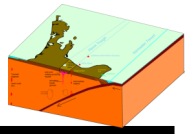
Name:_____ Class:_____ Date:_____

Snack Tectonics Lab



Materials:

Asthenosphere/Magma:_____

Oceanic Plate: _____

Continental Plate:_____

Other Materials:

Set Up:

1. Wash your hands/use sanitizer
2. Lay a square of wax paper on your desk
3. Have teacher/materials helper spread frosting on wax paper to represent the asthenosphere.

NOW YOU ARE READY TO GET STARTED!

Part 1: Divergent Plate Boundaries: *Oceanic-Oceanic*

1. Place two squares of fruit roll up side by side on top of the frosting.
2. Slowly press down and push them apart 0.5 cm.
3. What do you notice about the frosting between the two squares?
   _____
4. Pull the "plates" slowly apart to create a divergent plate boundary.
5. Sketch your observations/what you see below and answer the questions:

Q1: When you press down on the fruit roll up, frosting "oozes" up through the crack. What does this oozing frosting represent? _____

Q2: The frosting forms a ridge. What forms at real divergent plate boundaries under the ocean? _____

Part 2: Convergent Plate Boundaries: Continental-Oceanic

1. Lift up ONE of the fruit roll up squares and GENTLY place a graham cracker square in its place.
2. Gently slide the graham cracker square towards the oceanic crust until the two overlap.
3. Sketch your observations/what you see below and answer the questions:

Q1: Why were you told to place the graham cracker lightly and not push it down? _____

Q2: Why does the continental plate slide over the oceanic plate? _____
_____

Q3: What is the name of the process that takes place when a more dense plate goes under a less dense plate? _____

Part 3: Convergent Plate Boundaries: Continental-Continental

1. Remove both the pieces from the existing asthenosphere.
2. Slightly dampen one of each cracker's long edge by exposing it to water for a few seconds (not too long)
3. Place the continental crust crackers back on the asthenosphere with the wet edges touching each other.
4. Slowly push the "plates" together and observe what happens to the wet edges.
5. Sketch your observations/what you see below and answer the questions:

Q1: Wetting the edges is to help you see that the material is uplifted. What type of landform did you just represent the formation of?
_____

Q2: What is a real-world example? _____

Part 4: Transform Plate Boundaries: Continental-Continental

1. Pick up your graham crackers and flip them around so that the dry edges are now facing each other.
2. SLOWLY push one away from you and pull one towards you, mimicking the motion of a transform boundary.
3. Observe what happens along the edges that touch.
4. Sketch your observations/what you see below and answer the questions:

Q1: What happened to the edges that were touching as they slid past each other? _____

Q2: What action does this change represent? _____

Q3: What is the name of a "real world" example of this plate boundary?

_____

Q4: Where in the U.S.A. would you expect to find a lot of transform-fault activity? _____

BONUS: Convergent Plate Boundaries: Oceanic-Oceanic

Q1: There is a saying that when two oceanic plates converge, the one that is "oldest and coldest" will subduct. What do you know about **density** that makes this saying likely to be true?

Q2: What type of landform results from convergent oceanic-oceanic crust?

Place a check in each box if the action described on the left is true of the type of plate boundary in that column. These are tricky!

Description	**Divergent:** Oceanic-Oceanic	**Convergent:** Continental-Oceanic	**Convergent:** Continental-Continental	**Transform:** Continental-Continental	**Divergent:** Continental-Continental
Plates slide past each other moving in opposite directions					
Subduction occurs					
Forms mountains					
Island arcs formed					
Forms folded mountains					
Sea-floor spreading					
Forms volcanic mountains					
Creates rift valleys					
Plates move apart					
Plates move towards each other					
Creates earthquakes					
Forms mid-ocean ridge					

Part Seven: Mid-Ocean Ridges

44. Sketch the mid-ocean ridge
45. Label the direction of the plate movement
46. Label the boundary as Divergent, Convergent or Transform.

47. What is the name of the mid-ocean ridge in the Atlantic Ocean?

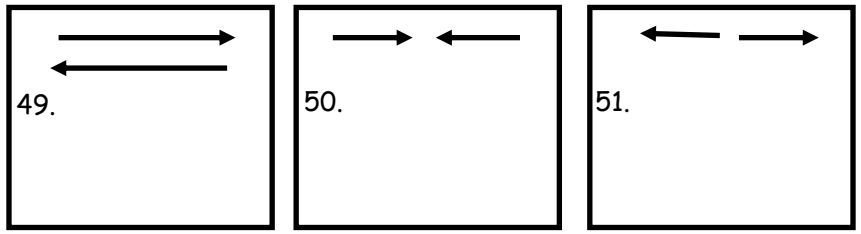
_____

48. Where has it built up so high that it has created a volcanic island?

_____

Part Eight: Plate Boundaries

Label each set of arrows for the plate boundary they illustrate:



52. Why do tsunamis form? _____

53. Why does California have so many earthquakes? _____

54. What type of plate boundary causes the earthquakes? _____

55. What type of plate boundary formed the Himalayas? (folded mountains)

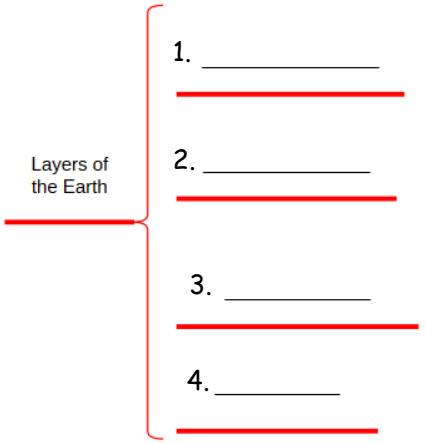
_____

Name:_____ Class:_____ Date:_____

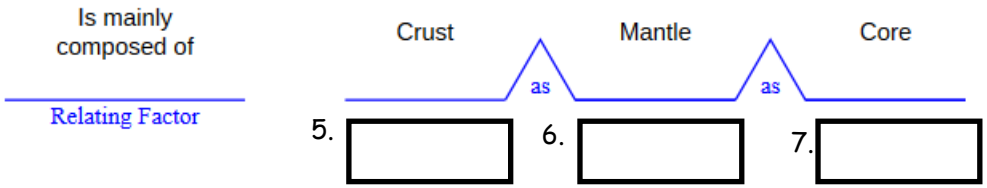
Plate Tectonics Review Booklet

S6E5.a Compare and contrast the Earth's layers
S6E5.f Explain the effects of physical processes (plate tectonics) on geological features.

Part One: Layers of the Earth: Fill in the brace map with the four layers of the Earth, starting with the one we are standing on:



Fill in the bridge map below, identifying what mineral(s) mainly compose each layer.



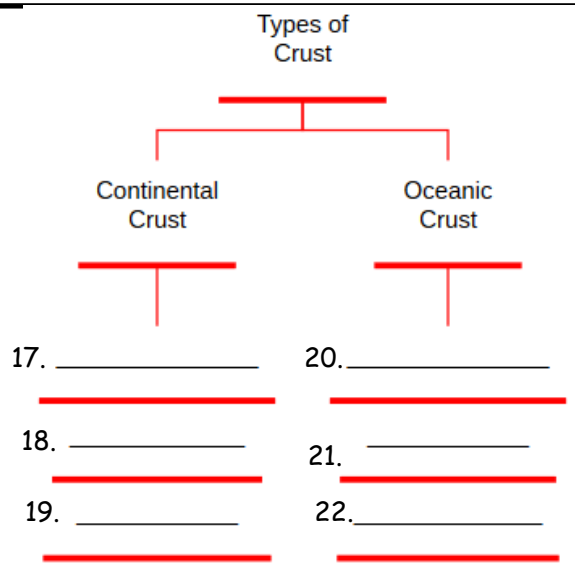
Part Two: Temperature and Density: Compare/contrast the layers of the Earth in terms of density, thickness, and temperature.

Least Dense to Most Dense:	Thinnest to thickest:	Hottest to Coldest:
8.	11.	14.
9.	12.	15.
10.	13.	16.

Part Three: Types of Crust

Use the following terms to fill in the tree map below about crust:

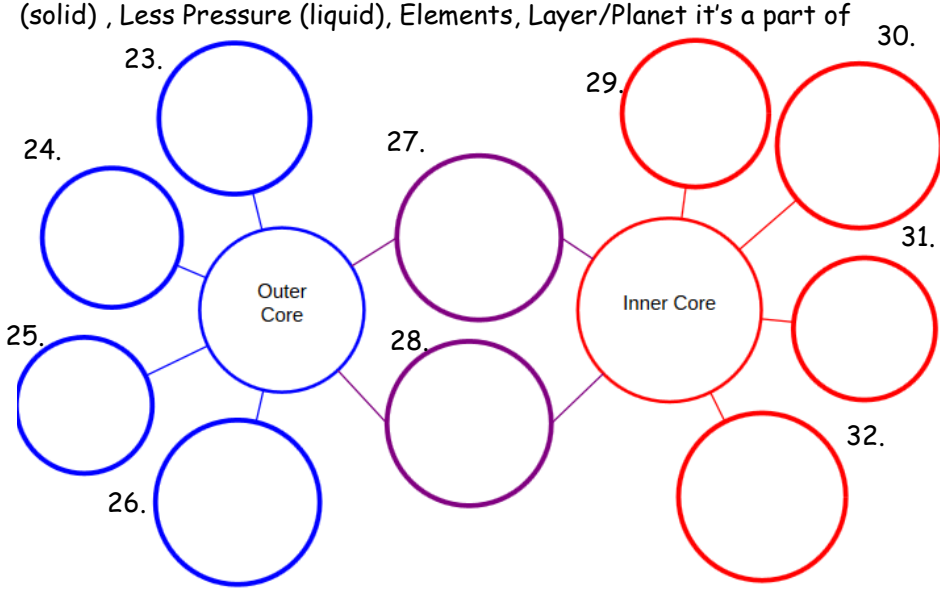
Basalt, Granite, Less Dense, More Dense, Thicker, Thinner



Part Four: Types of Crust

Use the guidelines to fill in the double bubble map:

Less Dense, More Dense, Thicker, Thinner, Hotter, Cooler, More Pressure (solid) , Less Pressure (liquid), Elements, Layer/Planet it's a part of



Part Five: The Lithosphere

33 & 34. Sketch AND label the lithosphere and asthenosphere.

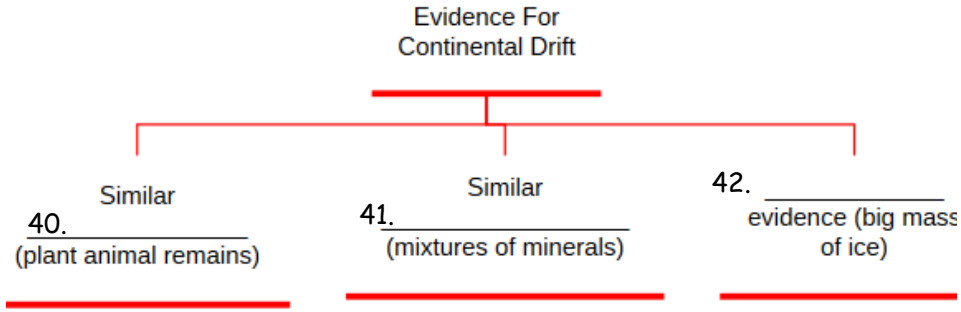
35. Which layer is completely solid? _____

36. What makes the lithospheric (tectonic) plates move? _____

_____

Part Six: Continental Drift Theory

39. What is/was Pangaea? _____

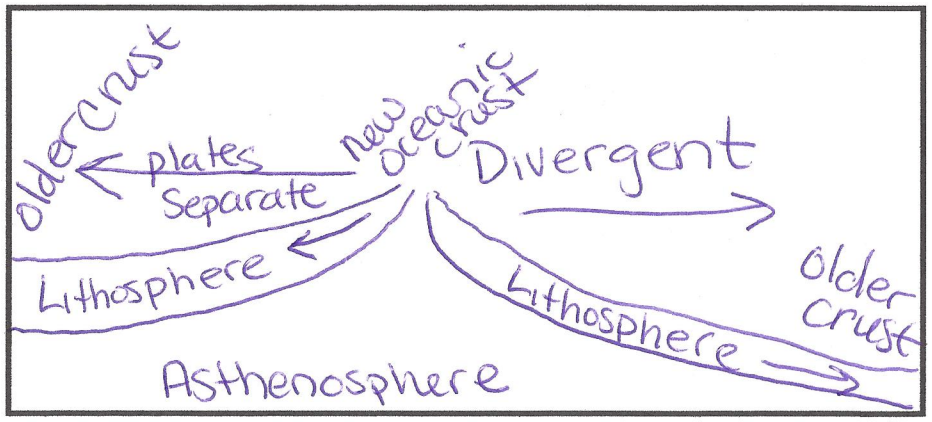


43. The Continental Drift Theory was the basis for the Theory of

_____

Part Seven: Mid-Ocean Ridges

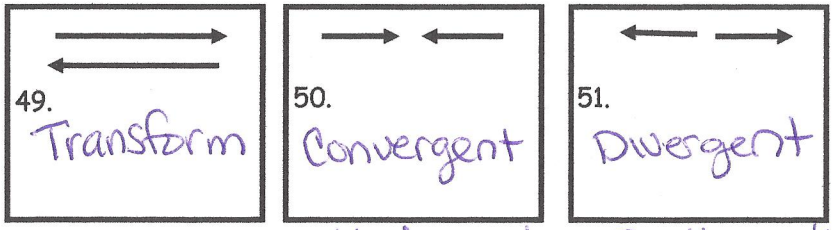
44. Sketch the mid-ocean ridge
45. Label the direction of the plate movement
46. Label the boundary as Divergent, Convergent or Transform.



47. What is the name of the mid-ocean ridge in the Atlantic Ocean? Mid-Atlantic Ridge
48. Where has it built up so high that it has created a volcanic island? Iceland, the Azores

Part Eight: Plate Boundaries

Label each set of arrows for the plate boundary they illustrate:



52. Why do tsunamis form? Underwater Earthquakes
53. Why does California have so many earthquakes? San Andreas fault (Transform Boundary of Pacific + N.A. Plates)
54. What type of plate boundary causes the earthquakes? Transform
55. What type of plate boundary formed the Himalayas? (folded mountains) Continental → Continental convergent

Name: Answer Key Class: _____ Date: _____

Plate Tectonics Review Booklet

S6E5.a Compare and contrast the Earth's layers
S6E5.f Explain the effects of physical processes (plate tectonics) on geological features.

Part One: Layers of the Earth: Fill in the brace map with the four layers of the Earth, starting with the one we are standing on:

Layers of the Earth
1. Crust
2. Mantle
3. Outer Core
4. Inner Core

Fill in the bridge map below, identifying what mineral(s) mainly compose each layer.

Is mainly composed of ____ Relating Factor

Crust — as — Mantle — as — Core

5. Oxygen Silicon
6. Magnesium
7. Iron / Nickel

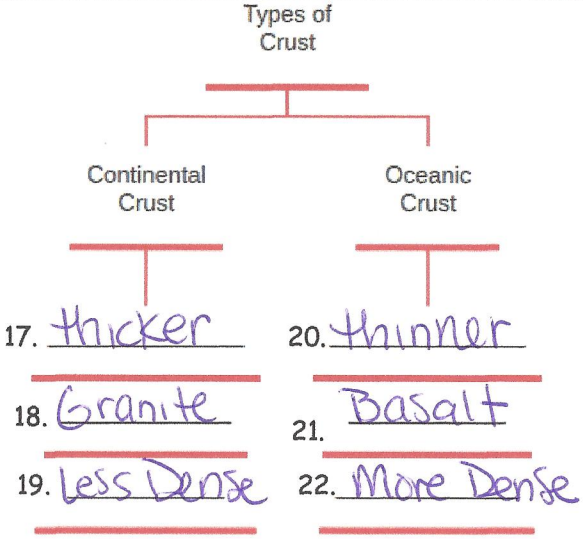
Part Two: Temperature and Density: Compare/contrast the layers of the Earth in terms of density, thickness, and temperature.

Least Dense to Most Dense:	Thinnest to thickest:	Hottest to Coldest:
8. Crust	11. Crust	14. Core
9. Mantle	12. Core	15. mantle
10. Core	13. mantle	16. Crust

Part Three: Types of Crust

Use the following terms to fill in the tree map below about crust:

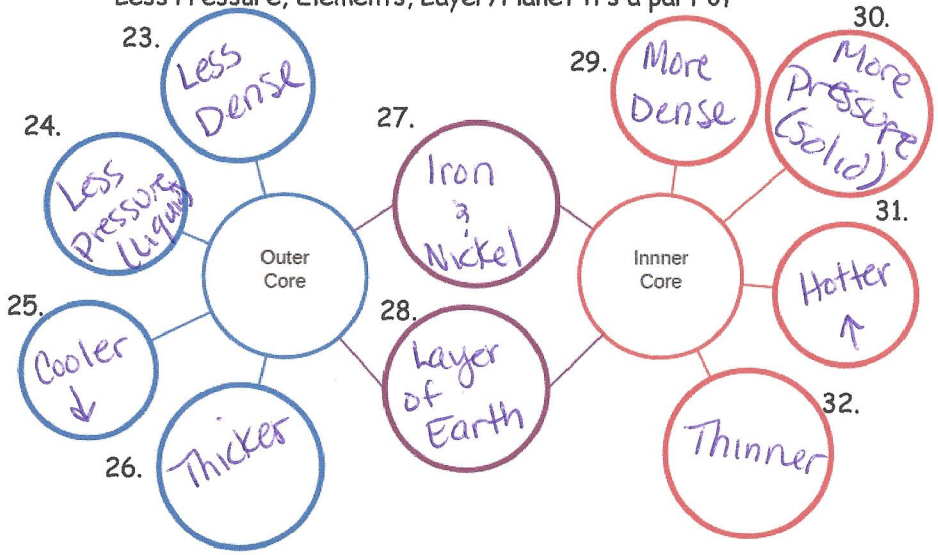
Basalt, Granite, Less Dense, More Dense, Thicker, Thinner



Part Four: Types of Crust

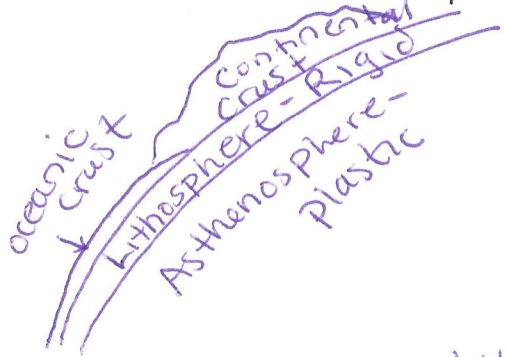
Use the guidelines to fill in the double bubble map:

Less Dense, More Dense, Thicker, Thinner, Hotter, Cooler, More Pressure, Less Pressure, Elements, Layer/Planet it's a part of



Part Five: The Lithosphere

33 & 34. Sketch AND label the lithosphere and asthenosphere.

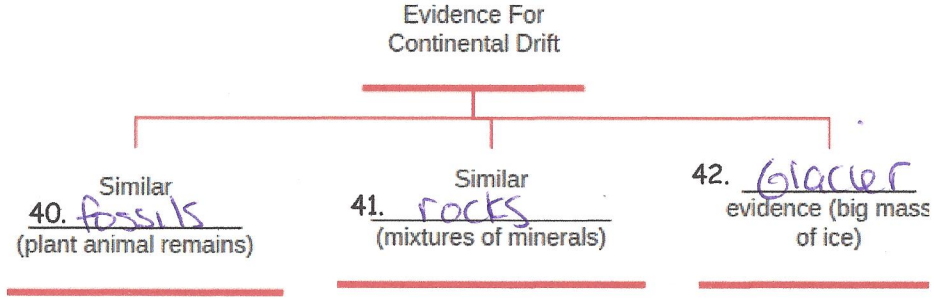


35. Which layer is completely solid? lithosphere

36. What makes the lithospheric (tectonic) plates move? Convection currents in the asthenosphere.

Part Six: Continental Drift Theory

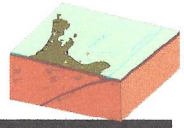
39. What is/was Pangaea? Supercontinent - all 7 continents together



43. The Continental Drift Theory was the basis for the Theory of Plate Tectonics

Name:_____ Class:_____ Date:_____

Snack Tectonics Lab



Materials:

Asthenosphere/Magma: Frosting

Oceanic Plate: Fruit Roll Up

Continental Plate: Graham Cracker

Other Materials: wax paper, water, pencil

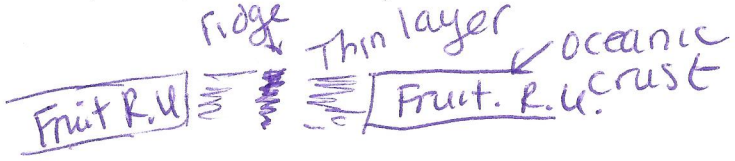
Set Up:

1. Wash your hands/use sanitizer
2. Lay a square of wax paper on your desk
3. Have teacher/materials helper spread frosting on wax paper to represent the asthenosphere.

NOW YOU ARE READY TO GET STARTED!

Part 1: Divergent Plate Boundaries: Oceanic-Oceanic

1. Place two squares of fruit roll up side by side on top of the frosting.
2. Slowly press down and push them apart 0.5 cm.
3. What do you notice about the frosting between the two squares? It rises up
4. Pull the "plates" slowly apart to create a divergent plate boundary.
5. Sketch your observations/what you see below and answer the questions:



Q1: When you press down on the fruit roll up, frosting "oozes" up through the crack. What does this oozing frosting represent? magma

Q2: The frosting forms a ridge. What forms at real divergent plate boundaries under the ocean? mid-ocean ridges

Part 2: Convergent Plate Boundaries: Continental-Oceanic

1. Lift up ONE of the fruit roll up squares and GENTLY place a graham cracker square in its place.
2. Gently slide the graham cracker square towards the oceanic crust until the two overlap.
3. Sketch your observations/what you see below and answer the questions:

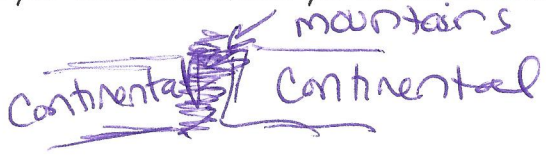
Q1: Why were you told to place the graham cracker lightly and not push it down? It is less dense

Q2: Why does the continental plate slide over the oceanic plate? The oceanic crust sinks because it is more dense

Q3: What is the name of the process that takes place when a more dense plate goes under a less dense plate? Subduction

Part 3: Convergent Plate Boundaries: Continental-Continental

1. Remove both the pieces from the existing asthenosphere.
2. Slightly dampen one of each cracker's long edge by exposing it to water for a few seconds (not too long)
3. Place the continental crust crackers back on the asthenosphere with the wet edges touching each other.
4. Slowly push the "plates" together and observe what happens to the wet edges.
5. Sketch your observations/what you see below and answer the questions:

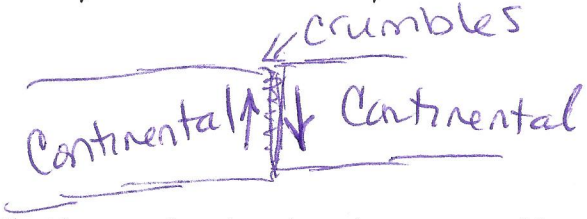


Q1: Wetting the edges is to help you see that the material is uplifted. What type of landform did you just represent the formation of? folded mountains

Q2: What is a real-world example? Himalayas, Appalachians

Part 4: Transform Plate Boundaries: Continental-Continental

1. Pick up your graham crackers and flip them around so that the dry edges are now facing each other.
2. SLOWLY push one away from you and pull one towards you, mimicking the motion of a transform boundary.
3. Observe what happens along the edges that touch.
4. Sketch your observations/what you see below and answer the questions:



Q1: What happened to the edges that were touching as they slid past each other? Edges crumbled - friction

Q2: What action does this change represent? earthquakes

Q3: What is the name of a "real world" example of this plate boundary? San Andreas Fault, Alpine Fault

Q4: Where in the U.S.A. would you expect to find a lot of transform-fault activity? California where the North American plate and Pacific Plate meet

BONUS: Convergent Plate Boundaries: Oceanic-Oceanic

Q1: There is a saying that when two oceanic plates converge, the one that is "oldest and coldest" will subduct. What do you know about **density** that makes this saying likely to be true?

Heat makes objects less dense - particles spread apart

Q2: What type of landform results from convergent oceanic-oceanic crust?

Volcano chains which form volcanic islands

Place a check in each box if the action described on the left is true of the type of plate boundary in that column. These are tricky!

Description	**Divergent:** Oceanic-Oceanic	**Convergent:** Continental-Oceanic	**Convergent:** Continental-Continental	**Transform:** Continental-Continental	**Divergent:** Continental-Continental
Plates slide past each other moving in opposite directions				✓	
Subduction occurs	✓	✓			
Forms mountains			✓		
Island arcs formed	form from convergent: oceanic-oceanic				
Forms folded mountains			✓		
Sea-floor spreading	✓				
Forms volcanic mountains		✓			
Creates rift valleys					✓
Plates move apart	✓				✓
Plates move towards each other		✓	✓		
Creates earthquakes				✓	
Forms mid-ocean ridge	✓				