

## Classroom Activity: CLAY TOPOGRAPHY

### Objectives

1. Students will be introduced to topographic maps.
2. Students will learn how to interpret contour lines and identify mountains on a topographic map.

### Necessary Materials

- ✓ Local topographic map  
Visit [TopoZone.com](http://www.topozone.com) (<http://www.topozone.com>) to create a topographic map of your town.
- ✓ Modeling clay or Play-doh
- ✓ Lunch tray
- ✓ Ruler
- ✓ Brightly colored yarn

### Background Information

A **topographic map** uses contour lines to represent landscape features, such as mountains and valleys. **Contour lines** are imaginary lines that connect points of land with the same elevation. **Elevation** is the height above sea level (in feet or meters) at any given location. The distance in elevation between two adjacent contour lines is the **contour interval**. To be informative about landscape features, all contour intervals on a map must be equal, but these distances can vary from map to map depending on the shape of the landscape. For example, a map of a relatively level area may have a contour interval of 10 feet whereas a map of a mountainous region may have a contour interval of 100 feet. Every fifth contour line is darker than the others and has a number (the elevation) written on it. These index contour lines are easier to identify and enable the map user to determine the elevation of the surrounding contour lines.

To use a topographic map to identify mountains, encourage students to look at the spacing between contour lines. Closely spaced contour lines represent a steep slope. Conversely, widely spaced contour lines represent a gentle slope. Circles of contour lines represent a hilltop or mountain peak.

### Laying the Groundwork

Begin by asking students, *what is a contour line?* Have them look up the word “contour” in the dictionary and then look at the lines on a topographic map. *What does a contour line represent? What do you think these lines are showing us? What observations can you make about the lines?* If they observe that the lines are sometimes far apart and sometimes close together, ask, *What do you think this might tell us?* Have them also look at the map legend for clues.

### Exploration

1. Before class, sculpt a mountain out of modeling clay or Play-doh. It is best if your mountain has both gentle and steep slopes. Press the base of the mountain onto the lunch tray so you can move it around the classroom. Cut several pieces of yarn long enough to reach around the diameter of the mountain.
2. Ask a student to hold the ruler upright next to the mountain with zero inches at the base.
3. Measure  $\frac{1}{2}$  inch up from the base of the mountain. Your contour interval in this case is  $\frac{1}{2}$  inch. (Note: If your mountain is tall, you may want to use a 1-inch contour interval). Have another student wrap a piece of the yarn around the mountain at this point. To hold the yarn in place, gently push it into the clay or Play-doh.
4. Continue measuring and marking the mountain at  $\frac{1}{2}$  inch increments until you reach the top.
5. Move the lunch tray to the floor. Have students stand over the mountain and look down on it. Students will see a series of rings that get progressively smaller from the base to the peak of the mountain. These rings are the same as the circles, representing hilltops or mountain peaks, on a topographic map.
6. Have students draw these lines in their journals. Challenge them to accurately represent the distance between contour lines.

### Making Connections

Ask students, *When you look at the mountain from above, do the contour lines look evenly spaced? What do the contour lines that are close together show us? What do the contour lines that are far apart show us?*

### Branching Out

In the next activity, students are going to apply what they have learned about contour lines and topographic maps by mapping the landscape of their schoolyard.