



# Seafloor Spreading Rates

## Lab Preview

**Directions:** Answer these questions before you begin the Lab.

1. Where can you find the data about each peak that you need for this lab?

2. What formula do you use to calculate the rate of movement in this lab?

*How did scientists use their knowledge of seafloor spreading and magnetic field reversals to reconstruct Pangaea? Try this lab to see how you can determine where a continent may have been located in the past.*

## Real-World Question

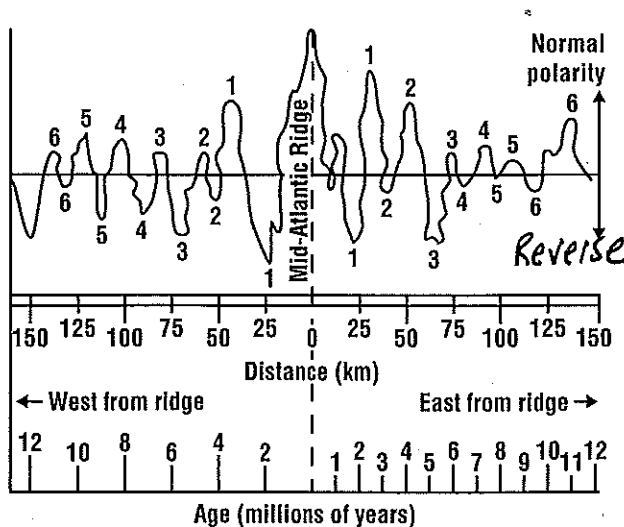
Can you use clues, such as magnetic field reversals on Earth, to help reconstruct Pangaea?

## Materials

metric ruler \_\_\_\_\_ pencil \_\_\_\_\_

## Goals

- Interpret data about magnetic field reversals. Use these magnetic clues to reconstruct Pangaea.



## Procedure

1. Study the magnetic field graph below. You will be working only with normal polarity readings, which are the peaks above the baseline in the top half of the graph.
2. Place the long edge of a ruler vertically on the graph. Slide the ruler so that it lines up with the center of peak 1 west of the Mid-Atlantic Ridge.
3. Determine and record the distance and age that line up with the center of peak 1 east of the ridge. Repeat this process for peak 1 east of the ridge.
4. Calculate the average distance and age for this pair of peaks.
5. Repeat steps 2 through 4 for each remaining pair of normal-polarity peaks.
6. Calculate the rate of movement in cm per year for the six pairs of peaks. Use the formula  $\text{rate} = \text{distance}/\text{time}$ . Convert kilometers to centimeters. For example, to calculate a rate using normal-polarity peak 5, west of the ridge:

$$\begin{aligned} \text{rate} &= \frac{125 \text{ km}}{10 \text{ million years}} = \frac{12.5 \text{ km}}{\text{million years}} \\ &= \frac{1,250,000 \text{ cm}}{1,000,000 \text{ years}} = 1.25 \text{ cm/year} \end{aligned}$$



(continued)

### Data and Observations

Peaks	Peak 1	Peak 2	Peak 3	Peak 4	Peak 5	Peak 6
Distance west normal polarity (km)						
Distance east normal polarity (km)						
Average distance (km)						
Average age from scale (millions of years )						
Rate of movement (cm/year)						

### Conclude and Apply

1. Compare the age of igneous rock found near the mid-ocean ridge with that of igneous rock found farther away from the ridge.  
 \_\_\_\_\_  
 \_\_\_\_\_
2. If the distance from a point on the coast of Africa to the Mid-Atlantic Ridge is approximately 2,400 km, calculate how long ago that point in Africa was at or near the Mid-Atlantic Ridge.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. How could you use this method to reconstruct Pangaea?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_