

Name: _____ Period: _____ Date: _____

Seafloor Spreading Simulation

Part I: Fill in the blanks based on your seafloor spreading model.

- 1) Let's assume the *oldest* oceanic crust formed when Pangaea started to split apart.
 - Label these two lines with their age: 200 million years old
 - Estimate the ages of at least 3 other pairs of lines, and label them as well on your paper model. The ages should get progressively younger towards the ridge.

- 2) In general, the youngest oceanic crust is found along the _____, while the oldest is found near the _____.

- 3) Reversals of the Earth's magnetic field seem to happen periodically due to movement of molten iron circulating in the _____ core.

- 4) How many times did the poles reverse according to your seafloor model? _____

- 5) The oceanic crust is made of _____, which contains _____ crystals that align with the Earth's magnetic field when the molten materials cool and _____ into rock.

- 6) Did the magnetic reversals actually *cause* the seafloor to spread? _____

- 7) Through the process of seafloor spreading, more oceanic crust keeps getting added onto each plate because hot magma from the _____ is continually pushing up through the lithosphere.
 (HINT → Which layer is breaking through the rift in the ocean floor?)

Part II: Refer to the magnetic reversal diagram on the right.

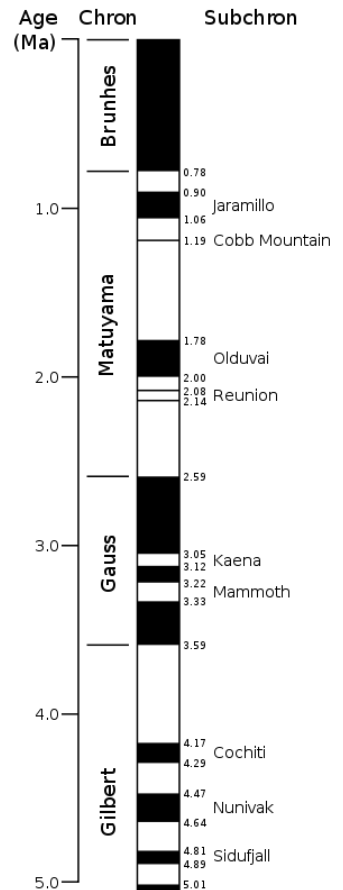
- 8) Is "normal" polarity represented by black or white? _____

- 9) How many reversals have happened in the last 5 million years? _____

- 10) Is there any discernible pattern or uniformity to the reversals? _____

- 11) When was the last time the Earth's magnetic field reversed? _____

- 12) Should we expect to see the Earth's magnetic field reverse any time soon?
 Explain:



Part III: Discussion questions

- 13) Imagine that your hands represented two continents pulling apart as Pangaea broke up due to sea floor spreading. We have talked about why Wegener's theory of Continental Drift was originally rejected. How does this model help to provide strong evidence for plate tectonics?
- 14) Why do the reversals drawn on your paper model create a symmetrical pattern?
- 15) You should notice that the alternating stripes of normal and reversed polarity are not all of equal width. What does this tell you about the lengths of time of normal and reversed polarity throughout geologic history?
- 16) The Earth is 4.6 billion years old. Based on observations of your sea floor spreading model, why do you think the oldest rocks on the ocean floor are only around 200 million years old? In other words, what happened to all the old oceanic rock?