

## **EARTH'S CHANGING SURFACE OBJECTIVES**

### **6.1.1 Identify and describe the earth's surface**

- a. Name and describe the main landforms and the earth's four spheres (Ch1 Sect1)

### **6.1.2 Identify and investigate weathering, erosion, and their effects**

- a. Identify and discuss causes of mechanical and chemical weathering and factors that effect speed of weathering (Ch2 Sect1)
- b. Describe the composition of soil and explain how it is formed (Ch2 Sect2)
- c. Identify ways soil is lost or destroyed and explain the importance of soil conservation (Ch2 Sect3)
- d. Name and describe processes that wear down the earth's surface (Ch3 Sect1)
- e. Explain gravity as a force that effects erosion (Ch3 Sect1)
- f. Explain water erosion and describe features formed by it (Ch3 Sect2)
- g. Describe land features formed by sediment (Ch3 Sect2)
- h. Explain how sediment enters moving water and list factors that affect water's ability to erode and carry sediment (Ch 3 Sect3)
- i. Name and describe two types of glaciers and ways they erode land (Ch3 Sect4)
- j. Explain how glaciers deposit sediments and the role of glaciers in the earth's history (Ch3 Sect 4)
- k. Identify how ocean waves get their energy and explain how waves shape landforms and change coastlines (Ch3 Sect5)

**Personal Learning Goal:** \_\_\_\_\_

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# EARTH'S CHANGING SURFACE

## CH 1 SECT 1: PAGES 6 - 10

### 6.1.1 a: Name and describe the main landforms and the earth's four spheres

\_\_\_\_\_ is the shape of the land. May be flat, sloping, hilly, or mountainous.

Is determined by the area's

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

\_\_\_\_\_ - the height above sea level of a point on Earth's surface

\_\_\_\_\_ - the difference in elevation between the highest and lowest parts of an area

\_\_\_\_\_ - a feature of topography formed by the processes that shape Earth's surface

\_\_\_\_\_ - a large area of land where the topography is similar

There are three main types of landforms:

1. \_\_\_\_\_ - flat or gently rolling land with low relief
  - a. \_\_\_\_\_ - lies along a seacoast
  - b. \_\_\_\_\_ - lies away from the coast
2. \_\_\_\_\_ - landform with high elevation and high relief
  - a. \_\_\_\_\_ - a group of mountains that are closely related in shape, structure and age
3. \_\_\_\_\_ - landform that has high elevation and a more or less level surface

(Not in textbook but on CRT)

The earth is divided into four spheres:

1. \_\_\_\_\_ - solid, rocky outer layer, made up of the continents and islands
2. \_\_\_\_\_ - outermost sphere, the mixture of gases that surrounds the planet; (nitrogen, oxygen, water vapor, carbon dioxide, & others)
3. \_\_\_\_\_ - oceans, lakes, rivers, and ice; covers more than 2/3 of the earth
4. \_\_\_\_\_ - all living things in the air, oceans, on or beneath the land surface

**Mapping Earth's Surface • Review and Reinforce**

# Exploring Earth's Surface

## Understanding Main Ideas

Fill in the blanks in the table below.

Landform	Elevation	Relief
Plains	Low or high	1. _____
2. _____	High	High
3. _____	High	Low

Answer the following questions on a separate sheet of paper.

- How does a coastal plain differ from an interior plain?
- Compare and contrast a mountain range with a mountain system.

## Building Vocabulary

Match each term with its definition by writing the letter of the correct definition on the line beside the term.

- |                           |  |
|---------------------------|--|
| _____ 6. plateau          | a. the height above sea level of a point on Earth's surface                        |
| _____ 7. topography       | b. the shape of the land   |
| _____ 8. elevation        | c. flat or gently rolling land with low relief                                     |
| _____ 9. relief           | d. a large area of land for which the topography is mainly one type of landform    |
| _____ 10. landform region | e. the difference in elevation between the highest and the lowest parts of an area |
| _____ 11. plain           | f. a landform that has high elevation and a more or less level surface             |

Mapping Earth's Surface

**LAB: Spheres/Landforms/Elevation/Relief**

**Station #1 (Landforms)**

- \_\_\_\_\_ Mountain
- \_\_\_\_\_ Plateau
- \_\_\_\_\_ Plain
  
- \_\_\_\_\_ Mountain Range
- \_\_\_\_\_ Mountain System
- \_\_\_\_\_ Mountain Belt

**Station #2 (Spheres)**

- \_\_\_\_\_ Lithosphere
- \_\_\_\_\_ Atmosphere
- \_\_\_\_\_ Hydrosphere
- \_\_\_\_\_ Biosphere

**Station #3 (Notes)**

\_\_\_\_\_ Notes completed correctly

**Station #4 (Elevation & Relief)**

Elevation of Point A = \_\_\_\_\_

Elevation of Point B = \_\_\_\_\_

Elevation of Point C = \_\_\_\_\_

Relief of the table = \_\_\_\_\_

\_\_\_\_\_ Passed objective

# EARTH'S CHANGING SURFACE

## CH 2 SECT 1: PAGES 38-45

### 6.1.2 a: *Identify and discuss causes of mechanical and chemical weathering and factors that effect speed of weathering*

\_\_\_\_\_ - the process that breaks down rock and other substances at Earth's surface (heat, cold, water, ice, oxygen, carbon dioxide, repeated freezing/thawing, rainwater)

\_\_\_\_\_ the removal of rock particles by wind, water, ice or gravity

Types of Weathering:

1. \_\_\_\_\_ - rock is physically broken into smaller pieces/same composition by freezing, thawing, heating, cooling, growth of plants, actions of animals, abrasion - \_\_\_\_\_

In cool climates, the most important force of mechanical weathering is: \_\_\_\_\_

\_\_\_\_\_ - when water seeps into rocks, freezes, then cracks the rock

2. \_\_\_\_\_ - the process that breaks down rock through chemical changes by action of water, oxygen, carbon dioxide, living organisms, and acid rain

Agents of Chemical Weathering:

water - \_\_\_\_\_  
oxygen - \_\_\_\_\_  
carbon dioxide - \_\_\_\_\_  
living organisms - \_\_\_\_\_  
acid rain - \_\_\_\_\_

\_\_\_\_\_ and \_\_\_\_\_ are the most important factors that determine the rate at which weathering occurs

\_\_\_\_\_ means that a material is full of tiny, connected air spaces that allow water to seep through it

\_\_\_\_\_ the average weather conditions in an area

Both chemical and mechanical weathering occur faster in \_\_\_\_\_ climates

Chemical reactions occur faster at \_\_\_\_\_ temperatures

Chemical weathering occurs more quickly where the climate is both \_\_\_\_\_ & \_\_\_\_\_

**Weathering and Soil Formation • Review and Reinforce**

# Rocks and Weathering

## Understanding Main Ideas

Fill in the blanks in the table below.

Cause	Type	Description
1. _____	Mechanical	Rock particles wear away rock.
2. _____	Chemical	Forms from coal, oil, and gas burning
Freezing and thawing	3. _____	Breaks rock by ice wedging
Carbon dioxide	4. _____	Forms carbonic acid in water
5. _____	Chemical	Weathers marble and limestone
6. _____	Mechanical	Burrowing in the ground breaks rock.
Plant growth	7. _____	Roots pry apart cracks in rock.
Living organisms	8. _____	Produce weak acid that weathers rock
Oxygen	9. _____	Causes rust on some rock

Answer the following questions on a separate sheet of paper.

- How does erosion differ from weathering?
- What factors determine the rate of weathering?

## Building Vocabulary

Fill in the blank to complete each statement.

- \_\_\_\_\_ is the movement of rock particles by wind, water, ice, or gravity.
- \_\_\_\_\_ means that a material has spaces that allow water to seep through it.
- The process that breaks down rock and other materials at Earth's surface is called \_\_\_\_\_.
- The grinding away of rock by other rock particles is called \_\_\_\_\_.
- The process by which ice widens and deepens cracks in rocks is called \_\_\_\_\_.

Weathering and Soil Formation

# EARTH'S CHANGING SURFACE

## CH 2 SECT 2: PAGES 48-54

### 6.1.2b Describe the composition of soil and explain how it is formed

\_\_\_\_\_ - the loose, weathered material on Earth's surface in which plants can grow;

One of the main ingredients of soil comes from \_\_\_\_\_ - the solid layer of rock beneath the soil.

Soil is a mixture of \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_

\_\_\_\_\_ - a dark-colored substance that forms as plant and animal remains decay (decayed organic material)

The \_\_\_\_\_ of a soil is a measure of how well the soil supports plant growth

\_\_\_\_\_ - soil that is made up of about equal parts of clay, sand, and silt has a crumbly texture that holds both air and water

Soil forms as \_\_\_\_\_ is broken down by \_\_\_\_\_ and mixes with other materials on the surface. Soil is constantly being formed wherever \_\_\_\_\_ is exposed.

Gradually, soil develops layers called \_\_\_\_\_

\_\_\_\_\_ - a layer of soil that differs in color and texture from the layers above or below

- A. \_\_\_\_\_ - crumbly, dark brown soil that is a mixture of humus, clay, other minerals
- B. \_\_\_\_\_ - clay and other particles washed down from A, but little humus
- C. \_\_\_\_\_ - contains only partly weathered rock
- D. \_\_\_\_\_ - solid layer of rock beneath the soil (where the Flinstones lived)

Scientists classify the different types of soil into major groups based on

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Some soil organisms make \_\_\_\_\_, the material that makes soil fertile  
Other soil organisms mix the soil and make spaces in it for \_\_\_\_\_ & \_\_\_\_\_

## EARTH'S CHANGING SURFACE

As plants shed leaves, they form a loose layer called \_\_\_\_\_

\_\_\_\_\_ - a process by which organisms that live in soil turn dead organic material into humus

\_\_\_\_\_ - the organisms that break the remains of dead organisms into smaller pieces and digest them with chemicals

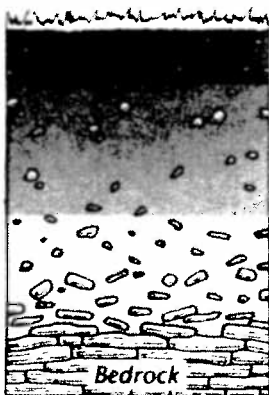
Examples are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_

**Weathering and Soil Formation • Review and Reinforce**

# How Soil Forms

## Understanding Main Ideas

Write a description of each soil horizon in the figure below.



1. A horizon \_\_\_\_\_  
\_\_\_\_\_
2. B horizon \_\_\_\_\_  
\_\_\_\_\_
3. C horizon \_\_\_\_\_  
\_\_\_\_\_

Answer the following questions on a separate sheet of paper.

4. How does soil form, and what is soil made of?
5. Describe how soil organisms affect the soil.
6. How do scientists classify soils?

## Building Vocabulary

Match each term with its definition by writing the letter of the correct definition on the line beside the term.

- |                        |   |
|------------------------|---|
| _____ 7. humus         | a. the loose, weathered material on Earth's surface in which plants can grow      |
| _____ 8. subsoil       | b. crumbly, dark brown soil that is a mixture of humus, clay and other minerals   |
| _____ 9. decomposers   | c. a layer of soil that differs from the layers above and below it                |
| _____ 10. bedrock      | d. decayed plant and animal remains   |
| _____ 11. topsoil      | e. organisms that break down animal and plant remains and wastes                  |
| _____ 12. loam         | f. the solid layer of rock beneath the soil                                       |
| _____ 13. soil horizon | g. a loose layer of leaves and other plant material on top of soil                |
| _____ 14. soil         | h. a layer of soil made mostly of clay and other particles, but with little humus |
| _____ 15. litter       | i. soil made of about equal parts clay, sand, and silt                            |

# EARTH'S CHANGING SURFACE

## CH 2 SECT 3: PAGES 56-59

### 6.1.2c Identify ways soil is lost or destroyed and explain the importance of soil conservation

\_\_\_\_\_ - the thick mass of tough roots at the surface of the soil. Keeps soil in place and holds onto moisture.

\_\_\_\_\_ - anything in the environment that humans use.

Soil is one of Earth's most valuable natural resources because \_\_\_\_\_

The value of soil is reduced when soil loses its \_\_\_\_\_ and when topsoil is lost due to \_\_\_\_\_

\_\_\_\_\_ removed the grass from the Great Plains and exposed the soil.

In times of drought, the topsoil quickly \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.

The \_\_\_\_\_ occurred during the 1930's. Several very dry years in a row turned the soil on parts of the Great Plains to dust. The wind blew the soil east in great, black clouds. This helped people appreciate the \_\_\_\_\_ of the soil.

\_\_\_\_\_ is the management of soil to prevent its destruction.

1. \_\_\_\_\_ is the practice of plowing fields along the curves of a slope. This helps slow the runoff of excess rainfall and prevents it from washing soil away.
2. \_\_\_\_\_ disturbs the soil and its plant cover as little as possible. Dead weeds and stalks of the previous year's crop are left in the ground to help return soil nutrients, retain moisture, and hold soil in place. Also called low-till or no-till plowing.
3. \_\_\_\_\_ planting different crops in a field each year, or every few years. Some crops absorb large amounts of nutrients; some crops restore nutrients

**Weathering and Soil Formation** • *Review and Reinforce*

# Soil Conservation

## Understanding Main Ideas

Complete the flowchart below by filling in the blanks.

1. \_\_\_\_\_ exposed the soil of the Great Plains. → A(n)
2. \_\_\_\_\_, or lack of rain, turned the topsoil to dust.  
→ Wind blew the soil away, creating an area called the
3. \_\_\_\_\_.

Answer the following questions on a separate sheet of paper.

4. Why is soil valuable?
5. What causes soil damage and loss?
6. When and where did the Dust Bowl occur?

## Building Vocabulary

Fill in the blank to complete each statement.

7. The practice of plowing fields along the curves of a slope is called \_\_\_\_\_.
8. \_\_\_\_\_ is the management of soil to prevent its destruction.
9. A method of planting crops that disturbs the soil and its plant cover as little as possible is called \_\_\_\_\_.
10. The thick mass of tough roots at the surface of the soil in a grassland is called \_\_\_\_\_.
11. In \_\_\_\_\_, a farmer plants different crops in a field each year.
12. Anything in the environment that humans use is a \_\_\_\_\_.

Weathering and  
Soil Formation

# EARTH'S CHANGING SURFACE

## SOIL VIDEO NOTES

1. What is soil?

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2. Define the following terms:

a. Soil horizons \_\_\_\_\_

b. humus \_\_\_\_\_

c. loam \_\_\_\_\_

d. loess \_\_\_\_\_

3. Name the four materials found in all soils

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4. There are 10 types of soil, name some of them:

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5. Name the four main causes of erosion:

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6. Name the three types of weathering:

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7. What is soil conservation?

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8. Name the three types of soil conservation

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# EARTH'S CHANGING SURFACE

## CH 3 SECT 1: PAGES 66-69

*6.1.2d Name and describe processes that wear down the earth's surface*

*6.1.2e Explain gravity as a force that effects erosion*

\_\_\_\_\_ is the process by which natural forces move weathered rock and soil from one place to another.

\_\_\_\_\_ is a very rapid type of erosion.

Other causes of erosion move soil and rock more slowly:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

The material moved by erosion is called \_\_\_\_\_

\_\_\_\_\_ occurs where the agents of erosion lay down sediment. It changes the shape of the land.

\_\_\_\_\_ is the force that moves rock and other materials downhill. It causes mass movement, a process that moves sediment downhill.

Different types of mass movement include:

1. \_\_\_\_\_ - the most destructive kind, occurs when rock & soil slide quickly down a steep slope
2. \_\_\_\_\_ - the rapid downhill movement of a mixture of water, rock, and soil
3. \_\_\_\_\_ - a mass of rock and soil suddenly slips down a slope. It moves down in one large mass
4. \_\_\_\_\_ - the very slow downhill movement of rock and soil

**Erosion and Deposition • Review and Reinforce**

# Changing Earth's Surface

## Understanding Main Ideas

Identify each of the examples below by writing *landslide*, *mudslide*, *slump*, or *flow* on the line beside it.

- \_\_\_\_\_ 1. Watery clay soil slides down a mountain.
- \_\_\_\_\_ 2. A telephone pole leans downhill.
- \_\_\_\_\_ 3. Rock at the top of a cliff suddenly falls.
- \_\_\_\_\_ 4. As you step on the mountain path, bits of rock and soil fall downhill.
- \_\_\_\_\_ 5. After a heavy rainfall, soil on a desert hill slides to the bottom.
- \_\_\_\_\_ 6. After many years, a gravestone on a hillside falls over.
- \_\_\_\_\_ 7. Rock and soil suddenly slip downhill in one large mass.
- \_\_\_\_\_ 8. During an earthquake, rock and soil move down a slope.

Answer the following questions on a separate sheet of paper.

- 9. What causes mass movement?
- 10. Describe how three processes act together to wear down and build up Earth's surface.
- 11. What is the difference between a mudflow and a landslide?

## Building Vocabulary

Fill in the blank to complete each statement.

- 12. The agents of erosion lay down sediment in new locations in a process called \_\_\_\_\_.
- 13. The material moved by erosion is called \_\_\_\_\_.
- 14. The process by which natural forces move weathered rock and soil from one place to another is called \_\_\_\_\_.
- 15. \_\_\_\_\_ includes several processes caused by gravity that move sediment downhill.

Erosion and Deposition

# EARTH'S CHANGING SURFACE

## CH 3 SECT 2: PAGES 72-81

6.1.2f Explain water erosion and describe features formed by it

6.1.2g Describe land features formed by sediment

\_\_\_\_\_ is the major agent of the erosion that has shaped Earth's land surface

\_\_\_\_\_ is the remaining water that moves over Earth's surface. Causes sheet erosion.

The amount of runoff in an area depends on five main factors

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

\_\_\_\_\_ tiny grooves in the soil caused by runoff

\_\_\_\_\_ a large groove, or channel, in the soil that carries runoff after a rainstorm

\_\_\_\_\_ a channel along which water is continually flowing down a slope, rarely dries up

\_\_\_\_\_ a large stream

\_\_\_\_\_ a stream that flows into a larger stream

\_\_\_\_\_ (watershed) the land area from which a river and its tributaries collect their water

Through erosion, a river creates:

1. \_\_\_\_\_ - deep, V-shaped
2. \_\_\_\_\_ - water flowing over a rock area that has eroded
3. \_\_\_\_\_ - the flat, wide area of land along a river
4. \_\_\_\_\_ - a loop-like bend in the course of a river
5. \_\_\_\_\_ - a meander that has been cut off from the river

Deposition creates landforms such as

1. \_\_\_\_\_ - a wide, sloping deposit of sediment formed where a stream leaves a mountain range
2. \_\_\_\_\_ - a landform made of sediment that is deposited where a river flows into an ocean or lake
3. It can also add soil to a river's \_\_\_\_\_

\_\_\_\_\_ - water that does not evaporate or become runoff. It is underground water. This can also affect the shape of the land.

## EARTH'S CHANGING SURFACE

Groundwater can cause erosion through a process of \_\_\_\_\_.

When water sinks into the ground, it combines with \_\_\_\_\_ to form a weak acid, called \_\_\_\_\_.

Carbonic Acid can break down \_\_\_\_\_.

Over time, these pockets develop into large holes underground called \_\_\_\_\_.

The action of carbonic acid on limestone can also result in \_\_\_\_\_.

\_\_\_\_\_ - a deposit that hangs like an icicle from the roof of a cave

\_\_\_\_\_ - a cone shaped deposit that builds up on a cave floor caused by slow dripping

If the roof of a cave collapses because of the erosion of the underlying limestone, the results s a depression called a \_\_\_\_\_.

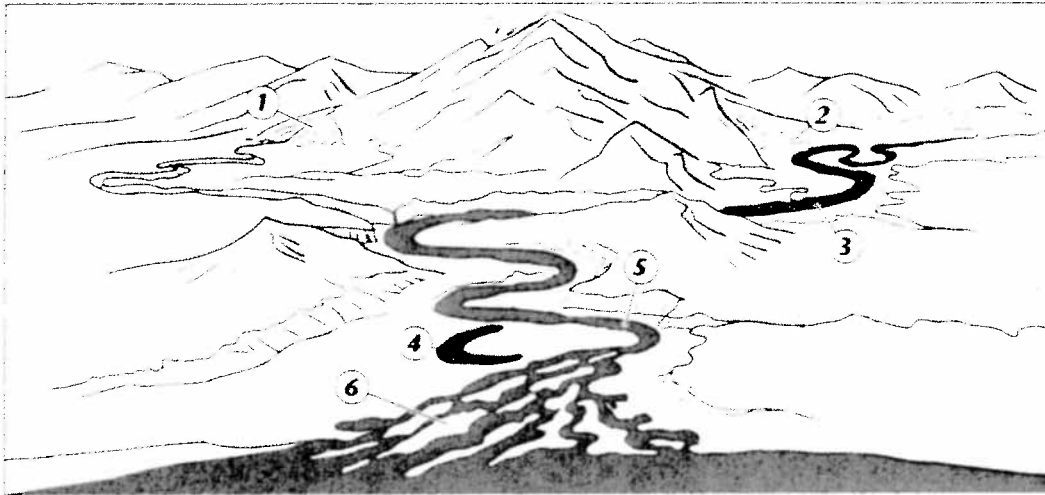
\_\_\_\_\_ a region in which a layer of limestone close to the surface creates deep valleys, caverns and sinkholes

**Erosion and Deposition** • *Review and Reinforce*

# Water Erosion

## Understanding Main Ideas

On a separate sheet of paper, identify and define each of the features on the figure below.



## Building Vocabulary

Fill in the blank to complete each statement.

7. A(n) \_\_\_\_\_ is a channel along which water is continually flowing down a slope.
8. The water that moves across Earth's surface after a rainfall is called \_\_\_\_\_.
9. A cone-shaped deposit that rises from the floor of a cave is called a(n) \_\_\_\_\_.
10. A(n) \_\_\_\_\_ is a large channel in the soil that carries runoff.
11. A type of landscape in which caves, deep valleys, and sinkholes are common is called \_\_\_\_\_.
12. A(n) \_\_\_\_\_ is a deposit that hangs from the roof of a cave.
13. A(n) \_\_\_\_\_ is the land area from which a river and its tributaries collect water.
14. The underground water that fills openings in soil and cracks in layers of rock is called \_\_\_\_\_.

# EARTH'S CHANGING SURFACE

## CH 3 SECT 3: PAGES 86-90

*6.1.2h Explain how sediment enters moving water and list factors that affect water's ability to erode and carry sediment*

\_\_\_\_\_ is the ability to do work or cause change

\_\_\_\_\_ is energy that is stored and waiting to be used later

\_\_\_\_\_ is the energy an object has due to its motion

As gravity pulls water down a slope, the water's potential energy changes to kinetic energy that can do work

Most sediment washes or falls into a river as a result of \_\_\_\_\_ & \_\_\_\_\_

\_\_\_\_\_ - the wearing away of rock by a grinding action

The amount of sediment that a river carries is its \_\_\_\_\_

A river's \_\_\_\_\_, \_\_\_\_\_, and the \_\_\_\_\_ all affect how fast the river flows and how much sediment it can erode

\_\_\_\_\_ is the force that opposes the motion of one surface as it moves across another surface

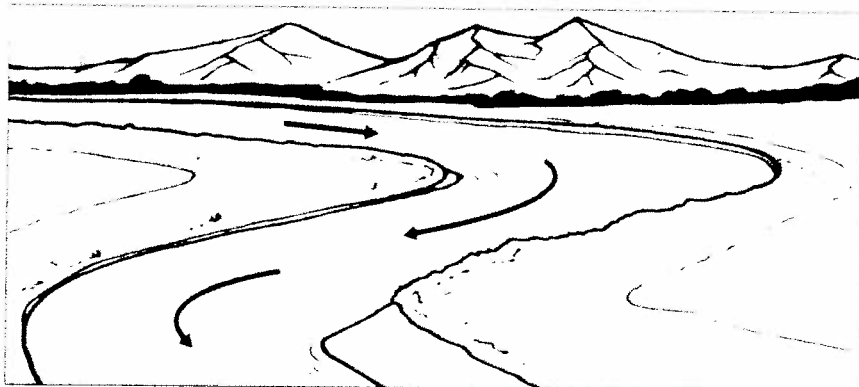
\_\_\_\_\_ a type of movement in which water moves lots of different ways

**Erosion and Deposition** • *Review and Reinforce*

# The Force of Moving Water

## Understanding Main Ideas

*On a separate sheet of paper, answer questions 1 and 2, using the figure below.*



1. Where is the stream eroding its bank? Explain.
2. Where is the stream depositing sediment? Explain.

*Answer the following questions on a separate sheet of paper.*

3. What happens to the potential energy of the water in a river as gravity pulls the water downhill?
4. In what ways does a river carry its load?
5. How do slope, volume of flow, and streambed shape affect a river's speed?

## Building Vocabulary

*Match each term with its definition by writing the letter of the correct definition on the line beside the term.*

- |                           |  |
|---------------------------|--|
| _____ 6. friction         | a. the amount of sediment a river carries                                      |
| _____ 7. energy           | b. the movement of water every which way                                       |
| _____ 8. load             | c. the ability to do work  |
| _____ 9. potential energy | d. the force that opposes the motion of one surface as it moves across another |
| _____ 10. abrasion        | e. the energy an object has due to its motion                                  |
| _____ 11. kinetic energy  | f. the wearing away of rock by grinding action                                 |
| _____ 12. turbulence      | g. energy that is stored and waiting to be used later                          |

**Erosion and Deposition**

# EARTH'S CHANGING SURFACE

## BILL NYE EROSION VIDEO QUIZ

NAME  
DATE  
PERIOD

1. True or False      Water can cause erosion by dissolving minerals.
2. True or False      When water freezes, it contracts.
3. True or False      Landscapes stay the same over long periods of time because of erosion.
4. True or False      Rust is formed by chemical erosion.
5. True or False      Homes built on the sides of hills face the greatest risk of being destroyed by wind erosion.
6. True or False      Rock that is composed of different layers can begin eroding from the inside, thus creating an arch.
7. True or False      Living things such as trees can both slow down and speed up erosion.
8. \_\_\_\_\_      Which of the following does NOT directly cause erosion?  
A. Ice      B. Lichen      C. Sun light      D. Chemicals
9. \_\_\_\_\_      All of the following are caused by water erosion, except:  
A. Sea stacks      B. Sand      C. Canyons      D. Mushroom rocks
10. \_\_\_\_\_      Canyon walls are worn away by erosion at a rate of approximately:  
A. 0.5 cm per year      B. 1 cm per year      C. 10 cm per year  
D. 100 cm per year

## BONUS

11. List anything else you learned from the video that wasn't mentioned above:

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# EARTH'S CHANGING SURFACE

## CH 3 SECT 4: PAGES 91 - 95

6.1.2i Name and describe two types of glaciers and ways they erode land

6.1.2j Explain how glaciers deposit sediments and the role of glaciers in the earth's history

\_\_\_\_\_ any large mass of ice that moves slowly over land

1. \_\_\_\_\_ - a long, narrow glacier that forms when snow and ice build up high in a mountain valley
2. \_\_\_\_\_ - a glacier that covers much of a continent or large island

Glaciers can form only in an area where \_\_\_\_\_

\_\_\_\_\_ - Times in the past when Continental glaciers covered large parts of Earth's surface

### Glacial Erosion

1. \_\_\_\_\_ - as a glacier flows over the land, it picks up rocks
2. \_\_\_\_\_ - the glacier dragging rocks across the land, gouges and scratches the bedrock

### Glacial Deposition

When a glacier melts, it deposits the sediment it eroded from the land, creating

\_\_\_\_\_

\_\_\_\_\_ - the mixture of sediments that a glacier deposits directly on the surface

The till deposited at the edges of a glacier forms a ridge called a \_\_\_\_\_

Retreating glaciers also create \_\_\_\_\_ - small depressions that form when a chunk of ice is left in glacial till.

\_\_\_\_\_ - when a depression left in till by melting ice fills with water

**Erosion and Deposition • Review and Reinforce**

**Glaciers**

**Understanding Main Ideas**

Fill in the blanks in the table below.

Glacial Landform	Description	Result of Erosion or Deposition?
1.	Mounds or ridges of till	Deposition
Horn	A sharpened peak	2.
Cirque	A bowl-shaped hollow	3.
4.	Small depression formed when a block of ice melts in till	Deposition
Glacial lake	Large lake in large basin eroded by plucking and abrasion	5.
Arête	Sharp ridge separating cirques	6.
Drumlin	A long mound of till that is higher at one end than at the other	7.

Answer the following questions on a separate sheet of paper.

8. What are the two kinds of glaciers, and how are they different?
9. How do glaciers form?
10. How do glaciers move?
11. When do glaciers deposit sediment?

**Building Vocabulary**

Fill in the blank to complete each statement.

12. A glacier picks up rocks through a process called \_\_\_\_\_.
13. Times when continental glaciers cover large parts of Earth's surface are called \_\_\_\_\_.
14. A(n) \_\_\_\_\_ is any large mass of ice that moves slowly over land.
15. The sediments deposited directly by a glacier are called \_\_\_\_\_.

# EARTH'S CHANGING SURFACE

## CH 3 SECT 5: PAGES 96-100

### 6.1.2k Identify how ocean waves get their energy and explain how waves shape landforms and change coastlines

The energy in waves comes from \_\_\_\_\_ that blows across the water's surface.

Waves are the major force of erosion along \_\_\_\_\_.

Waves shape the coast through \_\_\_\_\_ by breaking down rock and transporting \_\_\_\_\_ and other \_\_\_\_\_

Waves erode land by

1. \_\_\_\_\_ - hitting rocks along the shore with great force
2. \_\_\_\_\_ - when the wave hits land, the sediment it carries wears away rock

Waves coming to shore gradually change \_\_\_\_\_. This occurs as different parts of a wave begin to \_\_\_\_\_ on the bottom.

\_\_\_\_\_ - a part of the shore that sticks out into the ocean

#### Landforms Created by Wave Erosion:

1. \_\_\_\_\_ - a hollow area in rock caused by wave erosion over time
2. \_\_\_\_\_ - when waves erode the base of a cliff so much that the rock above collapses
3. \_\_\_\_\_ - this forms when waves erode a layer of softer rock that underlies a layer of harder rock.

If this collapses, the result might be a \_\_\_\_\_ - a pillar of rock rising above the water

#### Deposits by Waves:

Deposition occurs when waves \_\_\_\_\_, causing the water to drop its sediment

\_\_\_\_\_ - an area of wave-washed sediment along a coast

\_\_\_\_\_ - a process of repeated waves hitting the beach and carrying sediment down the beach with the current

One result of this process is the formation of a:

\_\_\_\_\_ - a beach that projects like a finger out into the water

Incoming waves carrying sand may build up:

\_\_\_\_\_ - long ridges of sand parallel to the shore

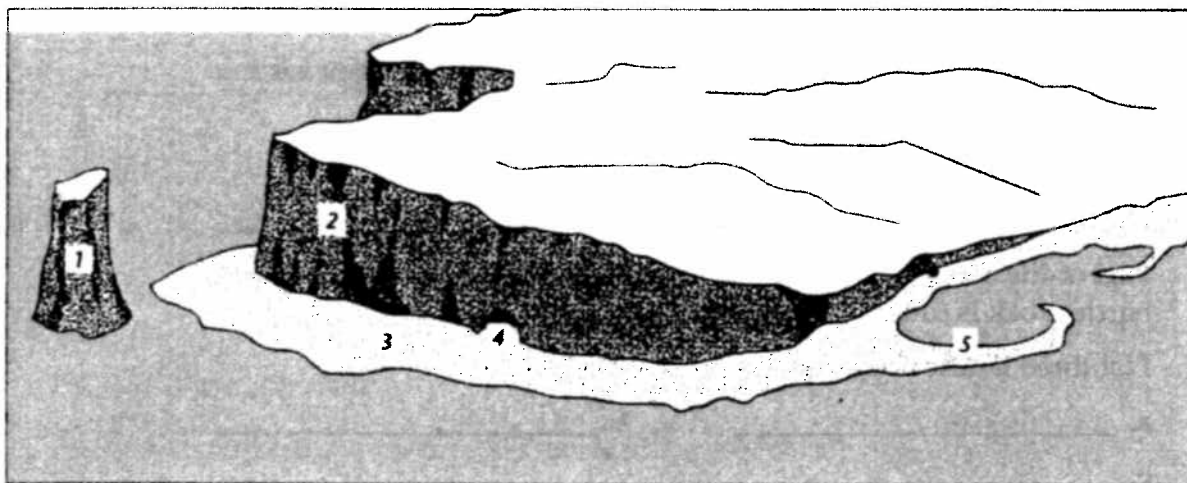
A \_\_\_\_\_ is similar to a sandbar, but this forms when storm waves pile up sand above sea level.

**Erosion and Deposition • Review and Reinforce**

# Waves

## Understanding Main Ideas

The numbers on the figure below point to landforms created by either wave erosion or deposition. On a separate sheet of paper, identify each landform and describe how it formed.



Answer the following questions on a separate sheet of paper.

6. How do ocean waves form, and how do they change to cause water to erode land along a shoreline?
7. What are two ways in which waves erode the land?
8. Explain how waves eventually even out a shoreline.

## Building Vocabulary

Fill in the blank to complete each statement.

9. The process in which beach sediment moves down a beach with the current is called \_\_\_\_\_.
10. An area of wave-washed sediment along a coast is a(n) \_\_\_\_\_.

# EARTH'S CHANGING SURFACE

## CH 3 SECT 6: PAGES 101 - 103

*Explain how wind causes erosion*

*Identify features resulting from deposition by wind*

### Wind Deposition

\_\_\_\_\_ - a deposit of wind-blown sand

Wind by itself is the \_\_\_\_\_ agent of erosion. Yet wind can be a powerful force in shaping the land in areas where there are few \_\_\_\_\_ to hold the soil in place.

Wind causes erosion by

1. \_\_\_\_\_ - the process by which wind removes surface materials.
2. \_\_\_\_\_ - this can polish rock, but it causes little erosion

Deflation can sometimes create an area of rock fragments called \_\_\_\_\_

When there is already a slight depression in the ground, deflation can produce a bowl-shaped hollow called a \_\_\_\_\_

Abrasion by wind-carried sand can \_\_\_\_\_ rock, but it causes little erosion.

### Wind Deposition

All the sediment picked up by wind eventually falls to the ground. This happens when the wind \_\_\_\_\_ or some obstacle \_\_\_\_\_ the wind blown sand sediment.

Wind erosion and deposition may form:

1. \_\_\_\_\_ - when the wind strikes an obstacle
2. \_\_\_\_\_ - fine, wind-deposited sediment (clay & silt)  
helps to form fertile soil

## EARTH'S CHANGING SURFACE

### PROJECT

Design an example of a landscape on the surface provided. You may use clay, paper, or any other material approved by the teacher. This landscape must include the following landforms and terms. Please use toothpicks and paper to label each landform and term. Names of all group members must be visible.

Be creative and neat!

\_\_\_\_\_ mountain

\_\_\_\_\_ plateau

\_\_\_\_\_ river

\_\_\_\_\_ tributary

\_\_\_\_\_ gulley

\_\_\_\_\_ alluvial fan

\_\_\_\_\_ flood plain

\_\_\_\_\_ meander

\_\_\_\_\_ oxbow lake

\_\_\_\_\_ delta

\_\_\_\_\_ beach

\_\_\_\_\_ sea arch

\_\_\_\_\_ sea stack

**Erosion and Deposition** • *Review and Reinforce*

# Wind

## Understanding Main Ideas

Complete the flowchart below by filling in the blanks.

1. \_\_\_\_\_ removes sand and other sediment from the ground by the process of 2. \_\_\_\_\_. → The wind
3. \_\_\_\_\_ the sediment when it hits an obstacle, such as a boulder. → As the sediment piles up, a(n) 4. \_\_\_\_\_ forms.

Answer the following questions in the spaces provided.

5. Describe how wind moves different sizes of sediment.

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6. How does desert pavement form?

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7. How are the sediments in loess deposits different from the sediments in a sand dune?

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## Building Vocabulary

Fill in the blank to complete each statement.

8. The process by which wind removes surface materials is \_\_\_\_\_.
9. Fine sediment deposited by wind in layers is called \_\_\_\_\_.
10. A deposit of windblown sand is called a(n) \_\_\_\_\_.

## Website Links

Website Name or URL \_\_\_\_\_

Information I learned from this website: \_\_\_\_\_  
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