

# **EARTH SCIENCE** Lesson Plan

## Quarter 3, Week 7, Day 1



### **Outcomes for Today**

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Standard Focus:

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Continental ice sheets increase the weight of the Earth's crust and depress it significantly. As the ice sheets melt, the excess weight on the crust decreases and the crust rebounds. In areas of the world the crust is rising 1 cm per year. Over time, it could eventually impact harbors, lakes, and river drainage patterns.

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

**isostacy**

**isostatic rebound**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 20.1, pp. 523-527

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- About 70% of Earth's surface is below sea level and about 30% above.
- Mountain roots extend into the mantle. As erosion takes place and mass is lost from a mountain, the root rises in response.
- Mountain roots are many times as deep as the mountain is high.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

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### 10. Collect data and post.

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**One possible activity:** Problem-Solving Lab, p. 526 of the text

**Procedure:** Students determine the rate of isostatic rebound changes over time

**Discussion:** Discuss the last ice age and climate changes

**Key question:** How did the rate decrease with time?

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world

# **EARTH SCIENCE** Lesson Plan

## Quarter 3, Week 7, Day 2



### **Outcomes for Today**

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Standard Focus: Earth Sciences 3.b

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Orogeny or orogenesis, the processes of mountain building, involves folding, faulting, metamorphism, magma production and emplacement, and downwarping. When an oceanic plate converges with another oceanic plate, one plate is subducted into the mantle. The magma that reaches the crust creates a series of volcanoes called an island arc. The Aleutian Arc represents one of the largest subduction zones in the world stretching a least 400 km west of Alaska. It is unique because it involves an oceanic-oceanic convergent boundary to the west and an oceanic-continental convergent boundary to the east.

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

**orogeny**

**orographic belts**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 20.2, pp. 528-531

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Most orogenic belts are associated with plate boundaries.
- Earth's tallest mountains are formed at continental-continental boundaries.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

---

### 10. Collect data and post.

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**One possible activity:** Why Do Mountains Look the Way They Do?

**Procedure:** Students create a K-W-L chart in small groups

**Discussion:** Discuss what is already know about mountains

**Key question:** What do we want to know about mountains?

**Source:** <http://teachingboxes.org/mountainBuilding/lessons/lesson1.jsp>

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world

# **EARTH SCIENCE** Lesson Plan

## Quarter 3, Week 7, Day 3



### **Outcomes for Today**

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Standard Focus

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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The Appalachian Mountains are very old and the result of many plate collisions. During the Paleozoic era, the Appalachian region was periodically submerged under shallow seas and layers of sediment and carbonate rock were deposited. Later changes in plate movement allowed for the creation of a subduction zone along an oceanic plate. The Appalachians grew with subsequent collisions as the supercontinent of Pangaea was created. When Pangaea began to break apart, the mountain building ceased and the mountains began to erode.

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

**Valley ridge**

**Piedmont**

**Blue Ridge**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 20.2, 532-534

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- The Appalachian Mountains extend from Newfoundland to Alabama.
- Each region of the Appalachians shows different degrees of deformation.
- The Appalachians were formed in stages from about 700-300 million years ago.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

---

### 10. Collect data and post.

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**One possible activity:** Investigating Shape

**Procedure:** Students categorize photos of mountains

**Discussion:** Discuss ways in which the mountains are different

**Key question:** How can the mountains be grouped by shape?

**Source:**

[http://teachingboxes.org/mountainBuilding/lessons/lesson2\\_activity1.Jsp](http://teachingboxes.org/mountainBuilding/lessons/lesson2_activity1.Jsp)

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

---

Extend the reading to the students' lives or to the world

# **EARTH SCIENCE** Lesson Plan

## Quarter 3, Week 7, Day 4



### **Outcomes for Today**

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Standard Focus

#### **PREPARE**

##### **1. Background knowledge necessary for today's reading.**

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Ocean ridges on the ocean floor are divergent boundaries formed by convection currents in the mantle. The warming of the overlying plate causes the plate to bulge upward and rise higher than the surrounding ocean floor, creating a gently sloping mountain range.

##### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

#### **pillow basalts**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

#### **READ**

##### **3. Review the vocabulary and concepts previously covered in this chapter.**

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##### **4. Read directions for investigation/activity.**

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##### **5. Read text.**

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Ch. 20.3, pp. 535-536

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Ocean ridges formed differently and are much longer and taller than continental mountains.
- Ocean ridges are composed mainly of igneous rocks.
- Some magma from the main rift may intrude into the overlying rock to form dikes.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

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### 9. Explore today's simulation with inquiry activities.

---

### 10. Collect data and post.

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**One possible activity:** Folded Mountains

**Procedure:** Students model folded mountains

**Discussion:** Discuss the force of compression on rocks

**Key question:** What would happen if the rocks were more brittle?

**Source:**

[http://teachingboxes.org/mountainBuilding/lessons/lesson2\\_activity2.jsp](http://teachingboxes.org/mountainBuilding/lessons/lesson2_activity2.jsp)

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world



# **EARTH SCIENCE** Lesson Plan

Quarter 3, Week 7, Day 5



## **Outcomes for Today**

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Standard Focus

### **PREPARE**

#### **1. Background knowledge necessary for today's reading.**

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Mountains can also form away from tectonic plate boundaries. Uplifted mountains form when entire regions are forced upward like the Colorado Plateau, but the process is not well understood. Another type of nonboundary mountains are fault-block mountains, like the Sierra Nevadas which are faulted along their eastern flank.

#### **2. Vocabulary Word Wall.**

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Introduce 3-5 important words from today's reading

**uplifted mountains**      **fault-block mountains**

- Show, say, explain, expand, explode or buzz about the word briefly
- Show, say, define the word quickly and add to the word wall.

### **READ**

#### **3. Review the vocabulary and concepts previously covered in this chapter.**

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#### **4. Read directions for investigation/activity.**

---

#### **5. Read text.**

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Ch. 20.3, pp. 537-539

## RESPOND

### 6. Fix the facts. Clarify what's important.

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Discuss the reading and add 3-5 events/concepts to the billboard

Students might mention:

- Rocks that make up uplifted mountains generally undergo less deformation than rocks
- Fault-block mountains form when large pieces of crust are tilted, uplifted, or dropped downward between normal faults.

### 7. Post information on the billboard. Add new information to ongoing projects on the wall.

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## EXPLORE

### 8. Explore today's investigation with inquiry activities.

---

### 9. Explore today's simulation with inquiry activities.

---

### 10. Collect data and post.

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**One possible activity:** Fault Block Mountains

**Procedure:** Demonstrate how normal faults contribute to the formation of mountains

**Discussion:** Discuss the normal fault formation

**Key question:** What happened after tension was created?

**Source:**

[http://teachingboxes.org/mountainBuilding/lessons/lesson2\\_activity3.js](http://teachingboxes.org/mountainBuilding/lessons/lesson2_activity3.js)  
[p](#)

## EXTEND

### 11. Prompt every student to write a short product tied to today's reading.

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### 12. Close with a short summary.

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Extend the reading to the students' lives or to the world