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## Contour Map of Mount Capulin in New Mexico

### **Purpose**

To model the shape of the earth's surface features in two dimensions using hand drawn contour lines.

### **Materials**

Plastic Mountain Replica

Clear Plastic Box

Ruler (metric side)

Tape

Clear Acetate Sheet

Waterbase projector pens

Water

Beaker

### **Background:**

Contour lines, as visualized on the Earth's surface, are closed curves (in the grandest sense) at constant elevation, which are always perpendicular to the slope of the surface at any point. Since a contour line might actually close only after wandering a large geographical region, contour lines on a model, a map or chart might seem to close. Each contour line has an expressed or implied elevation. The contour interval is the constant difference between adjacent contour lines. Closely spaced contour lines on a map or chart would indicate a steep slope. Drainage features such as gullies, streams or rivers are distinguished on the map or chart by a consistent dip in the contour lines as each crosses the thread of the stream at right angles.

### **Procedure:**

1. Using tape, secure the mountain replica to the bottom of the box. The hole in the top of the mountain should be sufficient to keep the model from floating.
2. Make marks every one half of a centimeter (5 mm) apart up the side of the box, beginning at the bottom.
3. Label this elevation scale using zero at the bottom, .5 cm, 1 cm, 1.5 cm etc. with the waterbase projector pen
4. Carefully fill the box with water using the beaker until you reach the first mark. The resulting "shore line" matches the definition of a contour line since it is at a constant elevation (Observing this is the whole point of the activity).
5. This, and the remaining contour lines can be inscribed on a two dimensional surface. First, cover the box with its lid and place the acetate sheet on top of the lid
6. Using the crayon, draw each contour of the replica as it appears at the "shore line" directly onto the acetate sheet by viewing from above.
7. Water is carefully added with the beaker to bring the level to the next mark. Make sure the mountain is still attached to the bottom.
8. Continue until the mountain is completely submerged
9. Label your contour lines, to do this you need to know that the bottom of the box is at an elevation of approximately 6,000 feet. One centimeter scales to 250 feet.

10. When you are finished trace the contour lines onto a plain white sheet of paper label each contour line to turn in with your lab.

**Evaluation Questions:**

1. Describe the general shape of the contour lines.
2. What general statement can be made about the closeness of the lines and the steepness of the slope?
3. Describe how the solidified lava flows have affected the pattern of contour lines.
4. How would a steep valley down the side of the volcano change the contour pattern?
5. Would it be possible to distinguish a basin from a mountain on a topographic map or chart?
6. What was the meaning of this lab?