

Using a Paleomagnetic Record to Reconstruct the Position of a Continent

Overview

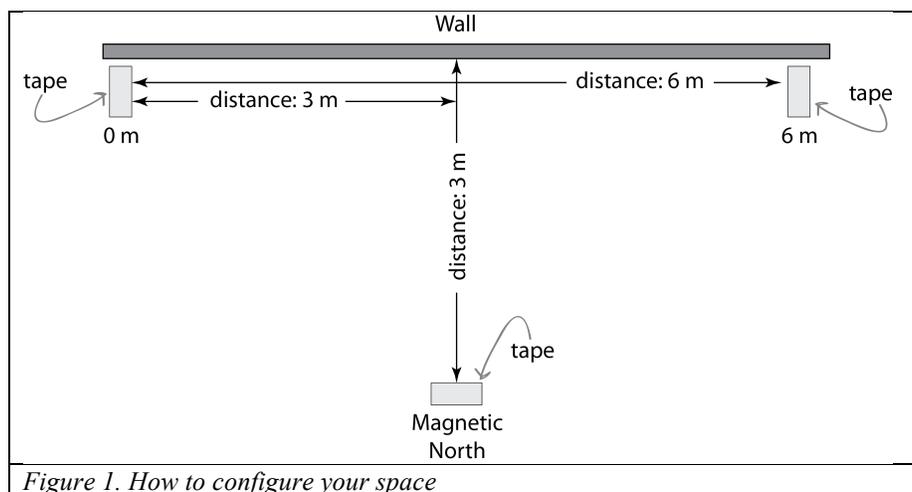
In this activity you will simulate the motion of a continent and construct the paleomagnetic record that would result from your continent's motion. You will then exchange your paleomagnetic record with that of another group and reconstruct the position of their continent over time.

Objective

The purpose of this exercise is to give you an intuitive sense of how paleomagnetic records are used to reconstruct the positions of continents through geologic time.

Part A. How To Set Up

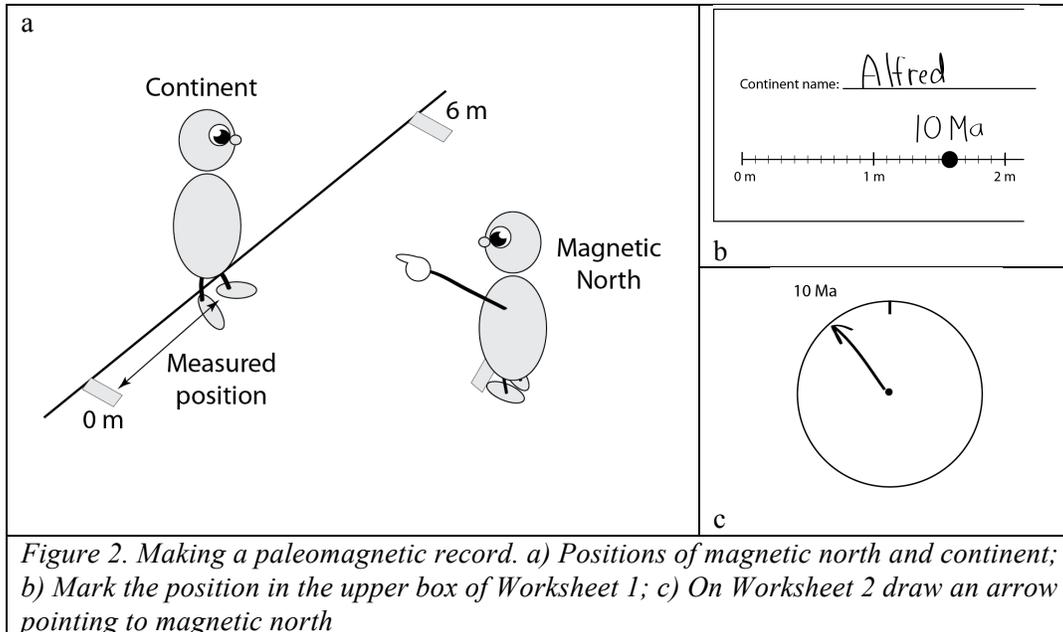
1. Set up your space as in Figure 1. Mark out a distance of 6 m along a wall. Mark the 0 m and 6 m positions by placing tape on the floor and labeling the tape. Find the 3 m position and measure 3 m away from the wall, at a right angle. Mark the location. This will be the location of the magnetic north pole.
2. Name your continent. Write the name of your continent in the top box of Worksheet 1, and on Worksheet 2.
3. Designate members of your group to fill the following roles:
 - a. Magnetic north pole
 - b. Continent
 - c. Measurer
 - d. Recorder



Part B. Making a Paleomagnetic Record

1. Have magnetic north stand behind the tape, and face the wall as in Figure 2a. Have the continent stand against the wall and face magnetic north.
2. You will choose four positions along the wall for the continent, representing its locations at 10 Ma, 20 Ma, 30 Ma, and 40 Ma. For each position you will do the following:
 - a. Have the measurer find the position of the continent by measuring between the continent and the 0 m mark. Have the recorder mark in that position in the top box of Worksheet 1 (Figure 2b).

- b. Have magnetic north extend an arm and point to the continent as in Figure 2a. The continent will use this as a reference to help draw a compass needle on Worksheet 2 that points at magnetic north (Figure 2c). The continent should hold Worksheet 2 with the grey arrow pointing straight ahead.



Part C. Reconstructing the Position of a Continent

1. Exchange your Worksheet 2 (paleomagnetic record) with another group. Write the name of their continent in the lower box on Worksheet 1.
2. Give Worksheet 2 to the continent, and for each compass on Worksheet 2, do the following:
 - a. Have the continent and magnetic north position themselves as before (Figure 2a).
 - b. Have the continent extend an arm to point in the direction of the compass arrow, and then move along the wall until the continent is pointing directly at magnetic north.
 - c. Have the measurer find the distance of the continent from the 0 m mark.
 - d. Have the recorder mark this in the lower box of Worksheet 1 and label it with the correct age as before.
3. When you've worked through all four compasses on Worksheet 2, compare your reconstruction of the position of the other group's continent (lower box on your Worksheet 1) with the positions they recorded as they made their paleomagnetic record (upper box on their Worksheet 1). How close did you get to their record?

Worksheet 1. Continent Position

Part B. Making a Paleomagnetic Record

Continent name: _____



Part C. Reconstructing the Position of a Continent

Continent name: _____



Worksheet 2. Paleomagnetic Record

Continent name:



Hold the page with this arrow pointing straight ahead

