

Topographic Mapping:

Mapping the surface of unknown planets

Question:

Where on the surface of this planet can you land a multi-million dollar research spacecraft?

Objectives:

1. To measure the topography of a given area and make a contour map from the data.
2. To learn about remote sensing and measuring: surface features and contour maps and different research techniques.

Materials:

1. Topo Boxes
2. Remote Sensing Tool (bamboo skewer)
3. Graph paper
4. Computers (if computer extension is used)

Topo Box Construction – Materials Needed:

1. A sturdy cardboard shoe box, shipping carton with its top, or boot box.
2. Green Styrofoam (commonly used in floral arrangements) cut to fit in the bottom of the box.
3. A tool for shaping the Styrofoam (a large spoon will suffice).
4. A sharpened pencil or similar object to punch holes in the box top.
5. A plastic coffee stirrer (about 5 inches long) or other long thin object like a bicycle spoke, a wooden kebab skewer, or a chopstick – to use as a depth gauge.
6. Adhesive tape and a ruler or tape measure.
7. A blank 3- by 5-inch index card.
8. Graph paper: several pieces with the same grid size.

Instructions: Important: DO NOT OPEN THE BOX UNTIL INSTRUCTED TO DO SO!!!!

- Students working in pairs
 - 1st Student collect the data from the Topo box
 - 2nd Student records the data on graph paper, matching the color on the sensing instrument, to the corresponding elevation guide located on the sides of each Topo box.
1. Student A will find a quadrant and coordinate on the Topo Box
Starting point for all quadrants is X on grid to Topo box
 2. Student B will find graph paper and corresponding coordinate
 3. Student A will use remote sensing tool to determine elevation in the box by reciting the color on the tool
 4. Student B will use the color information given by Student A to correspond to the matching elevation guide that is on each side of the box. Student B will then record this elevation on the graph paper
 5. Steps 1-4 will be repeated until entire quadrant is mapped.

Questions:

1. Describe the topography of the box.
2. What geologic features could be found in the box?
3. Where is the best place to land a spacecraft? Mark this on your map. Explain.
4. What do the numbers on the scale mean?