🌋 Lesson Plan: Landforms, Rocks, and Soil

Grade Level: 5
Subject: Science
Duration: 45-60
NGSS 5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

🎯 Learning Objectives

By the end of this lesson, students will be able to:

- **Identify** the different layers of soil and various types of landforms
- **Describe** the rock cycle and the formation of sedimentary, igneous, and metamorphic rocks
- **Explain** the processes of weathering, erosion, and deposition

💼 Materials Needed: (all links are included in this PDF)

- Printed copies of the Study Guide (https://newpathworksheets.com/api/guide/study-guide-science-grade-5-landforms-rocks-and-soil.pdf)
- Printed copies of the Activity Lesson (https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-5-landforms-rocks-and-soil-rocks-and-the-rock-cycle-4.pdf)

- Printed copies of Worksheet 0 (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-0.pdf)
- Printed copies of Worksheet 1 (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-1.pdf)
- Printed copies of Vocabulary Set 1 (https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-5-landforms-rocks-and-soil-1.pdf)

Lesson Procedure

Step 1: Introduction (5 minutes)

- Hook students by asking: "Have you ever wondered how giant mountains are formed or why rivers are curvy?"
- Show the images of the topographic map and different landforms from the Study Guide

(https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-5-landforms-rocks-and-soil-1.pdf)

- Review the detailed rock cycle diagram together from the Activity Lesson, tracing the path from magma to different rock types. (https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-5-landforms-rocks-and-soil-rocks-and-the-rock-cycle-4.pdf)

Step 4: Independent Practice (15 minutes)

- Have students complete the Rock Cycle diagram labeling and rock drawing exercises in the Activity Lesson independently. (https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-5-landforms-rocks-and-soil-rocks-and-the-rock-cycle-4.pdf)
- Assign Worksheet 1 for students to review concepts related to chemical and mechanical weathering, erosion, and faults. (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-1.pdf)

Step 5: Assessment (10 minutes)

- Administer Worksheet 0 as a quick formal assessment to evaluate understanding of rock properties, topographic maps, and soil layers. (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-0.pdf)
- Review the answers as a class to correct any remaining misconceptions.

- Create a physical model of a volcano using clay, baking soda, and vinegar to demonstrate an eruption.
- Use a stream table (a tray with sand and water) to model and observe the processes of weathering, erosion, and deposition in real-time.

Complete List of Available Resources:

- NewPathWorksheets: Landforms, Rocks, and Soil (https://newpathworksheets.com/science/grade-5/landforms-rocks-and-soil)
- Study Guide PDF (https://newpathworksheets.com/api/guide/study-guide-science-grade-5-landforms-rocks-and-soil.pdf)
- Activity Lesson PDF (https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-5-landforms-rocks-and-soil-rocks-and-the-rock-cycle-4.pdf)
- Worksheet 0 PDF (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-0.pdf)
- Worksheet 1 PDF (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-1.pdf)
- Worksheet 2 PDF (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-2.pdf)
- Worksheet 3 PDF (https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-landforms-rocks-and-soil-3.pdf)
- Vocabulary 1 PDF (https://newpathworksheets.com/api/vocabulary/vocabulary-science-

LANDFORMS, ROCKS, AND SOIL

Use a Special Map

When you want to see and understand landforms, the best type of map is a **topographic map**. A topographic map shows many features of the landscape, such as water, roads, and landmarks, but also uses contour lines to represent precisely the size, shape, and elevation of the land's features.

What is a topographic map?

Life-Giving Soil

Soil is the loose material the covers much of the Earth's surface. There are three main layers of soil, starting from the top: **topsoil**, which is the soil we walk around on and the soil in which the plants and trees grow, **subsoil**, and even deeper below is **bedrock**.

What about Rocks?

Rocks are made up of many tiny pieces of minerals. **Minerals** are natural, nonliving crystals that make up rocks.

Types of rocks:

Igneous rocks form when melted rock cools down and then hardens again. During the cooling stage, crystals form.
Sedimentary rocks form when layers of rock settle on top of each other and then harden together.
Metamorphic rocks form when solid rocks are pressed together and heated; the extreme heat can change the properties of the rocks being squeezed together.

Lesson Checkpoint:
Name one type of rock and how it's formed.

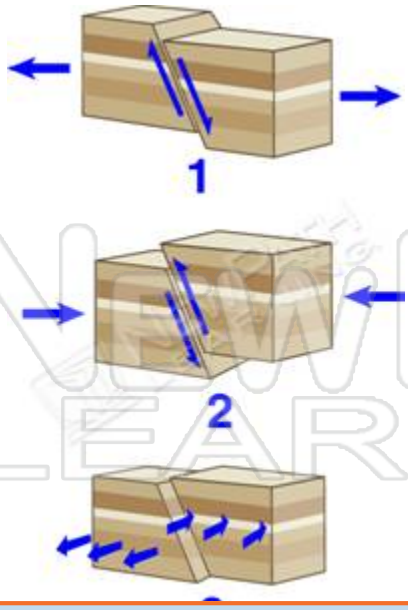
Weathering and Erosion

Erosion is the wearing away of the earth's surface by rain, wind, snow, and ice. There are two kinds of erosion: **mechanical weathering** is the breaking of rock into small pieces because of such things like gravity, wind, rain, and ice. **Chemical weathering** is the changing of material in a rock through a chemical process.

Erosion can occur quickly, as in a landslide, or can happen slowly, as in a slow moving river. When water moves, in rivers, ocean currents, tides, and floods, it moves particles of soil and rock from one spot to another.

Rain causes erosion too! Rain can move soil downhill off of fields. Farmers obviously need soil to grow crops, so they try and do what they can to stop the erosion of their fields. Farmers plow across fields to do this. The spaces created by plow catch rainwater to keep it from rolling off of their fields and taking soil and other particles with it.

Different types of faults:



against each other. When the pieces move, they cause changes to the Earth. Slow changes caused by plate movements can occur over long periods of time, such as the formation of mountains. Plate movements can also cause RAPID changes to the earth....think EARTHQUAKE!

How Do Earthquakes Happen?

Earthquakes usually occur where two plates bump into each other. What most often happens to cause an earthquake is that two plates bump into each other and their edges get stuck together but the rest of the plates keeps moving. Soon the plate edges finally unstick and an earthquake occurs due to the energy released as the plates unstick. This energy shoots out in all directions causing seismic waves to shake the ground as the waves move to the Earth's surface.

The spot on the Earth's surface directly above where an earthquake occurs is called the **epicenter**.

Lesson Checkpoint:
Explain how earthquakes occur.

Lesson Checkpoint:
What causes volcanoes to erupt?

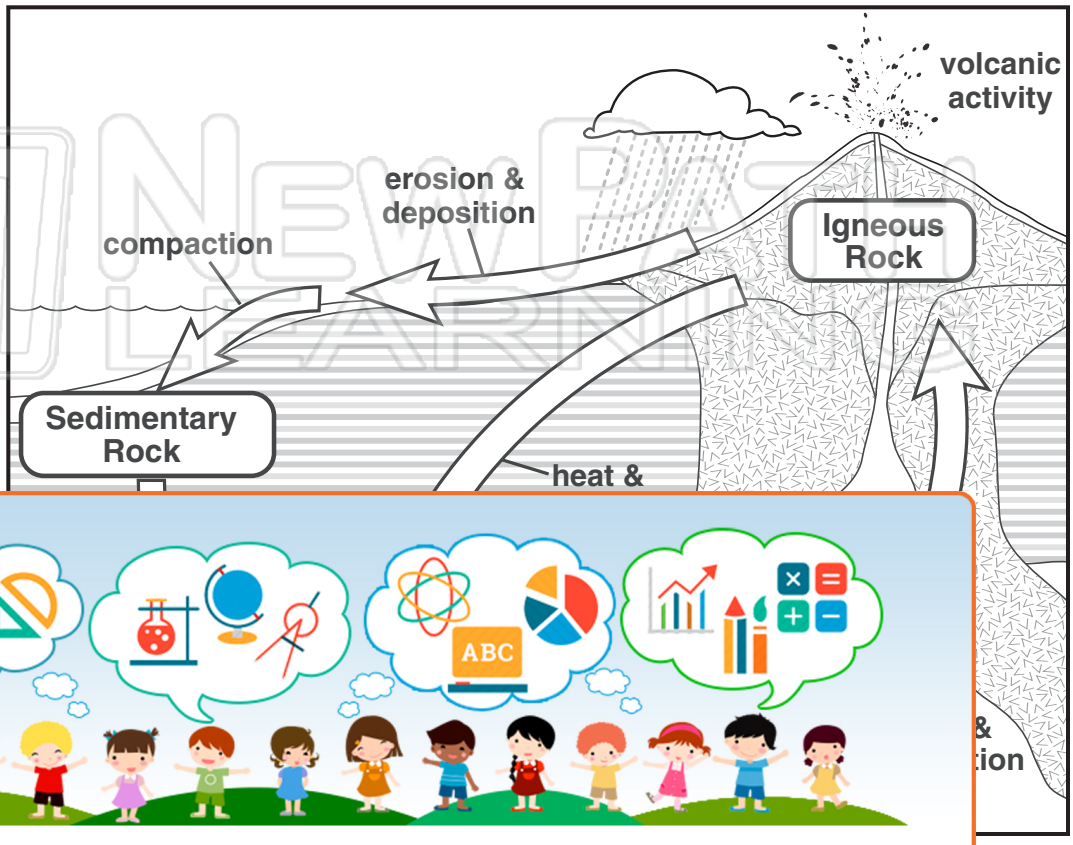
Rocks & the Rock Cycle

Sci E

Name _____ Class _____ Date _____

Rocks are made up of many tiny pieces of minerals. **Minerals** are natural, nonliving crystals that make up rocks.

The **rock cycle** is the **recycling** of old rocks into new rocks. It is caused by heat, pressure, chemical reactions, weathering and erosion. It can take millions of years for rocks to move through this cycle.



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Earth's surface during a volcanic eruption as **lava**. Once on the Earth's surface, lava cools quickly forming igneous rocks. Magma may also cool and crystalize underground.


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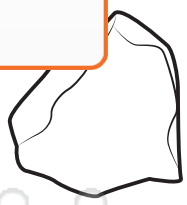
pumice


obsidian

The weight of rocks pressing down on other rocks causes **heat and pressure** below the Earth's surface forming **metamorphic rocks**. Metamorphic rocks can form from sedimentary, igneous, and other metamorphic rocks.


gneiss


quartz

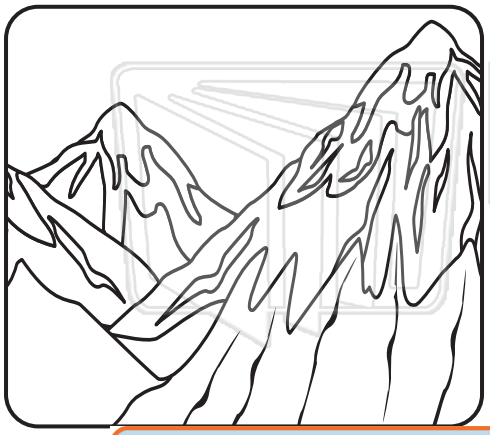
Landforms

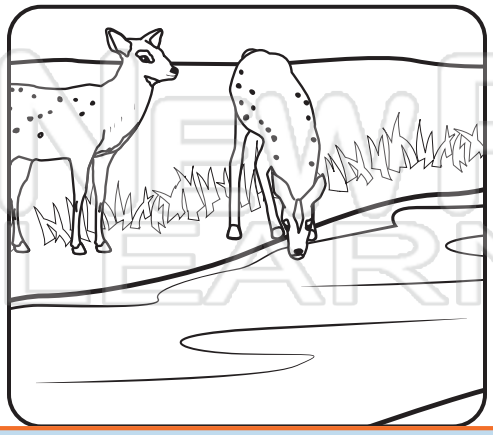
Sci E

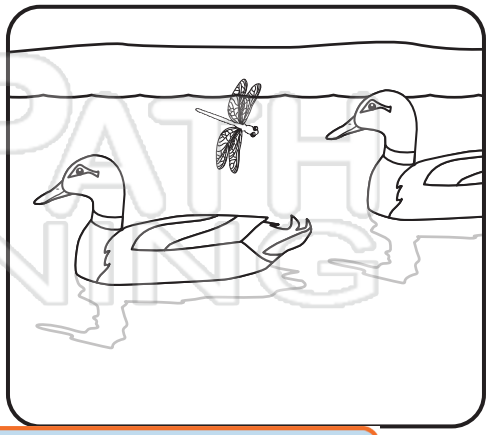
Name _____ Class _____ Date _____

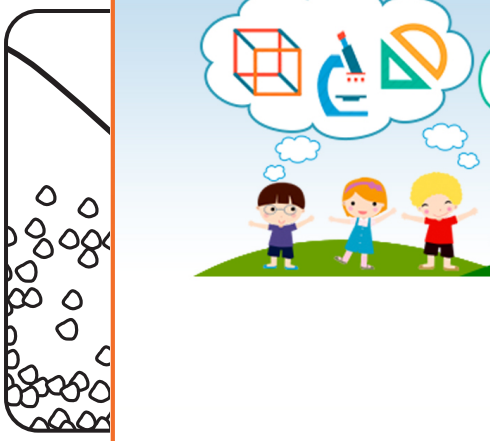
Landforms

Landforms are features that make up the Earth's surface. They include mountains, plateaus, canyons, rivers, hills and valleys.



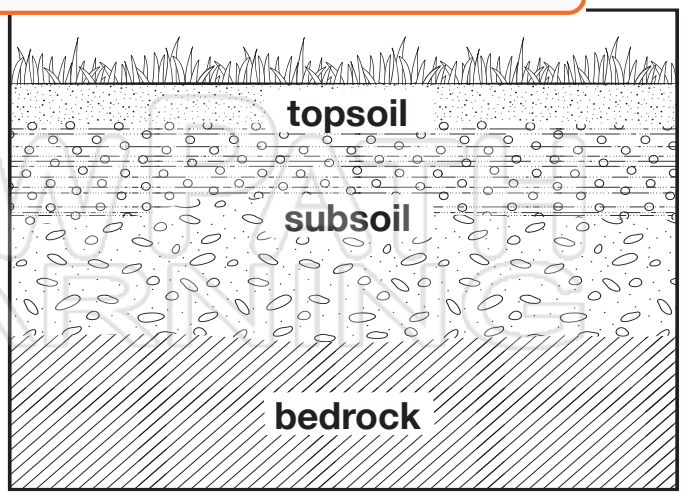






Chan…sion. **Weat**…er pieces.

Soil is the loose material that covers much of the Earth's surface. It is made up of three main layers: **topsoil**, **subsoil** and **bedrock**. Soil is formed from the weathering and erosion of rocks and minerals.



Landforms

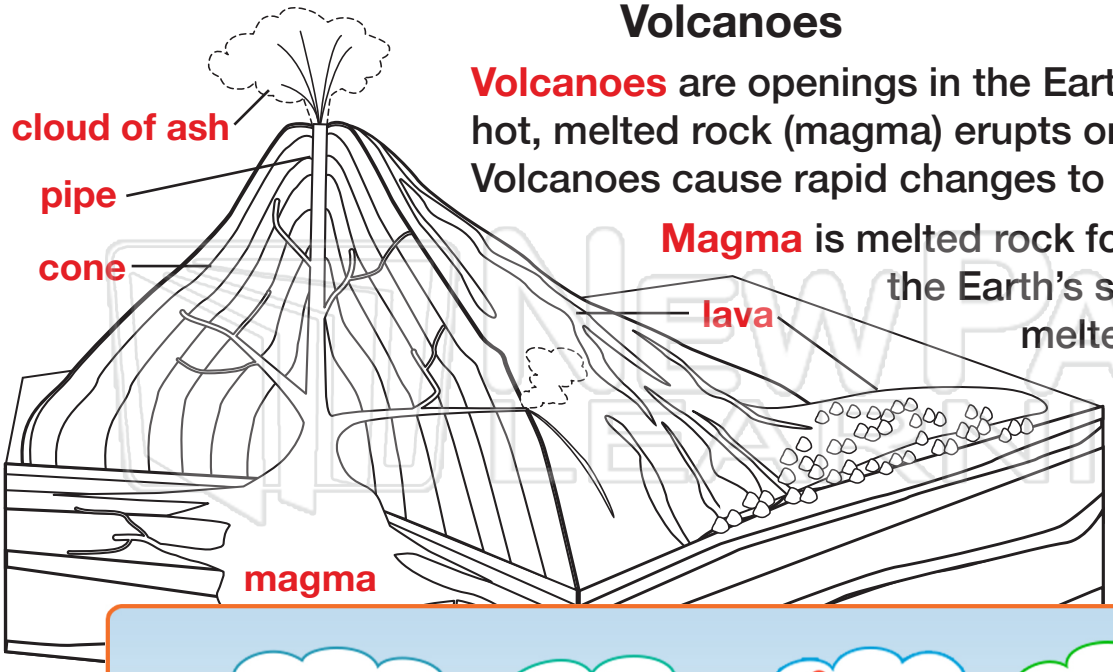
Sci E

Name _____ Class _____ Date _____

Volcanoes

Volcanoes are openings in the Earth's crust where hot, melted rock (magma) erupts onto the surface. Volcanoes cause rapid changes to Earth's surface.

Magma is melted rock found **beneath** the Earth's surface. **Lava** is melted rock that comes **above** the Earth's surface.



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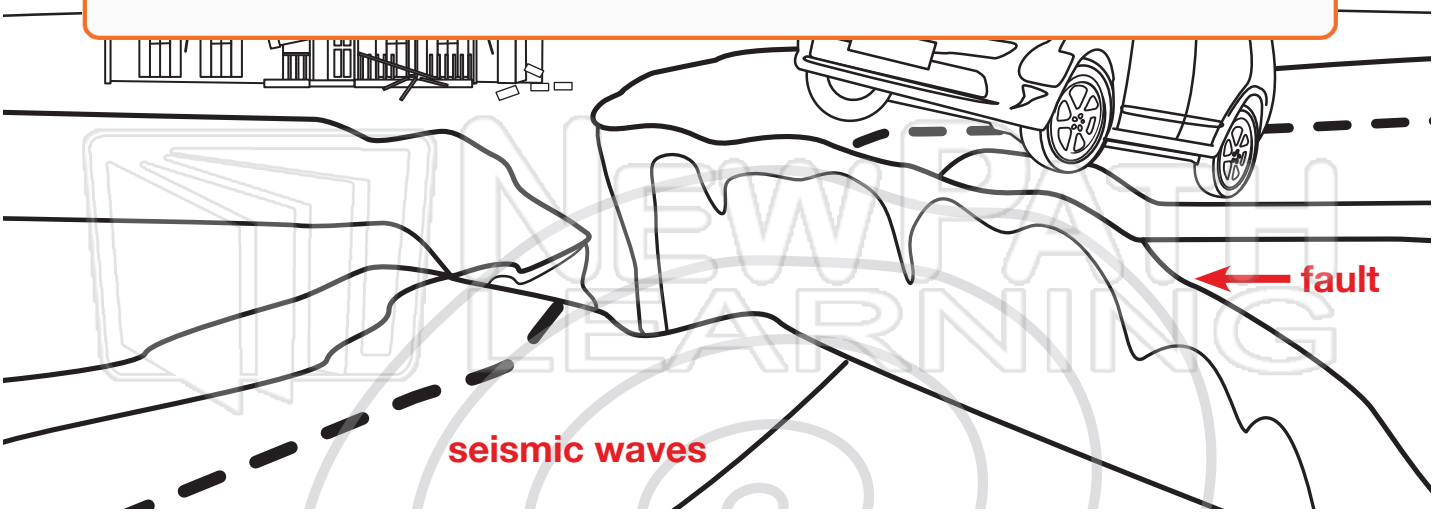

Landforms

Sci E

Name _____ Class _____ Date _____

Volcanoes

What is a **volcano**? _____

_____

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_____

Describe the difference between **magma** and **lava**.

_____

_____

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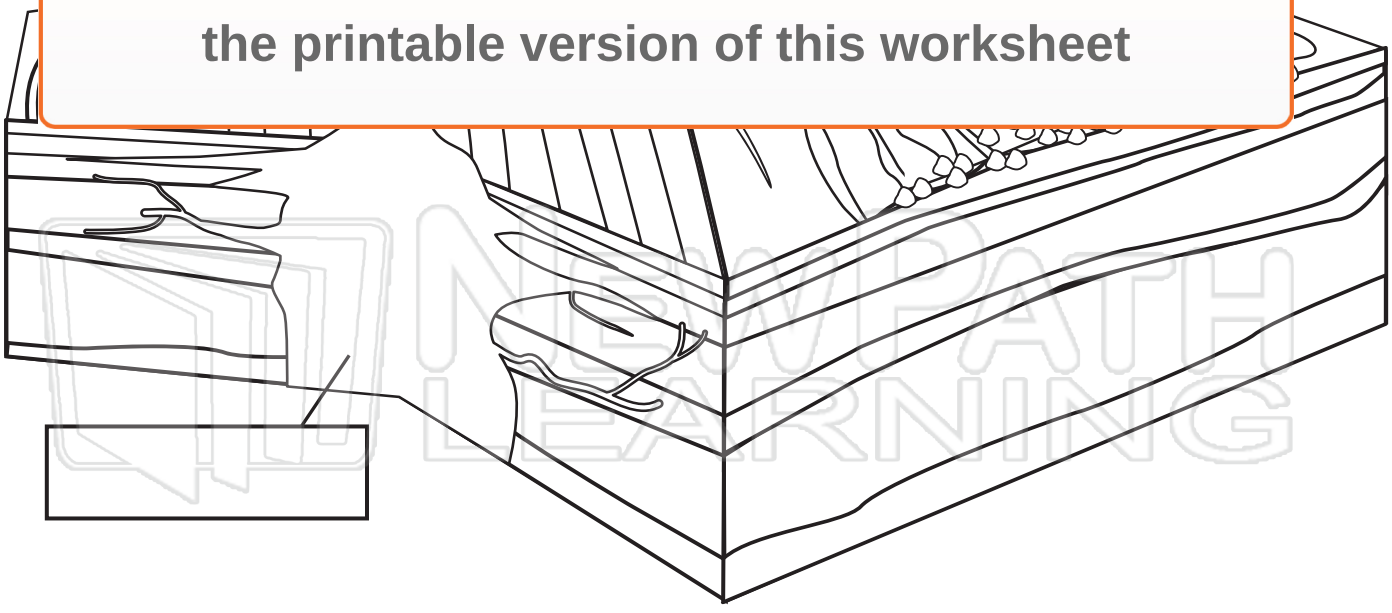


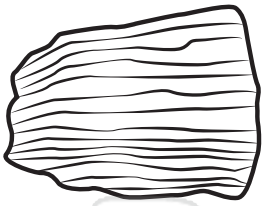
Rocks & the Rock Cycle

Sci E

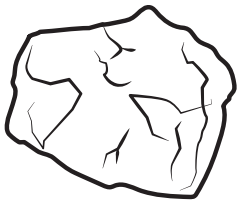
Name _____ Class _____ Date _____

What are rocks? _____

_____



sandstone



limestone

Sedimentary rocks are _____

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halite

Draw & label a rock

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rock

PREVIEW

Please Sign In or Sign Up to download the printable version of this worksheet

Igne

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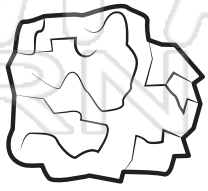
pumice

obsidian

Draw & label a rock



granite

Rocks & the Rock Cycle

Sci E

Name _____ Class _____ Date _____

What is the Rock Cycle? _____

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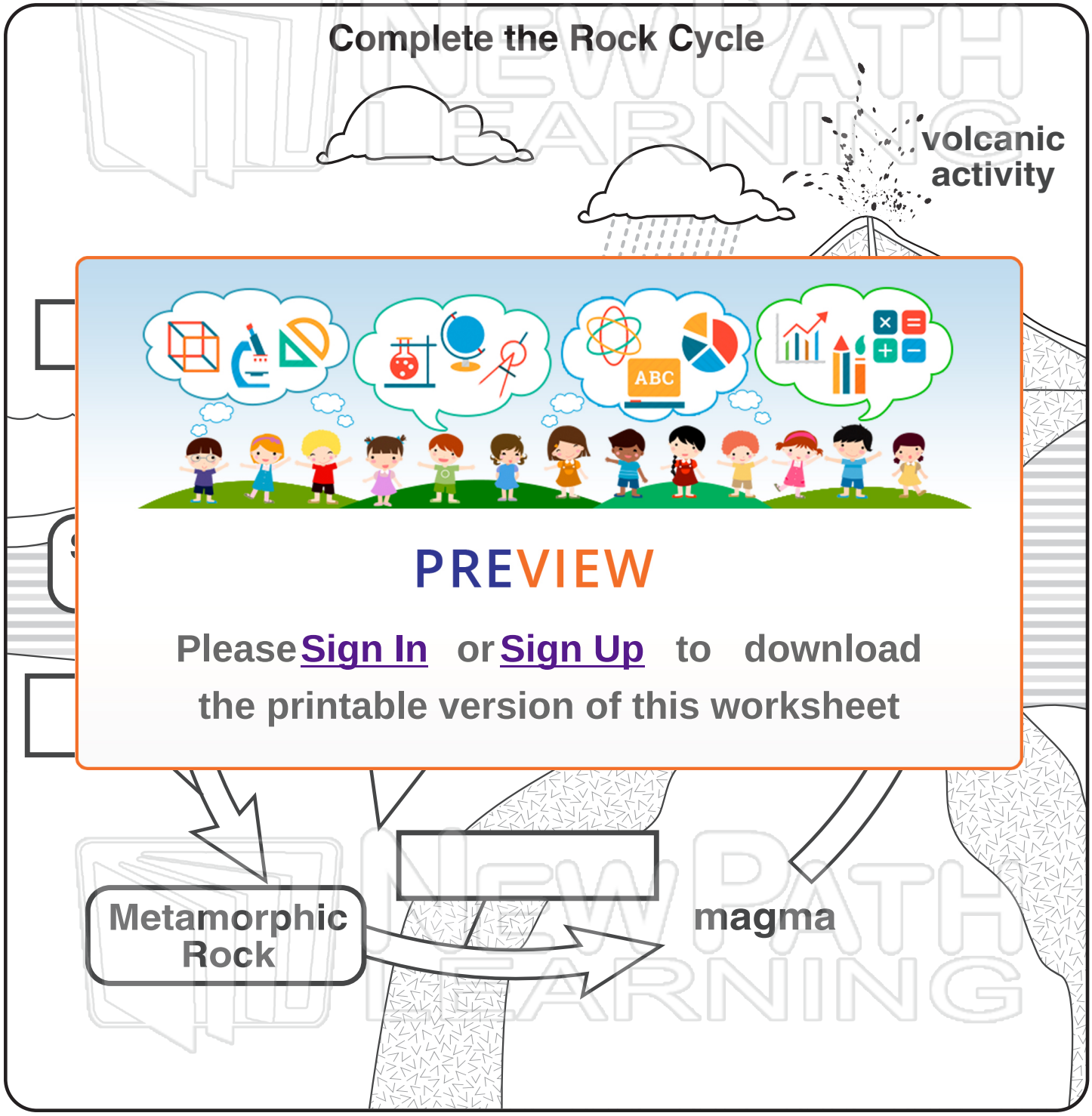
Complete the Rock Cycle



Landforms

Sci E

Name _____ Class _____ Date _____

Contours on a **topographic map** show changes in elevation of various landforms.

Use the symbols key to study the map.
Find the changes in elevation.

Map Symbols

- contour line - elevation
- primary highway
- secondary highway
- trail
- river
- stream
- wetlands
- bridge

PREVIEW

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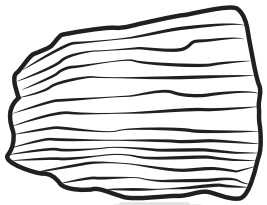
Rocks & the Rock Cycle

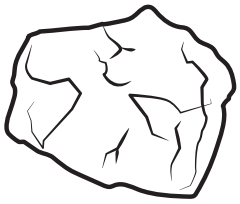
Sci E

Answer Key

What are rocks? Made from minerals above and under ground.



sandstone



limestone

Sedimentary rocks are formed by layers of eroded materials compressed together.

halite

Draw & label a rock

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rock

PREVIEW

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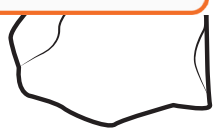
Igneous rocks are rocks made from lava from volcanoes. They are different based on temperature and where they were formed.

pumice



obsidian

granite

Draw & label a rock

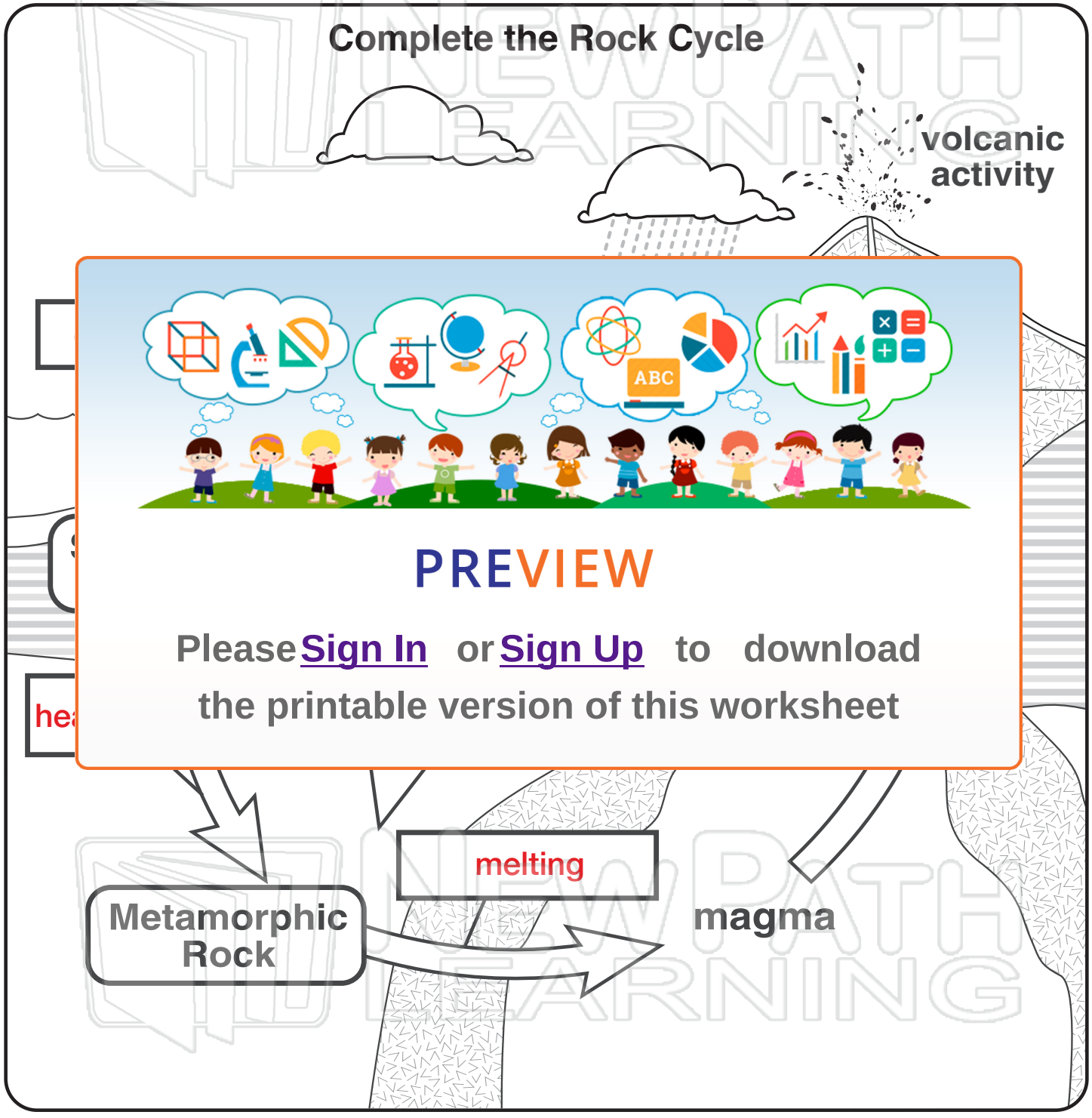
Rocks & the Rock Cycle

Sci E

Answer Key

What is the Rock Cycle? The rock cycle is the recycling of old rocks into new rocks. It's caused by heat, pressure, weathering and erosion.

Complete the Rock Cycle



Landforms

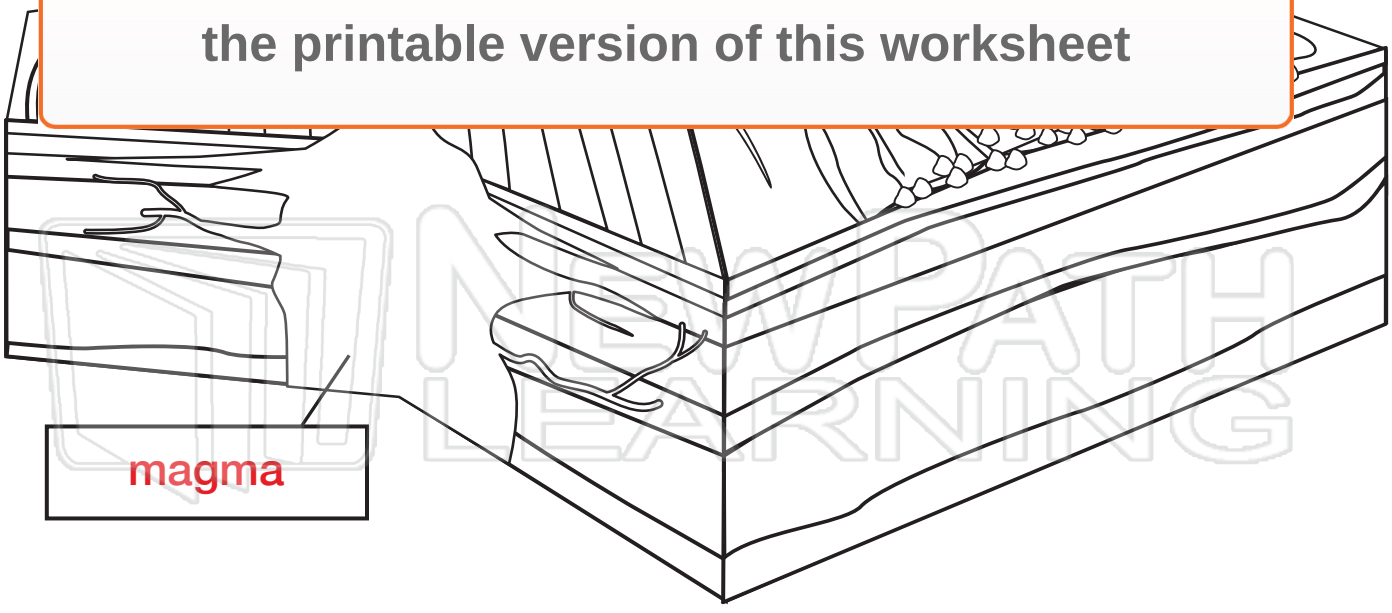
Sci E

Answer Key

Volcanoes

What is a **volcano**? They are opening in the Earth's crust where magma erupts onto the surface. They can change the Earth's surface and even form mountains.

Describe the difference between **magma** and **lava**.
Magma is hot melted rock below the Earth's surface. When the magma erupts onto the surface it is called lava. Lava flows out of volc



Landforms, Rocks and soil

Sci E

Name_____ Class_____ Date_____

1 What is drawn on a **topographic map** to represent the **elevation** of the land features shown on the map?

A different colors
B dots
C icons
D contour lines

2 Mountains, plateaus, canyons, hills, and valleys are all examples of different _____.

A landforms
B water features
C man-made land features
D elevations

3 **Soil** is the loose material the covers much of the Earth's surface. What is the **correct order** of soil layers starting with the top layer to the hard, bottom layer?

A bedrock, subsoil, topsoil

4 What do all **rocks** have in common?

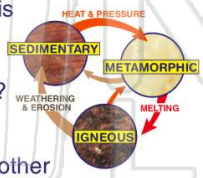
A They have large crystals.
B They are made of minerals.
C They are formed on the Earth's surface.

5

C metamorphic rocks
D temperate rocks

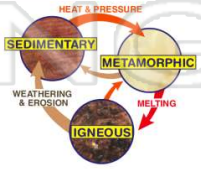
7

9 Which of the following is the best way to describe what the **rock cycle** represents?



A how rocks change from one form to another
B only how rocks are made
C only how rocks erode
D only how rocks break apart

10 This rock cycle diagram shows that **heat and pressure** can cause sedimentary rocks to **change** into _____.



A graphite rocks
B igneous rocks
C metamorphic rocks
D larger rocks

Landforms, Rocks and soil

Sci E

Name_____ Class_____ Date_____

1 What is drawn on a **topographic map** to represent the **elevation** of the land features shown on the map?

A different colors
B dots
C icons
D contour lines

D

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B water features
C man-made land features
D elevations

A

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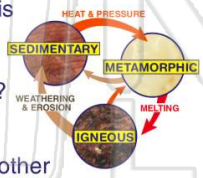

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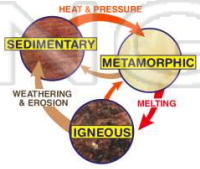


A graphite rocks
B igneous rocks
C metamorphic rocks
D larger rocks

C

Landforms, Rocks and soil

Sci E

Name_____ Class_____ Date_____

1 The following picture is an example of _____.

A heat and pressure
B how minerals are made
C chemical weathering
D erosion

2 What type of **weathering** involves the breaking of rock into small pieces because of such things like gravity, wind, rain, and ice?

A cold weathering
B formation weathering
C mechanical weathering
D chemical weathering

3 _____ is the **changing** of material in a rock through a **chemical process**.

A Chemical weathering
B Mechanical weathering

4 **Erosion** can occur quickly or slowly.

True or false?

A true
B false

5

off the field
D to grow larger plants

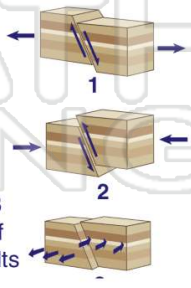
A erosion **C** deposition
B decomposition **D** weathering

7

9 **Faults** are rock **fractures or cracks** in the Earth's crust. What causes **faults**?

A movement or shifting of the Earth's surface
B erosion
C weathering
D heavy precipitation

10 A **reverse fault** occurs when one block of earth is **pushed upward**. Which fault in the diagram represents a **reverse fault**?



A fault #1 **C** fault #3
B fault #2 **D** none of the faults

Landforms, Rocks and soil

Sci E

Name_____ Class_____ Date_____

1 The following picture is an example of _____.

A heat and pressure
B how minerals are made
C chemical weathering
D erosion

D

2 What type of **weathering** involves the breaking of rock into small pieces because of such things like gravity, wind, rain, and ice?

A cold weathering
B formation weathering
C mechanical weathering
D chemical weathering

C

3 _____ is the **changing** of material in a rock through a **chemical process**.

A Chemical weathering
B Mechanical weathering

A

4 **Erosion** can occur quickly or slowly.

True or false?

A true
B false

A

5

A

off the field
D to grow larger plants

7

C

A erosion
B decomposition
C deposition
D weathering

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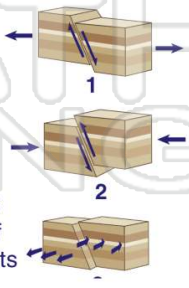


A fault #1
B fault #2
C fault #3
D none of the faults

B

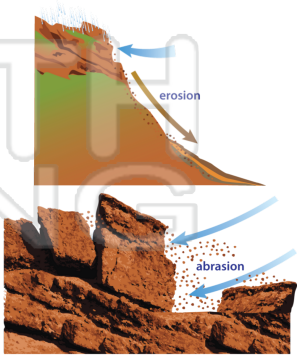
Landforms, Rocks and soil

Name_____ Class_____ Date_____

Match each of the following terms to its definition:

Continental glacier	Abrasion	Alluvial fan	Acid rain
Alpine glacier	Chemical weathering	Continental plates	Erosion

1. - a process by which weathered rock and soil is transported to a new location; the wearing away of the Earth's surface by rain, wind, snow and ice



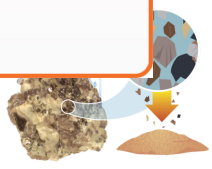
2. - a type of mechanical erosion that occurs when one rock grinds against another

3. causes

4. mount

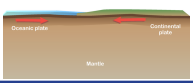
5. altitud

6. reacti



7. - a moving mass of ice that forms across large geographic regions near the poles

8. - tectonic plates under land



Landforms, Rocks and soil

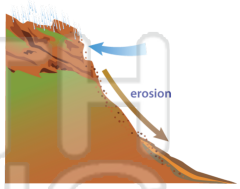
Sci E

Name_____ Class_____ Date_____

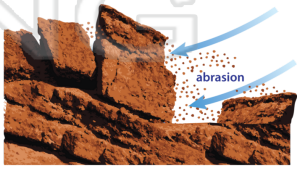
Match each of the following terms to its definition:

Continental glacier	Abrasion	Alluvial fan	Acid rain
Alpine glacier	Chemical weathering	Continental plates	Erosion

1. erosion - a process by which weathered rock and soil is transported to a new location; the wearing away of the Earth's surface by rain, wind, snow and ice



2. abrasion - a type of mechanical erosion that occurs when one rock grinds against another

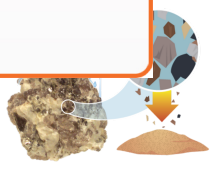


3. aci
weath

4. allu
or hill,

5. alp
mount

6. che



7. continental glacier - a moving mass of ice that forms across large geographic regions near the poles

8. continental plates - tectonic plates under land