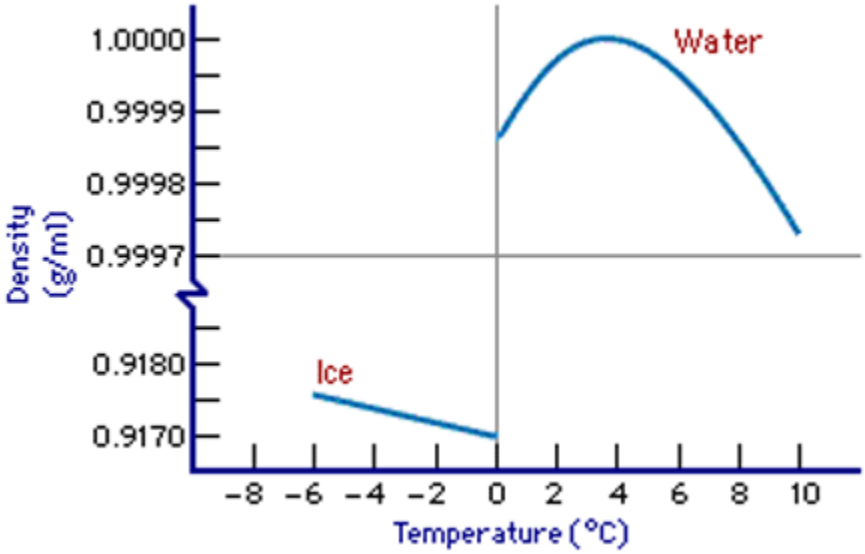
Section 3: What Drives the Plates?



Section 3 Question: What is density and how does it impact plate movement?

What Do You See?

(lava lamp)

What Do You Think?

Sketch what happens when two ocean plates move towards each other. Label the trench and volcanoes.

What Do You Think Now?

Focus Question A: What is the effect of density on the position of a material?	
Prediction:	
Observations:	
Plan: *How can you determine the densities of the liquids?*	
Plan	Revisions

Data: *Create a data table.*

Explain:

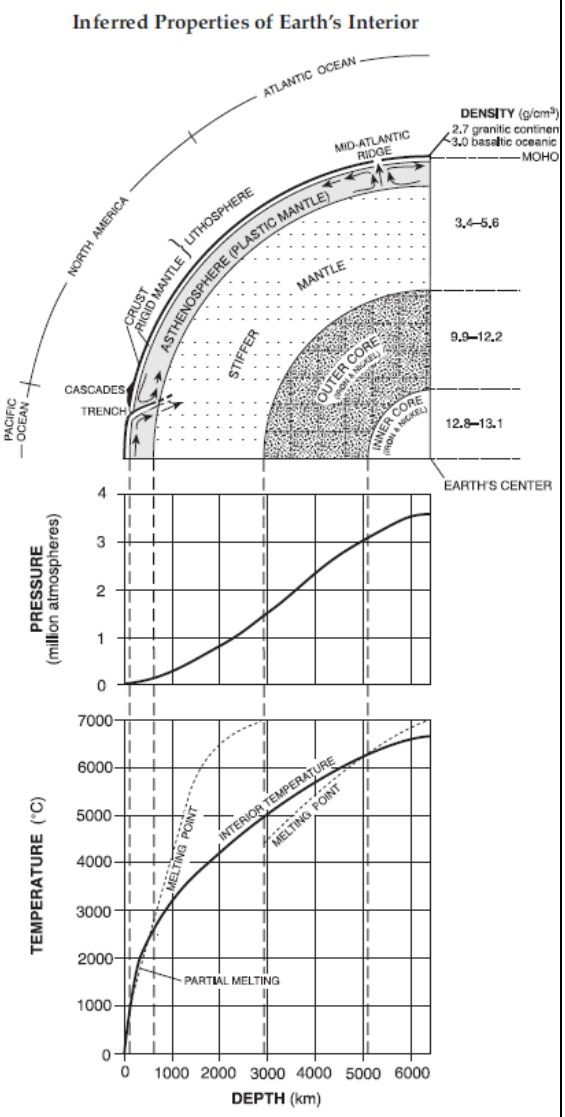
Focus Question B: What is the effect of temperature on density of a material?
Prediction:
Observations:
Claim:
Evidence:

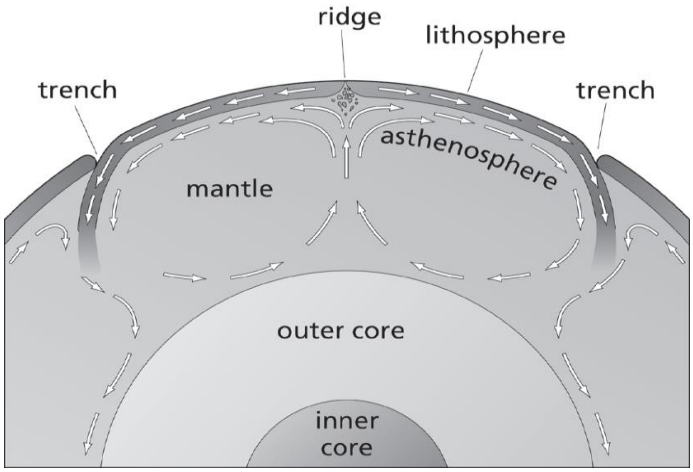
Focus Question C: What are the densities of Earth Materials?
Prediction:
Plan:
Data:

Claim:
Evidence:
Extension: *Page 10 in your ESRT*

RETURN TO WDYTN

DIGGING DEEPER

Evidence for Earth's Interior Structure	
• The average density of rocks increases as depth increases as shown in laboratory experiments. This would indicate that the densest materials in Earth would be found towards the center. • The average density of Earth is 5.5 g/cm^3	How does the average density of Earth compare to the densities of the materials measured in the investigate?
The Flow of Matter and Energy within Earth	
• Temperature and pressure inside Earth increases as depth increases. • There are three main sources for Earth's internal heat energy. 1. Radioactive decay of elements 2. Residual heat from Earth's formation 3. Heat from impacts such as meteorites • Over time the Earth has been slowly cooling as heat is transported from the core to the surface. • Material near the core of the Earth is heated, lowering its density, which causes it to rise towards the lithosphere. • At the lithosphere, the heat is lost allowing the material to cool, become more	How does the rate of mantle convection compare the rates of our experiments in this section? 

dense, and sink back down, • This process is called mantle convection.	
Processes in the Mantle	
• Mantle convection is believed to be the driving force behind the movement of tectonic plates. • The plates themselves also play an important role in thermal convections. • Mid-ocean ridges are broad expanses of much warmer rock that slope down gently to the ocean floor. It is believed that mid-ocean ridges add a pushing effect to the movement of lithospheric plates. • At subduction zones, the portion of the colder, and therefore more dense plate, that has been subducted, is believed to add a pulling effect to the movement of lithospheric plates.	Why can the core, mantle, and crust be considered a system when discussing plate tectonics? 

Chapter 2, Section 3 E.B.C.
What Drives the Plates

Name:_____
Period:_____

Question (2)		
Claim 1 (2)		
A. Supporting Evidence (3)	B. Supporting Evidence (3)	
Claim 2 (2)		
A. Supporting Evidence (3)	B. Supporting Evidence (3)	
Analysis (6)		

	Claim *A statement or conclusion that answers the original question/problem.*	**Evidence** *Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.*	**Analysis** *A justification that connects the evidence to the claims. It shows why the data counts as evidence by using appropriate and sufficient scientific principles and vocabulary*.
0	Does not make a claim, or makes an inaccurate claim.	Does not provide evidence, or only provides inaccurate or vague evidence.	Does not provide an analysis, or only provides an irrelevant analysis.
1	Makes an accurate but vague or incomplete claim.	Provides vague evidence and does not include specific data.	Repeats evidence and links it to claim, but does not include specific scientific principles.
2	Makes accurate and complete claim.	Provides correct evidence but does not include specific data.	Connects all evidence to the claims using scientific principles or vocabulary but not both.
3		Provides correct evidence and includes specific data.	Connects all evidence to both claims using scientific principles and vocabulary.

CHECKING UP: Page 160, 1 through 4 (2 points each)

18

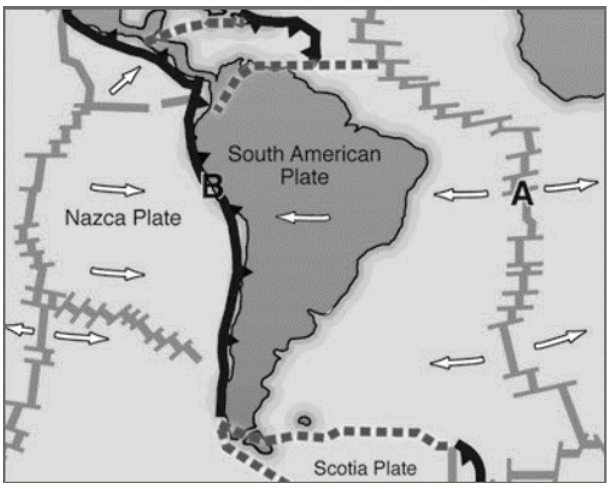
1.

2.

3.

4.

Answer the following questions using the map to the right. (5 points each)



A. At point A, two plates are moving away from each other. What is happening between them?

B. At point B, two plates are moving toward each other. What happens if they have:
   a. Different densities?

   b. The same density?