

Activity 5A: Plate Motion and Evidence

One of the most striking things about the geography of the continents today is how they appear to fit together like puzzle pieces. The reason for this is clear: they once were connected in the past and have since separated shifting into their current positions.

Open the [browser version of Google Earth](#) and zoom out to an eye altitude (camera) of ~10,000 miles. Examine the coastlines of eastern South America and Western Africa and notice how well they match in shape. There are scientifically important rock deposits in southern Brazil, South America and Angola, Africa that show the northernmost glacial deposits on the ancient continent of [Pangaea](#), which indicates these two areas were once connected.

1. Based on the shape of the two coastlines, give the present-day latitude and longitude of two sites along the coasts of these countries that used to be connected when the two continents were joined as a part of Pangaea (note: there are multiple correct answers):
 - a. Brazil:
 - i. Latitude:
 - ii. Longitude:
 - b. Angola
 - i. Latitude:
 - ii. Longitude:
2. Measure in centimeters the distance (Map Length) between the two points you recorded in the previous question. *Hint: use the ruler icon along the left-hand toolbar.*
 - a. Distance (in centimeters) =
3. This portion of Pangaea broke apart 200,000,000 years ago. Using the distance you measured above, calculate how fast (the rate) South America and Africa are separating in cm/year. (*Hint: the formula to use here is $Rate = Distance/Time$*). SHOW YOUR WORK.

Name: _____

Activity 5A

Examine the Western Coast of South America, the Eastern Coast of Asia, and the Pacific Ocean. If South America and Africa are separating and the Atlantic Ocean is growing, then the opposite must be occurring on the other side of the earth (the Americas are getting closer to Asia and the Pacific Ocean is shrinking). It begs the question, when will the next supercontinent form? To determine this, we need a bit more information.

4. Measure the distance between North America and Mainland Asia in centimeters? (*Hint: measure across the Pacific at 40° N latitude, between Northern California and North Korea*)
 - a. Distance (in centimeters) =

5. Using the distance above, and the rate calculated in question 3, determine the time it will take to develop a new supercontinent. (*Hint: the formula $Rate = Distance/Time$, can be reworked to $Time = Distance/Rate$*). SHOW YOUR WORK.