Name: _____ Class: _____ Date: _____ ID: A

Mountains Short Study Guide

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

____ 1. A good model for isostasy is ____.
a. a collision between two cars
b. the water line of a boat when someone boards or leaves it
c. scraping food off a plate
d. stretching a cracked, old rubber band

____ 2. In the process of isostatic rebound, mountains are eroded over hundreds of millions of years, while the crust below them ____.
a. rises
b. sinks
c. splits to form a rift
d. converges at a boundary

____ 3. After millions of years of erosion, the Appalachian Mountains still exist because of ____.
a. continental drift
b. orogeny
c. erosion
d. isostatic rebound

____ 4. Uplifted mountains ____.
a. form when a large region of Earth's crust rises up as a unit
b. have rocks that are not very deformed
c. are the result of erosional forces
d. all of the above

____ 5. Fault-block mountains ____.
a. form when two continental plates collide
b. form above a subduction zone
c. form when a large pieces of crust are dropped between large faults
d. all of the above

____ 6. The Himalayas formed as the result of ____.
a. hot spot volcanism
b. divergence on the ocean floor
c. continental-continental convergence
d. oceanic-oceanic convergence

Matching

Match each item with the correct statement below.

a. divergent boundaries
b. Europe
c. Pangaea
d. hot spots

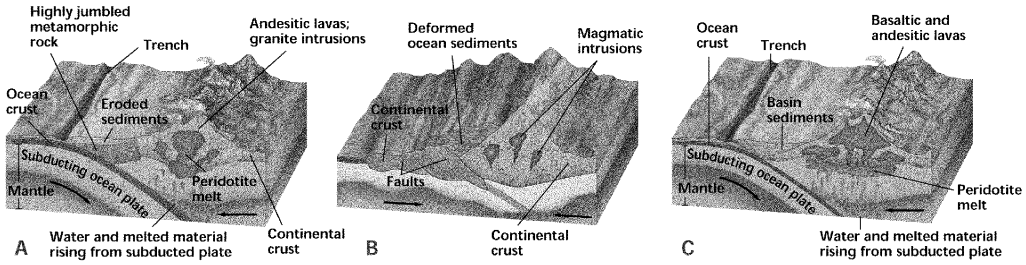
____ 7. At this type of boundary, a warming lithosphere bulges upward and is higher than the surrounding oceanic crust.
____ 8. The volcanic peaks of Hawaii formed as a result of these.
____ 9. Ancestral North America and ancestral Africa collided to form this supercontinent.
____ 10. Some of the rocks and geologic structures in this region are like those in the Appalachian Mountains.

Match each item with the correct definition below.

a. fault-block mountains
b. isostatic rebound
c. orogeny
d. pillow basalts
e. isostasy
f. uplifted mountains

____ 11. Mountains that form when large pieces of crust are tilted, uplifted, or dropped between large faults
____ 12. Billowy rocks that form when lava erupts onto the seafloor
____ 13. Cycle of processes that form mountain ranges
____ 14. Slow process of the crust's rising after overlying material is removed
____ 15. Condition of equilibrium whereby Earth's crust is balanced by the upward force of buoyancy and the downward force of gravity
____ 16. Mountains that form when large regions of Earth experience upward movement

Short Answer



17. In the diagram above, describe what is happening in Figure A. What will be the result?

18. Which mountain range today is an example of the setting shown in Figure B? Describe what is happening.

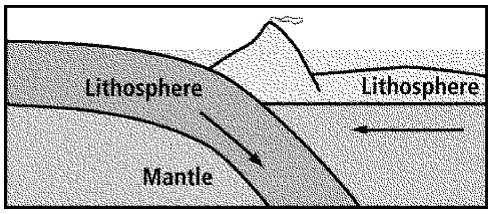
19. Explain how tension can cause fault-block mountains to form.

20. Why are the rocks that make up the Valley and Ridge Province of the Appalachians so highly folded?

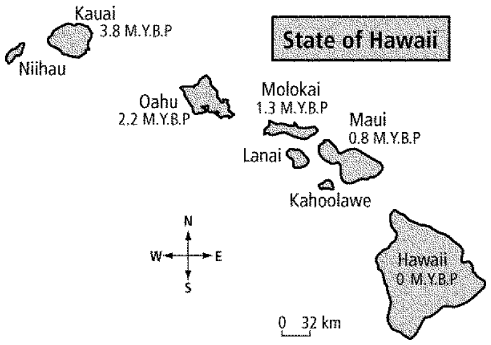
Compare and contrast each pair of related terms or phrases.

21. volcanoes along oceanic-continental margins, volcanoes over hot spots

Identify the type of boundary in each diagram.

22. 

Use the map of the Hawaiian Islands to answer the following questions. The dates on the map represent the approximate times (millions of years before the present [M.Y.B.P.]) that the islands formed.



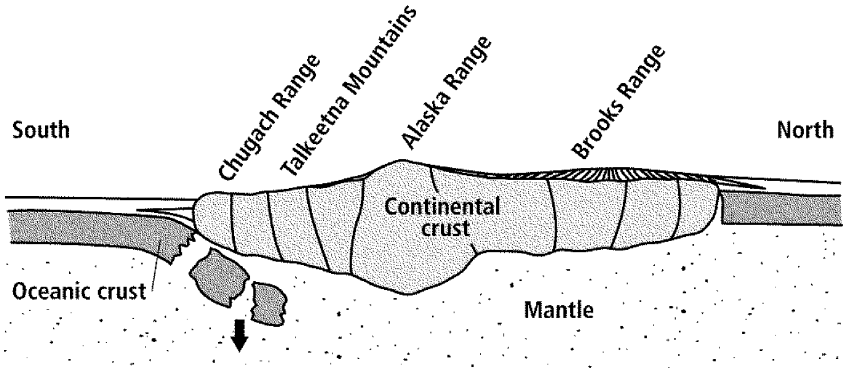
23. According to the map, which island is the oldest? Which is the youngest?

24. Where would you expect the next island in the group to form? Describe its location and mark the place on the map.

Read a geologist's report below on one area of Alaska. Then use the information in the report and the cross-sectional diagram of central Alaska to answer the questions.

The central Brooks Range of Alaska is an area of rugged, east-trending ridges with heights of up to about 2500 m. This range, which stretches across northern Alaska, is part of the Rocky Mountain system. Sedimentary rocks are common in the Brooks Range. These rocks are complexly folded and faulted in the Brooks Range and are less deformed elsewhere. Some marine sedimentary rocks contain small fossils of invertebrates, shells, and corals and are found near the mountains' summits of the Brooks Range. The fossils provide information that is useful in dating rocks and establishing the geological sequence.

Metamorphic rocks, such as marble and dolomite, are found along the south side of the range. Several episodes of uplift, deformation, and intrusion have produced complexly folded, fractured, and thrust faulted blocks. Erosion and heavy glaciation account for the rugged mountain profiles and U-shaped valleys evident today.



25. How does the Chugach Range appear to have formed?

26. How can you explain the presence of marine sedimentary rock in the Brooks Range?

Mountains Short Study Guide
Answer Section

MULTIPLE CHOICE

1. B
2. A
3. D
4. D
5. C
6. C

MATCHING

7. A
8. D
9. C
10. B

11. A
12. D
13. C
14. B
15. E
16. F

SHORT ANSWER

17. An oceanic plate is colliding with a continental plate. A subduction zone will form. The edge of the continental plate will lift to form a mountain range.
18. Examples may vary: Sample answer: Himalayas; two continental plates are colliding. Thick masses of deformed crust are pushed upward and faulted to form high mountains.
19. Tension results in a stretching of the crust. This stretching causes blocks of crust to drop down between the faults that form. The areas between the dropped down blocks form fault-block mountains.
20. Compressional forces associated with the collision between ancestral Africa, Europe, South America and ancestral North America led to the extensive folding and faulting of these rocks.
21. Volcanoes along oceanic-continental convergent margins are usually parts of large mountain ranges. Volcanoes that form over hot spots are generally solitary peaks far from tectonic plate boundaries.
22. oceanic-oceanic boundary
23. The oldest is Kauai. The youngest is Hawaii.
24. about 30–50 km south or southeast of Hawaii

25. The oceanic plate descended into the mantle. The edge of the continental plate was forced upward, and the continental crust folded and thickened.
26. When the oceanic plate collided with the continental plate, rocks from both plates' crusts were involved in the process of uplift that formed the mountains. Over many million of years, the rock layers from each of the plates have been folded and twisted so many times that marine sedimentary (from the oceanic plate and the once low continental plate) rock can be found within the elevated mountains.