

Notes: Geology Chapter 1

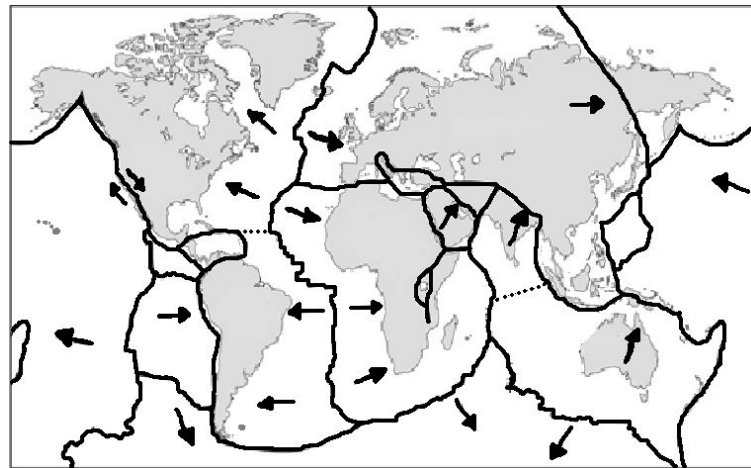
<p>How did Earth form?</p>	<ul style="list-style-type: none"> • _____ billion years ago, bits of material collided and _____ together • _____ from impacts heated the material up and Earth _____ into ball of rock • _____ "heavier" materials/elements (_____, nickel) sank toward _____ • _____ "lighter" materials/elements stayed on _____ • Formed _____ main layers: the _____ (heavy stuff), the _____, the _____ (light stuff)
<p>How do we know how the Earth's interior looks?</p>	<ul style="list-style-type: none"> • Study the _____ from _____ or underground _____ that scientists set off. Energy moves _____ through less dense materials and _____, and faster through _____ dense materials and _____.
<p>What are the lithosphere and asthenosphere?</p>	<ul style="list-style-type: none"> • Lithosphere = Earth's _____ + _____ top of _____—most rigid layer • Asthenosphere = right under the lithosphere; upper _____—soft enough to _____ like hot tar • Lithosphere is _____ into large pieces, called _____ plates <ul style="list-style-type: none"> - Can be _____ or small. Contain both continental and _____ crust - Plates fit together like jigsaw
<p>What is continental drift?</p>	<ul style="list-style-type: none"> • Alfred _____ (German) proposed continental drift hypothesis in _____ <ul style="list-style-type: none"> - Says that continents were once _____, but gradually drifted _____ • Continents were once joined in a supercontinent called _____ <ul style="list-style-type: none"> - Pangaea split apart over the last _____ million years. • People didn't believe him at first because he didn't know _____ they moved.
<p>What evidence do we have that continents move?</p>	<ul style="list-style-type: none"> • EVIDENCE from _____, _____, and rocks <ul style="list-style-type: none"> - Same _____: <ul style="list-style-type: none"> • Example: In both South America and _____, a small, ancient reptile's _____ were found, but _____ else in the world. Could be explained if S. America and Africa were once _____. - _____ changes <ul style="list-style-type: none"> • Example1: Greenland is near the _____ circle (near north pole), but it has fossils of _____ plants. Example2: South Africa is very _____, but its rocks have scratches made by _____ sheets. - Same _____ types in Brazil and West Africa. Also, _____ layers in the Appalachian Mountains of North America were exactly like the limestone in _____ Highlands.
<p>Evidence in Oceans:</p>	<ul style="list-style-type: none"> • Ocean floor was studied in _____—found _____ ridges. Found in _____ ocean. Sea-Floor _____ occurs at MORs. MORs form along _____ in the crust <ul style="list-style-type: none"> - Molten (_____) rock oozes through the cracks and cools to form new _____ - _____ of the sea floor: <ul style="list-style-type: none"> • Rock samples show that _____ rock is _____ to the ridge, while _____ rocks are _____ away. • Ocean floor _____ and moves _____ from mid-ocean ridges like a conveyor belt, moving the _____ plates and their continents with them. - Ocean Trenches: <ul style="list-style-type: none"> • Oceanic crust _____ into the Asthenosphere at ocean _____. _____ crust is destroyed at the same _____ that new crust is forming.
<p>Why do plates move?</p>	<ul style="list-style-type: none"> • Plates move because of _____. Rock in the Asthenosphere follows a _____ current—a motion that transfers _____ energy in materials. <ul style="list-style-type: none"> • Rock is _____ close to the _____ → Rock becomes _____ dense ("lighter") → Rock _____ up → Rock _____ down (away from the core) → Rock becomes _____ dense ("heavier") → Rock _____
<p>What is the Theory of Plate Tectonics?</p>	<ul style="list-style-type: none"> • _____ is made of huge plates that move over the surface of the Earth • Lithosphere is moved by: <ul style="list-style-type: none"> - _____ Currents: Plates are carried on the Asthenosphere by convection currents circulating—happens _____ (over millions of years, plates move _____ of kilometers) - Slab _____: where _____ pulls the edge of a cool, dense plate into the Asthenosphere—the entire plate is _____ along. - Ridge _____: material from a _____ ridge slides downhill from the ridge—the material _____ the rest of the plate.
<p>What are the major tectonic plates?</p>	<ul style="list-style-type: none"> • There are _____ major tectonic plates: African, Antarctic, Australian, _____, _____, Nazca, _____, South American, and Pacific plates. • Plates affect each other as they _____. They can: <ul style="list-style-type: none"> - Move _____—Example: South American and _____ - _____ together—Example: Indian and _____ - _____ past each other—Example: North American and _____
<p>What are plate boundaries?</p>	<ul style="list-style-type: none"> • Tectonic plates have _____ boundaries. <ul style="list-style-type: none"> - _____: where the _____ of 2 plates meet - There are _____ types of boundaries. • _____: plates move _____ <ul style="list-style-type: none"> - most are found in the _____. Also called _____ centers • _____: plates push _____ • _____: plates _____ past each other
<p>What is a divergent boundary?</p>	<ul style="list-style-type: none"> • Divergent boundaries: plates move _____ (← →) <ul style="list-style-type: none"> - Sea floor _____ at these boundaries and forms _____: <ul style="list-style-type: none"> • plates move apart, forming a _____ in the center (called a _____ valley)

	<ul style="list-style-type: none"> • _____ material rises from the crack, _____ ocean water cools the rock until it becomes _____—forms new sea _____. • Ex. Mid-_____ Ridge—longest in the world (6214 miles) - Continents move apart at divergent boundaries <ul style="list-style-type: none"> • Plates move _____; cracks form in Earth's crust (forms a _____ valley) • _____ rock (hot!) oozes into these cracks • Rift valley gets _____ and lower as the continents move farther _____; water can fill in the valley to form a _____ or lake: Ex. Great Rift Valley in _____
What is a convergent boundary?	<ul style="list-style-type: none"> • _____ boundaries: plates move _____ (→ ←) <ul style="list-style-type: none"> - Plates _____ together; crust is _____ or crumbled (destroyed)—forms _____ - Subduction: when 2 plates _____ together and one is _____ dense ("heavier") than the other, so it _____ under the _____ dense ("lighter") plate. <ul style="list-style-type: none"> • _____ form in subduction zones as magma rises where the plate is melting as it _____ into the hot Asthenosphere
What are the 3 types of convergent boundaries?	<ul style="list-style-type: none"> • Continental-continental collision: 2 plates with _____ crust push _____ <ul style="list-style-type: none"> - plates have _____ density, so _____ SUBDUCTION - plates will crumble and _____ (destroying crust), forming _____ - Ex. Himalayas (Mt. Everest), Alps—still _____ today • Oceanic-oceanic subduction: _____ plate (more dense) with oceanic crust sinks below _____ plate. Forms ocean _____ • Oceanic-continental subduction: plate with oceanic crust is _____ dense so it _____ below plate with continental crust, which is _____ dense <ul style="list-style-type: none"> - 2 main features: ocean _____ and coastal _____ - As ocean crust sinks under a continent, continental crust _____ and forms a range of mtns—some of the mountains are _____, as _____ oceanic crust rises through the plate.
What are transform boundaries?	<ul style="list-style-type: none"> • Transform Boundaries: plates _____ past each other <ul style="list-style-type: none"> - Crust is neither _____ nor destroyed—plates move past each other in _____ directions - As they move, their edges _____ and grind against each other, causing _____ - Mostly occur near _____ ridges, but also occur on _____, where they are clearly visible as _____ along the surface. - Can _____ rivers and roads so they look _____. - Example: San Andreas Fault in California—where N. American plate and _____ plate are moving in opposite directions—it's why CA has lots of _____.
What are hot spots?	<ul style="list-style-type: none"> • _____: hot rock that rises in thin _____ from the _____. They can track plate _____ in oceans <ul style="list-style-type: none"> - Causes underwater _____ that may become tall enough to form an _____ - Hot spots never _____—the _____ moves _____ the hot spot - Used to measure _____ and _____ of plate movement - Ex. Hawaiian Islands—formed as _____ plate moves over a _____ spot. The largest island, Hawaii, is _____ over the hot spot.
What are faults?	<ul style="list-style-type: none"> • Fault: a _____ in Earth's crust. • Faults generally occur at _____ plate boundaries where plates are _____ • 2 main types of faults: <ul style="list-style-type: none"> - _____: 2 pieces of land move _____ to each other, so one side of the fault is _____ than the other. - _____: 2 pieces of land move _____

1. When do scientists believe that the Earth formed?
2. What happened to the heavier materials when Earth formed?
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4. The three main layers of the Earth are the _____, _____, & _____.
5. The _____ is the Earth's thickest layer. The _____ is the Earth's thinnest layer.
6. The two basic types of crust are _____ and _____.
7. The two sections of the core are the _____ & the _____.
8. The _____ is the section of the core that is liquid.
9. The _____ is the section of the core that is solid.
10. _____ crust is thicker than _____ crust.
11. Why is the inner core solid while the outer core is liquid?

12. Which portions of the Earth form the lithosphere?
13. Which portions of the Earth form the asthenosphere?
14. What are tectonic plates? Where are they found?

15. How do plates move?
16. Name 2 plates that are moving together.
17. Name 2 plates that are pulling apart.
18. Name 2 plates that are sliding past each other.
19. What is subduction?
20. What commonly causes earthquakes?
21. What forms in the ocean at divergent boundaries?
22. What forms at oceanic-continental plate boundaries?
23. What are the 2 types of faults? _____ Draw each one:



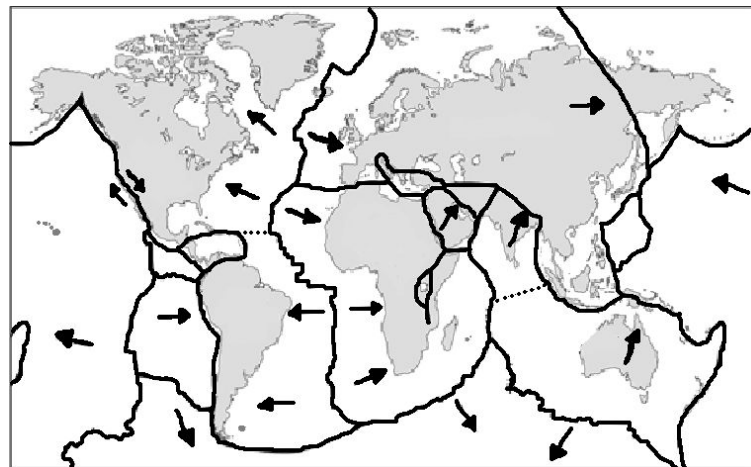
Geology Chapter 1 Notes Questions

Questions:

***Draw the layers of the Earth (pg. A10). Label the words **inner core, outer core, mantle, crust, lithosphere, Asthenosphere, less dense, more dense.**

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24. Draw the Hawaiian Islands; draw an arrow showing which way the plate is moving (pg. A27):