

Schoolyard Activity: SCHOOLYARD MAP

Objectives

1. Students will transfer their knowledge of contour lines from a model to the real world.
2. Students will learn how to measure and map the change in elevation in the schoolyard.

Necessary Materials

- ✓ Tape measure
- ✓ Wood or metal stakes (4)
- ✓ String
- ✓ Level
- ✓ Yardstick
- ✓ Nails
- ✓ World topographic map
(http://www.pqnet.com/seajester/maps/world_topo_ocean_floor_720x420_flat.jpg)
- ✓ Local topographic map
Visit TopoZone.com (<http://www.topozone.com>) to create a topographic map of your town.
- ✓ Colored pencils

Background Information

There are some general rules for creating topographic maps. A single contour line can represent only one elevation. A contour line should never split or divide. Contour lines should never end, except at the edge of the map. A contour line must not intersect other contour lines. Recall from the last activity that closely spaced contour lines represent a steep slope and widely spaced contour lines represent a gentle slope. And, as students have already learned, circles of contour lines represent hilltops or mountain peaks.

For this activity, try to find a slightly sloped section of the schoolyard, if possible. If this isn't possible, locate a sloped piece of land near the school.

Laying the Groundwork

Ask students, *How would you go about making a topographic map of your schoolyard? What things do you need to know in order to make this kind of map?*

Exploration

1. Have students measure out a 10- by 10-foot plot of sloped land. It is best if the plot slopes downhill from one end to the other. Place a stake at each corner of the square and run a string between the stakes to create a square.

2. Determine the total change in elevation in the plot. Ask a student to place one end of the level at the highest point in the plot, with the other end pointing downhill. Adjust the level. Have another student measure the distance from the end of the level to the ground using the yardstick. Repeat this step until you reach the low end of the plot. Add up all of the measurements to get a value for the total change in elevation for your plot.
3. Divide this number by the number of contour intervals you want. The resulting number represents the distance (in inches) between contour lines.
4. Determine the location for each contour line on the ground. Again, have a student place one end of the level at the highest point in the plot, with the other end pointing downhill. Adjust the level. Have this student keep the level horizontal while another student slides the yardstick (while keeping it vertical) along the level until the distance between the level and the ground is the distance calculated for between the contour lines. Mark the ground at this location with a nail. This is where your first contour line will be located. Repeat this step until the position for each contour line has been located.
5. Divide the class into 3 groups. Have them repeat step 4 starting from three other locations in the plot. The starting points for each group should be evenly spaced from one another and from the transect you have already run.
6. Connect the nails for each contour line with string.
7. Have students create a topographic map in their journals by drawing an aerial view of the contour lines. Remind them to accurately represent the distances between contour lines. (Note: You can take this opportunity to teach your students map and compass skills so they can identify north, south, east, and west on their topographic map. They will need these skills for their upcoming expedition!).

Making Connections

Show students the “Topographic Map of the World.” *How does it compare to the map you have just created?* Have students color the different contour intervals on their map. Each color represents one and only one contour interval. Explain that this is another way to represent changes in elevation on a topographic map.

Branching Out

While students are looking at the topographic map of the world, ask them, *Now can you find the mountains on each continent?* Have them locate the mountain ranges described in the “Mountains of the World” section.

Look again at a local topographic map. *Now that you know how to identify mountains on a map, can you see whether there is a mountain nearby? What does this map tell you about this local mountain? What is the mountain’s name? How tall is it? What does the slope of this mountain look like?*