

Lesson 3: Landforms (2 Days)

☐ Getting Started

Many of the maps that you used in Lesson 2 included landforms, which are natural features of the Earth. In this lesson, you'll learn more about different kinds of landforms and how they were formed.

Stuff You Need

- *Prisoners of Geography* by Tim Marshall
- *The Geography Book: Activities for Exploring, Mapping, and Enjoying Your World* by Caroline Arnold
- 2' x 3' board
- 3' length of rubber hose or flexible plastic tubing
- brown or gray construction paper* (Activity 3 - Option 2)
- funnel
- graph paper* (Activity 3 - Option 1)
- index cards* (Activity 3 - Option 2)
- journal
- large plate, small plate, and cup
- non-toxic modeling clay
- pencil
- pitcher
- ruler* (Activity 3 - Option 1)
- sandbox, sand table, beach, or other sandy area
- scissors
- transparent tape* (Activity 3 - Option 2)
- white paint

Ideas to Think About

- How have the landforms on Earth changed over time?
- How are landforms shaped by forces such as gravity and the movement of wind and water?
- How do humans influence erosion?
- How do natural resources affect human patterns of settlement?

Things to Know

- **Landforms** are natural features of the Earth's surface.
- The theory of **continental drift** explains that the continents have moved slowly over time to their current locations, shaping many features of the Earth's surface. This movement has caused continents to break apart and come together, forming mountains, oceans, and other landforms.
- **Erosion** is the gradual wearing away of rock and soil from the Earth's surface.
- **Deltas** are flat, triangular plains that form when silt (fine particles of soil) is deposited near the mouth of a river.

- Understand the features and differences among **islands**, **peninsulas**, **isthmuses**, **straits**, **bays**, and **fjords**. Be able to identify and describe each landform and body of water.

Activities

☐ Activity 1: The Continents

You may already be able to identify the continents on a globe or world map, but did you know that scientists believe that the continents weren't always in their now-familiar places? Watch the following videos to learn more about the theory of continental drift — the idea that the continents have moved slowly over time to their current locations — and how the movement of the continents has shaped many features of the Earth's surface.



Continental Drift 101

www.beyondthepage.com/link/11913/



Theory of Continental Drift

www.beyondthepage.com/link/11914/

Watch the video on this website.

Next, in *The Geography Book*, read pp. 43-44, which provide more information on continental drift. Now follow the instructions for the map puzzle on page 45 using the map provided on the "Moving Continents" activity pages. Don't worry too much about cutting precisely around tiny islands and peninsulas — cutting out the main shape of each continent will work fine for this activity.

☐ Activity 2: Land and Sea

Read pp. 58-60 in *The Geography Book*, paying special attention to the definitions of **islands**, **peninsulas**, **isthmuses**, **straits**, **bays**, and **fjords**.

On the two "Where Land and Sea Meet" activity pages, define each term and use the space provided to draw an example (real or imagined) that illustrates each definition. Use the following link from National Geographic to find at least one real-world example for each term, and write that example on the lines provided. Finally, write one sentence about each example that describes it, identifies its location, or explains something interesting about it.

Optional Extension

If you would like, use art supplies to create a map of an imaginary region that includes all of the terms that you've used in this lesson (island, peninsula, isthmus, strait, bay, and fjord). Be sure to give each feature a name and label your map. You may also enjoy completing the "Islands in a Tub" activity on page 60 of *The Geography Book*.



National Geographic Education

www.beyondthepage.com/link/11974/

Type each term into the Search Box on the main page. Then, click on the Encyclopedic Entry for the term

☐ **Activity 3: Mountains**

Read pp. 51-53 in *The Geography Book* to learn about the highest and lowest points on each continent.

Read about the tallest mountains in the world, and see a satellite view of the peaks at the following website.



The World's Highest Mountains

www.beyondthepage.com/link/11915/

Next, ask a parent which of the following activities you should complete:

Option 1

Use the "Mountain Heights" activity page to mark the heights of each mountain. Refer to the height information on page 51 of *The Geography Book*.

Option 2

Follow the instructions on pp. 52-53 of *The Geography Book* to make a paper model of some of the world's tallest mountains.

Day 2

☐ **Activity 4: Valleys and Canyons**

In this activity, you'll have the chance to see how the flow of water can create valleys and canyons on the Earth's surface. Read pp. 56-57 of *The Geography Book* to learn more about valleys and canyons. Do the erosion demonstration described in the book. If you have access to a length of rubber hose or plastic tubing, you can

complete the full demonstration. If you have only a sand pile and a bucket of water, you can still try the second step in which you pour water over a hill of sand to see what happens as the water runs down the pile.

You may have seen examples of water washing away soil in your own yard or a community park. The next time it rains, watch for examples of erosion. Can you think of any ways to prevent erosion in those situations?

Based on your reading, the demonstration with sand and water, and your own observations, complete the "Erosion" activity page.

☐ **Activity 5: The Flow of Water**

Read pp. 66-67 of *The Geography Book* to learn more about rivers. Follow the instructions on page 67 of the book; you will use water, a flat board, and some modeling clay (the book calls modeling clay "plasticene") to experiment with how the slope of the land and local landforms can affect the flow of rivers.

The Mississippi River is one of the longest rivers in North America, stretching over 2,300 miles from Minnesota all the way to the Gulf of Mexico. Known for its rich history and powerful flow, the river has been a vital waterway for transportation, trade, and wildlife for centuries. Read pp. 28-29 of *Prisoners of Geography*. Then answer the questions on "The Mighty Mississippi" activity page.

☐ **Activity 6: Deltas**

Read page 68 of *The Geography Book*, focusing on the two gray boxes labeled "The Mighty Mississippi" and "Deltas." Then watch the following videos. When you are done, complete the "Deltas" activity page to record what you learned.



Why Do Rivers Have Deltas?

www.beyondthepage.com/link/11916/



Ancient Egypt Geography — Nile River Valley and Nile Delta

www.beyondthepage.com/link/11917/

Wrapping Up

The Earth's landforms have changed dramatically over time, shaped by forces such as wind, water, and gravity. Humans have often settled near geographic features that provide the natural resources that humans need. Human settlement can have an

impact on the local environment by, for example, influencing the rate of erosion. What landforms and bodies of water are near your home, and how does their presence influence your life?

Life Application

Is there a mountain or a river near your home? If you have the chance, visit it with a notebook or nature journal in hand. Note any differences between the mountain or river area and your own backyard. Is the weather the same? Are the trees and plants the same? Are there any animals in one place that you don't notice in the other? Record your observations and maybe even sketch or photograph some of your favorite natural discoveries.



Moving Continents





Moving Continents



ISLAND

Where Land & Sea Meet

ISTHMUS

PENINSULA

Definition:

Definition:

Definition:

Example:

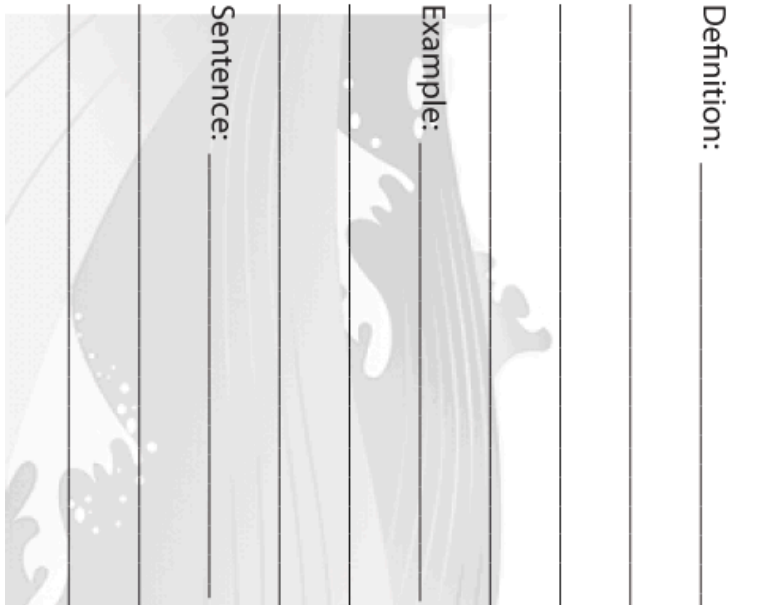
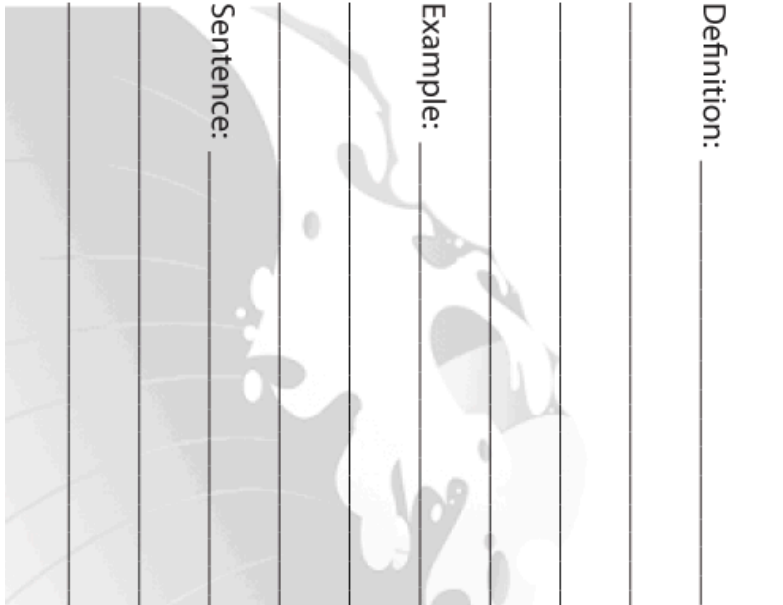
Example:

Example:

Sentence:

Sentence:

Sentence:



Where Land & Sea Meet

2

STRAIT

Definition: _____

Example: _____

Sentence: _____

BAY

Definition: _____

Example: _____

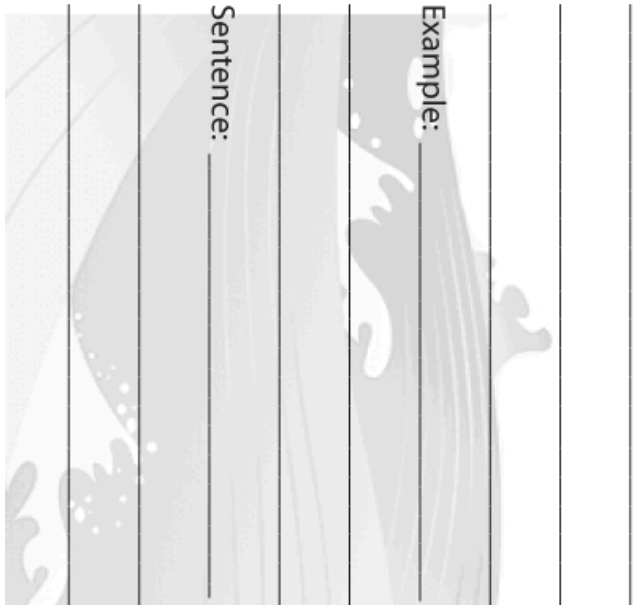
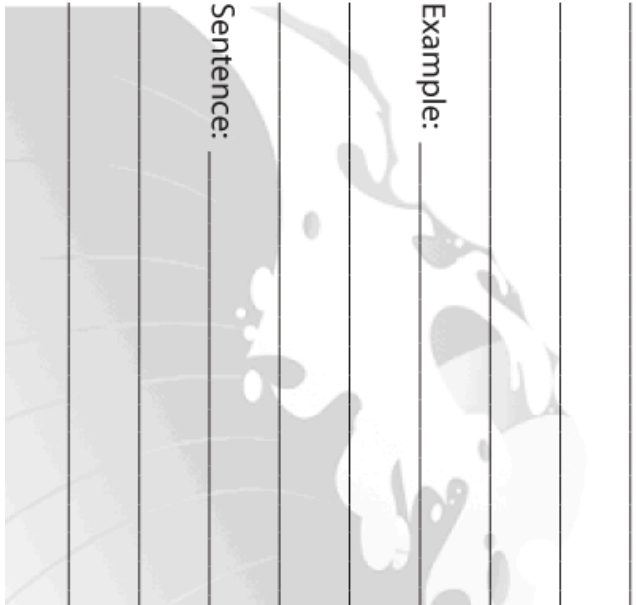
Sentence: _____

FJORD

Definition: _____

Example: _____

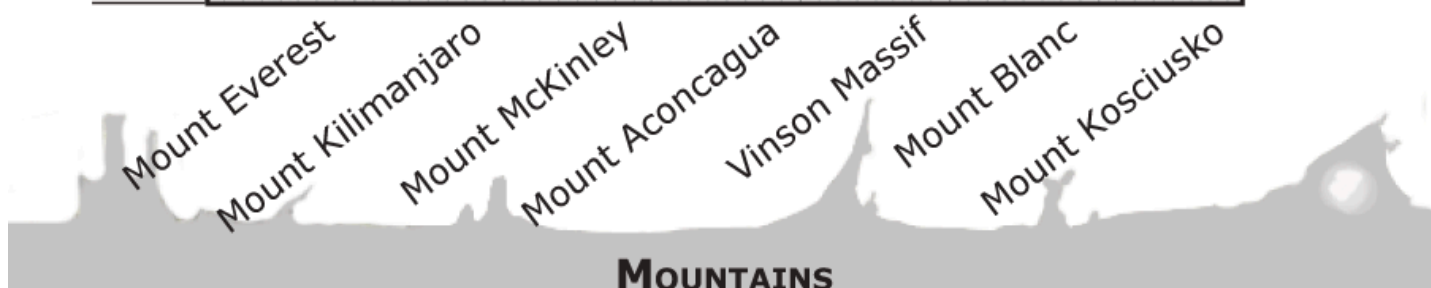
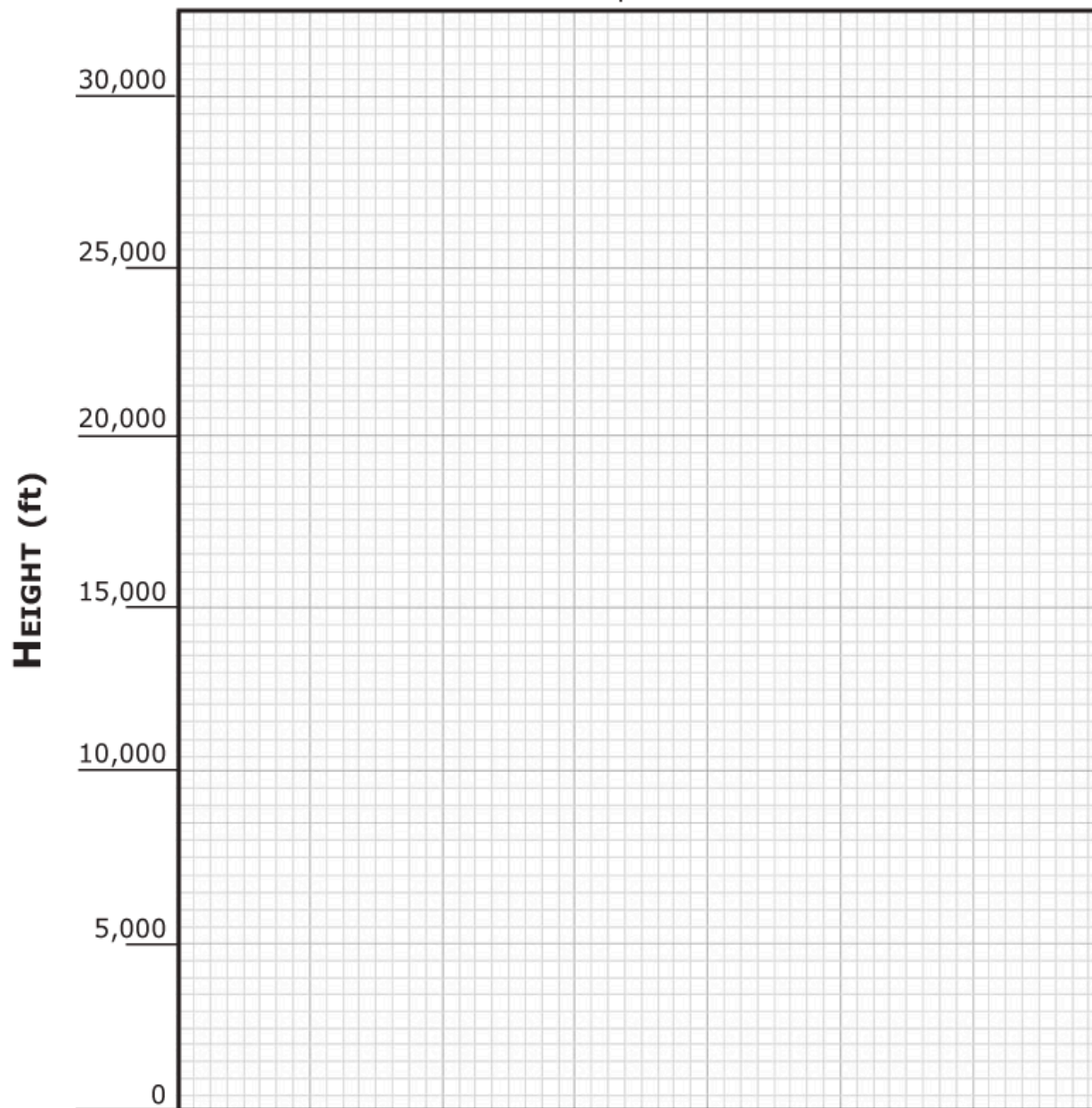
Sentence: _____



Climbing to the Top of the Mountain

Directions: Identify the height of each mountain and color in a bar graph showing how tall it is. One cube on the graph paper will represent 500 feet, so if you are including a mountain that is 5,000 feet high, you will color in 10 cubes for that mountain. If a mountain were 4,500 feet high, you would color in 9 cubes. Try to show the mountain's height as accurately as possible.

scale: 1 square = 500 ft



EROSION



1. What is erosion? _____

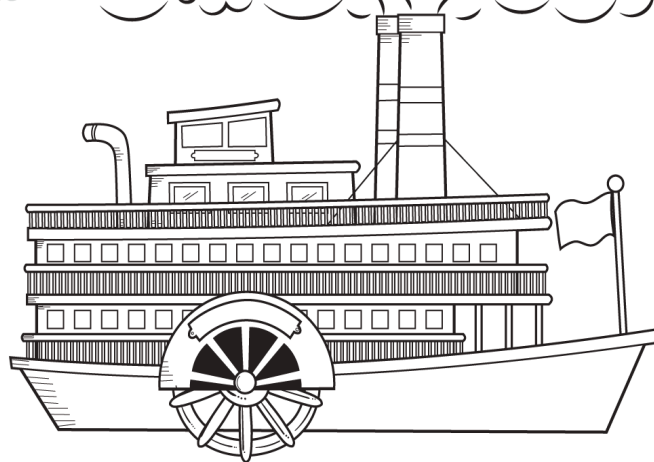
2. Describe the results of your own activity with sand and water. _____

3. How do human activities influence erosion? _____

4. How could people alter their activities to avoid unnecessary soil erosion? _____

THE MIGHTY MISSISSIPPI

1. Why was gaining control over the Mississippi basin important?



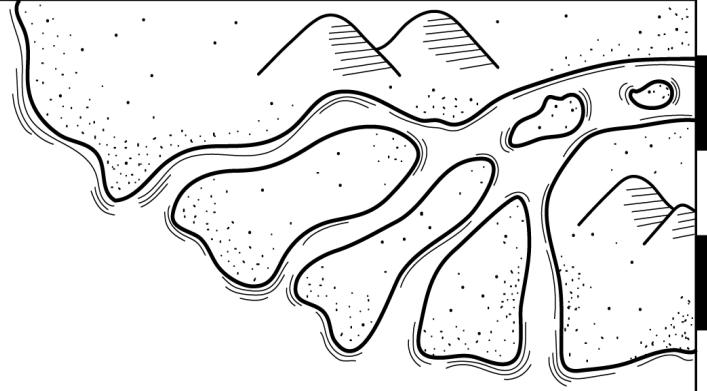
2. Why is a river network vital for trade? _____

3. How is the history of the Mississippi River connected to slavery? _____

4. How might the Mississippi River have influenced the development of cities along its banks?

5. How would you feel about taking a boat trip down the entire length of the Mississippi River?
What do you think you would see and experience along the way?

Deltas



Directions: Use the information from *The Geography Book* and the video to answer these questions.

How is a delta formed? _____

What does a delta look like? _____

How does a delta affect human activities? _____

Lesson 3: Landforms (2 Days)

Getting Started

✿ Ideas to Think About

- How have the landforms on Earth changed over time?
- How are landforms shaped by forces such as gravity and the movement of wind and water?
- How do humans influence erosion?
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Things to Know

- **Landforms** are natural features of the Earth's surface.
- The theory of **continental drift** explains that the continents have moved slowly over time to their current locations, shaping many features of the Earth's surface. This movement has caused continents to break apart and come together, forming mountains, oceans, and other landforms.
- **Erosion** is the gradual wearing away of rock and soil from the Earth's surface.
- **Deltas** are flat, triangular plains that form when silt (fine particles of soil) is deposited near the mouth of a river.
- Understand the features and differences among **islands**, **peninsulas**, **isthmuses**, **straits**, **bays**, and **fjords**. Be able to identify and describe each landform and body of water.

⦿ Skills

- Identify and analyze forces that cause change in landforms over time, including water and ice, wind, and gravity. (SS)
- Discuss and consider the wearing away and movement of rock and soil in erosion and its importance in forming canyons and valleys. (SS)
- Discuss how the flow of water and the slope of land affect erosion. (SS)
- Discuss and analyze how humans influence erosion and deposition in local communities as a result of activities like clearing land, planting vegetation, or building dams or other water-altering structures. (SS)
- Describe the deposition of eroded material and its importance in establishing landforms including deltas and flood plains. (SS)

Introducing the Lesson

Explain to your child that over the next two days, he will be learning about landforms, which are natural physical features on the surface of the earth. He will be learning what these features are, how they were formed, and how they affect the lives of the people who live near them.

Activities

Activity 1: The Continents

In this activity, your child will be learning about continental drift by tracing and cutting apart a map of the world and moving the continent pieces.

Activity 2: Land and Sea

In this activity, your child will define several geographical features that occur where land and sea meet. He will then use the National Geographic Education website to find real-world examples of each feature and write a sentence about each.

Depending on your child's interests and writing skills, you may wish to offer some further instruction about the kinds of sentences that you want your child to write about each real-world example. Some students may write something as straightforward as "Florida is a peninsula" while other students may write, "Florida is a peninsula that faces both the Atlantic Ocean and the Gulf of Mexico." You can also extend this activity by inviting your child to conduct library or online research on each example in order to write a more detailed statement about each.

In an optional activity, your child can draw an imaginary region that might include all of these features or complete a hands-on activity from *The Geography Book*.

Answer Key:

- An **island** is a body of land surrounded by water.
- An **isthmus** is a narrow strip of land that connects two larger landmasses and separates two bodies of water.
- A **peninsula** is a piece of land that is almost entirely surrounded by water but is connected to the mainland on one side.
- A **strait** is a narrow body of water that connects two larger bodies of water.
- A **bay** is a body of water partially surrounded by land.
- A **fjord** is a long, deep, narrow body of water that reaches far inland.

Activity 3: Mountains

Both activity options will allow your child to represent the heights of the tallest mountains on each continent visually.

Option 1

In Option 1, your child will use graph paper to chart the heights of different mountains. Students who are more mathematically inclined may prefer to chart the heights on graph paper.

Option 2

In Option 2, your child will create 3-D construction paper models that will not be exactly to scale, but will approximate the differences in height among the various mountains. Students who are hands-on learners might prefer making paper cone models.

Answer Key:

- | | |
|----------------------------------|-------------------------------|
| • Mount Everest: 29,035 feet | • Vinson Massif: 16,864 feet |
| • Mount Kilimanjaro: 19,340 feet | • Mont Blanc: 15,771 feet |
| • Mount McKinley: 20,320 feet | • Mount Kosciusko: 7,308 feet |
| • Mount Aconcagua: 23,034 feet | |

Day 2**Activity 4: Valleys and Canyons**

In this activity, your child will have the chance to see the impact of erosion first-hand by pouring a bucket of water over a pile of sand. If you have access to a funnel and a length of rubber hose or flexible plastic tubing, your child will also be able to see how directing the flow of water can prevent erosion. This activity can, however, be completed without the hose or tubing if those supplies are unavailable.

Answer Key:

1. What is erosion? *Erosion is the movement of weathered materials- rock fragments and particles of soil broken down by water, ice, and temperature changes.*
2. Describe the results of your own activity with sand and water. *Answers will vary.*
3. How do human activities influence erosion? *Human activity such as digging mines, damming rivers, cutting forests, and plowing fields increases the rate at which the soil erodes.*
4. How could people alter their activities to avoid unnecessary soil erosion? *Answers will vary, but may include people can prevent soil erosion by planting more trees and plants to hold the soil together.*

Activity 5: The Flow of Water

In this activity, your child will experiment with how the slope of the land and the landforms surrounding flowing water can change the water's flow. He will also read and answer questions about the Mississippi River.

Answer Key:

1. Why was gaining control over the Mississippi basin important? *Its smooth waters allow large ships to travel. It helped to connect and unite the northern and southern parts of the country.*
2. Why is a river network vital for trade? *A river network is vital for trade because transporting goods by water is less expensive than transporting them by road.*
3. How is the history of the Mississippi River connected to slavery? *African slaves were forced to work on cotton and sugar plantations in the south. These items were shipped along the river by steamboat to be sold.*
4. How might the Mississippi River have influenced the development of cities along its banks? *Answers will vary, but could include the river provided water for drinking, transportation for goods, and fertile land for farming, all of which attracted people to settle and build cities nearby.*
5. How would you feel about taking a boat trip down the entire length of the Mississippi River? What do you think you would see and experience along the way? *Answers will vary.*

Activity 6: Deltas

Your child will explore river deltas in this activity. You may wish to extend this activity by doing some research with your child on the Mississippi River Delta in the United States.

Answer Key:

1. How is a delta formed? *Deltas form when a river flows into a quiet body of water and drops sediment that it was carrying. As the sediment builds up, new land is formed.*
2. What does a delta look like? *They are often in the shape of a triangle.*

3. How does a delta affect human activities? *Answers will vary but may include a delta affects human activities by providing fertile land for farming, acting as a natural barrier against floods, and offering habitats for wildlife and fisheries.*

Wrapping Up

Questions to Discuss

- How do you believe the landforms and bodies of water near people's homes can impact their lives? (Answers will vary but may include: Landforms and bodies of water near where people live can significantly influence their lives by affecting the climate, available jobs, and recreational activities. For example, living near a coast might provide opportunities for fishing and beach activities, while mountainous areas could offer hiking and skiing.)
- Are there any ways in which people affect the landforms near where they live? (Yes, human activities like farming, mining, and land clearing can cause increased erosion. Students may also mention structures like dams or human impacts like pollution.)

Things to Review

- Review definitions of key terms like landforms, continental drift, island, isthmus, peninsula, strait, bay, fjord, valley, erosion, and delta.
- Review the information your child recorded on each of the lesson's activity pages.