

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Explaining Earth Changes

### Part 1

Mountains in the United States undergo the same processes as the Himalayas and other mountain ranges across the world. In the US, on the same continent, there are mountain ranges that are getting taller and mountain ranges that are getting smaller.

The Rocky Mountains



The Appalachian Mountains



The Rocky Mountains - in the left photo - are still growing higher while the Appalachian mountains - in the right photo - are getting smaller over time.

1. How can one mountain range be growing while another is getting smaller? In your response, explain the relationships between the forces that are uplifting mountains and the forces that are wearing them down and how they cause changes in the mountains over time.

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In 1909, Earl Douglass was in the Rocky Mountains and his job was to look for dinosaur bones. In his journal, he wrote about the day he found them:

*At last, in the top of the ledge where the softer overlying beds form a divide, a kind of saddle, I saw eight of the tail bones of a brontosaurus in exact position. It was a beautiful sight. Part of the ledge had weathered away and several of the vertebra had weathered out and the beautifully preserved centra lay on the ground. It is by far the best looking dinosaur prospect I have ever found. The part exposed is worth preserving anyway.*



Source: <https://www.smithsonianmag.com/science-nature/a-visit-to-douglass-dinosaur-23586196/>

The place he found the dinosaur fossils is now called Dinosaur National Monument and it is on the Utah/Colorado Border. There is a large slab of exposed rock that reveals the fossils of dinosaurs from different time periods. It is called the “wall of bones,” which is a cliffside with over 1500 fossils. The fossils are from a river bed from the late Jurassic time period. Scientists think the dinosaurs and other reptiles died near the river bed and were buried. Eventually this river bed was uplifted to become a cliff. ,

2. Draw a time-series model that explains how these bones became fossils and were buried in the river bed that then became the wall of bones discovered by Earl Douglass.

Time 1: How did the fossil become a fossil at the river bed?	Time 2: How did this river bed become the side of a cliff?	Time 3: How was Earl Douglass able to see the bones sticking out of the cliff?

## Part 2



The videos about the Rift Valley in Africa present two different claims for why the crack suddenly appeared:

**Claim 1:** The plates have been slowly moving apart for hundreds of years and as they moved the crack filled with soil and sediment, so it was not visible. In 2018 it rained a lot and the dirt, sediment, and soil washed away leaving a large crack in the ground.

**Claim 2:** The tension and earthquakes at the divergent boundary as the plates are moving apart caused the crack to appear in the ground in a day.

- 1. Develop a Model.** Create two models to show how each claim can explain what happened to create a visible crack in the Earth.

Model of Claim 1	Model of Claim 2

**2. Gathering Evidence.** Complete the table below to describe what evidence you need to help determine the most plausible explanation for the crack. Provide at least 3 sources of evidence.

For each piece of evidence, say what question it will help you answer.

Evidence	What question this evidence will help me answer
1.	
2.	
3.	
4.	
5.	
6.	
7.	

Add more rows if you need them.