

Name: _____

Chapter 10
Reshaping Earth's Surface

Lesson 1 - "How does Earth's surface change?"

I. Earth's Features

- a. Over a long period of time, water can dig deeper and deeper into flat land to form deep canyons.
 - i. The Badlands National Park was formed by erosion as moving water dug into Earth.
- b. Glaciers are huge masses of slowly moving ice that can carry huge amounts of rock and soil to carve out land.
 - i. The Great Lakes were formed by glacier movement.
- c. Sediments are solid particles that are moved from one place to another.
 - i. Rivers deposit particles that can build up on the surface of the Earth.

II. Weathering and Erosion

- a. Many changes on Earth's surface can be seen only over thousands of years. These changes are often caused by weathering and erosion.

Name: _____

Chapter 10
Reshaping Earth's Surface

- b. Weathering is the process of breaking down rock into smaller pieces, usually caused by water or ice breaking down rock.
 - i. Mechanical weathering occurs when the minerals that make up the rock do not change.
 - ii. An example of mechanical weathering is when plant roots grow into the cracks of a rock and make the cracks larger.
- c. Chemical weathering occurs when the actual minerals that make up a rock change.
 - i. The change can be caused when the minerals react with other substances in the environment.
- d. Erosion is the process by which soil and sediments are transferred from one location to another.
 - i. Transfer is usually caused by wind, water, ice, or gravity.
- e. The biggest difference between erosion and weathering is that erosion involves movement of materials from one place to another.

Name: _____

Chapter 10
Reshaping Earth's Surface

III. Soil Erosion

- a. The roots of plants help prevent soil erosion.
 - i. Cover crops add nutrients to the soil and help prevent erosion.
- b. In the 1930's years of draught and poor farming practices left many areas of soil bare.
 - i. The southern plains became known as the Dust Bowl because of the severe dust storms that blew for eight years.
- c. The draught affected the land, caused health problems, deaths, and damaged cars and farm equipment.
- d. The draught also helped farmers learn better farming methods and they learned how to take care of the land.

Name: _____

Chapter 10
Reshaping Earth's Surface

Lesson 2 – “How does water affect Earth's features?”

I. Deposition

- a. All moving water has energy, and water running downhill is the main process that shapes Earth's surface.
 - i. Water can mechanically weather rock by breaking down rock and soil into bits of sediments.
 - ii. Water can also chemically weather rock by dissolving minerals and other materials in the rock.
- b. When sediments formed during weathering are eroded and deposited at another location it's called deposition.
 - i. Deposition forms river deltas.
 - ii. Mineral deposits in lakes and ocean floors are formed when dissolved minerals settle out of the water.

Name: _____

Chapter 10
Reshaping Earth's Surface

II. Minerals in Lakes and Oceans

- a. Rivers carry an estimated four billion tons of dissolved salts to the oceans each year.
 - i. Because of this, the amount of salt in the ocean has increased over thousands of years.

III. River Systems

- a. Rivers and streams are dynamic systems, which means they are always changing.
- b. A stream begins by water flowing downward by the pull of gravity. When other streams join it, it forms a river. The flowing river wears down soil and rock and carries sediment away.
- c. The sediments a river carries can be deposited in different places.
 - i. As water slows down, it has less energy and can carry less sediment. Heavier sediments are deposited first.

IV. Floodplains

- a. Flooding can move huge amounts of sediments to places that would otherwise never receive them.

Name: _____

Chapter 10
Reshaping Earth's Surface

- b. A floodplain is a part of the landscape that is likely to receive the overflow water and sediment from a flooded river.

V. The Mississippi River

- a. The Mississippi River is one of the largest river systems in the world.
- b. Water from 31 states drains into the Mississippi.
- c. The land drained by a river is called its drainage basin.
- d. The river is 3,705 kilometers long.
- e. Each second 600,000 cubic feet of water empties into the Gulf of Mexico.

Lesson 3 – “How do waves affect coastal landforms?”

I. Wave Energy

- a. Any wave carries energy.
- b. Water does not move forward with the wave. Only energy moves. The water stays in the same spot, rising and falling in a circular motion.

Name: _____

Chapter 10
Reshaping Earth's Surface

- c. As waves move toward shore, the shallower ocean bottom interferes with the waves' movements. The bottoms of the waves slow down but the tops continue to move quickly, so the tops tumble forward.
- d. Wave energy is the strongest at the water's surface.

II. Causes of Waves

- a. The most common cause of waves is wind. As winds touch water, energy transfers from the wind to the water, forming waves.
- b. Waves can also be formed by tectonic activity.
 - i. Volcanic eruptions, earthquakes, and landslides that take place underwater or along coasts and can form tsunamis.
 - ii. Tsunamis are waves that travel at incredible speeds and reach great heights before they crash into the shore.
 - iii. Tsunamis can cause tremendous damage and loss of life.

Name: _____

Chapter 10
Reshaping Earth's Surface

III. Wave Characteristics

- a. Scientists use certain characteristics to describe all waves.
 - i. The highest part of the wave is the crest.
 - ii. The lowest part is the trough.
 - iii. The amplitude of the wave is measured from where the wave starts, its midpoint, to either the crest or trough.
- b. On a calm day, the amplitude of ocean waves is small.
- c. When strong winds blow, the waves pick up energy and the amplitude greatly increases.
- d. The wavelength is the distance from one crest to the next or from one trough to the next.

IV. Beaches: Dynamic Systems

- a. Waves carry sediments that can wear down coastal landforms.
- b. Waves also build up beaches by moving sand along the shore.
 - i. A longshore current can move materials from the shoreline to an area in the

Name: _____

Chapter 10
Reshaping Earth's Surface

water away from the shore, creating a sandbar.

- c. Wind can also change landforms along a coast.
 - i. On rocky shores, wind can shape cliffs and large rocks into amazing shapes.
 - ii. Along quieter, sandy coastlines, wind can blow loose sand into piles, called dunes, along the edge of a beach.
- d. The color and texture of any beach are determined by the sources of its sand and rock.