

RAFT IDEAS

Topics: Geography, Map Reading, Spatial Thinking

Materials List

- ✓ EVA foam (any color, 1 sheet per student project)
- ✓ Scissors
- ✓ Glue
- ✓ Pen and paper

This Activity can be used to teach:

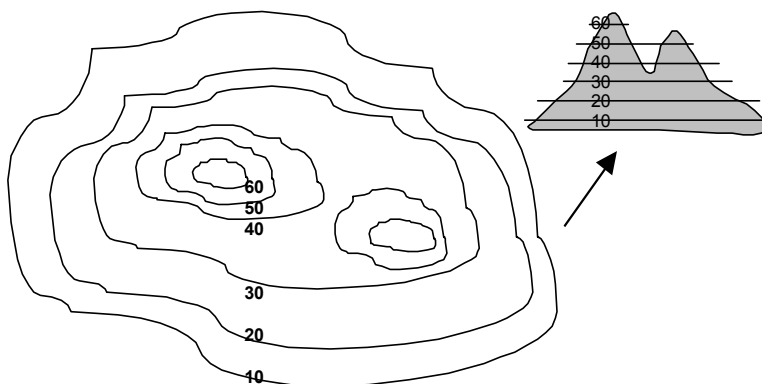
- Topographic Maps (CA Science Standards: Grade 6, 7.f; HS Investigation and Experimentation, 1.h)
- Map Construction and Interpretation (CA Science Standards: Grade 7, 7.d; HS Earth Science, 9.g)
- 2-Dimensional representations of 3-Dimensional objects (CA Math Standards, Measurement and Geometry, Grade 4, 3.6)



Resource Area For Teachers
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Making Mountain Models

3-D Models from Topographic Maps Using EVA Foam



This modeling activity can be used to teach topographic map-reading skills. Students draw a fictitious topographic map, and then build the mountain represented by the map's contour lines.

To Do and Notice

1. Have students draw a random closed rounded shape roughly 4 inches by 6 inches, then repeatedly draw similar shapes, each inside the previous shape (with various spacings between the lines) until they have 4 to 7 lines.
2. Copy the drawing by photocopying or tracing. Keep the copy for later.
3. Have students cut out the outermost shape from their drawings, then trace that shape onto a sheet of the EVA foam and cut out the shape on the foam.
4. Then, cut out the next outermost shape from the drawing: cut away the first shape, trace the second shape onto the foam sheet, and cut out the foam shape.
5. Repeat step 4 until all of the shapes have been cut out.
6. Using the copy of the drawing as a guide, stack and glue the successive shapes upon each other to build up the mountain.

Note to teachers: keep the first project simple, or it will be too time-consuming.

The Science Behind the Activity

Topographic maps provide a method to show a 3-dimensional landscape on a 2-dimensional map by showing lines that mark the surface of the landscape at regular elevation intervals. Topographic maps have many different uses. For example, they aid hikers in navigating terrain, and they allow scientists to chart occurrences and types, such as plant species, by elevation and location. The field of map-making (cartography) is a sub-field of geography, important to both Earth Sciences (geology, physical geography) and Social Science (political geography).

Taking it Further

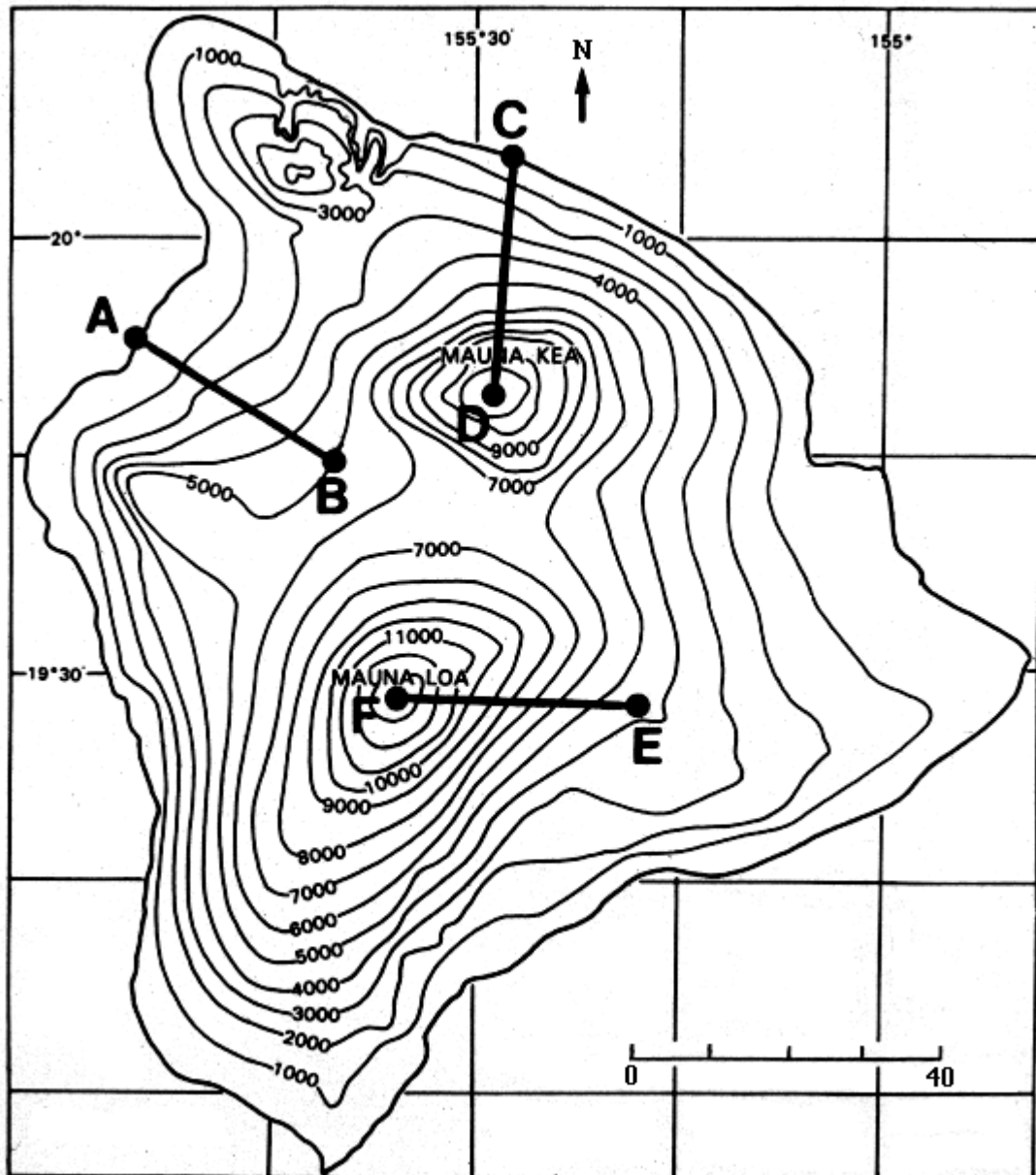
- Have the class compare the resulting models to the copies of the drawings.
- For students ready for a challenge, have them create a 3-dimensional model of a real topographic map, such as the map of Hawaii on the back of this page. For complex maps such as the Hawaii map, students should work in teams.

Web Resources:

A variety of topographic maps of actual places can be found at:
<http://www.csus.edu/indiv/s/slymaker/Geol10L/wholemaps.htm>

Information about symbols used on topographic maps can be found at:
<http://mac.usgs.gov/mac/isb/pubs/booklets/symbols>

Topographic Map of the Big Island of Hawaii



Topographic Map of Hawaii from: <http://www.ems.psu.edu/~nese/ed2image.htm>