

Activity Time: 2 class periods of 50-60 minutes

Materials: (can be adjusted for table groups up to 4)

- Playdoh or modeling clay
- Clay wire cutter (or sewing thread)
- Blank laminated sheets of paper (11"x17" or larger is best)
- Dry erase markers
- 2 Meter sticks

Directions:

- 1) Begin with discussion by posing a question about which direction water will travel if it lands from a rain cloud onto the ground. Have students consider what factors would influence where that water will go.
- 2) With the modeling clay, have groups shape a mountainous area that contains both a "steep" side and a "gradual" side.
- 3) Place the model on the laminated sheets and have students trace an outline of the base onto the paper with the dry erase marker.
- 4) To ensure accuracy, have students create perpendicular dotted lines with a pencil or sharp object on the surface of the clay model to help maintain the alignment of the layers of the mountain after they are slid. So the dots on the dotted line should be fairly frequent so that at least one appears per layer. Also, use the dry erase markers to make marks on the laminated paper to line up with the perpendicular dotted lines on the clay.
- 5) Place two meter sticks on each side of the clay model. Two students should hold down the far edges of the stick. The width of the meter sticks will be the height of the slices of the clay model.
- 6) Slice the clay model with the clay wire cutter by carefully moving laterally back and forth across the top of the meter sticks while slowly pulling towards oneself. It is critical that the wire is using the meter sticks as a guide for cutting a consistent height through the clay model.
- 7) Carefully remove the top layer of the clay model and set aside temporarily (a student could hold it)
- 8) Remove the cut bottom layer and place to the side of the laminated sheet.
- 9) Realign the top layer using the dotted lines to match the perpendicular ones on the laminated sheet. Students will notice that the foundation of the model is smaller.
- 10) Carefully trace the outline of the new base with a dry erase marker, creating a topographic line of higher elevation.
- 11) Repeat steps 6 through 10 until the clay model is shorter than the width of the meter sticks. Make sure to number each of the layers, in order, on the laminated sheet.
- 12) Reassemble the whole clay model and place next to the topographic map just created by the outlines.

Summary:

- 1) Describe the patterns you notice in the topographic lines for the different sides of the mountain. (Steep versus gradual)
- 2) Compare the 2-D topographic map to the 3-D clay model. Write in your own words what a single topographic line represents?
- 3) What does the location of the topographic lines relative to one another indicate?
- 4) How would your topographic map look different if you changed the height of your slices? Bigger slices? Smaller slices?
- 5) How would changing the height of your mountain slices, change the amount of information on your map?

Application:

- 1) Looking at a paper topographic map (or ArcGIS), describe some of the features of an area of the landscape. Be specific about where you are looking on the map, and what evidence exists on the map to support your interpretation.