type: none"><input type="checkbox"/> Preview<input type="checkbox"/> Review<input type="checkbox"/> Teach full lesson live<input type="checkbox"/> Teach using synchronous suggestions<input type="checkbox"/> Students work independently using:<ul style="list-style-type: none"><input type="checkbox"/> Printed @Home Slides<input type="checkbox"/> Digital @Home Slides<input type="checkbox"/> @Home Videos	
Students will...	Teacher will...	Students will...	Teacher will...

<p>Look at the <i>Students will</i> columns. What are students working in the lesson(s) above that you could collect, review, or provide feedback on? See Some Types of Written Work in Amplify Science to the right for guidance.</p> <p>If there isn't a work product listed above, do you want to add one? Make notes below.</p>	<p>Some Types of Written Work in Amplify Science</p> <ul style="list-style-type: none"> • Daily written reflections • (6-8) Homework tasks • (K-5) Investigation notebook pages • Written explanations (typically at the end of Chapter) • Diagrams • Recording pages for Sim uses, investigations, etc 	
<p>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.</p>	<p>Completing Written Work</p> <ul style="list-style-type: none"> • 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) 	<p>Submitting Written Work</p> <ul style="list-style-type: none"> • 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
<p>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.)</p>		

Suggestions for synchronous time

The following are some ideas for making the most of synchronous time with your students. As a general rule, the best way to use your synchronous time is to provide students opportunities to talk to one another, or to observe or visualize things they could not do independently.

Online synchronous time	Notes
<p>Online discussions: It's worthwhile to establish norms and routines for online discussions in science to ensure equity of voice, turn-taking, etc.</p> <p>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.</p> <p>Interactive read-alouds: Screen share a digital book or article, and pause to ask questions and invite discussion as you would in the classroom.</p> <p>Shared Writing: This is a great opportunity for a collaborative document that all your students can contribute to.</p> <p>Co-constructed class charts: You can create digital charts, or create physical charts in your home with student input.</p>	

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.	

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