

Activity #5 - Seafloor Block Model

Concepts # 1, 3, 5, 6

- #1 The floor of the ocean is composed of hills, plains, ridges, trenches, and seamounts.
- #3 Geologists and oceanographers use maps of the sea floor as tools for research and applied science (technology).
- #5 Continual convection currents move the earth's crust, resulting in the formation of islands and deep oceanic trenches.
- #6 Core drilling has produced information regarding the movement and density of the oceanic and continental crusts.

Objective:

Students construct a 3-D block model of the ocean floor to study fundamental earth processes.

Materials:

- block model sheet (cardstock isn't necessary, but can be used as an option if available)
- label tags sheet
- colored pencils or fine tipped felt markers
- scissors
- glue

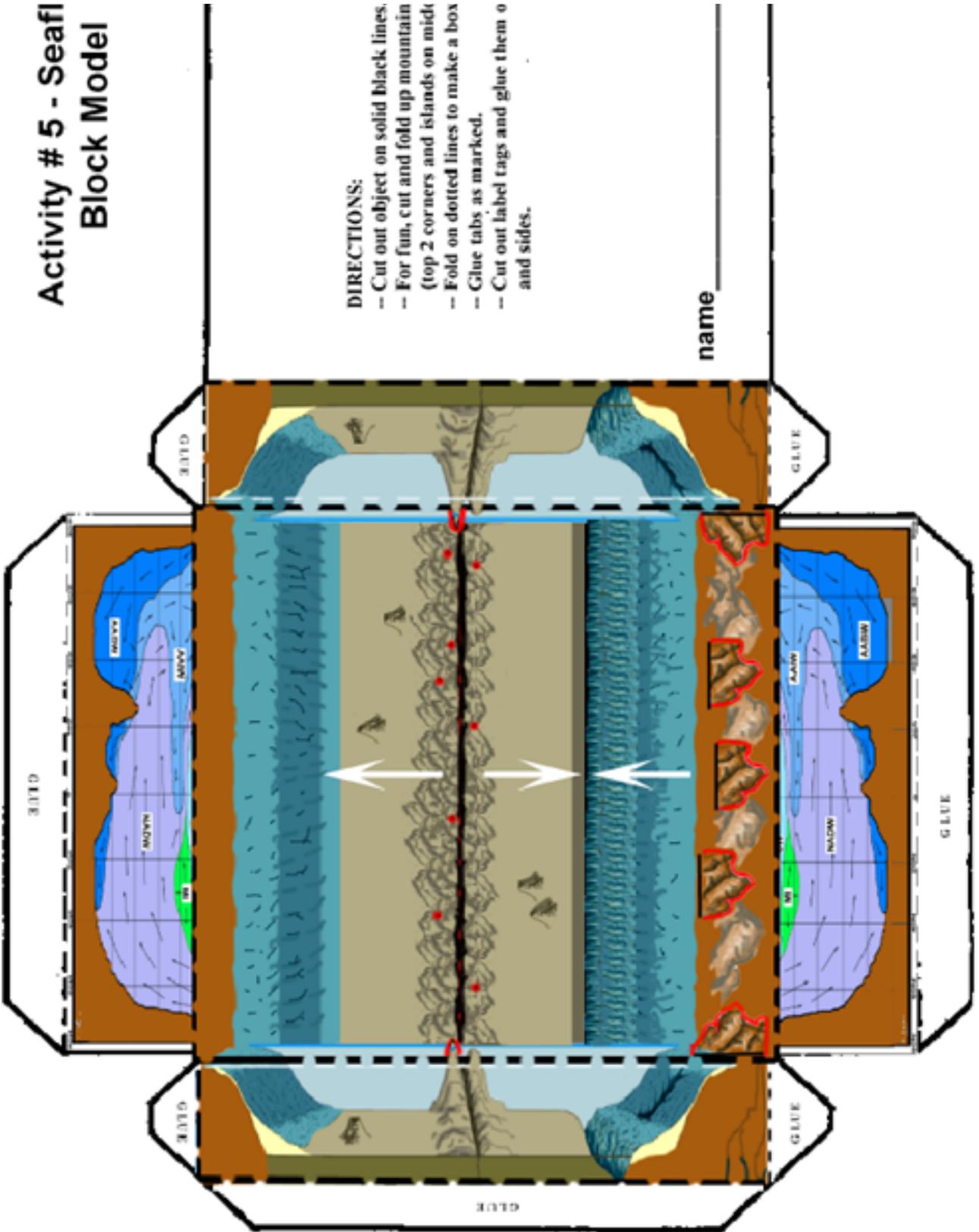
Procedures:

1. Cut out the block model from the sheet by cutting on the solid lines.
2. For extra fun cut out the mountains and islands and fold them up above the sea level. (see photo)
3. Make folds on the dashed lines.
4. After fitting your block model together to see how it will look, use your colored pens or pencils to color-in your model. Be creative, but use the same color patten on the top and along the sides.
5. Glue the model together using the flaps that say "glue."
6. Cut the label tags carefully, as close to the letters and words as possible. (Don't leave much white space around the borders).
7. Glue the label tags on the top and along the sides. Draw neat arrow from each label tag pointing to the correct feature.

Evaluation:

- Which crust, the oceanic or the continental, is thicker? (continental)
- Which type of crust floats higher above the mantle? (continental; the top of the continental crust is higher than the top of the oceanic crust, like an ice cube floating in water.)
- Which type of crust must, therefore, be less dense? (continental)
- Use arrows to draw in convection currents beneath the surface of the mid-ocean ridge.
- Place an “x” at the point(s) where the oceanic crust remelted to form the mantle.
- If the amount of crust remains the same, new crust must be formed to replace the crust that is remelted. Where is the new crust formed? (New crust is formed at the mid-ocean ridges of the deep ocean basin)
- Circle the path of molten rock from the mantle to the top of an oceanic volcano.
- The Pacific Ocean has many volcanic islands. There are also volcanic islands in the Atlantic Ocean. Name an island group that is an example of a volcanic island arc. (The Azores, Philippines, Marshall Islands, Tuamoto Islands, Fiji islands)
- What is thought to cause deep-ocean trenches? (Where plates collide, one dives under the other.)
- What does the theory of plate tectonics and continental drift say about the positions of the continents? (Hypothesizes that the continents are in relative motion and are not in the same positions as in the past. The continents are always changing.)
- Write a paragraph describing and explaining what the box demonstrates about earth processes. Use the terms found on the label tags in the paragraph.

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DIRECTIONS:

- Cut out object on solid black lines.
- For fun, cut and fold up mountain (top 2 corners and islands on mid)
- Fold on dotted lines to make a box
- Glue tabs as marked.
- Cut out label tags and glue them on and sides.

name _____

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Label Tags

HINT: Try to cut each label tag as close to the letters and words as you can. (Don't leave a lot of white space around the edges of each tag). Don't worry if you end up with extra tags !

ABYSSAL
PLAINS

RIFT

SEAMOUNT

ISLAND

TRENCH

TRENCH

ABYSSAL
PLAINS

RIFT

RIDGE

RIDGE

SLOPE

SLOPE

SLOPE

SLOPE

SHELF

SHELF

SHELF

SHELF

CONTINENTAL
CRUST

CONTINENTAL
CRUST

OCEANIC
CRUST

OCEANIC
CRUST

LAND
MASS

LAND
MASS

GUYOT

GUYOT

ABYSSAL
PLAINS

RISE

RISE

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View of Completed Model

