

6

Chapter Review

the **BIG** idea

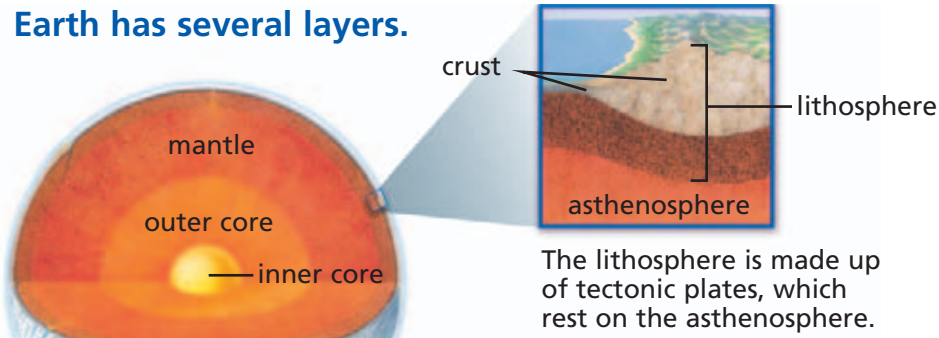
The movement of tectonic plates causes geologic changes on Earth.



CONTENT REVIEW
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KEY CONCEPTS SUMMARY

1 Earth has several layers.

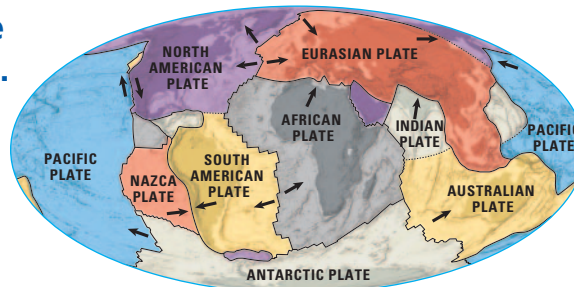


VOCABULARY

inner core p. 186
outer core p. 186
mantle p. 187
crust p. 187
lithosphere p. 187
asthenosphere p. 187
tectonic plate p. 188

2 Continents change position over time.

Gravity and motions in the asthenosphere move tectonic plates over Earth's surface.



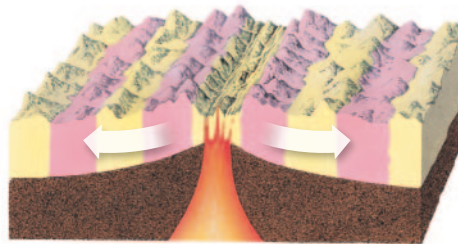
VOCABULARY

continental drift p. 190
Pangaea p. 192
mid-ocean ridge p. 192
convection p. 193
convection current p. 193
theory of plate tectonics p. 194

3 Plates move apart.

New crust is formed at divergent boundaries. Features include:

- mid-ocean ridges
- records of magnetic reversals
- rift valleys



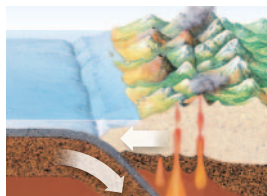
VOCABULARY

divergent boundary p. 198
convergent boundary p. 198
transform boundary p. 198
rift valley p. 199
magnetic reversal p. 200
hot spot p. 203

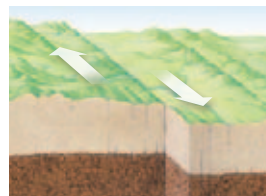
4 Plates converge or scrape past each other.

Crust is destroyed or folded at convergent boundaries.

- Subduction boundaries form island arcs, deep-ocean trenches, and coastal mountains.
- Collision boundaries can form mountains.



Crust is neither formed nor destroyed at transform boundaries.

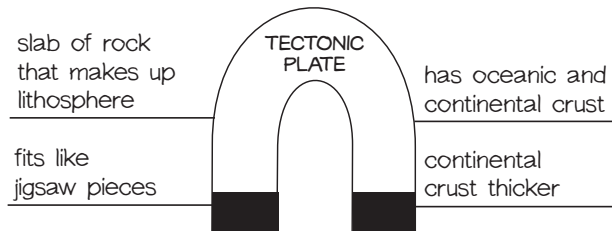


VOCABULARY

subduction p. 206
continental-continental collision p. 207
oceanic-oceanic subduction p. 208
oceanic-continental subduction p. 209

Reviewing Vocabulary

Make a magnet word diagram for each of the vocabulary terms listed below. Write the term in the magnet. Write other terms or ideas related to it on the lines around the magnet.



1. mantle
2. lithosphere
3. mid-ocean ridge
4. convection current
5. divergent boundary
6. convergent boundary

Reviewing Key Concepts

Multiple Choice Choose the letter of the best answer.

7. Which of the following best describes Earth's mantle?
 - a. the densest of Earth's layers
 - b. the home of all life on Earth
 - c. the thickest layer of hot rock
 - d. the thinnest and hottest layer
8. Tectonic plates make up Earth's
 - a. lower mantle
 - b. lithosphere
 - c. asthenosphere
 - d. inner core
9. Why did many scientists reject Wegener's continental drift hypothesis?
 - a. He could not explain how the continents moved.
 - b. The geology of continents did not support his hypothesis.
 - c. Fossil evidence showed that the continents were never joined.
 - d. The climates of the continents have remained the same.

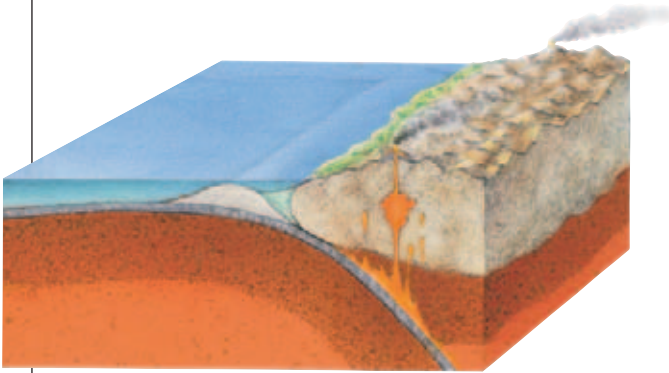
10. What evidence from the sea floor shows that tectonic plates move?
 - a. The sea floor is much older than any of the continents.
 - b. The sea floor is youngest near a mid-ocean ridge and older farther away.
 - c. Mid-ocean ridges circle Earth like seams in a baseball.
 - d. The sea floor is thinner than continental crust.
11. A mid-ocean ridge forms where plates
 - a. move apart
 - b. push together
 - c. scrape past each other
 - d. subduct
12. Plate motion is caused partly by
 - a. magnetic reversals
 - b. convection currents
 - c. continental drift
 - d. volcanic hot spots
13. Which of the following is formed at a collision zone?
 - a. mountain range
 - b. volcanic island chain
 - c. deep-ocean trench
 - d. continental rift valley
14. What happens when two oceanic plates meet?
 - a. Both plates sink into the asthenosphere.
 - b. The colder, denser plate sinks.
 - c. Both plates fold the rock between them.
 - d. One plate slides past the other.
15. Where is crust neither formed nor destroyed?
 - a. mid-ocean ridge
 - b. continental rift valley
 - c. transform boundary
 - d. subduction zone

Short Answer Write a short answer to each question.

16. How does the theory of plate tectonics help geologists predict future geologic events?
17. How do rocks record changes in Earth's magnetic field?
18. Explain what happens when a continental plate splits apart.

Thinking Critically

Use the diagram to answer the questions below.



19. **ANALYZE** Write your own explanation of how the coastal mountains formed.
20. **PREDICT** Would you expect the volcanoes on this coastline to continue to be active? Why or why not?
21. **APPLY** Looking at the map above, why do you think the coastal mountains are in a fairly straight line?
22. **APPLY** On the map above, where would you expect to find a deep ocean trench? Why?
23. **APPLY** A friend looks at the diagram and tells you that there should be an island arc forming off the coast. Use your own knowledge and the map above to support or reject your friend's statement.
24. **SYNTHESIZE** On a separate piece of paper, extend the diagram to the left. Draw the type of plate boundary that someone might find far out at sea.
25. **PREDICT** Will the Andes Mountains on the west coast of South America become taller or shorter in the future? Use the theory of plate tectonics to explain your answer.

APPLY Copy the chart below. Fill in the type of boundary—divergent, convergent, or transform—where each formation is likely to appear.

Formation	Type of Boundary
26. Mid-ocean ridge	
27. Volcanic island arc	
28. Rift valley on land	
29. Mountains	
30. Deep-ocean trench	
31. Hot-spot volcano	

the BIG idea

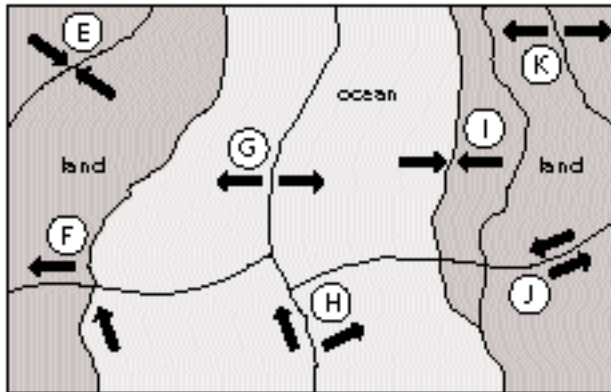
32. **IDENTIFY CAUSE AND EFFECT** Look again at the photograph on pages 182–183. Now that you have finished the chapter, explain what may be forming this crack in Earth's surface.
33. **PREDICT** Use the map on page 195, which shows Earth's tectonic plates and the directions in which they are moving. Based on the plate movements, where do you think the continents might be in a few million years? Draw a map that illustrates your prediction. You might want to give your landmasses names.

UNIT PROJECTS

If you are doing a unit project, make a folder for your project. Include in your folder a list of the resources you will need, the date on which the project is due, and a schedule to keep track of your progress. Begin gathering data.

Analyzing a Diagram

The diagram shows several tectonic plates. The arrows indicate the direction each plate is moving. Study the diagram and answer the questions below.



- Where is an ocean trench most likely to form?
 - F
 - G
 - H
 - I
- Where is a continental rift valley most likely to form?
 - E
 - F
 - J
 - K
- Where would you find a convergent boundary?
 - E
 - F
 - H
 - K
- Where is a mid-ocean ridge most likely to form?
 - G
 - H
 - I
 - F
- What is a good example of a transform boundary?
 - E
 - I
 - J
 - K
- Which is most likely to happen at I?
 - Island arcs will form parallel to a trench.
 - A spreading center will create a rift valley.
 - Continental crust will be destroyed.
 - Subduction will cause oceanic crust to melt.
- Why are earthquakes likely to occur at J?
 - Two plates are spreading away from each other.
 - Two plates are colliding with each other.
 - Two plates are scraping past each other.
 - One plate is sliding under another plate.
- Why are mountains likely to form at E?
 - A rift valley is forming.
 - Two plates are colliding.
 - Magma is flowing upward.
 - One plate is sinking.
- Which is most likely to happen at G?
 - Rising magma will create new crust.
 - Subduction will cause a deep trench.
 - Colliding plates will cause rocks to crumple.
 - Moving plates will create island arcs.

Extended Response

Answer the two questions below in detail. Include some of the terms shown in the word box. In your answer, underline each term you use.

tectonic plates subduction magma crust
 continental drift hot spot mantle

- Two island chains are separated by a deep ocean trench. Although they are close to each other, the islands have very different fossils and types of rock. Explain why these island chains have such different geologic features.
- Andrea lives near a chain of mountains located far from plate boundaries. The closest mountain is an active volcano. The other mountains used to be volcanoes. The farther away a mountain is in the chain, the older it is. Explain these facts.