

Inspire Science



Inspire
Science
DIFFERENCE

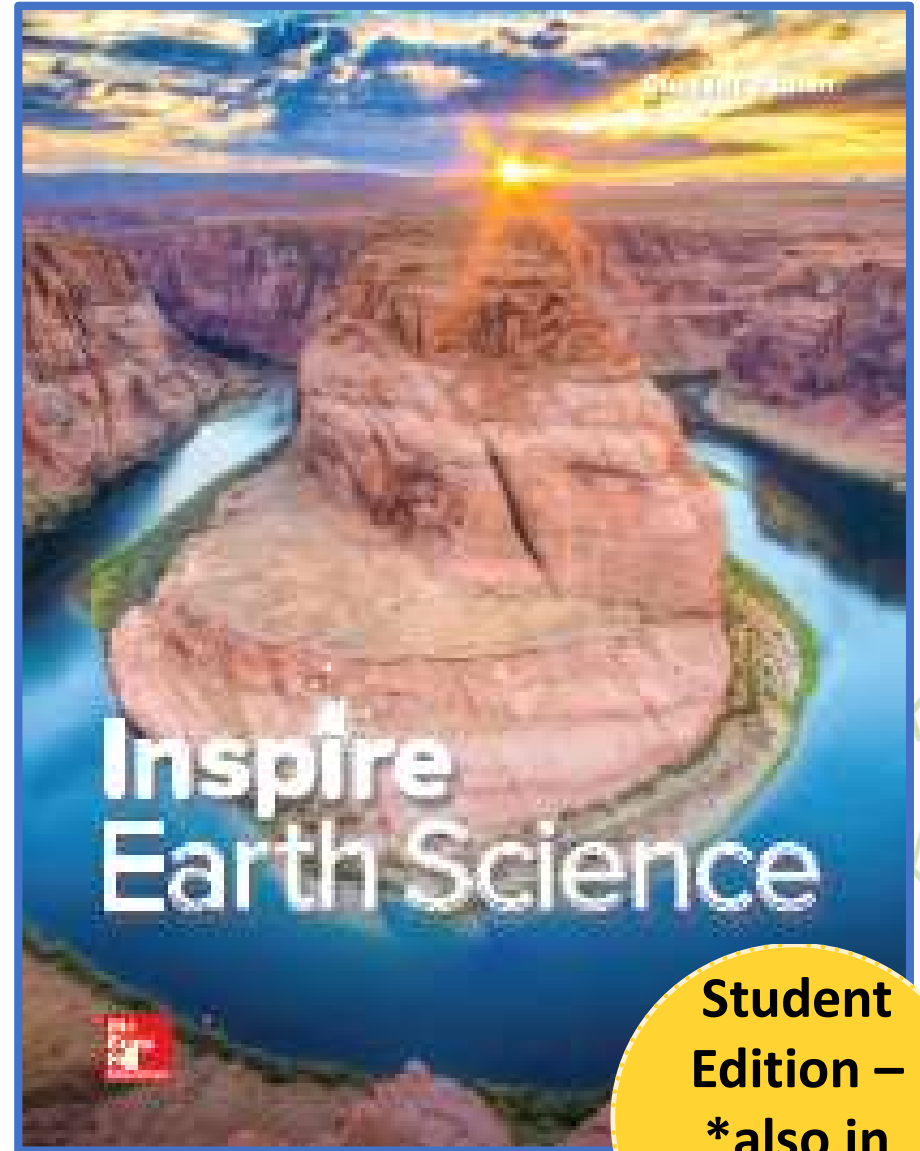
Inspire Earth Components

Inspire Science



Digital Teacher
& Student Center
Access

Teacher's
Edition



Student
Edition –
*also in
*Spanish**

Print & Digital Solution

Inspire Science

Print
and
Digital

Print Forward Classroom

Hybrid Classroom

Digital Forward Classroom

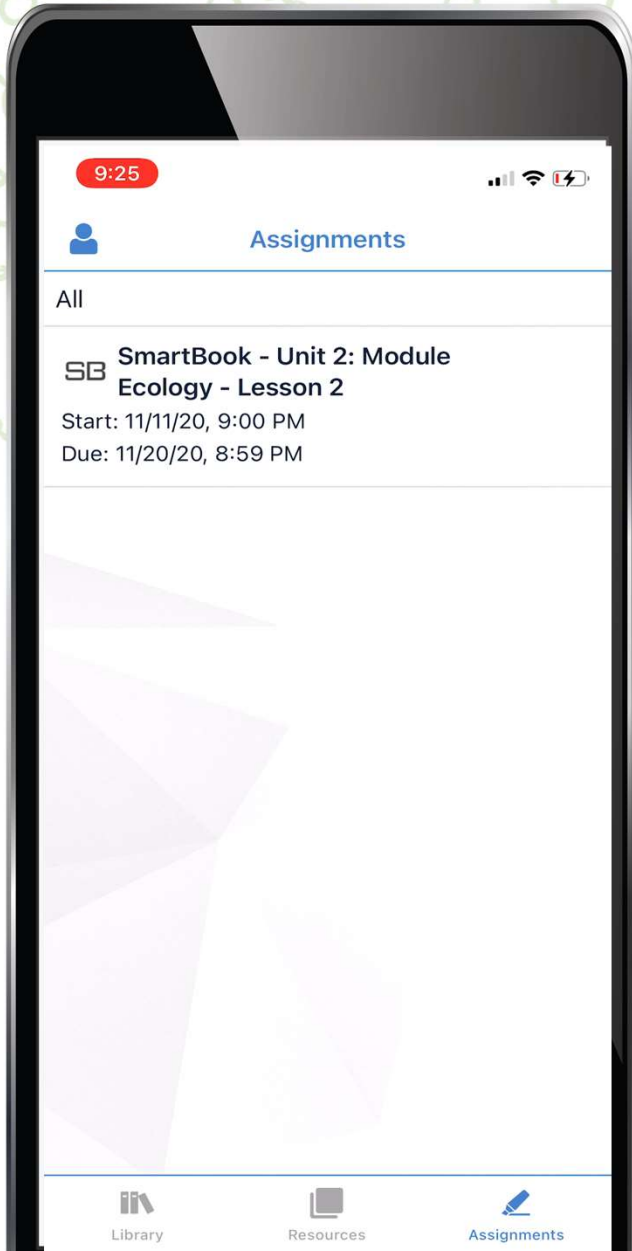


Maximum Access

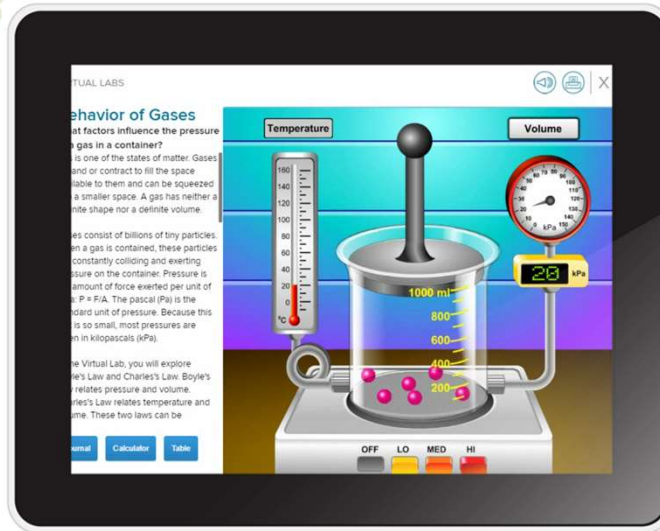
Inspire Science



Dynamic Digital Resources



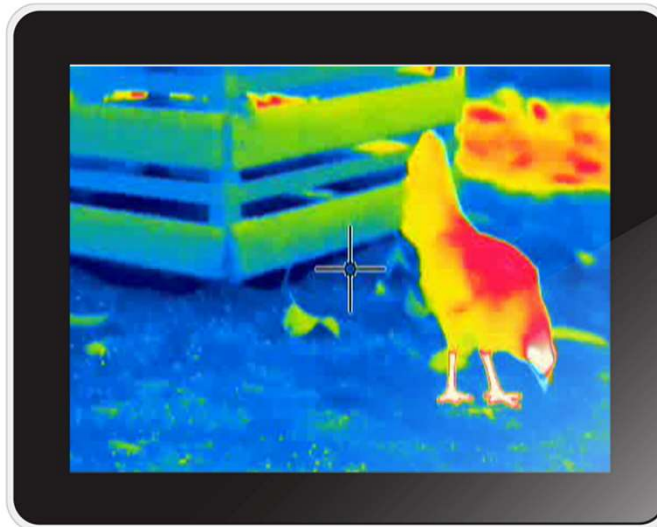
LearnSmart Adaptive Learning Supports



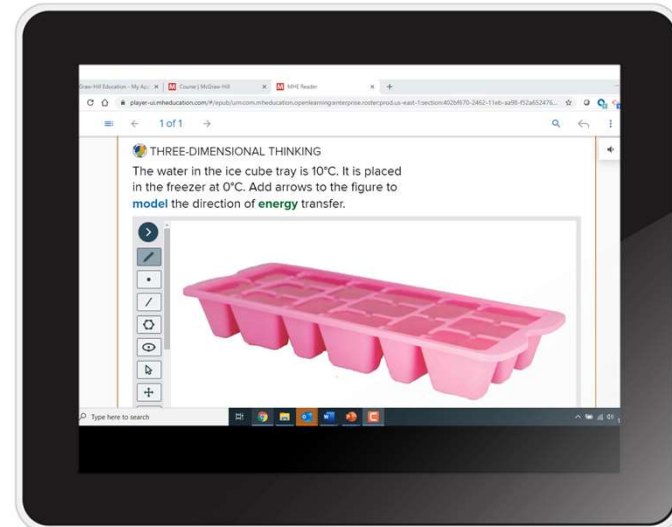
Virtual Labs & Simulations



Lesson Concept Videos



Phenomenon Videos



Interactive eBook

Spanish Student Edition

Inspire Science

MÓDULO 14 VULCANISMO

ENCUENTRA EL FENÓMENO

¿De dónde viene la lava?



CONÉCTATE para ver un video sobre un volcán llamado Erta Ale, en Etiopía, que hace erupción continuamente.

SEP Hacer preguntas

¿Tienes más preguntas acerca del fenómeno? Si es así, agrégalas al pizarrón de preguntas clave.

CER Afirmación, evidencia, razonamiento

Hacer una afirmación Usa la tabla CER para hacer una afirmación acerca de dónde viene la lava. Explica tu razonamiento.

Reunir evidencia Usa las lecciones del módulo para reunir evidencia que respalde tu afirmación. Registra la evidencia mientras trabajas en el módulo.

Explicar el razonamiento Repasarás tu afirmación y explicarás tu razonamiento al final del módulo.

CONÉCTATE para acceder a la tabla CER y explorar los recursos que te ayudarán a reunir evidencia.



Multilingual Glossary

Multilingual Glossary:
English and Spanish



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
Arabic



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
Bengali



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
French



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
Haitian Creole



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
Hmong



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
Korean



Visible to Students PDF

Assign

Add to presentation

Multilingual Glossary:
Mandarin



Visible to Students PDF

Assign

Add to presentation

Explore/Explain: Language Development Supports

Inspire Science

abiotic factors	非生物因素	生物環境中的非生命部份。
acceleration	加速	物體速度改變的速率。
acid	酸	在水中形成氫離子而且酸鹼度在 7 以下的任何物質。
actin	肌動蛋白	在肌肉細胞中組成肌原纖維細絲的結構蛋白，其功能為促進肌肉的收縮。
activation energy	活化能	使粒子起反應，從而形成活化複合物。反應所需的最低能量。
active transport	主動運送	細胞利用能量，將物質從低濃度區域運送到高濃度區域。
adaptation	適應	結構、行為或生理功能，使生物能夠在環境因素作用下生存。
adaptive radiation	適應輻射	祖先進化出一系列的物種，以適應不同的環境。
ADP (adenosine diphosphate)	ADP(腺二磷酸)	在轉換成腺三磷酸的過程中分解磷酸根形成的分子，產生的能量釋放用於生物反應。
adrenal glands	腎上腺	位於腎臟頂部分泌激素，例如讓身體為緊急情況作好準備的腎上腺素，是成對腺體。
aerobic.	需氧的	需要氧氣存在的化學反應。

Multilingual
Glossary
13 Languages

Show original

火山的解剖

回想一下，岩漿到達地球表面時被稱為熔岩。熔岩通過一個稱為導管的管狀結構到達地表，並從一個稱為通風口的開口出來。當熔岩流過通風口並流到地面上時，它在通風口周圍冷卻並凝固。隨著時間的流逝，凝固的熔岩層會堆積形成稱為火山的山脈。在火山頂部，在噴口周圍，是一個碗狀的凹陷，稱為火山口。火山口通過導管連接到岩漿室。找到圖中所示的火山的火山口，導管和通風口。

岩漿通過導管從地球深處向上移動，並通過通風孔在地球表面噴發。通風口周圍的區域稱為火山口。

火山口的直徑通常小於1公里。較大的窪地，稱為破火山口，直徑可達10公里。如果岩漿室排空，留下了一個巨大的圓形凹陷。地表塌陷後，水有時會充滿形成的火山口湖火山口形成了。

播放視頻以顯示火山口的形成方式。

Google Translate
Compatible



Actively Learn™

Ever-Growing Library of Science
Current Event Articles

Standards Aligned

Search by topic, grade band, or lexile

Students Learn More Deeply

Actively Learn

Inspire Science

Homepage - Content - Actively L x Course | McGraw Hill x +
https://read.activelylearn.com/#teacher/catalog

MENU Actively Learn Science Curriculum Units Topics Interactives News & Articles Search ?

BACK TO SCHOOL: SCIENCE SKILL PRACTICE LESSONS

Should I Kill Spiders in My Home? An Entomologist Explains Why Not To
Article

Identifying Variables in an Investigation
Skill Practice

The Metric System
Skill Practice

Analyzing Graphs
Skill Practice

GRADE LEVEL

- ☐ 6th - 8th grade
- ☐ 9th - 10th grade

Show all grade levels

ASSIGNMENT TYPE

- ☐ Article
- ☐ Assessment

Show all assignment types

LEXILE LEVEL

- ☐ 450L - 790L
- ☐ 770L - 980L

FEATURED ASSIGNMENTS

Interactive Science Articles

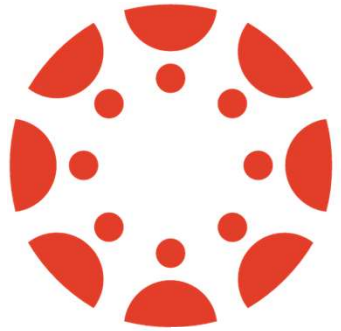
- Search by Standard
- Translate to 100 languages!
- Text, (in the article!) to class and the teacher about science

Inspire Science DIFFERENCE

McGraw Hill Education

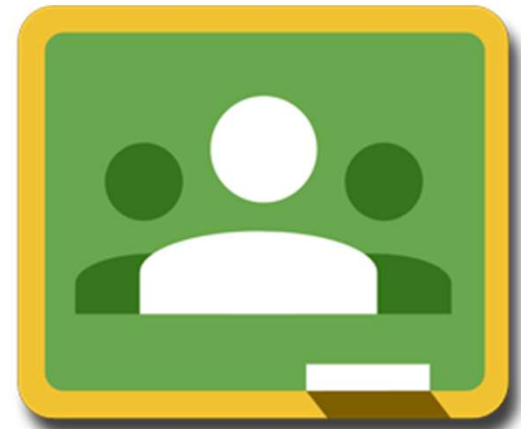
Integrate with your LMS

Inspire Science



canvas

Clever



Google for Education
Partner

moodle

and more

Assignment Sync
and Grade
Passback



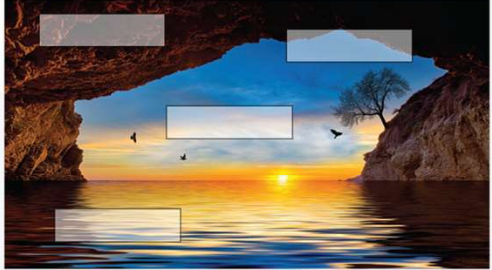
Designed for 3D





 **THREE-DIMENSIONAL THINKING**

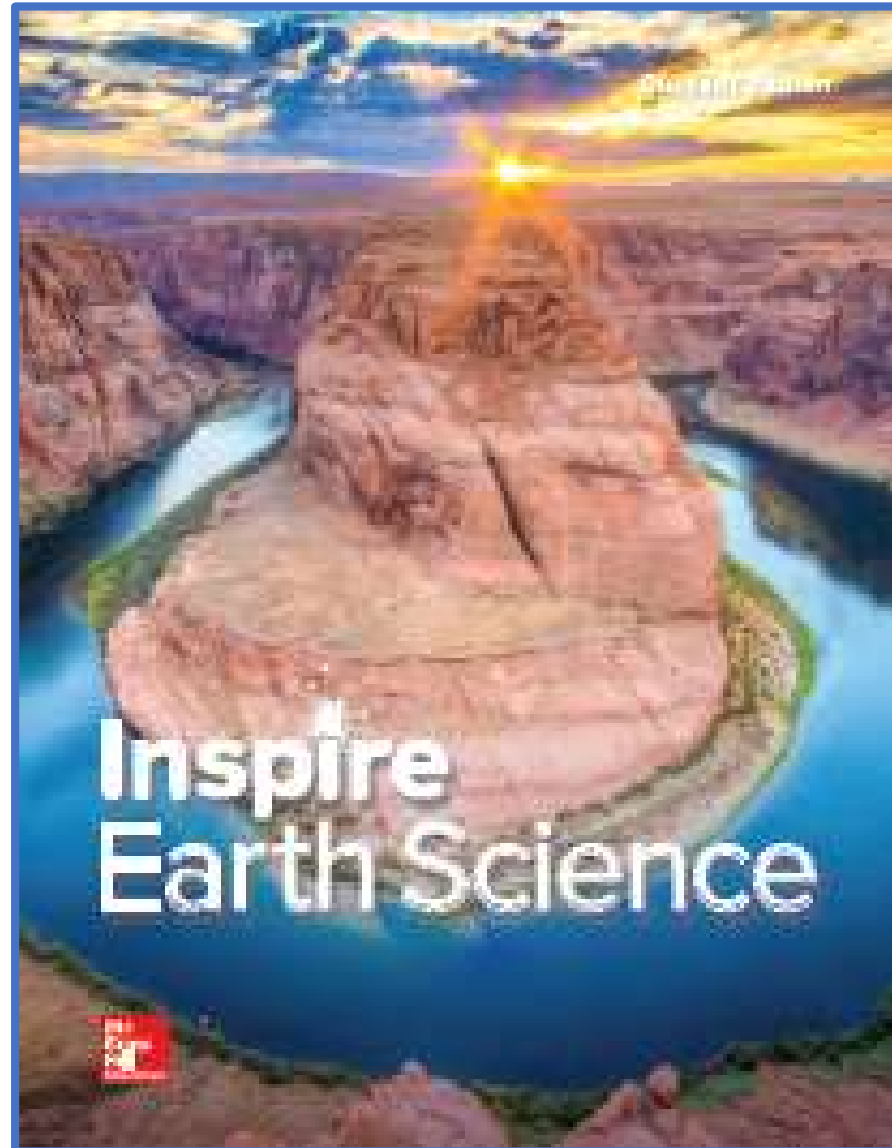
With a partner, label the subsystems of the larger Earth system in the photo. Think how water moves between the subsystems? Create a diagram that models how water moves between Earth's subsystems in your Science Notebook.



[Check Answer](#)

Unit Walkthrough

Inspire Science



Unit Anchoring Phenomenon

Inspire Science

Inspire
padlet

Michelle Johnson • 1m

Why are the rock layers sideways?

Unit Storyline

In this unit, students will seek to answer the question “How do rocks react under titanic pressure?” The modules in this unit each provide part of the answer to this question.

- **Module 13: Plate Tectonics**
Students will learn that most geologic activity occurs at the boundaries between plates.
- **Module 14: Volcanism**
Students will learn that volcanoes develop from magma moving upwards from deep within Earth.
- **Module 15: Earthquakes**
Students will learn that earthquakes are natural vibrations of the ground, some of which are caused by movement along fractures in Earth’s crust.
- **Module 16: Mountain Building**
Students will learn how mountains form through dynamic processes which crumple, fold, and create faults in Earth’s crust.

Module Storyline

In this module, students will seek to answer the Encounter the Phenomenon Question “How do we know that this landmass is moving?” The lessons in this module each provide part of the answer to this question.

- **Lesson 1: Drifting Continents**
Students will explore the history of and the evidence for continental drift. This will lead them to understand the theory behind continental drift.
- **Lesson 2: Seafloor Spreading**
Students will explore how the ocean floor is mapped and what was discovered about ocean rocks and sediment. This will lead them to understand how magnetism gives evidence of seafloor spreading.
- **Lesson 3: Plate Boundaries**
Students will explore the theory of plate tectonics and the differences between divergent, convergent, and transform boundaries. This will lead them to understand what happens at plate edges when they move.
- **Lesson 4: Causes of Plate Motions**
Students will explore how convection and density are related to the movements of tectonic plates. This will lead them to understand the forces behind continents moving.

Solve a Problem: STEM Unit Project

UNIT 4
THE DYNAMIC EARTH



Solve A Problem STEM UNIT PROJECT

Performance Task: Plate Tectonics

Students will research plate tectonics and how scientists have used evidence on Earth's surface to infer the motion of the crust. Students will use their research to describe the history of plate tectonics and provide the evidence supporting their description.

This project incorporates the following ideas from the Unit:

- tectonic plates
- plate boundaries
- paleomagnetism
- continental drift

This project bundles these performance expectations:

HS-ESS1-5

HS-ESS2-1

HS-ESS1-6

HS-ETS1-1

 **GO ONLINE** to the Unit Planning and Presentation Resources to find project resources.

Solve a Problem: STEM Unit Project

Key Question:

How can a community prepare for an earthquake, a tsunami, or a volcanic eruption?

Back

Earthquakes, tsunamis, and volcanic eruptions can be catastrophic events in some regions around the world. Even though students might not live in a region that has these events, they might move to or visit these locations in the future. Knowing how to prepare for these events is important for everyone.

Before students begin working on their response plans conduct a discussion about how these events occur during each event. This discussion should direct student response plans for catastrophic events.

Key Question:

How can a community prepare for an earthquake, a tsunami, or a volcanic eruption?

For this project, there is not one correct solution. There are many ways that a community can prepare for an event, and devise response plans for an event occur. The response plan should include plans for individual households, schools, and businesses. Consider dividing the class into teams and assign them to develop a plan for. Make sure that within a class, earthquakes, tsunamis, and volcanic eruptions are covered. Although these events vary, the response plans will likely be different.

Discuss the Engineering Design Process with the students prior to starting the activity. Remind students that they can circle back to previous steps if needed. It is unlikely that students will be successful in their first attempt at a response plan. Their plans will likely have to be modified and reevaluated until their plans are satisfactory. It should take about 300 minutes for students to complete this project.

Remind students that the failure of a plan does not mean that their time and efforts were wasted. A lot of knowledge comes from failures. Students need to learn from their mistakes and apply their knowledge to reconfigure their response plans.

Evaluation and
Presentation

Testing and
Analysis

Evaluation and
Presentation

Testing and
Analysis

Identify Problem
or Need

Define Problem or
Need Using
Constraints

Research and
Brainstorming

Development of
Alternative
Solutions

Engineering
Design Process

Module Investigative Phenomenon



The online Launch Lab *What makes magma rise?* can be used at this time as a starting point for investigation.



Date _____ Period _____ Name _____

MODULE 14

LaunchLAB

What makes magma rise?

Magma is molten rock that lies beneath Earth's surface. In this activity, you will model the movement of magma within Earth by making a "lava lamp".

Procedure



1. Read and complete the lab safety form.
2. Pour about 300 mL of **water** into a 600-mL beaker.
3. Pour about 80 mL of **vegetable oil** into the beaker.
4. Sprinkle **table salt** on top of the oil while you slowly count to 5.
5. Add more salt to keep the movement going.

Analysis

1. **Identify** which component of your model represents magma.
2. **Describe** what happened to the oil before and after you added the salt.
3. **Hypothesize** what caused the "magma" to rise.

Module Investigative Phenomenon

MODULE 14 VOLCANISM

ENCOUNTER THE PHENOMENON

Where does lava come from?

CER Claim, Evidence, Reasoning

Make Your Claim Use your CER chart to make a claim about where lava comes from. Explain your reasoning.

Collect Evidence Use lessons in this module to collect evidence to support your claim. Record your evidence as you move through the module.

Explain Your Reasoning You will revisit your claim and explain your reasoning at the end of the module.

 **GO ONLINE** to access your CER chart and explore resources that can help you collect evidence.

help you collect evidence.



LESSON 1: Explore & Explain:
Anatomy of a Volcano



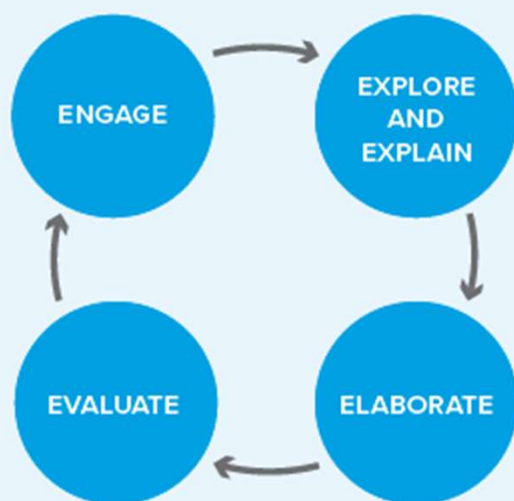
LESSON 2: Explore & Explain:
Types of Magma



Additional Resources

5E Model Highlights

LESSON



ENGAGE:
Encounter the Phenomenon
Phenomenon Question

EXPLORE/EXPLAIN:
Virtual Labs
PhET Simulations
Labs
Applying Practices
Supporting Resources

ELABORATE:
Environmental Connection
STEM Career Connections

EVALUATE:
Lesson Review
 Three-Dimensional
Assessment

Explore: Flexible Labs & Investigations

Inspire Science

Date _____ Period _____ Name _____

LaunchLab

LaunchLAB

Quick Investigation

Investigation

Design Your Own

wn

GeoLAB

Name _____

LAB



**APPLYING
PRACTICES**

Date _____

Class _____

How old are Crustal Rocks?



**Three-Dimensional Thinking
Applying Practices**

The online Applying Practices project *How old are crustal rocks?* can be used to assess students' mastery of performance expectation **HS-ESS1-5**.

**Flexible
Inquiry Based
Labs –
Downloadable &
Editable**

Virtual
Labs!

Deposition

How do certain factors affect the erosion of soil by water?

Sheet erosion occurs when large amounts of water flow along the surface from higher to lower elevations, washing away layers of soil.

Thousands of acres of farmland are destroyed by erosion each year. Embankments surrounding and supporting roads and buildings are also eroding. Precautions that can reduce these losses include terracing a hillside and planting vegetation to prevent the topsoil from washing away in heavy rain. Managed properly, soil is a renewable resource on which crops can be grown and structures built.

In this Virtual Lab you will measure the amount of sediment collected from water runoff to compare the effects of three variables on water erosion.

Journal

Calculator

Table

30° Slope



Vegetation

YES

NO



Rain Intensity

LOW

HIGH



Rain

Reset

High

Moderate

Low



Amount of Sediment in Runoff

Explore: Virtual Investigations & PhET Simulations

Inspire Science

VIRTUAL LABS

Earth's Atmosphere

What is the structure of Earth's atmosphere?
peaking at the selected altitude, and then returning to Earth by parachute. Record the Atmospheric Data in the Table.

5. If the Show Phenomenon button is enabled, click it to learn about a meteorological or astronomical phenomenon that occurs at or near the selected altitude. To see the phenomenon again, click its label.

6. Repeat the Virtual Lab until you have collected data in the Table for each of the eleven altitudes. As you collect data, watch for trends in atmospheric pressure, density, and temperature within the four layers of Earth's atmosphere.

7. Complete the Journal questions.

8. Click the Reset button to start over.

Journal Calculator Table

Reset LAUNCH SHOW PHENOMENON

Altitude (km)

Exosphere

Thermosphere

Mesosphere

Stratosphere

Troposphere

Atmospheric Data: Altitude = 75 km

Density	Pressure	Temperature
0.0044	2.7	-102
(% of Sea Level Density)	(Pa)	(°C)

PhET
INTERACTIVE SIMULATIONS

University of Colorado Boulder

Chicken Soup

Water

1 L

pH

Basic

Acidic

Inspire Science DIFFERENCE

Virtual
Investigations –
Exclusive
to McGraw-Hill

Explain: Interactive Student Edition

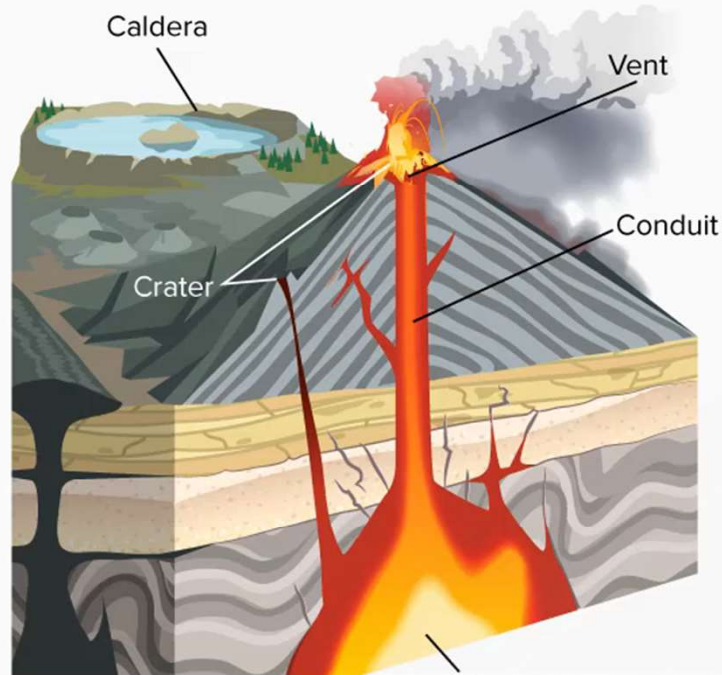
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Science
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1 of 3

Anatomy of a Volcano

Recall that when magma reaches Earth's surface, it is called lava. Lava reaches the surface by traveling through a tube-like structure called a conduit and emerges through an opening called a vent. As lava flows through the vent and out onto the surface, it cools and solidifies around the vent. Over time, layers of solidified lava can accumulate to form a mountain known as a volcano. At the top of a volcano, around the vent, is a bowl-shaped depression called a crater. The crater is connected to the magma chamber by the conduit. Locate the crater, conduit, and vent of the volcano shown in the image.

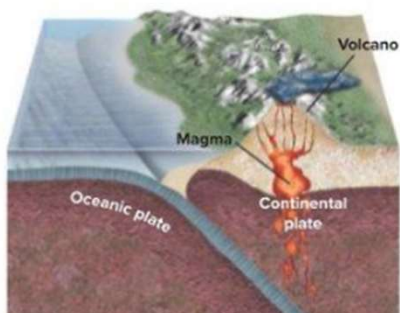


Interactive
Student Edition

Explore/Explain: Science Notebook Supports

Convergent volcanism

Recall that tectonic plates collide at convergent boundaries, which can form subduction zones—places where slabs of crust descend into the mantle. As shown in **Figure 2**, an oceanic plate descends below another plate into the mantle. As the oceanic plate descends, water flows with it, which helps to melt the overlying mantle, forming magma. The magma moves upward because it is less dense than the surrounding material. As it rises, it mixes with rock, minerals, and sediment from the overlying plate. Most volcanoes located on land result from oceanic-continental subduction. These volcanoes are characterized by explosive eruptions.



Get It?

Define What is convergent volcanism?

Two major belts

The volcanoes associated with convergent plate boundaries form a major belt, shown in **Figure 1**. The Circum-Pacific Belt is also called the Pacific Ring of Fire. The name *Circum-Pacific* gives a hint about the location of the belt. *Circum* means “around” (as in *circumference*). The outline of the belt corresponds to the outline of the Pacific Plate. The belt stretches along the western coasts of North and South America, across the Aleutian Islands, and down the eastern coast of Asia. Volcanoes in the Cascade Range of the western United States and Mount Pinatubo in the Philippines are some of the volcanoes in the Circum-Pacific Belt. There is also a smaller belt called the Mediterranean Belt. It includes Mount Etna and Mount Vesuvius, two volcanoes in Italy. Its general outline corresponds to the boundaries between the Eurasian, African, and Arabian plates.

Divergent volcanism

Recall that at divergent plate boundaries, tectonic plates move apart, and new ocean floor is produced as magma rises to fill the gap. When lava is erupted under water, it often takes the form of pillows, like those in **Figure 3**, and is called pillow lava. Unlike the explosive volcanoes detailed in **Figure 4**, volcanism at divergent boundaries tends to be nonexplosive, with effusions of large amounts of lava. About two-thirds of Earth’s volcanism occurs under water, along divergent plate boundaries at ocean ridges.



Figure 3 Eruptions at divergent boundaries tend to be nonexplosive. At the divergent boundary on the ocean floor, eruptions often form huge piles of lava called pillow lava.



Get It?

Define What is convergent volcanism?

Explore/Explain: Science Notebook Supports

1 Volc

Compare and contrast the three types of volcanoes by completing the table below.

Type of volcano	Description	How does it form?	How explosive is its eruption?
Cinder-cone	Smallest Steep slopes Cone shaped Usually form on the edges of larger volcanoes	Other eruptions shoot out small fragments of lava *Lassen Cinder Cone - CA	Explosive eruptions
Shield	Largest of the three types Long, gentle slopes	Layers of thin, liquid lava accumulate over time *Mauna Loa - HI	Quiet eruptions - not very explosive
Composite	Much larger than a	Ash & hard chunks of lava alt.layers w/non-fluid lava *Mt. Shasta	

Draw the volcano shape that corresponds to the type listed below.

Composite Volcano	
Shield Volcano	
Cinder-cone Volcano	

Compare and contrast the three types of volcanoes by completing the table below.

Type of volcano	Description	How does it form?	How explosive is its eruption?
Cinder-cone			
Shield			
Composite			

Science
Notebook -
Print or Digital

Explore/Explain: Language Development Supports

Inspire Science

The screenshot shows a digital interface for language development supports. At the top, a purple header bar contains the text "EL Support". Below this, a white navigation bar shows "1 of 1" with left and right arrows. The main content area has a title "Eruptions" in orange, followed by the instruction "Review These Words" and a sub-instruction "Click the icon to review each definition." There are two large white boxes, one labeled "Viscosity" and one labeled "Tephra". Each box has a small icon at the bottom right. A blue box at the bottom right contains text about volcanoes and a sentence-building exercise.

EL Support

1 of 1

Eruptions

Review These Words

Click the icon to review each definition.

Viscosity

Tephra

Volcanoes: Volcanoes form along plate boundaries. Then have students come up with sentences of their own using *random* and *pattern*. Ex: *Many things seem random, but actually demonstrate some kind of pattern.*

Evaluate: Check Your Progress & LearnSmart

Types of Volcanoes

The appearance of a volcano depends on two factors: the type of material that forms the volcano and the type of eruptions that occur. Based on these two factors, there are three major types of volcanoes, shown in Table 1. Each differs in size, shape, and the type of eruptions it has.

Shield volcanoes A **shield volcano** is a mountain with broad, gently sloping sides and a nearly circular base. Shield volcanoes form when layers of thin, fluid lava flow from nonexplosive eruptions. They are the largest type of volcano. Mauna Loa, shown in Table 1, is a shield volcano.

Cinder cones When eruptions eject small pieces of lava into the air, these pieces of lava, called cinders, scoria, or tephra, fall back to the ground around the vent. Cinder cones have steep sides and are generally small; they are the most common type of volcano. The Lassen Volcanic Park cinder cone is 700 m high. Cinder cones are often found near larger volcanoes. For instance, volcanologists have identified cinder cones on the flanks of Mauna Kea, a large shield volcano on Hawaii.

Composite volcanoes **Composite volcanoes** are formed of layers of lava and ash from violent eruptions alternating with layers of tephra. They have a steep, conical shape. Composite volcanoes are generally larger than cinder cones, and are much larger than shield volcanoes. Because they are potentially dangerous to humans and the environment, Arenal Volcano in Costa Rica, shown in Table 1, and several in the western United States, such as Mount St. Helens.

Check Your Progress

Summary

- Volcanism includes all the processes in which magma and gases rise to Earth's surface.
- Most volcanoes on land are part of two major volcanic chains—the Circum-Pacific Belt and the Mediterranean Belt.
- The parts of a volcano include a vent, magma chamber, crater, and caldera.
- Flood basalts form when lava flows from fissures to form flat plains or plateaus.
- There are three major types of volcanoes—shield, composite, and cinder cone.

Demonstrate Understanding

1. **Explain** how the location of volcanoes is related to the theory of plate tectonics.
2. **Identify** two volcanoes in the Mediterranean Belt.
3. **Draw** a volcano and label the parts.
4. **Propose** Yellowstone National Park is an area of previous large-scale volcanism. Using a map of the United States, suggest the type(s) of tectonic processes associated with this area.

Explain Your Thinking

5. **Evaluate** the following statement: Volcanoes are present only along coastlines.
6. **Decide** whether a flood basalt is or is not a volcano.
7. **MATH Connection** If the Pacific Plate has moved 500 km in the last 4.7 million years, calculate its average velocity in centimeters per year. Refer to the *Skillbuilder Handbook* for more information.

LEARNSMART

Go online to follow your personalized learning path to review, practice, and reinforce your understanding.

Check Your Progress

Summary

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LEARNSMART

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SmartBook – Adaptive & Personalized Learning

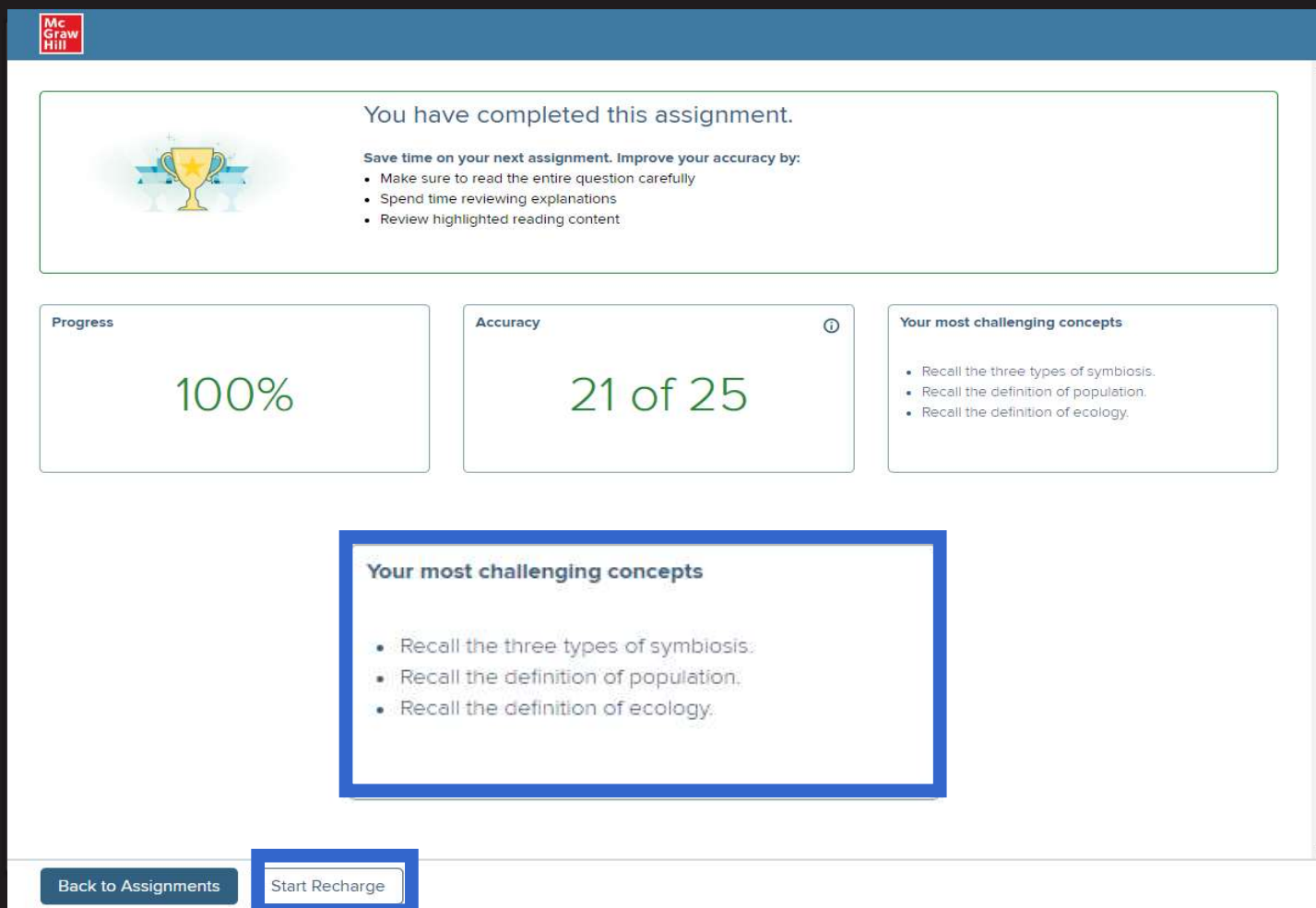
Inspire Science

LEARNSMART®
With SmartBook®

- Study tool
- Adapts to individual student performance
- Improve student outcomes
- Detailed student and class reporting



SmartBook: Student Reports



SmartBook: Teacher Reports

Inspire Science



Exit

SB2.0 Assignment Report

Overall Class Performance as of Jul 23, 2020

How many learners have completed?



8%

! Many learners have not completed the assignment.

How long did learners take to complete?



How aware are learners of their knowledge?



How many concepts were challenging?



! Many concepts require remediation.

Individual Learners

How did this learner do?



Search

Learner name



Challenging Concepts

Number of Learners

Recall the three types of symbiosis.

1

Recall the definition of population.

1

Recall the definition of ecology.

0

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Grade Distribution



Pass Rate



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SmartBook - Unit 2 - Module 2 -
Lesson 2



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25m
Estimate



14
Concepts

Start Reading

Start Questions

Module Study Guide & Wrap-Up

MODULE 14 STUDY GUIDE

 **GO ONLINE** to study with your Science Notebook.

Lesson 1 VOLCANOES

- Volcanism includes all the processes in which magma and gases rise to Earth's surface.
- Most volcanoes on land are part of two major volcanic chains—the Circum-Pacific Belt and the Mediterranean Belt.
- The parts of a volcano include a vent, magma chamber, crater, and caldera.
- Flood basalts form when lava flows from fissures to form flat plains or plateaus.
- There are three major types of volcanoes—shield, composite, and cinder cone.

- volcanism
- hot spot
- flood basalt
- fissure
- conduit
- vent
- crater
- caldera
- shield volcano
- cinder cone
- composite volcano

Lesson 2 ERUPTIONS

- There are three major types of magma—basaltic, andesitic, and rhyolitic.
- Because of their relative silica contents, basaltic magma is the least explosive magma, and rhyolitic magma is the most explosive.
- Temperature, pressure, and the presence of water are factors that affect the formation of magma.
- Rock fragments ejected during eruptions are called tephra.

- viscosity
- tephra
- pyroclastic flow

Lesson 3 INTRUSIVE ACTIVITY

- Intrusive igneous rocks are classified according to their size, shape, and relationship to the surrounding rocks.
- Most of Earth's volcanism happens below Earth's surface.
- Magma can intrude into rock in different ways, taking different forms when it cools.
- Batholiths form the core of many mountain ranges.

- pluton
- batholith
- stock
- laccolith
- sill
- dike

REVISIT THE PHENOMENON

Where does lava come from?

CER Claim, Evidence, Reasoning



GO FURTHER

SEP Data Analysis Lab

How do zones of volcanism relate to lava production?

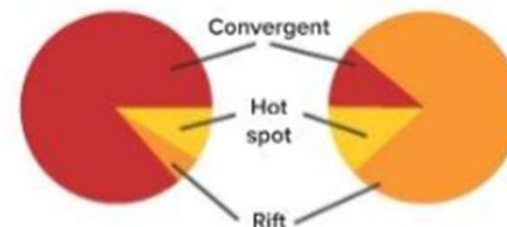
Researchers classify types of volcanic eruptions and study how much lava each type of volcano emits during an average year.

Data and Observations The circle graphs show data from 5337 eruptions and annual lava production for each zone.

CER Analyze and Interpret Data

1. **Claim.** Evidence. Describe the relationship between the type of

Number of Eruptions in Average Year



STEM UNIT PROJECT

Now that you've completed the module, revisit your STEM unit project. You will summarize your evidence and apply it to the project.

Assessments

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Formative & Summative Assessments

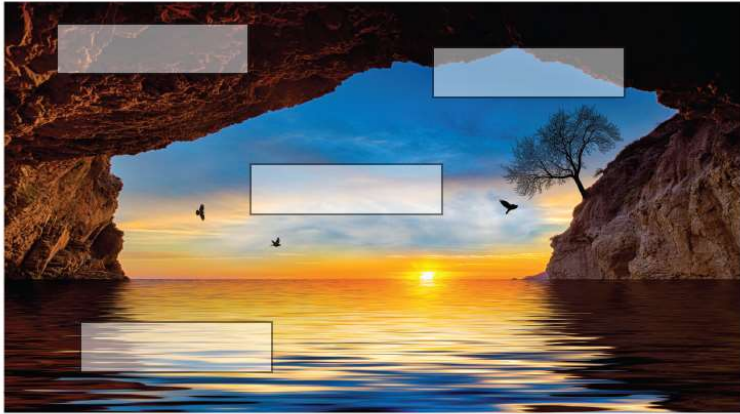


- **Formative:**
 - Module Pretests
 - 3D Thinking ?'s
 - Lesson Checks
 - Probes
- **Summative:**
 - Module Tests
 - 3D Assessments
- **Performance**
 - STEM Project
 - Applying Practices
 - Webquests

 **THREE-DIMENSIONAL THINKING**

With a partner, label the subsystems of the larger Earth system in the photo. How do you think water moves between the subsystems? Create a diagram that models your ideas on how water moves between Earth's subsystems in your Science Notebook.

Geosphere Hydrosphere Atmosphere Biosphere



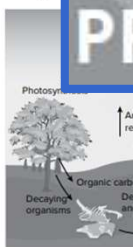
[Check Answer](#)

3D Assessment Success!

GUIDED PRACTICE

Performance Task

A student is developing a model of the carbon cycle. The student's first effort is the labeled drawing shown.



The student considers adding the Sun to the model. How does the Sun affect the carbon cycle?

Name _____ Date _____

GUIDED PRACTICE

A teacher reviews the student's work and suggests that the student revise the model to show the effects of human activities. Three-Dimensional



PRACTICE

Name _____ Date _____

5

TOPIC TEST

A team of scientists is studying the structure. As part of the study, they observe the interior, and then observe the exterior.

Earth's Systems

Answer the questions that follow. Some questions require you to select one answer; others require you to provide a short answer, draw a picture, or complete another type of task.

1

A team of students is investigating some examples of specific changes to Earth's surface. They propose the following procedure.

1. Select a variety of rock and mineral samples, including some soft and porous samples such as chalk.
2. Soak the samples in water for several hours.
3. Place the samples in a freezer at -4°C for one hour.
4. Remove the samples from the freezer and observe any changes in their appearance.
5. Repeat Steps 2 to 4 several times.

What type of change to Earth's surface does the procedure model?

Why is it important for the procedure to test a variety of rock and mineral samples, instead of only one sample?

Name _____ Date _____

THREE-DIMENSIONAL ASSESSMENT

2

A student is developing a model to show the movement of carbon among Earth systems. The model is dynamic, meaning that it shows the effect of either increasing or decreasing various processes. Which change would cause the greatest increase in the carbon dioxide dissolved in ocean water?

- (A) an increase in the biomass of phytoplankton in the ocean
- (B) a decrease in the biomass of animals in the ocean
- (C) an increase in atmospheric carbon dioxide levels
- (D) a decrease in the mining of fossil fuels under the ocean

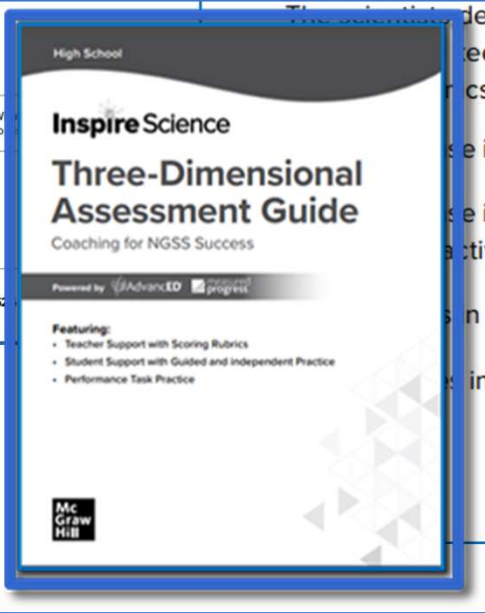
3

A scientist has been studying the changes that affected a mountain over the past 500 years. She proposes that at times the height of the mountain gradually increased, while at other times the height gradually decreased.

Identify two processes that could cause these changes.

Explain how these processes could cause the height of the mountain to change.

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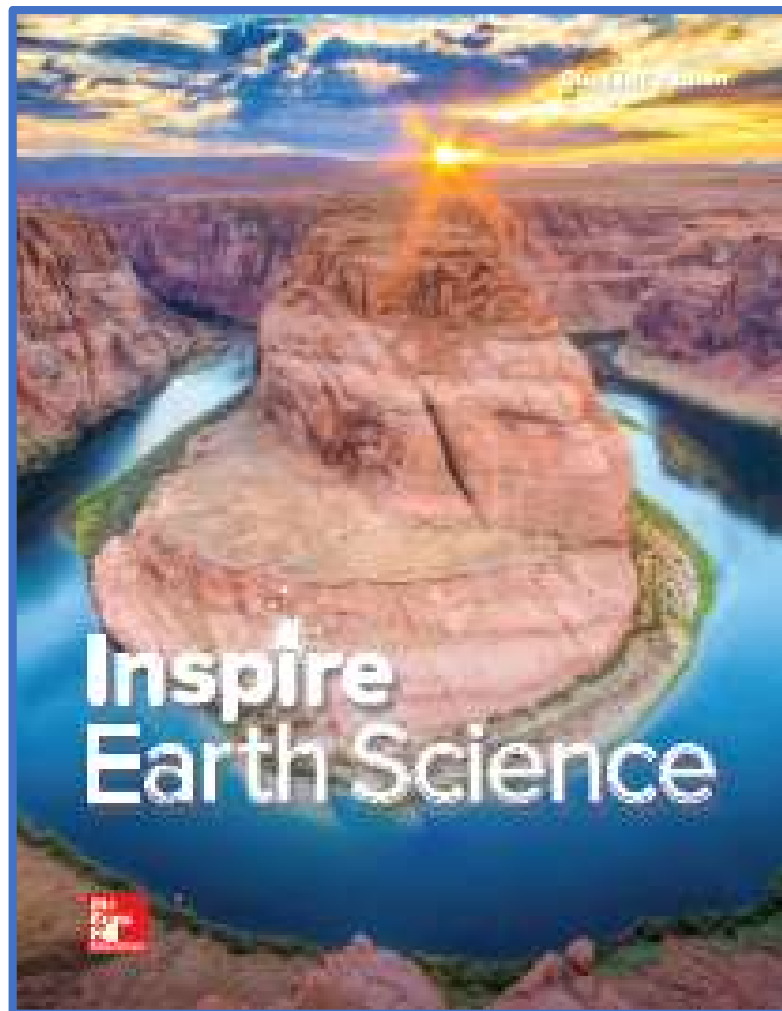


Let's take a **closer** look...

through a teacher's...

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