USGS Education - Paper Models Collection: The collection includes geologic processes, fossils, and landforms. They can be printed, colored, cutout and assembled. Printing on firm paper is helpful.

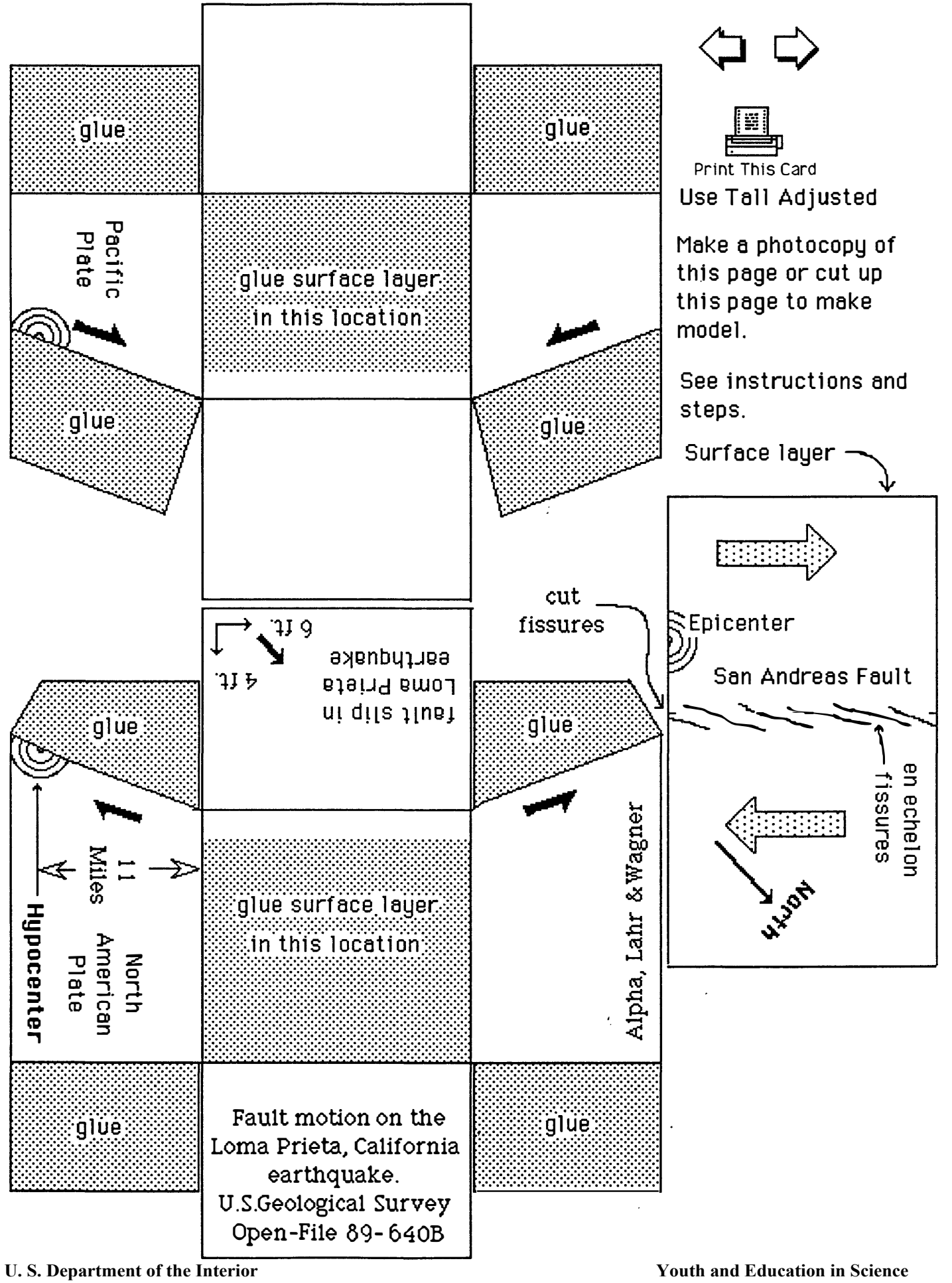
The San Andreas was created by Tau Rho Alpha, John C. Lahr, and Linda F. Wagner, USGS, Menlo Park CA. It depicts the surface fractures that developed along the San Andreas fault during the magnitude 7.1 Loma Prieta Earthquake, October 17, 1989.

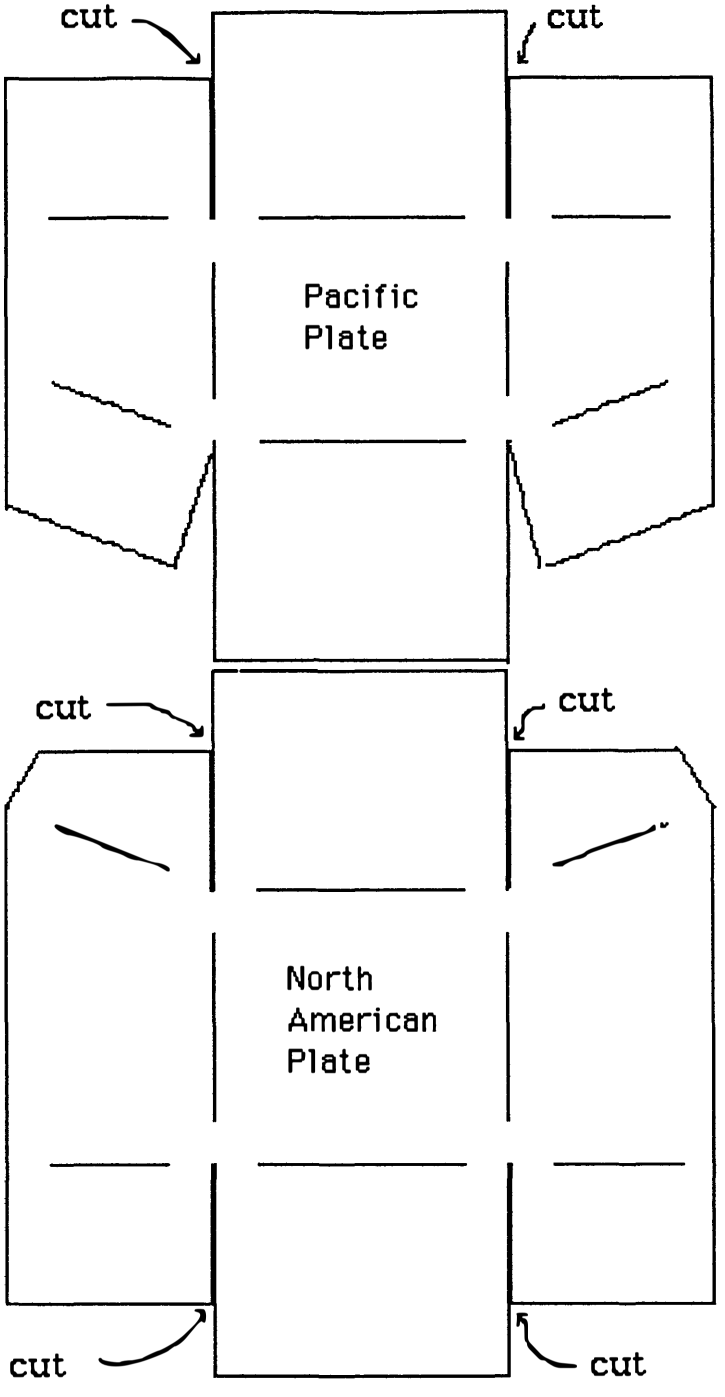
San Andreas Model - three pieces

About the Loma Prieta earthquake: The earthquake occurred in the Santa Cruz mountains between San Francisco and Monterey Bays, and was named after Loma Prieta, a nearby peak. With a magnitude of 7. 1, this was the largest earthquake since 1906 on the San Andreas fault. The rupture point (hypocenter) was 11 miles deep. The break expanded rapidly along the 70° dipping fault plane, moving at approximately 7,000mi/hr! It extended upward to within 4 mi of the surface and along the fault about 15 miles in both directions, but it did not break break at the surface. With respect to the North American plate, the Pacific plate moved northwest 1.9 meters (6 feet), and upward 1.3 meters (4 feet).

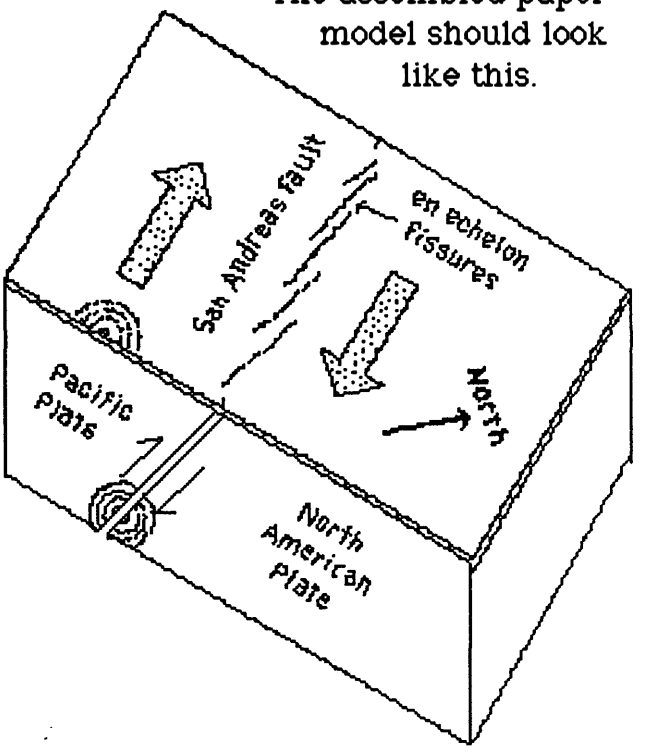
Because the main fault rupture, or break, did not continue all the way to the surface, the upper layers of the earth were bent rather than broken. The area of fissures, or deep cuts in the earth, mapped near the north end of the rupture may have been a result of this bending. In the paper model a series of cuts, which form a "stepped" pattern that geologists call en echelon, is placed directly above the fault rupture. These cuts allow motion on the fault below and illustrate how surface layers might be deformed by underground fault movement. The actual pattern of bending and fissures, however, is more complicated and is not portrayed by the paper model.

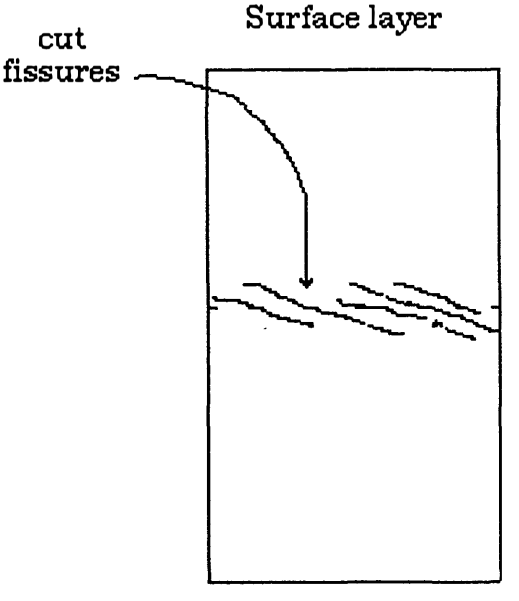
This model, and the above text, are from USGS Open File Report 89-640A, by Alpha, Lahr, and Wagner.


glue
glue
Pacific Plate
glue surface layer in this location
glue
glue
Print This Card
Use Tall Adjusted
Make a photocopy of this page or cut up this page to make model.
See instructions and steps.
Surface layer
cut fissures
Epicenter
San Andreas Fault
en echelon fissures
North
fault slip in Loma Prieta earthquake
6 ft.
4 ft.
glue
glue
11 Miles
Hypocenter
North American Plate
glue surface layer in this location
Alpha, Lahr & Wagner
glue
glue
Fault motion on the Loma Prieta, California earthquake.
U.S.Geological Survey
Open-File 89-640B

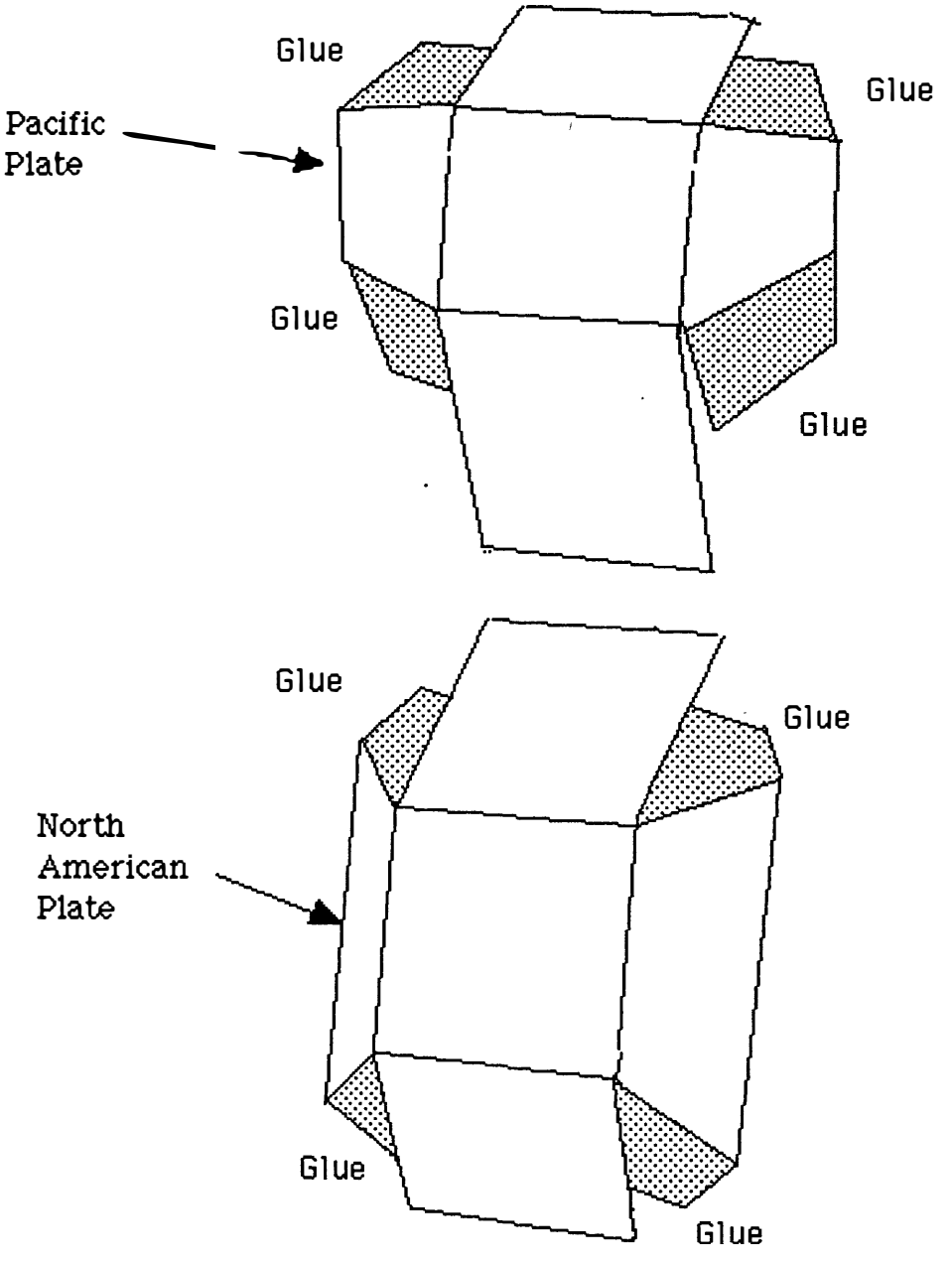


The assembled paper model should look like this.

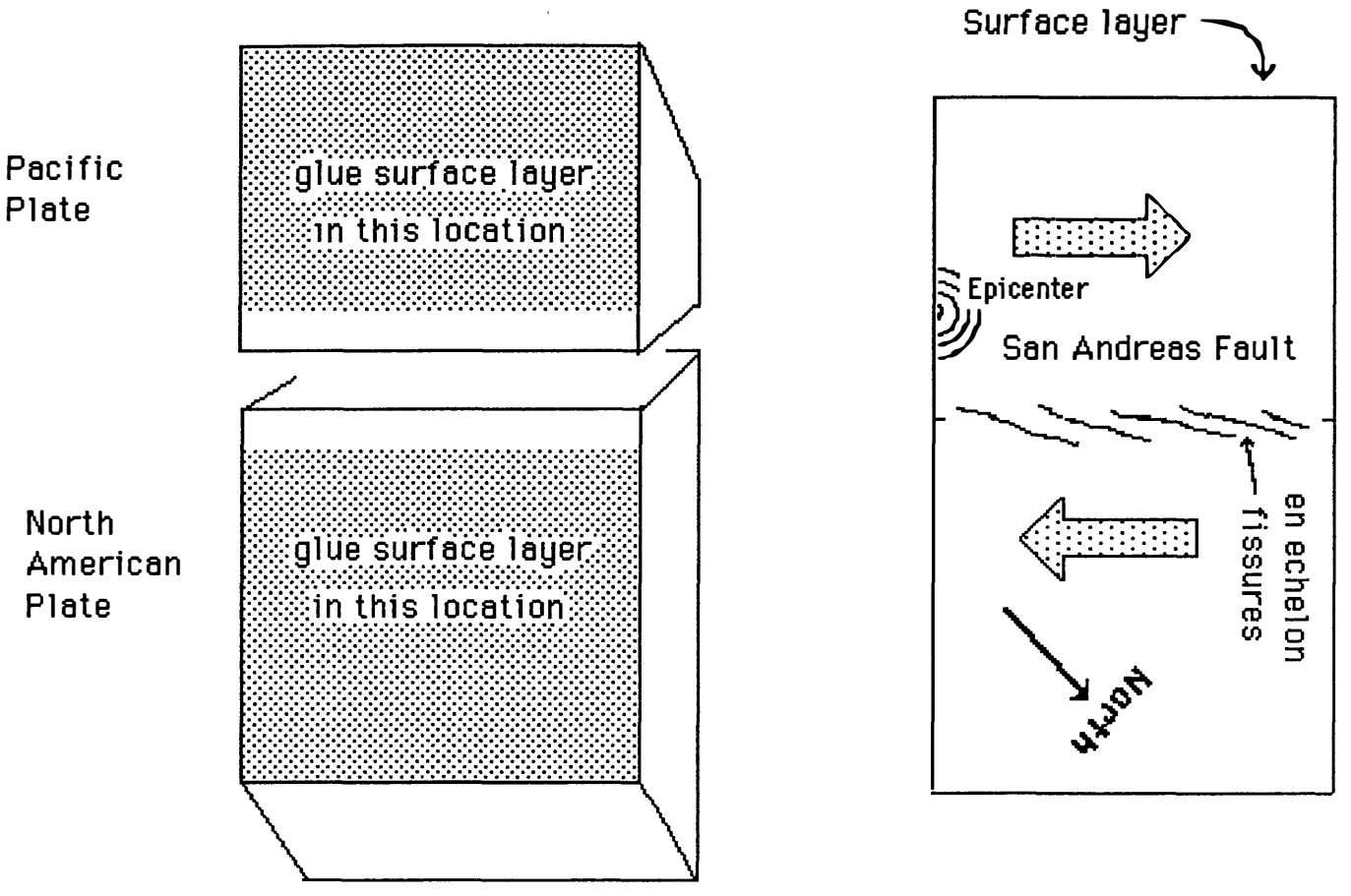




Step 1: Cut out the paper model by cutting along its borders. Cut fissures as shown.

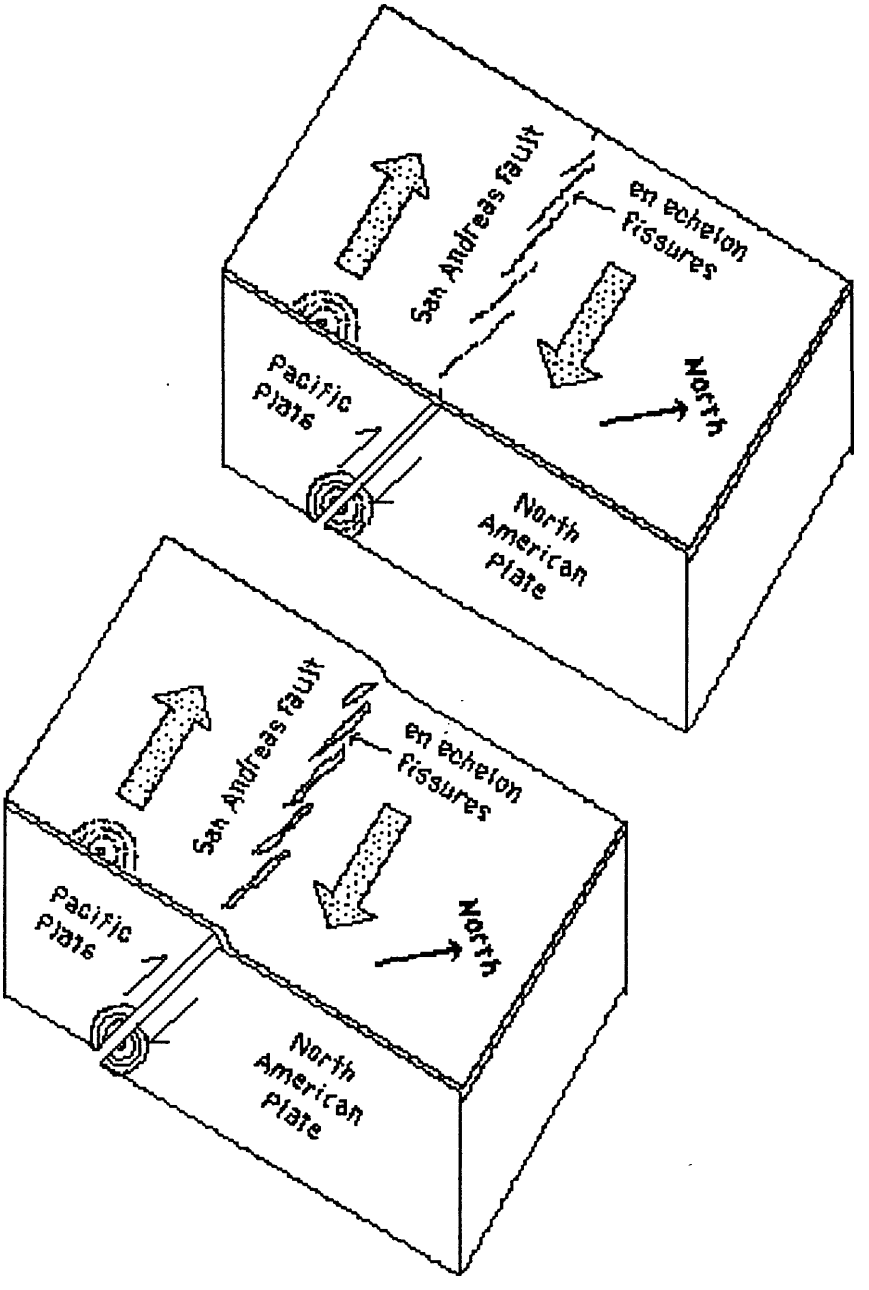


Step 2: Fold the paper model along the lines marked so that the printed side faces outward. Glue the marked tabs to make two small boxes.



The assembled blocks should look 1ike this.

Step 3: Glue the surface layer to the two paper blocks being careful that the area of the fissures remains free of glue so they will remain free to move.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