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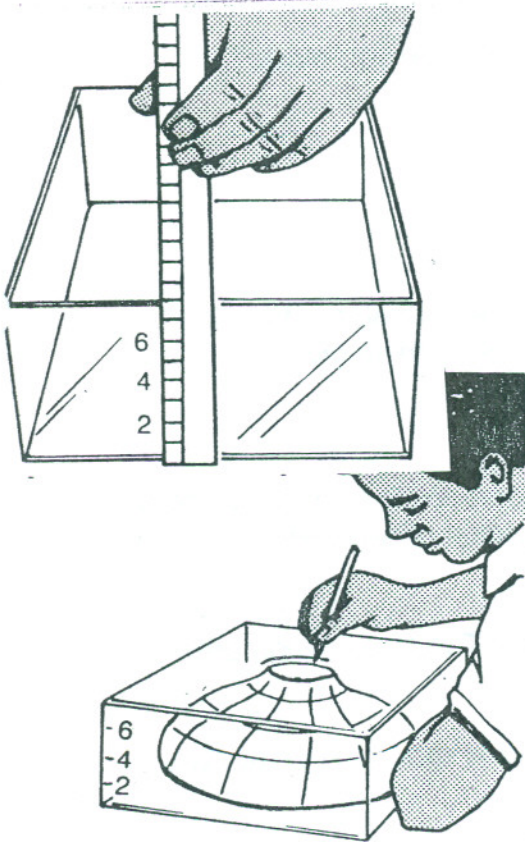
Experiment: Determining Elevation
(E. Science 9-6-3b)

Purpose: To determine how elevation is indicated on a topographic map.

Materials: plastic model landform
metric ruler water glass marker
clear plastic storage box with lid
transparency scrap white sheet of paper

Methods:

1. Using the ruler and the glass marker, make marks up the side of the storage box 1 cm apart as indicated in diagram. Label increments.
2. Secure the transparency to the outside of the box lid with tape.
3. Place the plastic model of land in the box. The bottom of the box will be zero elevation (sea level).
4. Pour water into the box to a height of 1 cm. Place the cover with the transparency on the box.
5. Trace the top of the water line on the transparency (see diagram.) Using the scale 1 cm = 20 m, mark the elevation on the line you just drew.
6. Remove the lid and add water until a depth of 2 cm is reached.
7. Map this level on the transparency of the lid and record the elevation on the line just drawn.
8. Repeat the process of adding 1 cm of water and tracing until you have the hill mapped. Record the elevation one each line.
9. Transfer the topographic map of the hill onto a white sheet of paper. Staple the traced page to this lab paper. (Put your name on both pages).



Results: Staple the traced sheet of the map to this lab, include your name on each.

Conclusions:

1. A contour interval - is the difference in elevation between two adjacent contour lines on a topographical map. What is the contour interval of this topographic map (include units)?

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2. A contour line is the line drawn on a topographical map that joins all points of the same elevation. While you were drawing the contour lines for this model landform, how did you know what each point' elevation was?
3. If the contour lines on a map were very close together would this show a gradual or a steep slope of a landform? Explain.
4. Remember the scale of the model is 1 cm to every 20 m. (In other words if the model was 4 cm high the actual hill was 80 m high). What is the total elevation of the actual hill that we had a model of? (Set up the proportion then solve).
$$\frac{1 \text{ cm of model}}{20 \text{ m of hill}} = \frac{\text{cm height of model}}{X \text{ m of the actual height of hill}}$$
height of the actual hill is _____ m
5. How was the elevation of the landform represented in the map you made?

Discussion:

1. How are elevations shown on topographical maps?
2. Must all topographic maps have a zero meter elevation (sea level) contour line? Explain using a mountain range in the middle of the USA as an example.
3. How would a contour interval of an area of high relief compare to one of low relief on a topographic map? (**Relief** is the variation in the elevation of an area.)
- 4a. Upon which mountain did God call Moses up to give the Ten Commandments (Ex. 19:20, Ex. 24:12)?
- 4b. What did Moses do while descending from the crest of the mountain as he was looking down on the camp (Ex. 32:19)?
- 4c. The camp was located on a plain and then there was a mountain that Moses went up. If we were to look at a modern topographic map of this area describe how close the contour lines would be for the following two locations?
plain where the camp is: _____
mountain Moses climbed: _____
- 4d. Instead of God just verbally giving the Ten Commandments to Moses, what is the significance of writing them by hand unto stones (solid rock)?