RAFT IDEAS

Topics: Geography, Map Reading, Spatial Thinking

Materials List

- ✓ 5 – 7 clear, stacking lids
- ✓ Permanent marker (ultra-fine tip)
- ✓ 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)

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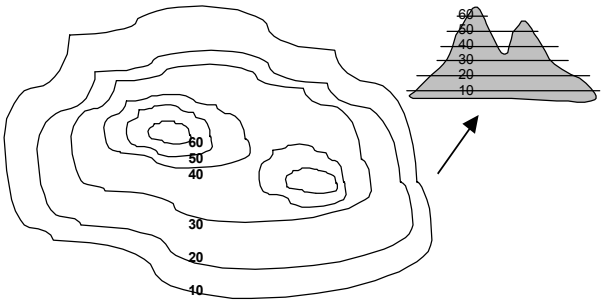
3-D Views

An In-Depth Look at Topographic Maps



This modeling activity can be used to teach topographic map-reading skills. Students draw a fictitious topographic map, and then transfer the map to stacking lids, producing a great 3-dimensional effect.

To Do and Notice

1. Have students draw a random closed rounded shape slightly smaller in diameter than the flat, lid surface, then repeatedly draw similar shapes, each inside the previous shape (with various spacings between the lines) until they have 5 to 7 lines. (Teacher Note: starting with a copies of a circle or square the same size as the flat surface of the lid will help students with alignment when stacking.)
2. Have students trace the outermost shape from their drawings onto a lid using the permanent marker.
3. Then, trace the next outermost shape from the drawing onto a second lid
4. Repeat step 3 until all of the shapes have been traced onto lids.
5. Using the drawing as a guide, stack the lids upon each other to build up the mountain: start with the lid representing the lowest elevation (largest shape) and then continue until the highest elevation (smallest shape) is reached.

Note to teachers: Depending on the method of tracing and stacking, the 3-D lid model might be the reverse image of the map. This is not a problem as long as students are aware of it; they should not conclude that topographic maps are always presented reverse to actual terrain.

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

- Try the RAFT Activity Idea ***Making Mountain Models*** that uses EVA foam to create actual, 3-D models from topographic maps.

Web Resource: A variety of topographic maps of actual places can be found at: http://www.csus.edu/indiv/s/slaymaker/Geol10L/wholemaps.htm