

How to Make a Contour Map of Your School Playground

Source: *Mountain Environments Novice On-Line Lessons*

http://www.math.montana.edu/~nmp/materials/ess/mountain_environments/

These instructions are for making a 4 x 4 contour map of a 6' x 6' plot of land. The number of contour intervals or size of the plot may be changed if desired.

Step 1: To make a contour map, first stake out with string a plot of uneven land.

Step 2: Determine the total change in elevation within your plot, from its highest point to its lowest point, in inches. (To measure this change in elevation you must place one end of a bubble stick level at the high point with the other end pointing towards the low point. Raise or lower the free end of the bubble stick until the bubble shows the stick is level.) With the yardstick, measure the vertical distance from the free end of the bubble stick to the ground. Continue measuring in this manner until you reach the low point and add up all of the vertical measurements that you took at the various points. This is your total change in elevation.

Step 3: Divide this elevation change by 4 to determine the contour interval when you build 3 contour lines. (Suppose the change in elevation was 24 inches from high point to low point. If 3 contour lines are needed between the high and low point, you'd divide the 24" by 4—not 3. The contour interval would be 6 inches.)

Step 4: Now that you have a contour interval, you must locate one point for each contour line that will be the starting point for that line. Place one end of the bubble stick level at the high point with the stick pointing towards the low point. Raise or lower the bubble stick until it is level. Mark your yardstick at the value of the contour interval and then hold the yardstick up to the bubble stick level. Slide the ruler along the bubble stick (keeping the yardstick vertical and the bubble stick horizontal) until the bottom end of the yardstick touches the ground. Put a large nail in the ground at that point which will mark the elevation for your first contour line. A contour line then can be run to the left and to the right of this line. Follow the same procedure to locate the beginning points for the other 2 lines.

Step 5: Making the contour lines with nails and string:

1. Locate a point one contour interval below your highest point. Mark it with a nail.
2. Mark out a contour line with nails. Put one end of the bubble stick level at the nail and move the other end of the bubble stick up or down the hill until you find a spot that centers the bubble in the level. Mark that point with another nail.
3. Now move the bubble stick from your second nail and continue with the same process until you have several nails in place in both directions from the original nail.
4. Run a string from nail to nail looping it around each nail to create a line.

Step 6: Construct another contour line one contour interval below the starting nail of the contour line above it. Continue this process until you have three contour lines.

Step 7: Now it's time to examine your contour lines. Stand above the strings and get an aerial view of it. Notice that the string zigs and zags over the rough ground. The rougher the ground, the more uneven the string will be.

Step 8: Next, get down on your hands and knees about 15-20 feet from your contour lines, and get your eyes at the same level as the string. From that position, the string should appear to be a straight line. It's as though you were standing on one side of a valley looking across the valley at a river which is on the same level as you. The river would appear to be a straight line.

Step 9: The three lines that you made should actually look straight, parallel, and equidistant from each other. If they are, you made your contour lines correctly and you are well on your way to becoming a map maker.

Step 10: Try to draw a field map of your plot by drawing an aerial view of your three contour lines as close to scale as possible.