

## Lesson Plan

### Comparing Processes

**Book:** *Plateaus*

**Series:** Landforms

**Level:** Beacon

### Objective

To help students practice summarizing texts, as well as comparing and contrasting several texts about related topics.

### Supplies

- 4 copies of the *Plateaus* book
- 4 copies of the *Mountains* book (or attached excerpt)
- 4 copies of the *Valleys* book (or attached excerpt)
- Paper and pencils

### Before the Activity

Divide students into four groups. If you don't have copies of *Mountains* or *Valleys*, print four copies of each excerpt (attached).

### Activity

Open the *Plateaus* book to Chapter 2 ("Building a Plateau"). This chapter explains how tectonic plates and volcanoes can cause plateaus to form. These events are also involved in the creation of other landforms, such as mountains and valleys. In the following activity, students will compare and contrast how Earth's shifting plates create various landforms.

Give each group a copy of each book (or excerpt). Each book focuses on a different landform. However, the process that forms all three landforms can involve tectonic plates and volcanoes. Students should read about all three landforms. They should write three paragraphs: each should summarize the way one of the landforms is created. Finally, students should write a fourth paragraph that compares and/or contrasts the ways these landforms are created.

**Evaluation**

Use the attached answer key to give students up to 5 points for each paragraph, for a total of 20 points.

**Standards**

This lesson may be used to address the Common Core State Standards' reading standards for informational texts, grade 5 (RI 5.3, 5.9) and the National Science Education Standards' Content Standard D, grades 5–8.

## **Mountains Excerpt (pp. 9–13 of *Mountains* by Martha London)**

### **CHAPTER 2 MOVING PLATES**

Mountains are formed in two main ways. The first way involves tectonic plates. These are huge slabs that make up Earth's crust. They act like a shell around the planet.

Tectonic plates move very slowly. Sometimes they crash into each other. When this happens, one plate is gradually forced upward. It starts to stick up from the ground. This process takes millions of years. But over time, it creates a mountain. Sometimes tectonic plates create entire mountain ranges when they collide.

Volcanoes can form mountains, too. These mountains can be on land. They can also be in the ocean. For example, Hawaii is a string of mountains formed by volcanoes.

Magma flows under Earth's tectonic plates. This melted rock is extremely hot. It can come to the surface through volcanoes. When magma reaches the surface, it is known as lava. Lava piles up as it cools and hardens. Over time, this process creates a mountain.

## **Valleys Excerpt (pp. 9–13 of *Valleys* by Patricia Hutchison)**

### **CHAPTER 2 FORMING A VALLEY**

Some valleys are V-shaped. These valleys are narrow. They have steep sides. V-shaped valleys are formed by rivers. Many rivers begin on mountaintops. Snow melts, and water flows downhill. As it flows, the water erodes the rock. Slowly, a V-shape forms between the hills. This process takes millions of years.

Some valleys are U-shaped. These valleys form in very cold mountain climates. The snow on the mountains melts in the summer. During the winter months, it freezes again. This process happens over and over. It forms a huge chunk of ice called a glacier. It takes thousands of years for a glacier to form. Then, the glacier creeps slowly down the mountainside. As it moves, the heavy ice grinds away the rock. When the glacier melts, a U-shaped valley is left behind. This type of valley has a curved bottom and steep sides.

Earth's crust is made up of huge pieces of rock. These pieces are called tectonic plates. They are always moving. But they move very slowly. When two plates move apart, molten rock comes out between them. This rock hardens when it cools. New, flat land forms between the plates. This land is a rift valley.

## **ANSWER KEY**

### **Plateaus (5 points)**

Plateaus form because of changes in Earth's crust. As tectonic plates move slowly, they sometimes crash together. One plate slides on top of the other, pushing up an area of land. Other times, hot magma pushes up Earth's crust. This creates a plateau. Plateaus can also happen when lava builds up over time after volcanic eruptions.

### **Mountains (5 points)**

Mountains also form because of changes in Earth's crust. Sometimes the plates of Earth's crust crash together. One plate is pushed upward. It starts to stick up and become a mountain. Other times, magma from beneath the plates bursts up to the surface through a volcano. Lava from the volcano piles up. As it cools and hardens, the lava creates a mountain.

### **Valleys (5 points)**

Valleys can form in several ways. Sometimes, a river erodes rock to form a V-shaped valley between hills or mountains. Other times, a glacier creeps slowly down a mountain and grinds away rock. When the glacier melts, a U-shaped valley is left. Valleys may also happen when two plates of Earth's crust move apart and magma comes up. This is called a rift valley.

### **Compare/Contrast (5 points)**

Magma (or lava) can be a cause of all three landforms, though they also have other ways of forming. Mountains and plateaus always form because of changes in Earth's crust. But valleys are sometimes created by moving rocks or water. Plateaus and mountains are usually caused by things piling up or being pushed up, while valleys are often created when things are worn down.