Name _____ **Period/ Block**_____ **Date** _____

Title: Constructing a Contour map

Introduction: You have previously studied maps which did not represent the Earth's surface accurately. Now you will see how the 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

Purpose: To learn to construct and interpret a contour map of a landform.

Materials: (At the end of lab make sure all equipment is put back neatly and wiped off.)

Plastic shoe box and lid

Plastic model of volcano

Overhead marker

600 ml Beaker

Plastic overlay

Masking tape (to tape down the plastic overlay)

Vocabulary:

Topography:

Contour line:

Topographic profile:

Depression or hachured lines:

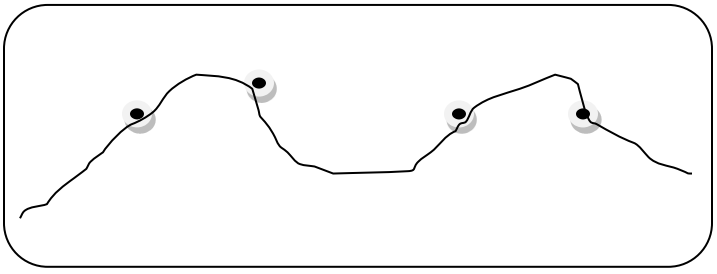
Procedure:

1. **Mark small horizontal lines on the side of the clear plastic shoe box spaced one centimeter apart. Measure from bottom to top.**
2. **Place the plastic volcano inside the shoebox**
3. **Tape the plastic overlay to the top of the box lid.**
4. **Begin filling the shoe box with water, stopping when the water level reaches the first marking. This is sea level which is equal to 0 meters elevation**
5. **Place the lid on the box and then using the marker trace the shoreline onto the plastic overlay**
6. **Take off the lid, add water until it reaches the next centimeter marking. (100 meters)**
7. **Replace the lid and trace the new shoreline. (note: if you are tracing over your first line do not draw it. Just add more water and go to the next level.**

8. **Repeat this procedure for every marking until the volcano is completely under water. Include the shore line of the lake as it forms in the crater of the volcano. *<u>Important</u>! The line that is inside the volcano "the lake" is a depression or hachured line. It should be drawn with the little lines that point into the center of the crater. Look in your notes or review book for the depression contour lines.***

9. **Create a contour map by tracing the contour lines from the plastic overlay onto a piece of plain white paper. Use the windows of the classroom or the overhead projector to trace your map as demonstrated by your teacher.**
10. **Label each contour line starting with the first making line. This is 0 meters elevation. Then the contour interval should be 100. (1.0cm = 100m of elevation)**
11. **Now when you get to the top of your contour lines (mountain) remember the rule with hachured or depression contour lines. The first one is always the same elevation as the "normal" contour line before it. Then you start labeling down in elevation in that contour interval. (you should only have one or two depression lines)**
12. **Now orientate your map paper so the mountain (volcano) is on the left-hand side and draw a straight line lengthwise (horizontal) through the center of the volcano. Label the left end of the line "A" and the right end "B"**
13. **Use a piece of graph paper to draw a topographic Profile along this A-B line. Follow the steps below**

<u>Step one</u>: Line up the bottom edge of a piece of profile paper along the profile line A-B. (you should not be able to see the top of your map.)
<u>Step two</u>: Using a pencil mark the piece of paper at the bottom where each contour line intersects the profile line. Make sure you also write down the elevation as you mark the contour line on your paper!!!!!!DO NOT DO IT AFTER YOU MADE YOUR MARKS
<u>Step three</u>: Create a vertical axis. Remember your range (in the interval) is going to be one higher than your highest number and one lower than your lowest number
<u>Step four</u>: Directly above the marks that you made at the bottom of your profile place an X at the elevation that you recorded.
<u>Step five</u> : If you did it right you will have four points all at the same elevation at the top of your mountain. When you draw your line you must show the crater at the top with these four points. The top of your volcano should look something like the box below.
<u>Step Six</u> : Connect the dots with a smooth line



This is how the top of your mountain profile should look.

14. **Using a horizontal scale of 1 cm = 1 km calculate the gradient or slope on your map from point "A" to the closest rim of the volcano. The rim of the volcano will be the area in-between the hachured line or depressor contour and the normal contour line before it and from point B to the closest rim of the volcano. Show the work on the report sheet.**

Report Sheet

Write gradient formula in the box to the right

Difference in elevation between Point A and the Rim _____

Distance from Point A to Rim (use metric ruler 1cm=1km) _____

Calculated gradient = _____

_____

Difference in elevation between Point B and the Rim _____

Distance from Point B to Rim (use metric ruler 1cm=1km) _____

Calculated gradient = _____

Remember to have all measurements to the nearest tenths and all numbers and calculations should have unit

Discussion Questions: record your answers on your write up cover sheet in complete sentences.

1. **What do contour lines represent on topographic map?**

2. **What is meant by the contour interval on a topographic map?**

3. **Why is unlikely that two contour lines would cross?**

4. **How does your map indicate areas of steep or gentle gradient (slope)?**

5. **How does a topographical map contour lines show a valley?**

6. **How can you determine the direction a stream flows on a contour map?**

7. **Would a contour map remain the same over time? Explain your answer.**