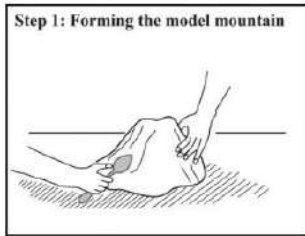


Playdoh Topography

Materials: A partner, 1 container of playdoh, 2 pencils, lab directions (2 pages), Thread (8” – 1’ in length), ruler

Procedure:

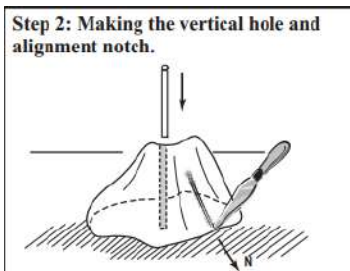


1. Shape a Volcano using one container of play dough.

- Place the clay on a piece of scrap paper.
- Shape the mound into a cone—pointy side up—roughly the shape of a stratovolcano like Mount Rainier.
- Remember each side of the volcano may have a different slope, or steepness.
- Consider making U-shaped glacial valleys running down the sides of the model using the back of a spoon, and then putting in some smaller V-shaped valleys, representing those carved by rivers and streams, using a pencil.

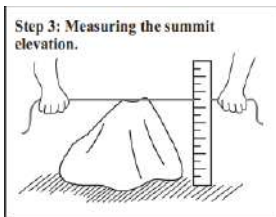
2. Make a Vertical Hole for Alignment of Parts:

- Next, use a pencil to make a vertical hole from the summit of the volcano, all the way down to the work surface.
- Remove the pencil and mark this spot on your paper. This mark will allow you to align the pieces of your model on the paper as you make a topographic map, so you should be able to see through it.



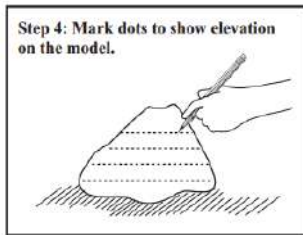
3. Choose a direction for north, such as the front of the classroom, and then make a straight groove down the outside of the model facing north.

- You will need to know where north is on your clay pieces, so, make the groove obvious



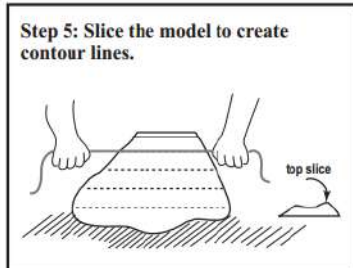
4. Measure and Record Elevation:

- Measure the elevation of the volcano and record it at question #1 on the student page.
 - To make this measurement, stretch the wire across the top of the volcano to a vertical ruler (see graphic).
 - You should divide your answer by four or five to determine your contour interval, that is, the distance between each contour line to be drawn in Step 4. Rounding is permitted. Write answer on student page at question #2



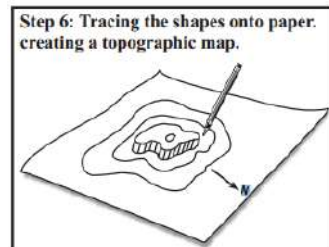
5. Mark Dots to Show Elevation on the Model

- a. Then, holding a toothpick horizontal, punch holes at each calculated contour interval, completely around their model



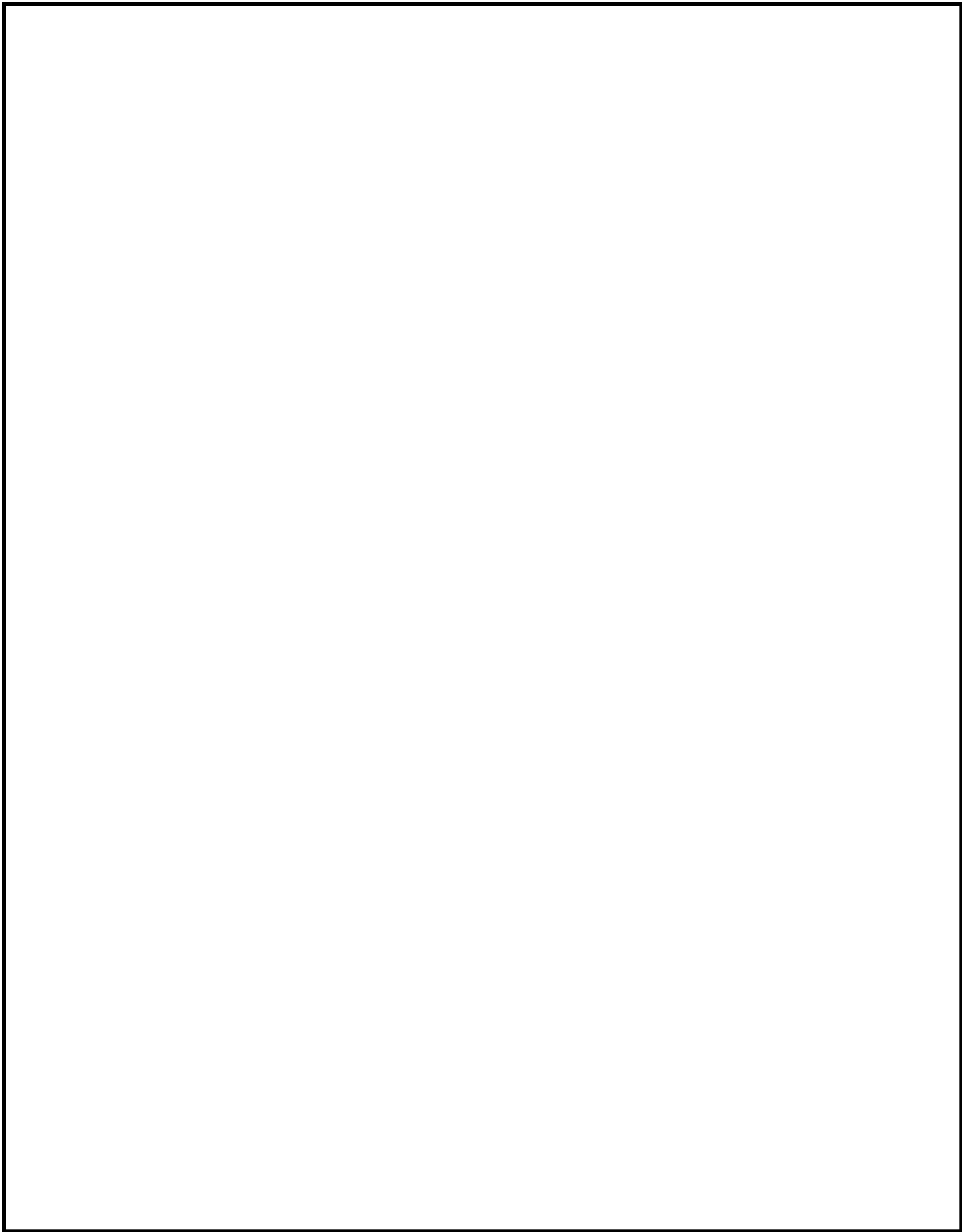
6. Slice the Model to Create Contour Lines

- a. Next, using the thread cut the model parallel to the work surface horizontally at the elevations marked by the dots.
- b. Try to keep your hands steady to keep all slices parallel and of even thickness.
- c. Start with horizontal slices near the top.
- d. These slices, cutting through the model at one elevation, will make a slice that outlines the volcano at that elevation.
- e. Since the cut is all at the same elevation, the outline is a contour line.
- f. The distance from one cut to the next is the contour interval.



7. Trace the Outline of Each Slice on Paper to Make a Contour Map of the Play-Dough Volcano Model:

- a. Using the square on this page and starting with the bottom-most, largest slice, center it on the paper, with the "North" groove facing the top of the page, and mark the position of the groove with a tic-mark.
- b. Use a pencil to make a distinct dot on the paper in the center of the dowel-hole.
 - i. This dot will be used for centering all of the other pieces.
- c. Finally, carefully trace the outline of the slice, paying attention to indentations and the shapes made by any valleys you may have carved.
- d. Remove the slab and center the next piece of your model over the "dowel-dot," lining up the "North-groove" with the direction of the tic-mark, towards the top of the page.
- e. Carefully trace the shape.
- f. Repeat until all of the slices have been centered and traced.
- g. You have just created a topographic map of your volcano!
 - i. Name your volcano
 - ii. List the contour interval
 - iii. Label the elevation of the summit
 - iv. Draw a north arrow



Post-Lab Questions:

- 1) Discuss the topographic map you built based on your neighbor's map. Were you close? Why or why not?
- 2) What do contour lines that are close together signify about the slope of the terrain?
- 3) Find the elevation of your volcano in centimeters and inches. (one inch equals 2.54 centimeters)
- 4) Make four or five contour lines on your volcano. List the elevation of the contour lines on your volcano.
- 5) What is the contour interval of your topographic map?
- 6) Notice how the glacial and river valleys are represented on the topographic map. Do the two types of valleys look the same?
- 7) Draw the rivers on your map using a dashed-and-dotted line and give each river a name.
- 8) How might you distinguish a valley from a ridge on a topographic map?
- 9) Notice how all of your lines form irregular circles or ovals. Imagine what would happen if you left the front door of your house and could only walk at one elevation, never traveling up or down—could you get back home? Explain.
- 10) Do all contour lines in the world eventually have to connect back to themselves? Why or why not?