

6.E.2.3 Formation of Soil and Parent Rock Type

Name: _____

Date: _____

- As stream velocity decreases, which factor will likely *increase*?
 - erosion of the stream bank
 - deposition of material in the stream
 - amount of material carried downstream
 - size of the particles carried downstream

- Glacial moraines are primarily the result of which of these processes?
 - transportation and deposition of rocks
 - chemical weathering and erosion of rocks
 - transportation and metamorphism of rocks
 - metamorphism and physical weathering of rocks

- Which of the following can cause erosion?
 - falling leaves
 - flowing water
 - growing grass
 - rising temperatures

- Which of the following is a **slow** process that changes Earth's surface?
 - flooding
 - earthquake
 - wind erosion
 - volcanic eruption

- How do plants *most* commonly break large rocks into smaller pieces?
 - Plant leaves insulate surrounding rocks from extreme temperatures.
 - Plant roots grow into cracks in rocks.
 - Seeds from plants fall onto rocks and release acidic compounds.
 - Stems of plants surround and squeeze rocks.

6. The freezing and thawing action of water affects a rock by

- Ⓐ transforming the rock into igneous rock.
- Ⓑ chemically changing the rock.
- Ⓒ gradually breaking down the rock into smaller pieces.
- Ⓓ leaving behind sedimentary particles from evaporated solutions.

7. A rock is pushed deep underground in an area where mountain-building is occurring, and undergoes the following processes.

- First, the rock experiences high pressure that causes its minerals to align themselves in bands.
- Second, the rock is pushed further underground and completely melts, then erupts from a volcano and hardens.
- Third, the rock is broken down by wind and water into small particles, which flow into a river and get compressed into rock.

Which order correctly shows this progression of rock types?

- Ⓐ igneous → metamorphic → sedimentary
- Ⓑ metamorphic → igneous → sedimentary
- Ⓒ metamorphic → sedimentary → igneous
- Ⓓ sedimentary → igneous → metamorphic

8. A glacier moving down a mountain valley is pictured below.

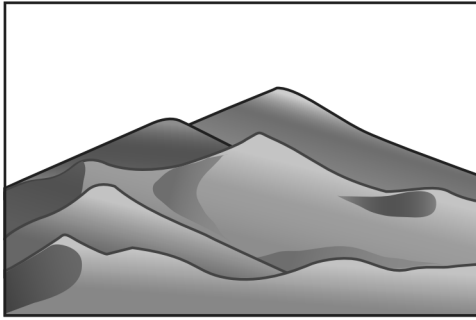


Glaciers are frozen, slow-moving rivers of ice that can move about three feet per day down mountain valleys. How does a glacier help create new soil?

- (A) by carrying living plant material to the ocean
 - (B) by scraping small particles off large rocks
 - (C) by melting rocks along its path down the valley
 - (D) by freezing small particles of soil to form large rocks
9. Which of the following is *most likely* to make a rock crack and crumble?
- (A) dew evaporating on the rock
 - (B) leaves decaying on the rock
 - (C) snow melting in a crack in the rock
 - (D) water freezing in a crack in the rock

10. In which of the following locations is new soil likely to form at the *slowest* rate over time?

(A)



Desert

(B)



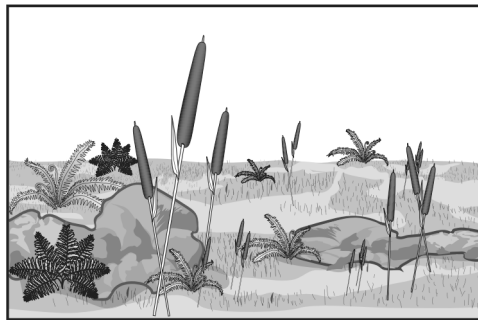
Forest

(C)



Hillside

(D)



Marsh

11. Which of the following can be caused by weathering?

(A)

cracks forming in a boulder

(B)

rocks melting to form magma

(C)

glaciers forming on a mountainside

(D)

pebbles combining to form a large rock

12. The Appalachian Mountains, which extend from Canada to Alabama, were much taller in the past than they are today. Which of the following two processes are *most* responsible for the decrease in the height of the Appalachian Mountains?

(A)

weathering and erosion

(B)

sedimentation and flooding

(C)

volcanic eruptions and landslides

(D)

tectonic collisions and earthquakes

13. Which of the following *does not* cause rocks to be broken down into sand or soil in nature?

(A)

sound waves

(B)

ocean waves

(C)

heating and cooling

(D)

wind and rain

14. Which activity can cause the formation of mountains?

- (A) weathering
- (B) tectonic plate collisions
- (C) earthquakes
- (D) water erosion

15. Which process is the *best* example of a sudden change to Earth's surface?

- (A) landslides moving loose rocks downhill
- (B) sediments depositing on the sea floor
- (C) deltas forming at the mouth of rivers
- (D) mountains building up

16. How does lava affect the surface of Earth?

- (A) Lava forms new land.
- (B) Lava helps plants grow.
- (C) Lava provides more food to animals.
- (D) Lava makes temperatures cooler on Earth.

17. The following table lists constructive and destructive processes.

Types of Processes

Constructive	Destructive
Deposition	Erosion
Earthquakes	Weathering

Which statement explains these two processes in nature?

- (A) Constructive are harmful, and destructive are helpful.
- (B) Destructive are harmful, and constructive are helpful.
- (C) Constructive build up, and destructive break down.
- (D) Destructive build up, and constructive break down.

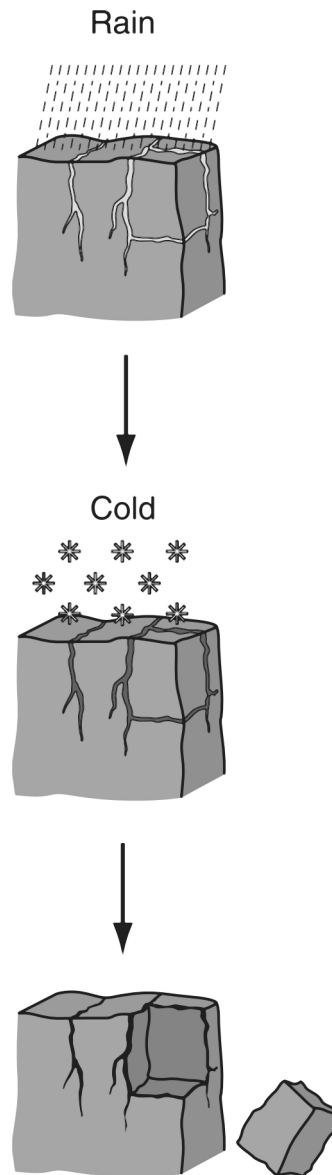
18. Weathering of rock can occur in many ways. In the western United States, strong winds can erode huge rock formations by blowing millions of tiny grains of sand at these rocks. Which term accurately describes this type of weathering?

- (A) Thermal
- (B) Chemical
- (C) Mechanical
- (D) Meteorological

19. Which *best* explains how soil is built up in flood plains?

- Ⓐ Farmers add fertilizer, which makes new soil.
- Ⓑ Plants break down into compost, which makes soil.
- Ⓒ Sediment is deposited by rivers during floods.
- Ⓓ Soil gets used up and the land becomes a desert.

20. Students studied the rock diagram shown below.



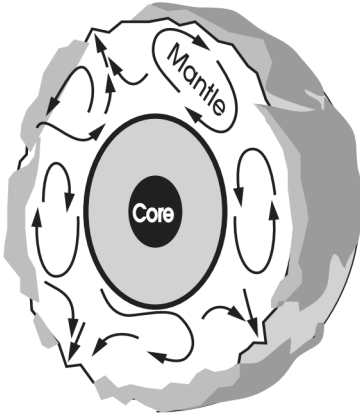
What does the diagram show?

- (A) how water moves rock from place to place
- (B) how different types of rock are formed
- (C) how rock gets moisture
- (D) how freezing and thawing of water breaks rock

25. *Chemical weathering* refers to processes that change the chemical composition of rocks, forming new minerals. *Physical weathering* refers to processes that break rocks down into smaller pieces without changing the chemical composition of the rocks. Which of the following processes is an example of chemical weathering?

- (A) the widening of cracks in rocks by tree roots
- (B) the rusting of iron-rich rocks
- (C) the expansion and contraction of rocks as temperatures change
- (D) the scouring of rocks by windblown sand

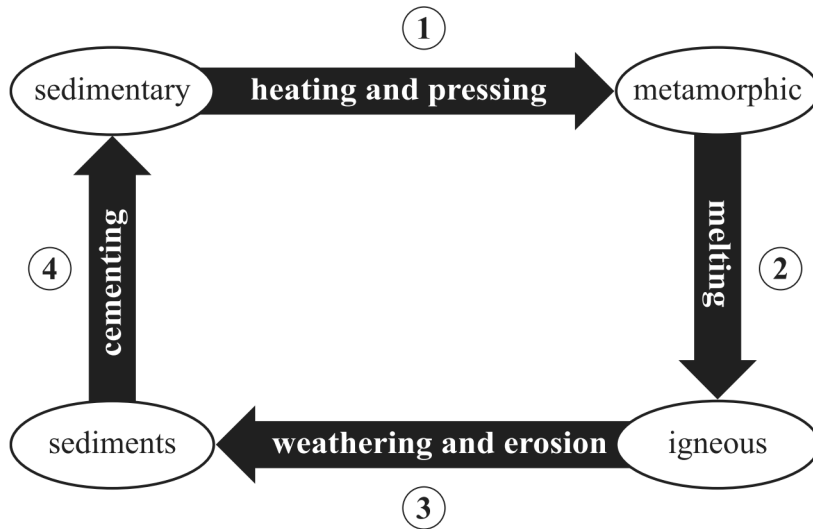
26. **Earth's Cross Section**



Scientists believe that forces in Earth's mantle move Earth's crustal plates. What do the arrows in the diagram represent?

- (A) ocean currents
- (B) gravity
- (C) convection currents
- (D) wind patterns

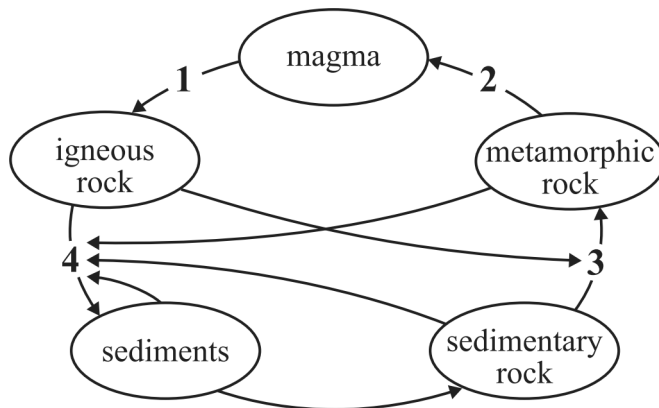
27. The picture below shows a model of the rock cycle.



During which part of the rock cycle does water break rocks apart?

- (A) part 1 (B) part 2 (C) part 3 (D) part 4

28. A rock cycle diagram is shown below.



What happens to rocks at location 3 in the diagram?

- (A) heating and pressing (B) melting and cooling
 (C) weathering and eroding (D) compacting and cementing

29. Shale is a sedimentary rock that can be metamorphosed into slate by

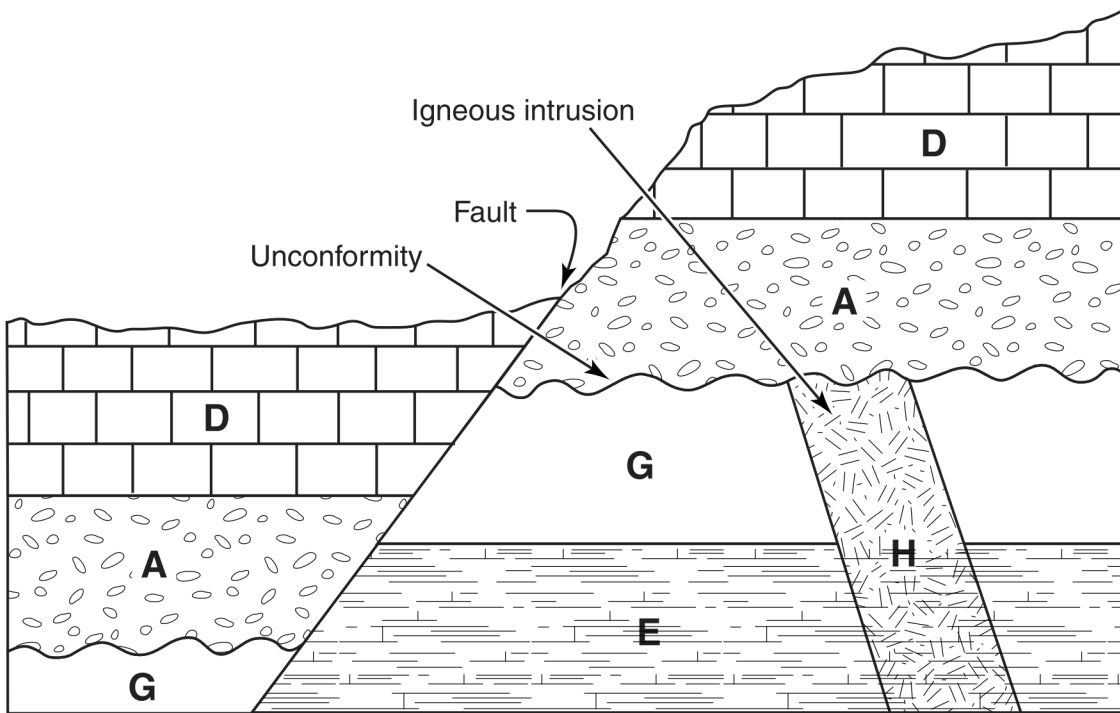
- (A) cementation.
- (B) chemical weathering.
- (C) sedimentation.
- (D) increased pressure.

30. Which of the following is *most* likely to produce a fragmental sedimentary rock?

- (A) magma fractured on the ocean floor
- (B) calcite crystallized from seawater
- (C) gravel deposited in a silt bed
- (D) limestone dissolved in cave formation

Earth scientists use theories and principles to help determine the relative age and formation of rocks and landforms.

- Superposition** Younger sedimentary rock layers are generally found on top of older rock layers.
- Cross-cutting** Faults and igneous intrusions are younger than the rock they cut through.
- Unconformities** An eroded surface that separates older rocks below from younger rocks above.



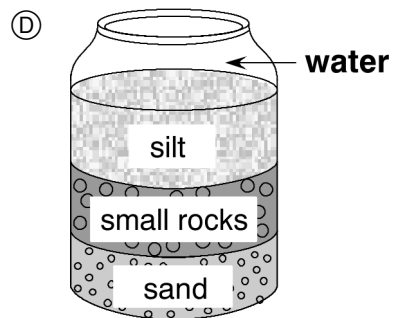
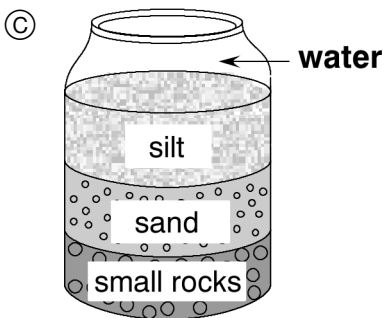
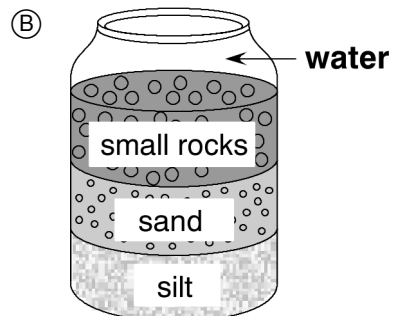
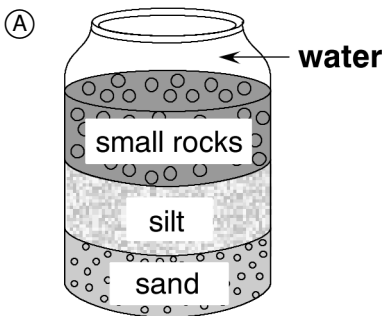
31. Which statement about the formation of rocks is true?

- (A) Heat and pressure can change igneous rock to sedimentary rock.
- (B) Weathering and erosion can change sedimentary rock into sediment.
- (C) Heat and pressure cause metamorphic rock to weather and erode.
- (D) Weathering and erosion prevent magma from changing into igneous rock.

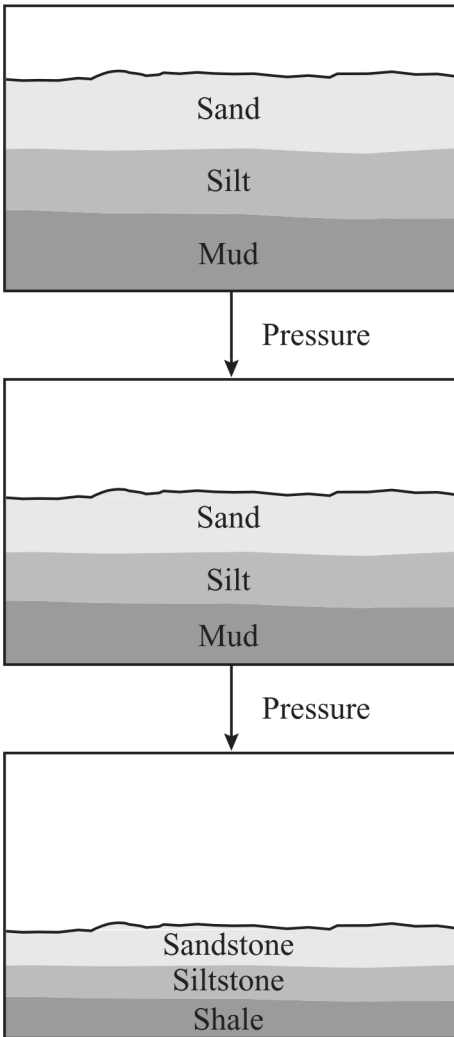
32. Mrs. Tucker gives her class samples of different soil types. Which action *best* helps Tanisha identify each soil type?

- (A) smelling it
- (B) touching it
- (C) weighing it
- (D) measuring it

33. Your teacher has brought a sample of water to class. The sample contains a mixture of small rocks, sand, and silt (very fine soil) from the Mississippi River. After a few hours, the sample settles. Which diagram shows how the sample will settle?



34. The diagram below shows how a type of rock is formed over time.



This diagram represents the formation of which of the following types of rock?

- (A) igneous (B) metamorphic (C) sedimentary (D) volcanic

35. Which of the following has the *greatest* effect on the ability of soil to hold water?

- (A) the age of the soil particles (B) the size of the soil particles
(C) the color of the soil particles (D) the luster of the soil particles

36. Which of the following statements *best* describes sandy soils?
- Ⓐ Sandy soils allow water to drain quickly.
 - Ⓑ Sandy soils easily break down into clay sediments.
 - Ⓒ Sandy soils hold plant roots tightly in place to prevent erosion.
 - Ⓓ Sandy soils have high levels of decomposed plant and animal matter.
37. Humus, or organic matter, is decayed plant and animal matter. Which Earth material contains humus?
- Ⓐ rock
 - Ⓑ mineral
 - Ⓒ soil
 - Ⓓ lava
38. Soil and weathered rock wash into low places to form sediment. Over a long period of time, the sediment changes into sedimentary rock. Where does this change occur?
- Ⓐ In the top layer of sediment
 - Ⓑ At Earth's surface near sunlight
 - Ⓒ Near the openings of volcanoes
 - Ⓓ At the bottom of many layers of sediment
39. Which soil type would be fertile for growing the majority of plants?
- Ⓐ Organic and mineral
 - Ⓑ Pebbles and gravel
 - Ⓒ Light and sandy
 - Ⓓ Clay and silt
40. Last spring, Bonesha prepared an area to plant a garden. She removed the grass and turned over the first layer of soil. She broke up the pieces of soil with the end of her shovel. Which layer of soil was Bonesha loosening with her shovel?
- Ⓐ Subsoil
 - Ⓑ Topsoil
 - Ⓒ Sand soil
 - Ⓓ Bedrock soil

41. A student has an earth material. Which is the *best* way for the student to find out if the earth material is soil?
- Ⓐ weigh the earth material
 - Ⓑ heat the earth material
 - Ⓒ look for pieces of dead plants in the earth material
 - Ⓓ measure the size of the pieces in the earth material

42. How can police detectives use the dirt on a suspect's shoes as evidence that the suspect was in a certain location?
- Ⓐ Shoes react differently to different types of soils.
 - Ⓑ Footprints are often left in the soft dirt.
 - Ⓒ Each shoe leaves a unique footprint.
 - Ⓓ Soils differ from place to place in color and texture.

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- | | | | |
|----------------|---|----------------|---|
| 1.
Answer: | B | 21.
Answer: | D |
| 2.
Answer: | A | 22.
Answer: | |
| 3.
Answer: | B | 23.
Answer: | A |
| 4.
Answer: | C | 24.
Answer: | B |
| 5.
Answer: | B | 25.
Answer: | |
| 6.
Answer: | C | 26.
Answer: | C |
| 7.
Answer: | B | 27.
Answer: | C |
| 8.
Answer: | B | 28.
Answer: | A |
| 9.
Answer: | D | 29.
Answer: | D |
| 10.
Answer: | A | 30.
Answer: | C |
| 11.
Answer: | A | 31.
Answer: | B |
| 12.
Answer: | A | 32.
Answer: | B |
| 13.
Answer: | A | 33.
Answer: | C |
| 14.
Answer: | B | 34.
Answer: | C |
| 15.
Answer: | A | 35.
Answer: | B |
| 16.
Answer: | A | 36.
Answer: | A |
| 17.
Answer: | C | 37.
Answer: | C |
| 18.
Answer: | C | 38.
Answer: | |
| 19.
Answer: | C | 39.
Answer: | A |
| 20.
Answer: | D | 40.
Answer: | B |

41.
Answer: C

42.
Answer: D