

**Recycled Crust**

The crust of the Earth is divided into plates that move. The movement of these plates is possible because the crust is actually growing and spreading, as lava rises up from the mantle and out of a deep valley in the ocean floor. The rising lava hardens and spreads out, thereby forming new land, which needs space. As the lava rises, the Earth's plates move apart slowly, creating what we now know as the mid-ocean ridge. Meanwhile, the crust is sinking and melting into the mantle at places where one plate slides under another, called deep trenches. The effect is sort of like a series of conveyor belts that move the plates.

**Objective**

Build a simple model of the Earth's crust to demonstrate how the sea floor spreads at a mid-ocean ridge, and how the Earth's crust reenters the mantle at a deep trench.

**Materials**

- a large, empty, cylindrical oatmeal carton
- two strips of different colored paper
- tape
- a pencil
- scissors

**Safety Notice:** All applicable laboratory safety rules must be followed. Students should not perform any experimental activity without the teacher's supervision and express permission. Students must follow safety guidelines and wear appropriate protective gear.

**Procedure**

1. Set the oatmeal carton on its side. It will represent the mantle of the Earth. At this point, the mantle is not covered by any crust.
2. Prepare your mid-ocean ridge and your two deep trenches. Using the scissors, carefully cut a slit vertically in the side of the oatmeal carton that's about 12 centimeters, or five inches, long. This slit represents your mid-ocean ridge. Then, carefully cut an identical slit on each side of the first one. These two additional slits will represent your two deep trenches.
3. Stack the two paper strips exactly on top of each other. Then, while holding them together, tape the ends of these papers onto the pencil. They should both hang off one side of the pencil. Wind the papers around the pencil. Be sure to leave the ends partially unwound.
4. Now place the pencil and papers inside the carton through the open end and push the two unwound ends out through the center slit of the carton.
5. Holding the pencil in place, separate the paper strips and push them into the slits on the sides of the carton. Take a close look at your model. The pieces of paper outside of your carton represent your crust.

6. To make the crust move, slowly pull the ends of the paper down from inside the carton.

What happens?

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The pieces of paper should rise together out of the top slit, the mid-ocean ridge. They then separate and spread out around the sides of the carton, which is the mantle of your Earth. Finally, they reenter the mantle at the side slits, which are your deep trenches.

**Conclusions**

- What happens to the crust as it reenters the mantle at the deep trenches?

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