

Name _____

Earth Science

Lab 8: Constructing a Contour Map

Date _____

Introduction: You have previously studied maps which did not represent Earth's surface accurately. Now you will see how Earth's surface features can be shown by using a contour (topographic) map. This kind of map uses contour lines to represent the elevation field of a land area.

Objective: You will learn to construct and interpret a contour map of a landform.

Vocabulary:

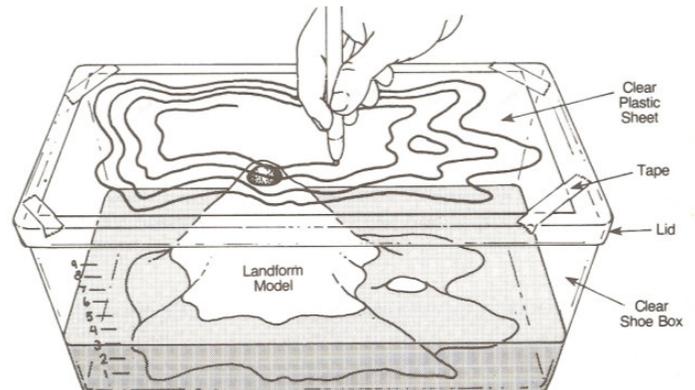
Topography

Contour line

Contour interval

Topographic profile

Hachured contour lines



Procedure:

1. Place the plastic volcano inside the box.
2. Tape the plastic overlay to the top of the box lid.
3. Begin filling the box with water, stopping when the water level reaches the first marking. This is *sea level* which is equal to 0 meters elevation.
4. Place the lid on the box and then trace the shoreline onto the plastic overlay with an overhead marker.
5. Taking the lid off, add water until it reaches the next centimeter marking.
6. Replace the lid and trace the new shoreline.
7. Repeat this procedure for every marking until the volcano is completely under water. *Make sure you include the shoreline inside the volcano as it forms in the crater!*
8. Create a contour map by tracing the contour lines from the plastic overlay onto a piece of plain white paper. You may wish to hold it up against a window to make the marks more visible.
9. Label each contour line starting with the first marking line. This is 0 meters elevation. Use a vertical scale of 1 cm = 100 m.
10. The contour line inside the volcano should be different from the other lines, as it represents decreasing elevation into an enclosed space. Make sure you label it correctly with hachured lines.
11. Orient your paper with the mountain on the left side and draw a straight line lengthwise through the center of the volcano across the entire sheet of paper. Label the left side "A" and the right side "B".
12. Use a piece of graph paper to construct a topographic profile along AB.

13. Using a horizontal scale of 1 cm = ¼ km, calculate the gradient on your map from point A to the closest rim of the volcano, and from point B to the closest rim. Be sure to record your answers on the lines below

Gradient from A to rim

Difference in elevation from A to rim _____

Distance from A to rim _____

Calculations:

Gradient _____

Gradient from B to rim

Difference in elevation from B to rim _____

Distance from B to rim _____

Calculations:

Gradient _____

14. Complete your contour map by following the steps below:

- Orient your contour map so the volcano is on the left.
- Indicate North, South, East and West at the bottom right of the map.
- Draw a graphic scale for this map (1 cm = ¼ km).
- Write the contour interval under the graphic scale. The contour interval is 100 meters.
- Label the first contour line you drew as 0 meters and color it blue. Label the fifth contour line and color it brown.
- Draw in a stream flowing from the northern rim of the volcano to the north side of the island. Indicate streamflow direction by modifying the contour lines it crosses.
- Name this map: Your Name Quadrangle in the upper right corner and put today's date under it.
- Draw a street that runs East-West, is 3 km long, and is located along the southern edge of the island. Name this street Colaizzi Street. Locate one end of the street near the west end of the island.
- Draw a street that runs North-South, is 2 km long, and intersects Colaizzi Street 1 km from its eastern end. Name this street Ogden Road.
- Place a school on the north side of Colaizzi Street 1 km west of the intersection, labeled Roth's School.
- Place a church ½ km east of the school on the south side of Colaizzi Street.
- Locate a mine at an elevation of 400 meters.
- Locate a trail leading from the mine to the intersection of Colaizzi Street and Ogden Road.
- Locate a house on the east side of Ogden Road 1 km north of the intersection.
- Locate a swamp in the northwest section of this map at an elevation of 50 m. Label it as Future home of Mancuso's Muscle Mania.
- Locate two docks on the northeast side of the island.
- Locate a double railroad track leading from the docks to the mine.
- Located at an elevation of 279 m is a roaming herd of llamas (create a symbol).
- Indicate a location that has been surveyed and found to have an elevation of 355 m.

Discussion Questions:

1. What do contour lines represent on a topographic map?
2. What is meant by the contour “interval” on a topographic map?
3. Why should two contour lines never cross?
4. Referring to your map of the volcano, how does a contour map indicate areas of steep gradient? Gentle gradient?
5. Compare the landform with your map. How must contour lines bend on a topographic map to indicate a stream valley?
6. How can you determine the direction a stream flows on a contour map?
7. Referring to your profile of a volcano, describe how you could change your drawing so that the side view would be more exaggerated.
8. Would a topographic map of a mountain constructed 10,000 years from now be identical to a map drawn today? Explain.
9. In order to construct a topographic map of your area you would have to collect certain data. What are these data and how would you use them to make a contour map?