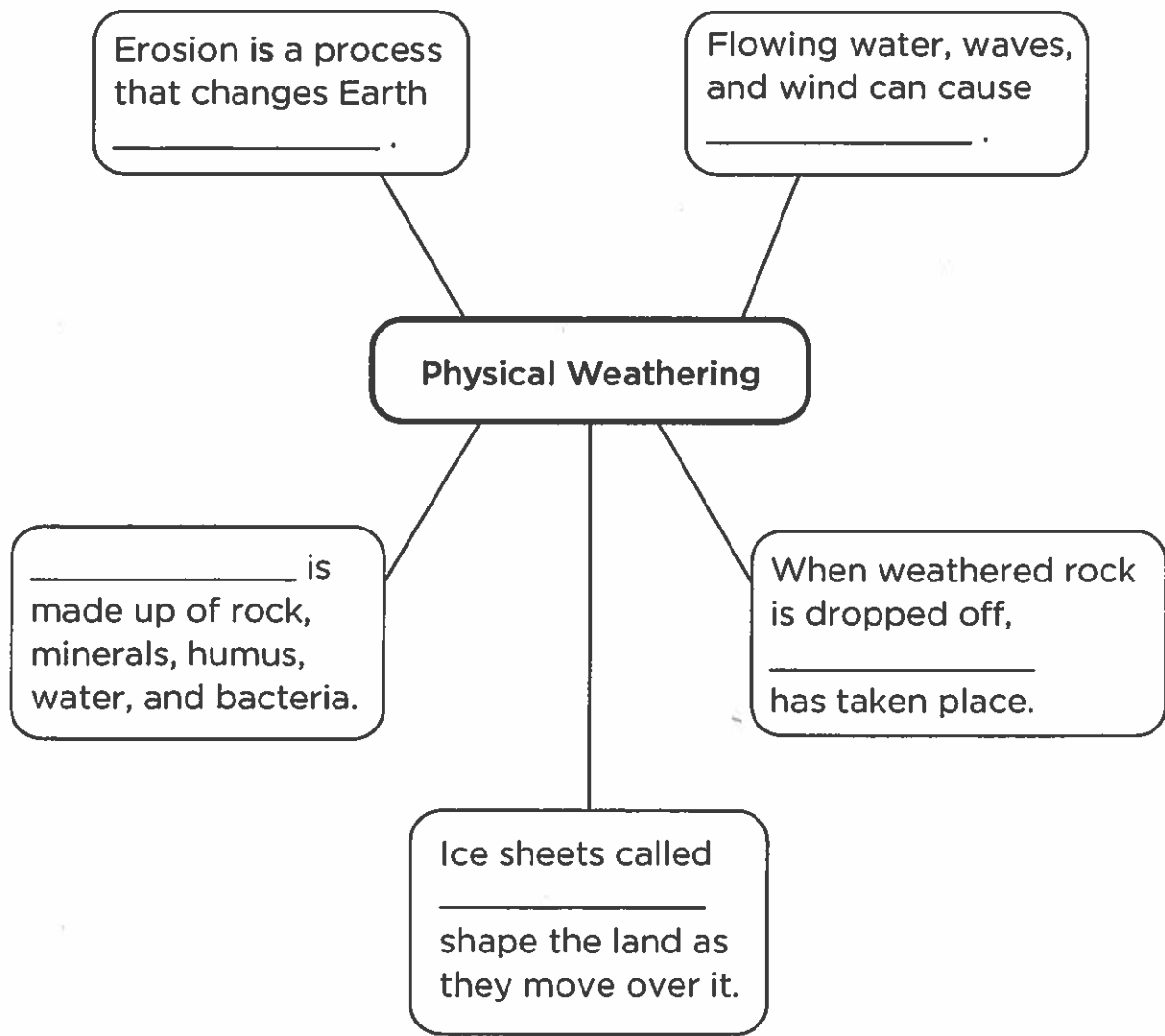


Slow Changes on Earth



Sierra

Read the Literature feature in your textbook.



Write About It

Response to Literature The poet uses personification to describe how rock is slowly worn away. Write a letter to the poet. Tell if you liked the poem. Discuss how making the mountain seem human made you feel. What did it help you understand?

Weathering

- | | | |
|-------------------------------|-----------------------|-------------------------------|
| a. abrasion | d. exfoliation | g. physical weathering |
| b. carbonic acid | e. horizon | h. weathering |
| c. chemical weathering | f. humus | |

Match the correct letter with the description.

- _____ A layer of soil
- _____ Breaks rock down without changing the rock material
- _____ Weathering that causes layers of rock to peel like an onion
- _____ The breaking down of rocks
- _____ Breaks rock down by changing its minerals
- _____ Decayed plant or animal material
- _____ Sharp edges of blowing sand wearing rocks away
- _____ A substance that forms when carbon dioxide combines with rainwater

Weathering

acid	chemical	humus
carbon dioxide	exfoliation	water
changes	horizons	weathering

Fill in the blanks.

Rocks are under constant attack by many forces and eventually break down. The breaking down of rocks is called _____ . Physical weathering breaks rock into smaller pieces without causing _____ changes. Physical weathering can be caused by freezing, thawing, plants, _____ , and abrasion. Chemical weathering causes _____ in the minerals in rocks. Oxygen and _____ can combine with _____ to form a weak _____ that can react with rock to break it down. Soil is mostly made from bits of weathered rock, minerals, and _____ , which is decayed plant or animal material. Soil forms into layers or _____ over many years. Soil is different from place to place because the rocks and living things that make up soil are different from place to place.

Erosion and Deposition

Use your textbook to help you fill in the blanks.

What causes erosion?

1. The transport of weathered rock is called _____.
2. The shape of the land is changed as _____ work together.
3. The biggest cause of erosion is _____.
4. Eventually, _____ are _____ in a new place.
5. Waves also cause _____ as they break rocks apart and then _____ the rocks and sand.
6. Wind _____ small pieces of rock, sand, and soil and carries them to _____.
7. Wind _____ by _____ at the same time.
8. _____ takes place when weathered rock, sand, and soil are _____ by wind or water.

What affects erosion?

9. A _____ soil is eroded more easily than _____ clay.
10. Erosion is also affected by the _____ of _____.

11. The strength of _____ and the growth of _____ also affect the rate of erosion.
12. In 1930, a _____ began that allowed bare, dry soil to _____ in an event known as the _____.
13. Many animals died because there were no _____ for them to eat, and thousands of _____ had to _____.

How can soil erosion be slowed?

14. From the Dust Bowl, people learned that it was important to _____ soil by using methods to save it and _____.
15. Farmers _____ between fields to slow _____.
16. Farmers use a method called _____ when they plant _____ of food crops and other plants to _____.
17. Farmers prevent soil from eroding when they _____ their fields _____ a slope in a method called _____.

Summarize the Main Idea

18. How do erosion and deposition affect the land?

Erosion and Deposition

- | | | |
|--------------------|---------------|------------------|
| a. conservation | c. deposition | e. erosion |
| b. contour plowing | d. Dust Bowl | f. strip farming |

Match the correct letter with the description.

- _____ Plowing across slopes rather than up and down
- _____ Carrying away weathered rock
- _____ Methods used to save soil and slow erosion
- _____ Planting rows of food crops next to rows of plants that hold soil
- _____ Dropping off weathered rock
- _____ Event during which a great deal of soil eroded, affecting plants, animals, and people

Erosion and Deposition

conserve	erodes	plants	strip farming
contour plowing	erosion	size	strength
deposition	flowing water	weathers	wind

Fill in the blanks.

Sediments and small rocks are often carried along in flowing water. The carrying away of weathered rock is called _____ . The biggest cause of erosion is _____ . Blowing _____ picks up small pieces of rock, sand, and soil as it _____ and _____ rock. Bits of eroded rock, sand, and soil are dropped off when _____ takes place. The rate of erosion can be affected by the _____ of sediments, the _____ of wind or water, and the presence of _____ . Farmers can _____ soil by planting rows of crops and soil-holding plants in a method called _____ . They can also prevent the soil on slopes from eroding by using _____ . There are many methods that farmers can use to conserve soil.

Landforms: Changing Over Time

Use your textbook to help you fill in the blanks.

What is a landform?

1. Huge, vast stretches of land without any hills or mountains are called _____.
2. Natural features on Earth's surface are called _____.
3. Most landforms take shape over _____ periods of time.
4. A _____ is a deep, narrow _____ with _____.

How can running water change land?

5. Water flows from the _____ to the _____.
6. As rivers journey downhill, they cut away land along their sides and _____.
7. When land becomes flatter, a river runs _____ and becomes _____.
8. A slowly running river that drops sediments at its _____ forms an area of land called a _____.

How can waves change land?

9. Waves pounding at a cliff can break _____ off its bottom and _____ the base of the cliff.
10. _____ are long, narrow strips of land that protect coastlines from _____.

How does wind change land?

11. Wind can blow sand into hills called _____ .
12. Sand dunes can be shaped like _____ or _____ that are shaped like long, wavy ridges.

How can ice change land?

13. Thick sheets of ice that slowly creep over the land in colder parts of Earth are called _____ .
14. Glaciers form when _____ falls than can melt.
15. Thick snow changes into _____ , which begins to _____ downhill and freeze onto _____ .
16. Glaciers widen, deepen, and straighten valleys into a _____ .

Summarize the Main Idea

17. How do natural processes create landforms?

Landforms: Changing Over Time

a. barrier island**c.** delta**e.** landform**b.** canyon**d.** glacier**f.** sand dune

Match the correct letter with the description.

1. _____ An area of land that forms at the mouth of a river
2. _____ A hill formed by blown sand
3. _____ A long, narrow strip of land that runs parallel to a coast
4. _____ A natural feature on Earth's surface
5. _____ A deep, narrow valley with steep sides
6. _____ A large, thick sheet of ice

Landforms: Changing Over Time

barrier islands	delta	landforms	sand dunes
canyon	erode	mouth	steep sides
deposited	glaciers	rocky cliffs	U-shaped

Fill in the blanks.

Earth's surface is always changing. Natural features on Earth's surface are called _____. Running water can carve a _____, a deep narrow valley with _____. Where a river curves, one bank is eroded and the sediments are _____ on the other bank. Sediments deposited at the _____ of a river form an area of land called a(n) _____. The constant action of waves can move sand and cause _____ to collapse. Long, narrow strips of land that run parallel to a coast are called _____. Wind carrying sand and bits of rock _____ rocks over a period of many years. Wind blows sand into hills called _____. Large, thick sheets of ice called _____ creep slowly over land and form _____ valleys. Forces change the surface of Earth in many ways over time.

**Write About It**

Write a paragraph in which you summarize “Land Over Time,” on a separate piece of paper. In your own words, tell the main idea. Write only the most important details.

Getting Ideas

Make sure you understand the purpose of a summary before you start to write. Write True or False by each statement below.

1. A summary is the same length as the article. _____
2. A summary is shorter than the article. _____
3. A summary contains only important information. _____
4. A summary contains all the information. _____
5. When you write a summary, you put information in your own words. _____
6. When you write a summary, you use the exact words from the article. _____

Planning and Organizing

Reread the article “Land Over Time.” Underline important information that belongs in a summary. Cross out unimportant information.

Land Over Time

Mountains seem like mighty giants. But are they? Weathering can break down even the mightiest mountain. Let's see how.

Wind carries seeds. Some seeds may land on patches of soil on rock and sprout. The roots find small cracks in the rock. The roots grow larger. At the same time, rain fills the cracks. When it gets cold, the water freezes. As a result, the ice expands and widens the cracks more. Eventually the roots get thicker. The cracks widen more until some pieces of the rock break off. In time, these smaller pieces of rock will become smaller yet. Over millions of years, weathering will break the mountain down.

Drafting

Write the main idea of “Land Over Time” on the lines below. Remember that the main idea is the most important idea.

Write a topic sentence for your summary. Put the main idea of the article in your own words. Tell the title of the article.

Now write the first draft of your summary on a separate sheet of paper. Start with your topic sentence. Then tell the important facts and details in your own words. Draw a conclusion at the end.

Revising and Proofreading

Proofread these sentences from one student’s summary. Correct the five spelling, punctuation, and capitalization errors.

“Land Over time shows that nothing lasts forever. It may take millions of years, but even great mountains can be destroyed? The process of wethering begins with the wind.

Now revise and proofread your summary. Ask yourself:

- Have I begun with a topic sentence that tells the main idea of “Land Over Time”?
- Have I left out minor details?
- Have I used my own words?
- Have I corrected all spelling, punctuation, and capitalization errors?

History of Science

Looking Back at Yosemite National Park

Yosemite Valley once looked very different than it does now. How can geologists find out how it has changed? They can read the rocks to investigate how Yosemite Valley got to look the way it does today.

- **500 million years ago**

A sea covers the area that is now Yosemite. Sediments slowly build up on the ocean floor, growing thousands of feet high. The lower layers become rock.

- **90 million years ago**

Underground, magma rises and cools into a huge block of granite.

- **10–5 million years ago**

The Sierra Nevada is formed as the block of granite is pushed upward. The Merced River carves Yosemite Valley into a canyon.

- **3–1 million years ago**

An ice age brings glaciers that fill the V-shaped valley. They widen it, deepen it, and carve it into a U-shaped valley.

- **10,000 years ago**

The last glacier finally melts. Lake Yosemite is formed when rocks dam the valley. Creeks plunge off cliffs creating Yosemite's waterfalls.

Summary

- states the main ideas.
- includes the most important details.
- uses your own words.

In 1906, President Theodore Roosevelt made Yosemite Valley and its surrounding forests a national park. Now each year millions of people visit Yosemite National Park to explore and learn about its geological clues for themselves.

**Write About It**

Summarize Write a few sentences that tell about the history of Yosemite National Park from long ago to the present. Use a summary chart to help organize your writing.

Slow Changes on Earth

Choose the letter of the best answer.

1. Which is an example of chemical weathering?
 - a. Carbonic acid reacts with limestone.
 - b. Sand wears away the edges of rocks.
 - c. Sediment is deposited at the mouth of a river.
 - d. Waves crash on a shore.

2. Deposition occurs when
 - a. bits of sand, soil, and rock are carried away by wind or water.
 - b. bits of sand, soil, and rock are deposited by wind or water.
 - c. sand blasts away the sharp edges of a rock.
 - d. water reacts with the minerals in a rock.

3. Sediment that collects near the mouth of a river forms an area of land called a
 - a. canyon.
 - b. delta.
 - c. sand dune.
 - d. plain.

4. Sand dunes are formed by
 - a. chemical weathering.
 - b. exfoliation.
 - c. waves.
 - d. wind.

5. A deep, narrow valley with steep sides is known as a
 - a. canyon.
 - b. glacier.
 - c. sand dune.
 - d. U-shaped valley.

Choose the letter of the best answer.

- 6.** The breaking down of rocks is called
- a. deposition.
 - b. formation.
 - c. thawing.
 - d. weathering.
- 7.** A large, thick sheet of ice that slowly creeps across land is a
- a. canyon.
 - b. delta.
 - c. glacier.
 - d. horizon.
- 8.** Exfoliation is an example of
- a. chemical weathering.
 - b. deposition.
 - c. physical weathering.
 - d. thawing.
- 9.** The carrying away of weathered rock is called
- a. contour plowing.
 - b. deposition.
 - c. erosion.
 - d. weathering.
- 10.** Natural features on Earth's surface are called
- a. humus.
 - b. landforms.
 - c. minerals.
 - d. sediments.