

Objective

The purpose of this assignment is twofold: first, you will have an opportunity to practice your skills in developing a contour map from data recorded from a differential leveling survey, and second, you will get a chance to practice your skills in developing simple engineering spreadsheets for surveying applications.

Problems

Part 1. Table 1 lists the elevations (in feet) at the corners of each 50-ft square grid cell. Develop a contour map for the two leftmost cells in the top row of the grid elevation data (indicated by green in Table 1). For these two cells, draw 2-ft interval contours using a scale of 1 inch = 25 feet. Remember to follow the [homework format](#); however, you may use a different type and size of paper to present your contour map. Identify your solution methodology and discuss its strengths and weaknesses. If you have questions, contact Dr. Camp.

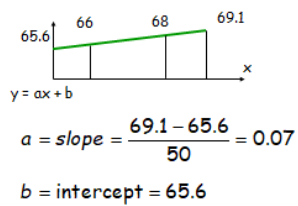
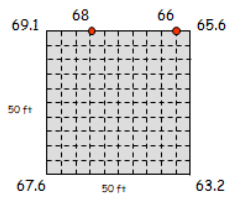
Table 1. Elevation data for a 50' x 50' grid.

	A	B	C	D	E
1	69.1	65.6	61.9	58.3	53.1
2	67.6	63.2	57.6	55.0	52.3
3	64.7	60.3	55.7	53.8	50.9
4	61.3	59.7	56.8	52.4	49.8

Show all the details of your calculations for the two leftmost cells in the top row of the grid above.

Topographic Survey - 1st cell

Construction of Contours - top edge

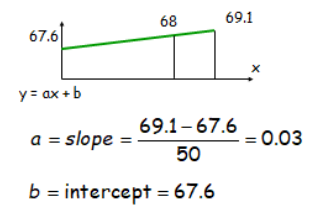
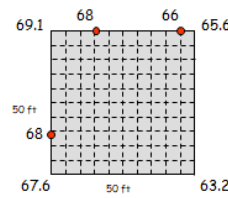


$$66 = 0.07x + 65.6 \quad \boxed{x = 5.7'}$$

$$68 = 0.07x + 65.6 \quad \boxed{x = 34.3'}$$

Topographic Survey - 1st cell

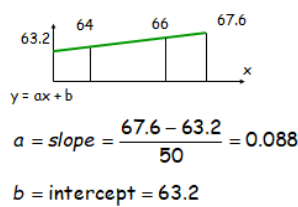
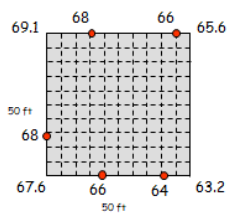
Construction of Contours - left edge



$$68 = 0.03x + 67.6 \quad \boxed{x = 13.3'}$$

Topographic Survey - 1st cell

Construction of Contours - bottom edge

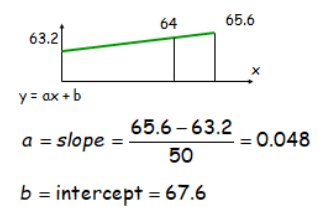
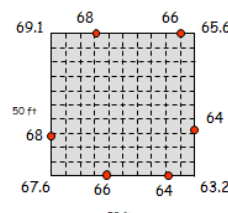


$$64 = 0.088x + 63.2 \quad \boxed{x = 9.1'}$$

$$66 = 0.088x + 63.2 \quad \boxed{x = 31.8'}$$

Topographic Survey - 1st cell

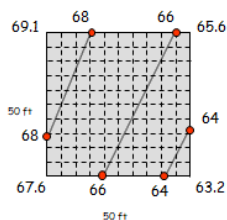
Construction of Contours - right edge



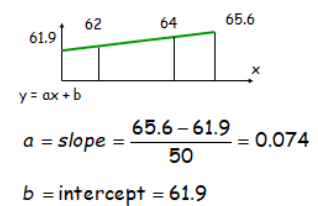
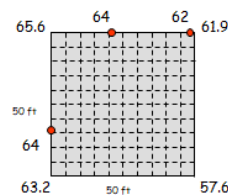
$$64 = 0.048x + 63.2 \quad \boxed{x = 16.7'}$$

Topographic Survey - 1st cell

Construction of Contours

Topographic Survey - 2nd cell

Construction of Contours - top edge

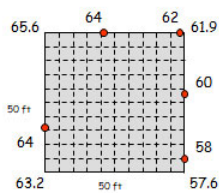


$$62 = 0.074x + 61.9 \quad \boxed{x = 1.4'}$$

$$64 = 0.074x + 61.9 \quad \boxed{x = 28.4'}$$

Topographic Survey - 2nd cell

Construction of Contours - right edge



$$a = \text{slope} = \frac{61.9 - 57.6}{50} = 0.086$$

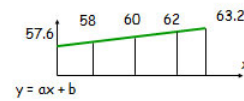
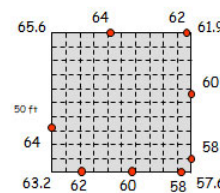
$$b = \text{intercept} = 57.6$$

$$58 = 0.086x + 57.6 \quad x = 4.7'$$

$$60 = 0.086x + 57.6 \quad x = 27.9'$$

Topographic Survey - 2nd cell

Construction of Contours - bottom edge



$$a = \text{slope} = \frac{63.2 - 57.6}{50} = 0.112$$

$$b = \text{intercept} = 57.6$$

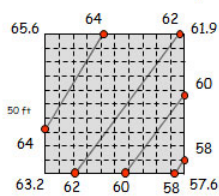
$$58 = 0.112x + 57.6 \quad x = 3.6'$$

$$60 = 0.112x + 57.6 \quad x = 21.4'$$

$$62 = 0.112x + 57.6 \quad x = 39.3'$$

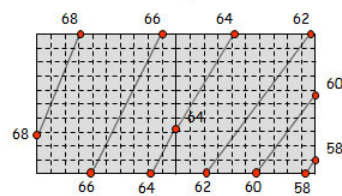
Topographic Survey - 2nd cell

Construction of Contours



Topographic Survey

Construction of Contours - Two top left cells



Part 2. Use the graphing capabilities of Excel to develop a contour map from the data listed in Part 1. Include a North arrow and contour line labels on your plot. Upload a copy of your Excel spreadsheet to the HWK #3 dropbox in Canvas.

