

Leveled Texts for Science



Earth and Space Science


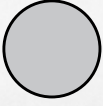




Table of Contents

Introduction	4
What Is Differentiation?	4
How to Differentiate Using This Product	5
General Information About the Student Populations.....	6
Below-Grade-Level Students	6
English Language Learners.....	6
On-Grade-Level Students	7
Above-Grade-Level Students	7
Strategies for Using the Leveled Texts.....	8
Below-Grade-Level Students	8
English Language Learners.....	11
Above-Grade-Level Students	14
How to Use This Product.....	16
Readability Chart.....	16
Components of the Product.....	16
Tips for Managing the Product	18
Correlation to Standards.....	19
Leveled Texts	
Jet Streams and Trade Winds	21
The Water Cycle.....	29
Tornadoes and Hurricanes.....	37
Structure of the Earth.....	45
Earthquakes and Volcanoes	53
Plate Tectonics	61
Wegener Solves a Puzzle.....	69
The Rock Cycle.....	77
Fun with Fossils.....	85
The Inner Planets.....	93
The Outer Planets	101
Our Place in Space	109
Other Citizens of the Solar System	117
The Astronomer's Toolbox.....	125
The Journey to Space	133
Appendix	
Resources	141
Works Cited.....	141
Image Sources.....	141–143
Contents of Teacher Resource CD	144

How to Use This Product

Readability Chart

Title of the Text	 Star	 Circle	 Square	 Triangle
Jet Streams and Trade Winds	1.9	3.1	4.7	6.5
The Water Cycle	1.6	3.1	4.7	6.5
Tornadoes and Hurricanes	1.8	3.4	4.6	6.7
Structure of the Earth	2.1	3.5	5.2	6.5
Earthquakes and Volcanoes	2.2	3.0	4.9	6.6
Plate Tectonics	2.2	3.5	5.1	7.0
Wegener Solves a Puzzle	2.0	3.5	5.1	6.6
The Rock Cycle	1.8	3.4	4.5	7.1
Fun with Fossils	2.0	3.2	5.0	6.9
The Inner Planets	2.2	3.1	4.8	6.7
The Outer Planets	2.1	3.4	4.9	6.5
Our Place in Space	2.2	3.4	5.2	6.7
Other Citizens of the Solar System	2.1	3.1	5.0	6.9
The Astronomer's Toolbox	2.2	3.4	4.8	6.8
The Journey to Space	1.7	3.1	4.9	6.7

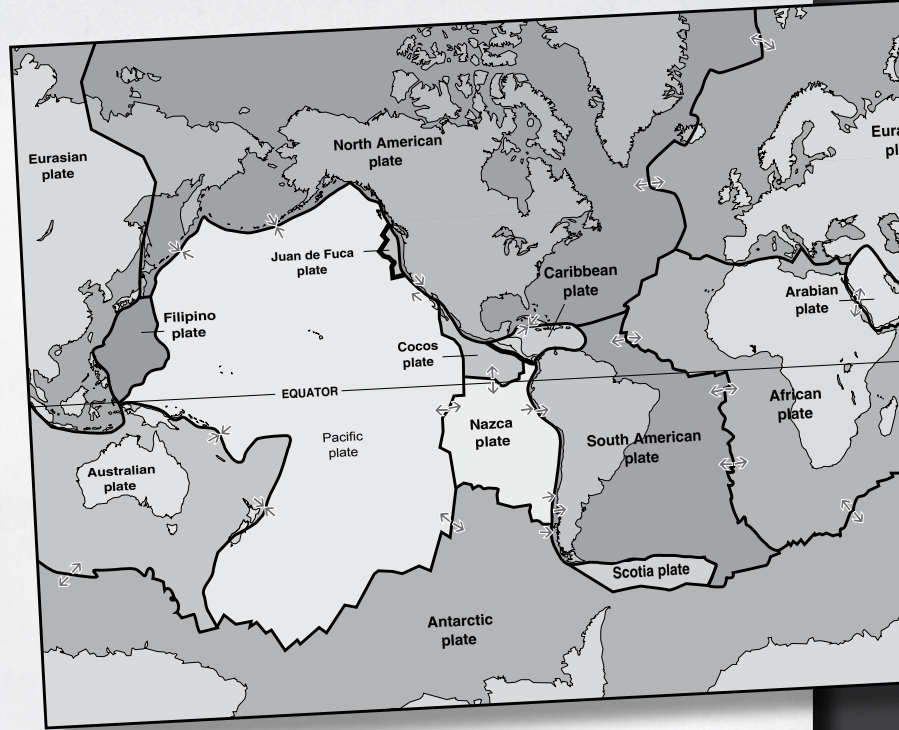
Components of the Product

Primary Sources

- Each level of text includes multiple primary sources. These documents, photographs, and illustrations add interest to the texts. The scientific images also serve as visual support for second language learners. They make the texts more context rich and bring the texts to life.

Plate Tectonics

The surface of Earth is not one solid part. It is made of many parts. They fit side by side like a puzzle. Unlike a puzzle, those parts move. They push each other. They crash and smash. The parts are called tectonic plates. There are two types of plates on Earth. Oceanic plates are under the ocean water. Continental plates are under land.



the tectonic plates of Earth

The edges of plates meet at boundaries. There are three main types. They are divergent, transform, and convergent. Each kind works in its own way. Each kind can be found all over the world. They also make land features such as mountains and valleys.

Divergent Boundaries

Iceland is a small island. It is in the Atlantic Ocean. It is far to the north. It was made from a divergent boundary. It is on a ridge in the ocean. The ridge is where two plates meet. One plate goes west. The other plate goes east. They are very slow. They move at a rate of two to four centimeters per year (one inch per year).

Volcanoes are common there. The plates cause a gap in the land. The plates move. The gap gets bigger. Magma bursts up. It comes through Earth's crust. This makes a volcano. Over time, the magma piled up. It cooled down. It formed Iceland.

Transform Boundaries

Most transform boundaries are found in the ocean. The San Andreas Fault is on land. It is a transform boundary. You can find it in California. One side is the Pacific Plate. The other side is the North American Plate. They don't move apart. The plates slide past each other. This makes the plates grind. They slip and shake. This makes earthquakes.

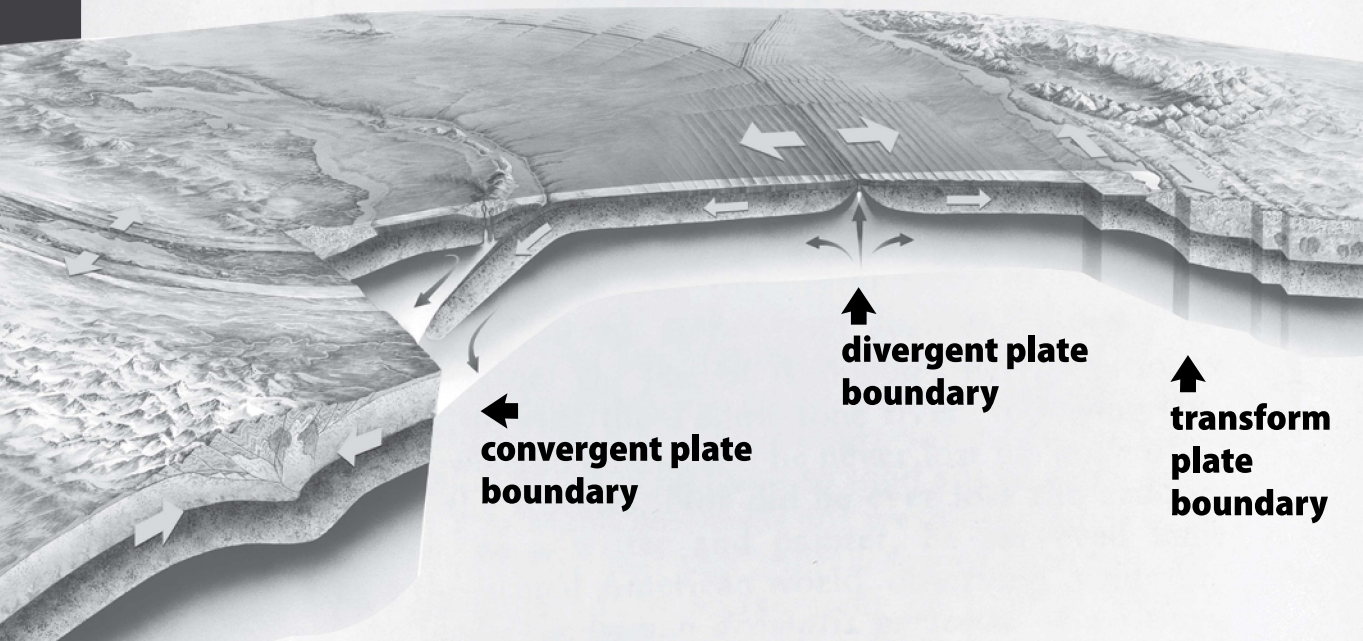
Convergent Boundaries

Plates can form convergent boundaries. There are three ways. Each type has its own results.

Two ocean plates can smash. Then you get an ocean-ocean collision. That is what is at the Mariana Trench right now. The quick Pacific Plate smashes west. It hits the Filipino Plate. The first plate dives down. It goes under the second. It is melted. This makes earthquakes. It also makes volcanoes. The Mariana Islands are volcanoes. They started on the ocean floor. They have grown large. Now they peek out of the water. They are in the shape of an arc. That is the same shape as plates below them.

Then there are continent-continent collisions. Two plates smash head-on. They “fight it out.” Then one plate loses. It subducts. It goes under the other. A lot of rock is scraped off the plate as it goes down. The rock piles up. It makes mountains. The Himalayas are the highest mountains in the world. They were made this way. It started 50 million years ago. The Indian and Eurasian plates crashed together. That formed the very tall mountain range.

The last kind to talk about is the ocean-continental collision. The ocean plate subducts. It dives under the other plate. There is one in South America right now. The ocean plate is diving under Peru and Chile. They have a lot of earthquakes. They even have volcanoes.

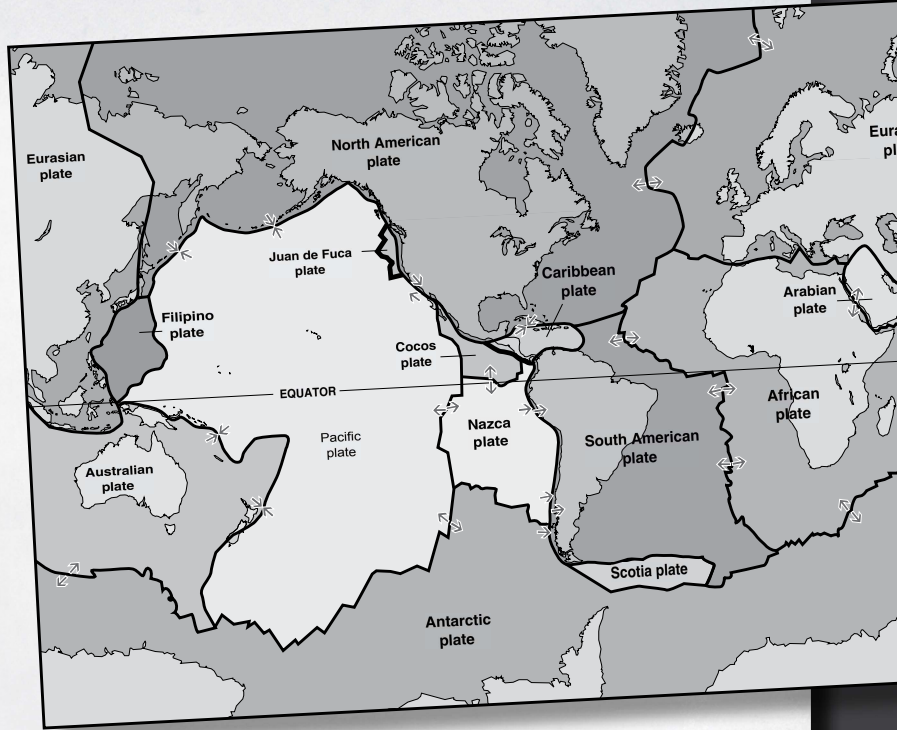


Comprehension Question

What is a tectonic plate?

Plate Tectonics

The surface of Earth is not one solid piece. It is made of many pieces. They fit side by side like a puzzle. Unlike a puzzle, those pieces move. They push each other. They crash and smash. The pieces are called tectonic plates. There are two types of plates on Earth. Oceanic plates are under the ocean water. Continental plates are under land.



the tectonic plates of Earth

The edges of plates meet at boundaries. There are three main types. They are divergent, transform, and convergent. Each kind acts in its own way. Each kind can be found all over the world. They also make land features such as mountains and valleys.

Divergent Boundaries

Iceland is a tiny island. It is in the Atlantic Ocean. You can find it between Norway and Greenland. It was made from a divergent boundary. Iceland is on a ridge in the middle of the ocean. Two plates are moving away from each other. They are very slow. They move at a rate of two to four centimeters per year (one inch per year).

Volcanoes are common on Iceland. The moving plates cause gaps. Magma bursts up and through Earth's crust. This action forms volcanoes. The cooled magma from the volcano formed Iceland.

Transform Boundaries

Most transform boundaries are found in the ocean. The San Andreas Fault is on land. The San Andreas Fault is a transform boundary. You can find it in California. One side is the Pacific Plate. The other side is the North American Plate. They don't move apart. They are sliding past each other. This causes major earthquakes.

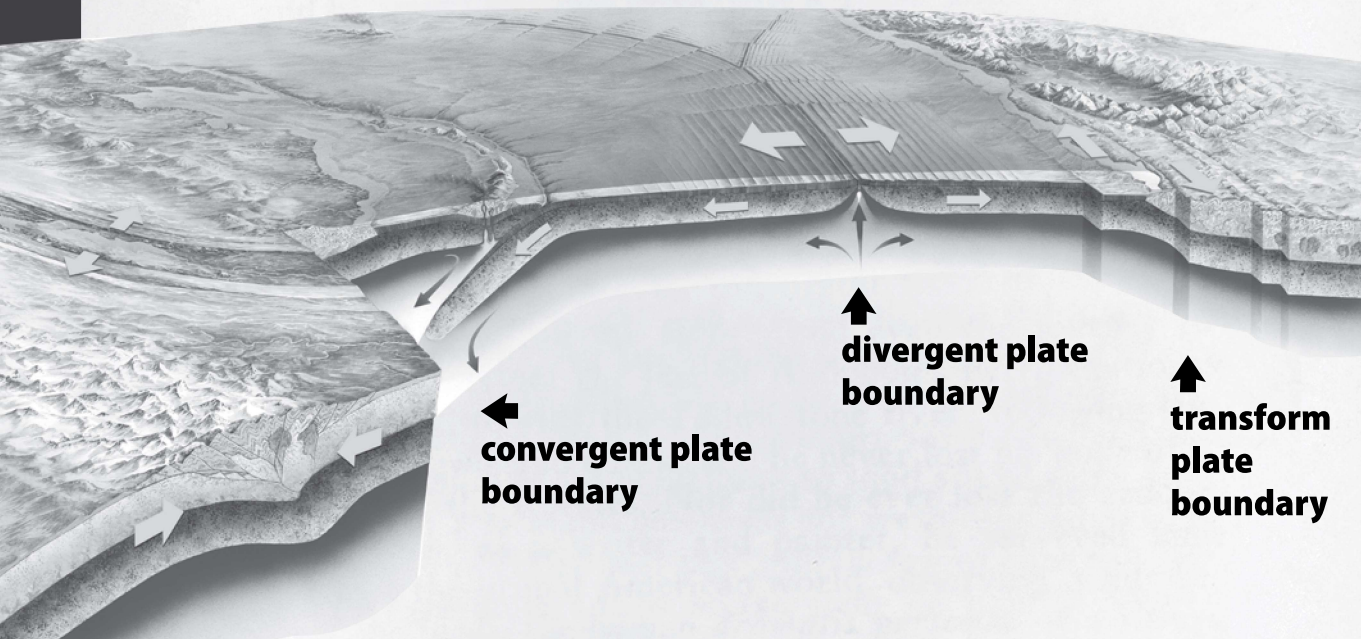
Convergent Boundaries

Plates can form convergent boundaries in one of three ways. Each type has its own results.

When two ocean plates collide, you get an ocean-ocean collision. That is causing the Mariana Trench right now. The quick Pacific Plate is crashing into the Filipino Plate. The first plate dives down into Earth's mantle. It is melted. This causes earthquakes. It also causes volcanoes. The Mariana Islands are underwater volcanoes. They have grown large. They have grown high enough to peek out of the water. They are in the shape of an arc. That is the same shape as the ocean-ocean boundary.

Then there are continent-continent collisions. Two plates collide head-on. They "fight it out." Then one plate loses. It subducts under the other. A lot of rock is scraped off the plate as it goes down. The rock piles up. It makes mountains. The Himalayas are the highest mountains in the world. They were made this way. It started 50 million years ago. The Indian and Eurasian plates crashed together. That formed the very tall mountain range.

The last kind to talk about is the ocean-continental collision. The ocean plate subducts. It dives under the other plate. There is one in South America right now. It is diving under Peru and Chile. They have a lot of earthquakes. They even have volcanoes.

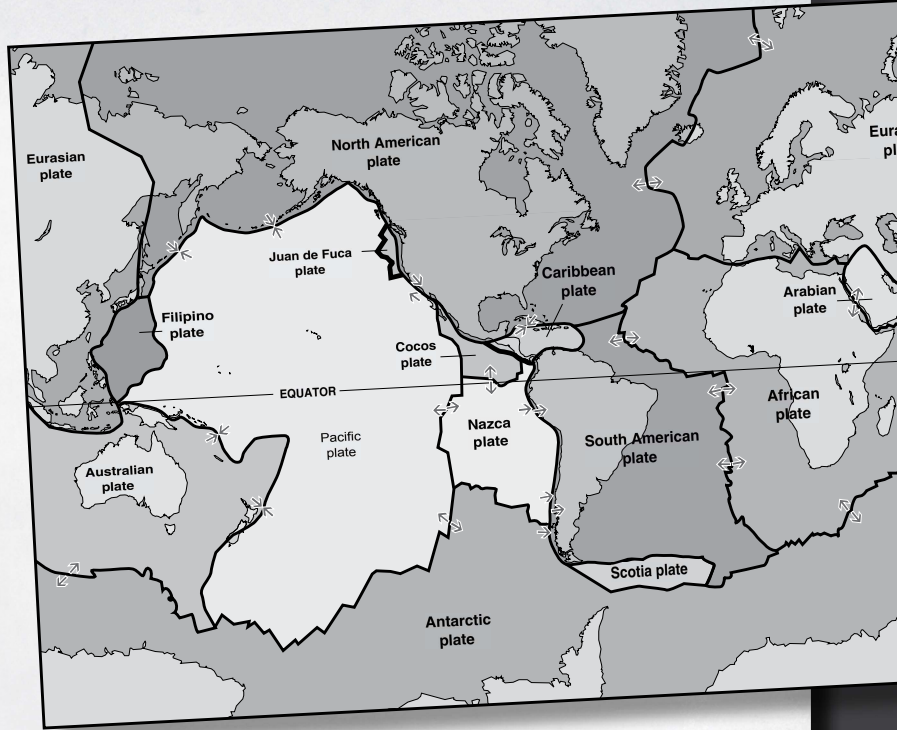


Comprehension Question

Describe how tectonic plates make up Earth's surface.

Plate Tectonics

The surface of Earth is not one solid piece. Instead, it is made of many pieces that fit together like a puzzle. However, unlike a puzzle, those pieces move. They jostle against each other. Sometimes they crash and smash together. The pieces are called tectonic plates. There are two basic types of plates on Earth. Oceanic plates are under the ocean water. Continental plates make up the continents.



the tectonic plates of Earth

Scientists also know that plates have three main types of boundaries, or edges. They are divergent, transform, and convergent. Each kind behaves in a different way. The many boundaries can be found all over the world. They also make land features such as mountains and valleys.

Divergent Boundaries

Iceland is a tiny island. It is in the Atlantic Ocean. You can find it between Norway and Greenland. It was made from the divergent boundary of the midocean ridge. Two plates are moving away from each other very slowly. They move at a rate of two to four centimeters per year (one inch per year).

Volcanoes are common on Iceland. The movement of the plates causes gaps. Magma bursts up and through Earth's crust. This action forms volcanoes. The cooled magma from the eruptions formed Iceland.

Transform Boundaries

Most transform boundaries are found in the ocean. The San Andreas Fault is on land. The San Andreas Fault is a transform boundary. You can find it in California. It falls between the Pacific Plate and the North American Plate. These two plates aren't moving away from each other. They are sliding past each other. This sliding motion has caused major earthquakes.

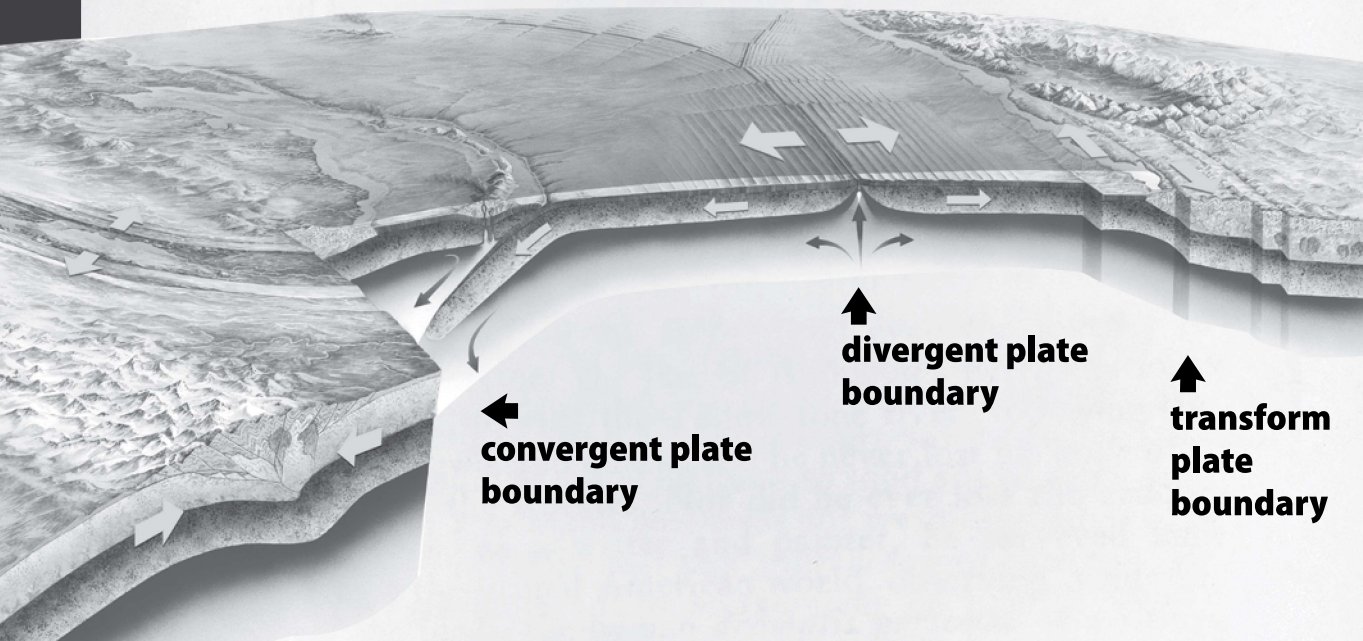
Convergent Boundaries

Plates can form convergent boundaries in one of three ways. Each type has its own results.

An ocean-ocean collision involves two ocean plates. Right now, such a collision is causing the Mariana Trench. The fast-moving Pacific Plate is crashing into the Filipino Plate. The first plate dives into Earth's mantle. It is melted. This causes earthquakes. It also causes volcanoes. The Mariana Islands are underwater volcanoes. They have grown large enough to rise above the water line. They are in the shape of an arc. That is the same shape as the ocean-ocean boundary.

Then there is the continent-continent collision. Two plates collide head-on. They "fight it out." Then one plate loses and subducts under the other. A lot of rock is scraped off the plate as it subducts. The rock piles up to make mountains. The Himalayas are the highest mountains in the world. They are the result of a collision that started about 50 million years ago. The Indian and Eurasian continental plates crashed together. That formed the very tall mountain range.

The last kind to talk about is the ocean-continental collision. The oceanic plate subducts. It dives under the continental plate. There is one in South America right now. This is happening near Peru and Chile. They have a lot of earthquakes and volcanoes.

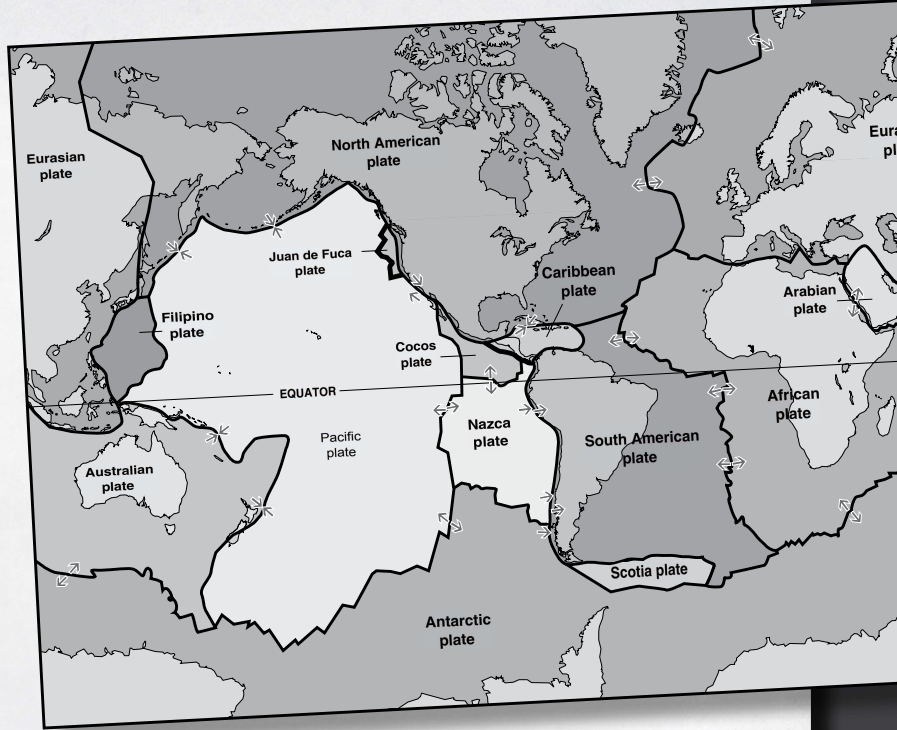


Comprehension Question

Describe how tectonic plates create Earth's landforms.

Plate Tectonics

The surface of Earth is not one solid piece. Instead, it is made of many pieces that fit together like a puzzle. However, unlike a puzzle, those pieces move, jostling against each other and sometimes crashing and smashing together. The pieces are called tectonic plates. There are two basic types of plates on Earth. Oceanic plates are under the ocean water. Continental plates make up the continents.



the tectonic plates of Earth

Scientists also know that plates have three main types of boundaries, or edges. They are divergent, transform, and convergent. Each boundary behaves in a different way. The different boundaries can be found all over the world. The boundaries also make land features such as mountains and valleys.

Divergent Boundaries

Iceland is a tiny island in the Atlantic Ocean. It is between Norway and Greenland. It was made from the divergent boundary of the midocean ridge. Two plates are moving away from each other very slowly. They move at a rate of two to four centimeters per year (one inch per year).

Volcanoes are common on the island nation of Iceland. The movement of the plates causes magma to burst up and through Earth's crust. This action forms volcanoes. The cooled material from the volcanic eruptions formed Iceland.

Transform Boundaries

Most transform boundaries are found in the ocean, but the San Andreas Fault is on land. The San Andreas Fault in California is a transform boundary. It falls between the Pacific Plate and the North American Plate. These two plates are sliding past each other instead of pulling away from each other. This sliding motion has caused major earthquakes all along the state's coastline.

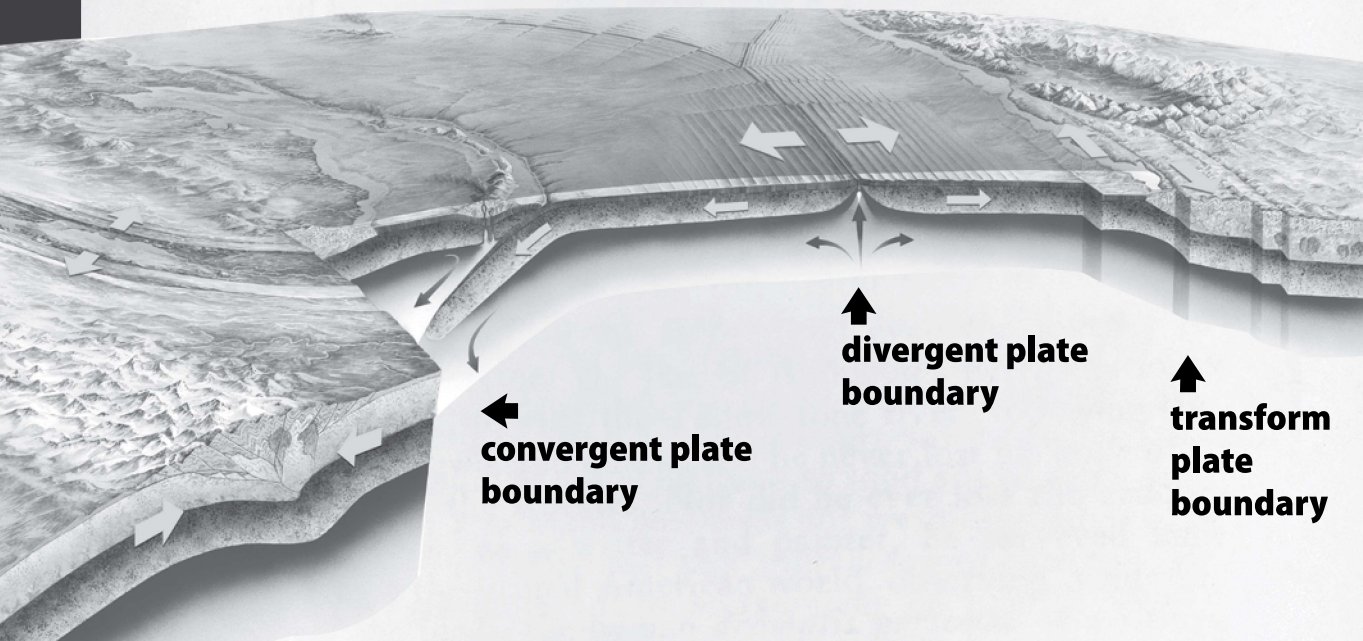
Convergent Boundaries

Plates can form convergent boundaries in one of three ways. Each type of convergent boundary has its own results.

An ocean-ocean collision happens between two ocean plates. Right now, such a collision is causing the Mariana Trench. The fast-moving Pacific Plate is crashing into the Filipino Plate. As the Pacific Plate dives into Earth's mantle, it is melted. This causes earthquakes and volcanoes. The Mariana Islands are underwater volcanoes that have grown large enough to rise above the water line. Such islands often form the shape of an arc. That is the same shape as the ocean-ocean collision boundary.

In a continent-continent collision, two plates collide head-on. They “fight it out” before one plate finally subducts under the other. A lot of material builds up as it is scraped off one plate as it subducts. The Himalayas are the highest mountains in the world. They are the result of a collision that started about 50 million years ago. The Indian and Eurasian continental plates crashed together to form the very tall mountain range.

An ocean-continental collision is happening in South America right now. An oceanic plate is being subducted under a continental plate. This is happening near Peru and Chile. That is why earthquakes and volcanoes are very common in this area of the world.



Comprehension Question

Describe how tectonic activity creates landforms.