

SECTION 3-1

SECTION SUMMARY

Changing Earth's Surface

Guide for Reading

- ◆ What processes wear down and build up Earth's surface?
- ◆ What force pulls rock and soil down slopes?

Erosion is the process by which natural forces move weathered rock and soil from one place to another. Gravity, running water, glaciers, waves, and wind all cause erosion. The material moved by erosion is **sediment**. When the agents of erosion lay down sediment, **deposition** occurs. Deposition changes the shape of the land. **Weathering, erosion, and deposition act together in a cycle that wears down and builds up Earth's surface.** Erosion and deposition are at work everywhere on Earth. Sometimes, they work slowly. At other times, they work more quickly. Erosion and deposition are never-ending.

Gravity pulls everything toward the center of Earth. **Gravity is the force that pulls rock and soil down slopes.** Gravity causes **mass movement**, any one of several processes that move sediment downhill. Mass movement can be rapid or slow. **The different types of mass movement include landslides, mudslides, slump, and creep.**

The most destructive type of mass movement is a landslide, which occurs when rock and soil slide quickly down a steep slope. Some landslides may contain huge masses of rock, while others may contain only a small amount of rock and soil.

A mudflow is the rapid movement of a mixture of water, rock, and soil. The amount of water in a mudflow can be as high as 60 percent. Mudflows often occur after heavy rains in a normally dry area. In clay soils with a high water content, mudflows may occur even on very gentle slopes. An earthquake can trigger both mudflows and landslides.

In the type of mass movement known as slump, a mass of rock and soil suddenly slips down in one large mass. It looks as if someone pulled the bottom out from under part of the slope. Slump often occurs when water soaks the base of a mass of soil that is rich in clay.

Creep is the very slow downhill movement of rock and soil. It occurs most often on gentle slopes. Creep is so slow that you can barely notice it, but you can see its effects in objects such as telephone poles, gravestones, and fenceposts. Creep may tilt these objects at unusual angles. Creep often results from the freezing and thawing of water in cracked layers of rock beneath the soil.

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REVIEW AND REINFORCE

Changing Earth's Surface

◆ Understanding Main Ideas

Identify each of the examples below by writing landslide, mudslide, slump, or creep 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.

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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.