

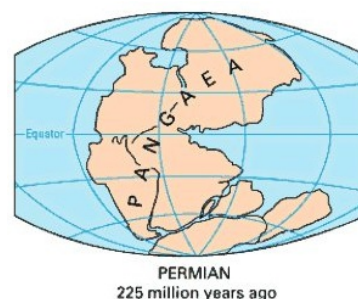
Intermediate Science 7
Unit 4: Earth Crust
Topic 2: Tectonic Plate Theory



Student Name _____

The Theory Of Continental Drift:

- Alfred Wegener proposed this theory in 1915
- He said that at one time all continents were joined together in one large land mass, he called **Pangaea**.
- His Theory suggested that the continents change position slowly by a few cm a year
- He could not prove his theory

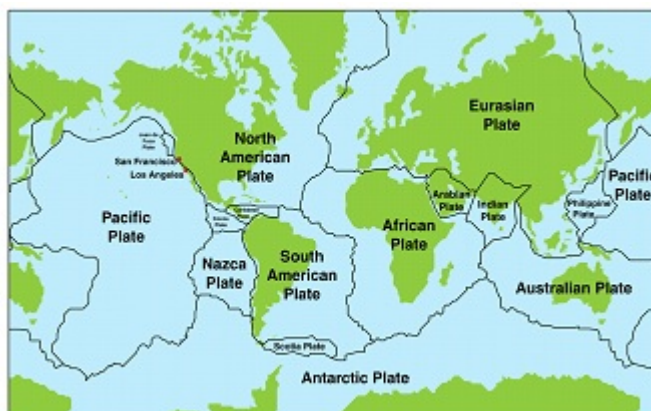


Evidence of Continental Drift:

- 1) Matching coastlines on different continents
- 2) Matching mountain ranges across oceans
- 3) Glacial ages and climate evidence
- 4) Fossil evidence

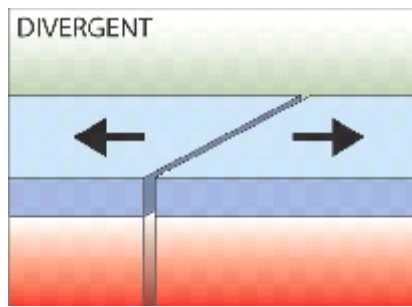
The Theory of Tectonic Plates:

- This explanation for how the continents move came as the result of observations of the sea floor spreading and other effects
- According to this theory, the Earth's crust is like a jigsaw puzzle made up of giant sections called **tectonic plates**.
- These plates 'float' on top of the mantle and so can move around the Earth's surface
- The plates are moving very slowly along plate boundaries

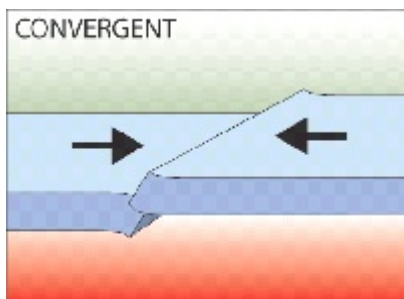


There are three ways the plates will move:

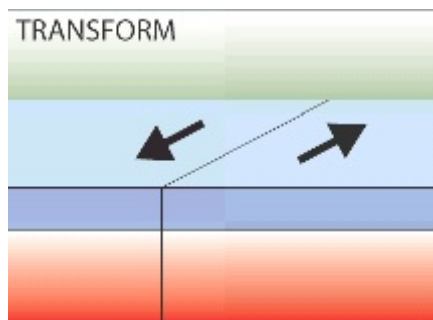
1. Divergent Boundaries: Boundary between two plates that are moving apart or rifting



2. Convergent Boundaries: Boundaries between two plates that are colliding



3. Transform Boundaries: Boundary between two plates that are sliding past each other



PART A: MULTIPLE CHOICE

Instructions: Shade the letter of the correct answer on the computer scorable answer sheet provided.

1. Who proposed the Continental Drift Theory?
 - (A) Alfred Wegener
 - (B) David Brothen
 - (C) Jamie Fifield
 - (D) Peter Bishop
2. What was the name of the supercontinent?
 - (A) All lands
 - (B) Pangaea
 - (C) Eurasia
 - (D) Wegenerland

3. Which of the following refers to the slow movement of land over the earth's surface?
 - (A) Continental Drift
 - (B) Continental Wandering
 - (C) Sea-floor spreading
 - (D) Subduction

4. What evidence supported the theory of continental drift?
 - (A) Fossils
 - (B) Glacial deposits
 - (C) Matching coastlines
 - (D) All of these

5. Which of the following was not used by Wegener as evidence of continental drift?
 - (A) Fossils that were found on different continents.
 - (B) Evidence of glacial scratches continents found near the equator.
 - (C) The fit of the continents.
 - (D) Magnetic reversals on the seafloor.

6. Why did geologists rejected Alfred Wegener's idea of continental drift because
 - (A) Wegener was interested in what Earth was like millions of years ago.
 - (B) they were afraid of a new idea.
 - (C) Wegener could not identify a force that could move the continents.
 - (D) Wegener used several different types of evidence to support his hypothesis.

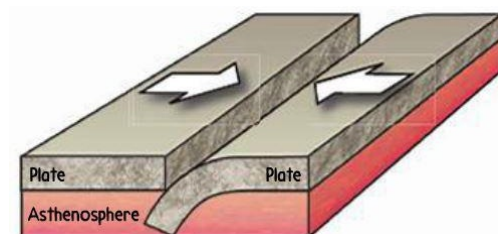
7. Which Theory states that pieces of Earth's crust are in constant, slow motion driven by movement in the mantle?
 - (A) The theory of continental drift
 - (B) The theory of Pangaea
 - (C) The theory of plate tectonics
 - (D) The theory of plate boundaries

8. What term describes the sections of the earth crust that 'floats' on top of the mantle and so can move around the Earth's surface?
 - (A) Dishes
 - (B) Plates
 - (C) Tectonics
 - (D) Utensils

9. What happens when rock is heated?
 - (A) Rock breaks
 - (B) Rock rises
 - (C) Rock sinks
 - (D) Rock become denser

10. The driving forces of tectonic plates are related to convection currents. Which layer of the does this occur?
 - (A) Crust
 - (B) Inner core
 - (C) Mantle
 - (D) Outer core

11. How do tectonic plates fit together?
- (A) Like a layer cake
 - (B) Like a jigsaw puzzle
 - (C) Like a stack of books
 - (D) Like a model car
12. What is a place where tectonic plates touch called?
- (A) Boundary
 - (B) Collision
 - (C) Division
 - (D) Separation
13. Which of the following is not a type of boundary?
- (A) Convergent boundary
 - (B) Divergent boundary
 - (C) Separation boundary
 - (D) Transform boundary
14. What name is given to the boundary between tectonic plates that slide past each other called?
- (A) Convergent boundary
 - (B) Divergent boundary
 - (C) Separation boundary
 - (D) Transform boundary
15. A boundary between tectonic plates that move away from each other is called?
- (A) Convergent boundary
 - (B) Divergent boundary
 - (C) Separation boundary
 - (D) Transform boundary
16. What boundary is shown below?
- (A) Convergent boundary
 - (B) Divergent boundary
 - (C) Separation boundary
 - (D) Transform boundary



PART B : MATCHING

[5]

Match each thermometer on the left with the best Descriptor on the right. Each Descriptor may be used only once. Place your answer on the scantron

<u>Term</u>	<u>Descriptor</u>
17. ___ Continental Drift	A. A plate boundary at which the plates move away from each other.
18. ___ Convection Currents	B. A plate boundary at which the plates move towards each other and collide.
19. ___ Convergent Boundary	C. The theory that the Earth's crust is broken up into pieces (called plates) that are moving on the Earth's mantle
20. ___ Divergent Boundary	D. In geology, a movement of material produced by the rising of warm magma and sinking of cooler and denser magma.
21. ___ Plate Tectonics	E. The theory that the continents move very slowly over the Earth's surface.

PART C: WRITTEN RESPONSE

1. What theory did Wegener propose?

2. What four types of evidence did Wegener use to support his theory?

4. What could Wegener not satisfactorily explain about continental drift?

5. What are three types of movement that can happen at plate boundaries?

6. Describe two ways in which the plate tectonics theory is different from the theory of continental drift.

Make an Earth's Layer's Foldable

NOTE: Please follow the directions carefully!

1. Color the four layers using this guide:

Inner Core - red

Outer Core - red-orange

Lower Mantle - orange

Middle Mantle - light orange

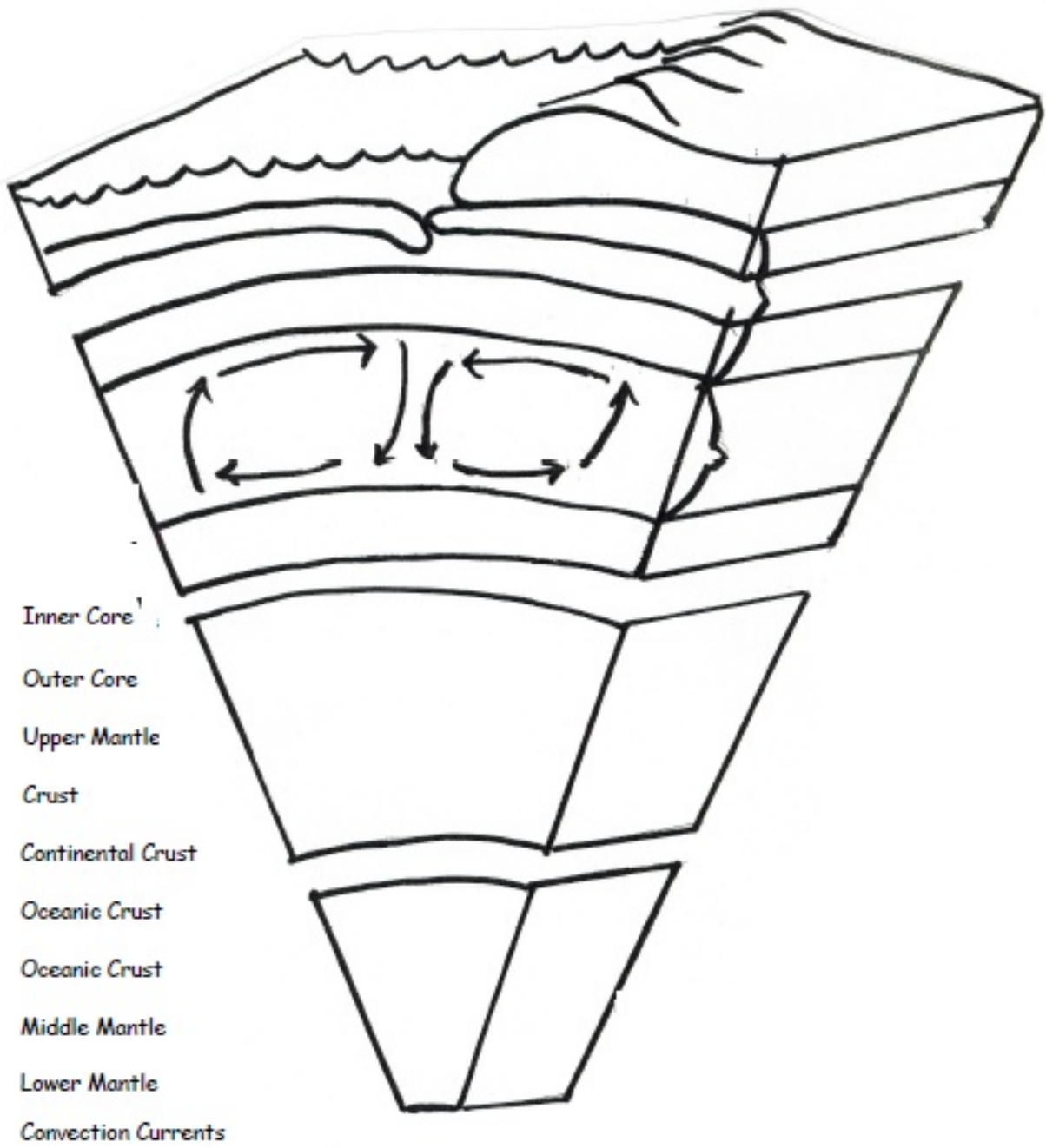
Upper Mantle - yellow

Oceanic Crust - dark brown

Continental Crust - light brown

Ocean - blue

2. Now you may cut out the layers! Also cut out the four squares and the 12 labels. Remember to cut out The Earth's Layers title
3. Set a piece of 8 by 11 blue paper in front of you. Closely trim the title. Paste The Earth's Layers title in the top left corner of the paper (or bottom right corner after you have folded and stapled the pages together--see Image).
4. Paste the Crust on the top of the first blue paper, to the left of center on the page--see Image.
5. Set a second piece of 8 by 11 blue paper on top of the first, close to the bottom of the crust.
6. Paste the Mantle on the second piece of paper. Part of the blue will show near the brackets. That's okay! You can clip it out later.
7. Carefully lining up the bottom of the top blue paper, and holding tightly, fold up the bottom of paper to about 1/4 inch below the bottom of the Mantle. Then fold up the bottom blue paper up to about 1/4 inch from the bottom of the blank blue paper.
8. Staple the fold with two staples very close to the edge.
9. Paste the Outer Core on the third flap down.
10. Paste the Inner Core on the bottom flap. Paste the Inner Core Information Square to the left of the Inner Core.
11. Paste the three other squares inside the flaps, on the corresponding Layers.
12. Cut out any of the blue flaps that show.
14. Using a black pen or marker, add the part of the Lithospheric bracket that was cut off.



STUDENT ACTIVITY

Instructions:

You will be piecing together a puzzle of the supercontinent Pangea based on fossil and rock evidence on the present day continents.

1. On the puzzle pieces handout, assign a color to each type of fossil or mountain belt in the legend and color the areas on the landmasses according to the legend.
2. Use scissors to cut along the borders of the continents. These are the approximate shape of the continents after Pangea broke up.
3. Place the continents on a piece of construction paper and move them around using the fossil and mountain chain evidence to match the continents together in the position they were in when they were part of Pangea. The pieces may not fit together exactly!
4. When you have assembled Pangea based on the fossil and rock locations, glue the continents onto your construction paper in the shape of the supercontinent. Glue the legend to your puzzle.

DIRECTIONS:

- 1) Label each continent with its name.
- 2) Color the fossils or mountains in the legend and color the symbols on each continent in the colors of the legend.
- 3) Cut out the continents and match up the fossil and mountain evidence to recreate Pangea.
- 4) Glue the continents into place on your construction paper.

