



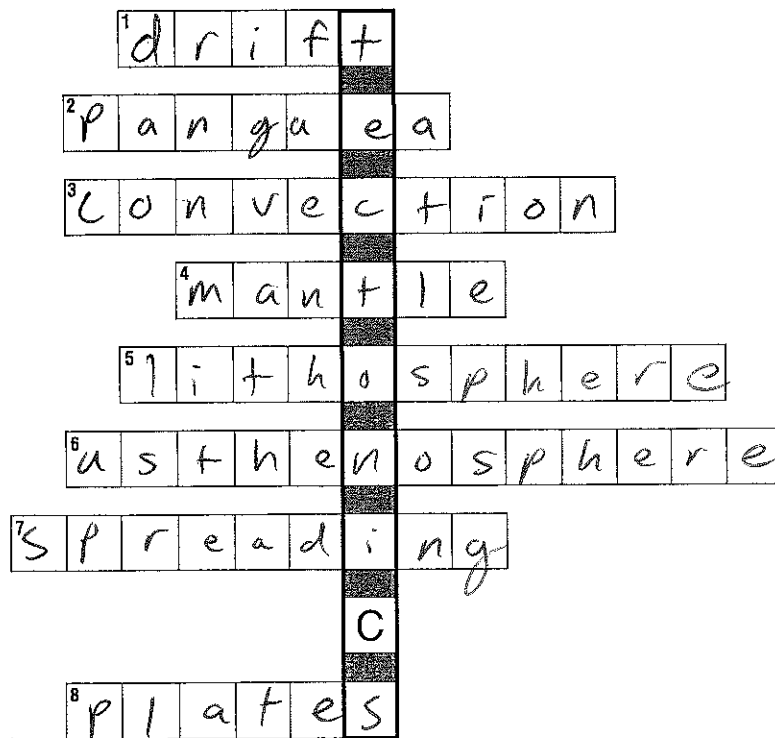
Directions: Use the following terms to complete the puzzle below. The letters in the darker, vertical box complete question 9.

~~Pangaea~~
~~convection~~

~~mantle~~
~~plates~~

~~spreading~~
~~drift~~

~~lithosphere~~
~~asthenosphere~~



- The hypothesis that continents move slowly is called continental _____.
- All continents once might have been connected in a large landmass called _____.
- The cycle of heating, rising, cooling, and sinking is a _____ current.
- Just below Earth's crust is the _____.
- The crust and part of the upper mantle are known as the _____.
- Continental plates move on the plasticlike layer of Earth's surface called the _____.
- Hot magma forced upward at mid-ocean ridges produces seafloor _____.
- Sections of Earth's crust and part of the upper mantle are called _____.
- The theory that Earth's crust and upper mantle are in sections that move is called plate tectonics.



Chapter Review

Plate Tectonics

Part A. Vocabulary Review

Directions: Write the term that matches each description below in the spaces provided. Then unscramble the letters in the boxes to reveal the mystery phrase.

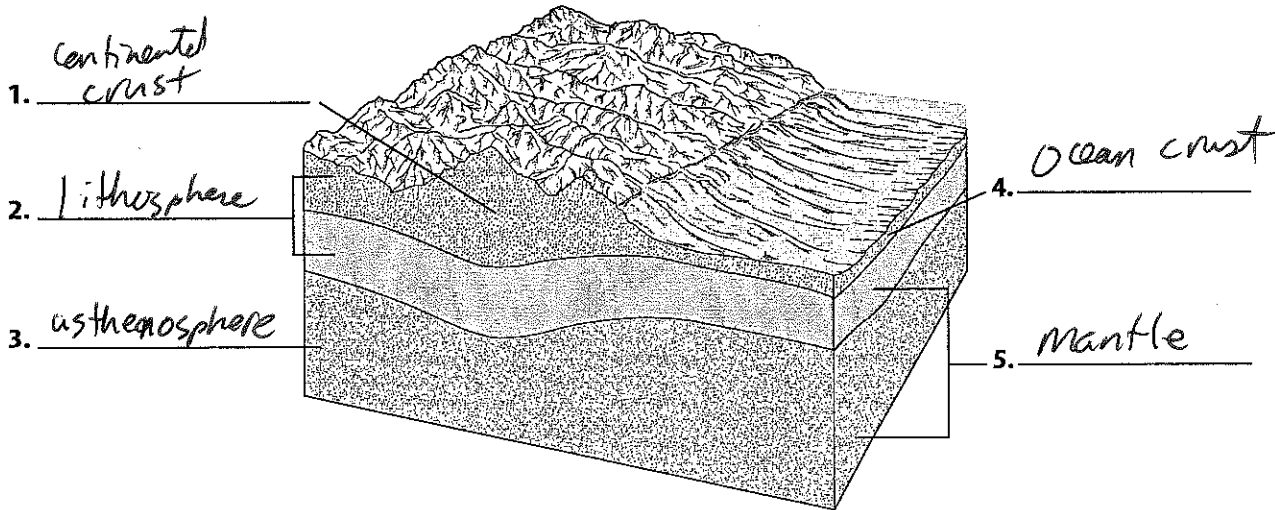
1. a s t h e n o s p h e r e
2. c o n v e c t i o n i n c u r r e n t
3. p l a t e t e c t o n i c s
4. s u b d u c t i o n z o n e
5. t r a n s f o r m b o u n d a r y
6. c o n v e r g e n t b o u n d a r y
7. l i t h o s p h e r e
8. m a g n e t o m e t e r
9. P a n g a e a
10. C o n t i n e n t a l D r i f t
11. D i v e r g e n t b o u n d a r y
12. P l a t e s
13. m a n t l e
14. C r u s t
15. S t r i k e - s l i p f a u l t

1. plasticlike layer of Earth's surface below the lithosphere
2. cycle of heating, rising, cooling, and sinking
3. theory that states that Earth's crust and upper mantle are broken into sections, which move around on a special layer of the mantle
4. area where an oceanic plate goes down into the mantle
5. plate boundary that occurs when two plates slide past one another
6. place where two plates move together
7. rigid layer of Earth's surface made up of the crust and a part of the upper mantle
8. sensing device that detects magnetic fields, helping to confirm seafloor spreading
9. one large landmass hypothesized to have broken apart about 200 million years ago into continents
10. hypothesis that the continents have moved slowly to their current locations
11. boundary between two plates that are moving apart
12. sections of Earth's crust and upper mantle
13. largest layer of Earth's surface, composed mostly of silicon, oxygen, magnesium, and iron
14. outermost layer of Earth's surface
15. where rocks on opposite sides of a fault move in opposite directions or in the same direction at different rates
16. Mystery phrase:

Chapter Review (continued)

Part B. Concept Review

Directions: Study the following diagram. Then label the parts of Earth's surface.



Directions: Answer the following questions using complete sentences.

6. Compare and contrast divergent, convergent, and transform plate boundaries.

divergent - come apart

convergent - move together and collide

transform - slip past one another

7. Describe how convection currents might be the cause of plate tectonics.

As the asthenosphere churns with convection currents, it will drag the lithosphere on top to move.

8. Why are new ideas often rejected, and what is needed before new ideas should be accepted?

New ideas can be very different from traditionally held ideas. You need good evidence to support new ideas.



Chapter Test

Plate Tectonics

I. Testing Concepts

Directions: For each of the following, write the letter of the term or phrase that best completes the sentence.

- B 1. The seafloor spreading theory was proposed by _____
 a. Alfred Wegener. c. Abraham Ortelius.
 b. Harry Hess. d. Carl Sagan.
- D 2. As Earth's plates move apart at some boundaries, they collide at others, forming _____
 a. mountains and volcanoes. c. strike-slip faults.
 b. ocean basins. d. both a and b.
- D 3. The youngest rocks in the ocean floor are located at the mid-ocean _____
 a. volcanoes. b. basins. c. trenches. d. ridges.
- D 4. The results of plate movement can be seen at _____
 a. rift valleys. c. plate centers.
 b. plate boundaries. d. both a and b.
- C 5. The _____ are forming where the Indo-Australian plate collides into the Eurasian plate.
 a. Andes mountain range c. Himalayas
 b. Rocky Mountains d. Appalachian Mountains
- D 6. The presence of the same _____ on several continents supports the idea of continental drift.
 a. fossils b. rocks c. neither a nor b d. both a and b
- A 7. Continental drift occurs because of _____
 a. seafloor spreading. c. magnetic reversal.
 b. Pangaea. d. earthquakes.
- C 8. The cycle of heating, rising, cooling, and sinking is called a _____
 a. subduction zone. c. convection current.
 b. convergent boundary. d. conduction current.
- B 9. Oceanic plates are pushed down into the upper mantle in _____
 a. convection currents. c. strike-slip faults.
 b. subduction zones. d. divergent boundaries.
- A 10. The hypothesis that continents have moved slowly to their current locations is called _____
 a. continental drift. c. magnetism.
 b. continental slope. d. convection.
- C 11. Plates move apart at _____ boundaries.
 a. convergent b. transform c. divergent d. magnetic
- B 12. Ocean floor rocks are _____ continental rocks.
 a. more eroded than c. younger than
 b. older than d. the same age as

Chapter Test (continued)

- A 13. The alignment of iron-bearing minerals in rocks when they formed reflects the fact that Earth's _____ has reversed itself several times in its past.
 a. magnetic field b. core c. asthenosphere d. gravity
- C 14. The lack of an explanation for continental drift prevented many scientists from believing a single supercontinent called _____ once existed.
 a. *Glomar* b. *Glossopteris* c. *Pangaea* d. *Mesosaurus*
- D 15. Scientists aboard the *Glomar Challenger* added to the evidence for the theory of seafloor spreading by providing _____.
 a. high altitude photos of existing continents.
 b. samples of plant life from different locations.
 c. samples of rock from different locations.
 d. direct measurements of the movement of continents.
- B 16. Where plates slide past one another, _____ occur.
 a. volcanoes b. earthquakes c. island arcs d. ocean trenches
- B 17. The places between plates moving together are called _____.
 a. divergent boundaries. c. strike-slip faults.
 b. convergent boundaries. d. lithospheres.
- D 18. Seafloor spreading occurs because _____.
 a. new material is being added to the asthenosphere.
 b. earthquakes break apart the ocean floor.
 c. sediments accumulate on the ocean floor.
 d. hot, less-dense material below Earth's crust is forced upward toward the surface.
- B 19. Studying the ocean floor, scientists found rocks showing magnetic _____.
 a. weakening. b. reversal. c. bonds. d. poles.

Directions: Complete the following sentences using the correct terms.

20. The theory that describes Earth's crust and upper mantle as being broken into sections is called plates tectonics *plate tectonics*.
21. The theory of sea-floor spreading was shown to be correct by age evidence and magnetic clues.
22. Convection currents, occurring in the mantle, are thought to be the force behind plate tectonics.
23. Earth's plasticlike layer is the asthenosphere.
24. Earth's lithosphere/plates move around on a special layer of the mantle.
25. The main lines of evidence for continental drift are fossil, rock, and climate clues, and the theory of seafloor spreading.
26. The rigid part of the plates of the lithosphere are made of oceanic crust or continental crust and upper mantle.
27. The name Pangaea means "all land."

Chapter Test (continued)**II. Understanding Concepts**

Directions: Answer the following questions on the lines provided.

1. What is the difference between a convergent and a divergent plate boundary?

Convergent move into each other, divergent move away. They have opposite motions

2. What happens to warmer material in a convection current?

warmer material becomes less dense and moves upwards in a convection current.

3. What observation led Alfred Wegener to develop the hypothesis of continental drift?

① climate data ② fossil evidence ③ Rock evidence

→ look in notes for details.

4. Which part of Earth's structure is about 100 km thick?

the crust

5. How were the Andes mountain range, the Himalayas, and the islands of Japan formed alike?

all were formed in convergent boundaries

6. How were the Andes mountain range, the Himalayas, and the islands of Japan formed differently?

Andes = continental - oceanic convergent

Himalayas = continental - continental convergent

Japan = volcanic island arc near subduction zone

Skill: Recognizing Cause and Effect

7. What causes new material to form at a mid-ocean ridge on the ocean floor?

As the crust separates, molten material underneath will fill in the newly formed gap.

Chapter Test (continued)**III. Applying Concepts**

Directions: Answer the following questions on the lines provided.

1. Why are there few volcanoes in the Himalayas?

No subduction is occurring to create volcanic activity.

2. Glacial deposits often form at a high latitude near the poles. Explain why glacial deposits have been found in Africa.

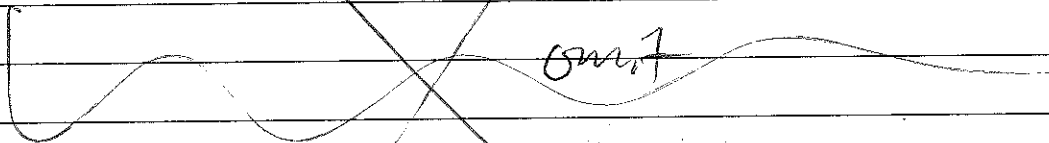
3. Why would the fossil of an ocean fish found on two different continents NOT be good evidence of continental drift?

Ocean fish can travel to different places easily so it's not as good as using land animal fossils.

IV. Writing Skills

Directions: Answer the following questions using complete sentences.

1. Explain how research from the *Glomar Challenger* helped scientists support the theory of seafloor spreading.



2. Since new crust is constantly being added, why does Earth's surface not keep expanding?

New crust forms but old crust will get recycled into the mantle, so the Earth does not grow in size.

