

Using Excel to Investigate Graphs, Tables, and Patterns – Lesson Plan

Objectives

To create a spreadsheet and graph of data that was explored in Investigation 3.4, *Variables and Patterns*, Prentice Hall, 2002.

Michigan Benchmarks:

- 1) Describe, analyze and generalize patterns arising in a variety of contexts and express them in general terms
- 2) Represent and record patterns in a variety of ways including tables, charts, graphs, and translate between various representations.
- 3) Use patterns and their generalizations to make and justify inferences and predictions.

Objectives:

- 1) Recognize patterns in everyday situations and be able to describe them verbally and symbolically
- 2) Use tables, charts and graphs to record patterns and change
- 3) Use patterns to predict unknown outcomes and explain their reasoning

Materials

Handout describing project and grading

Excel software

One computer per student (may make changes based on computer availability)

Data table from Investigation 3.4 (*Variables and Patterns*, Prentice Hall, 2002)

Computer projection device is helpful, but not required

Procedure

1. Students will meet in the computer lab at the beginning of class to save time by eliminating the need to transfer to another location.
2. Students were instructed the day prior to lesson to have their copy of data table 3.4 with them. Extra copies will be available for those who did not bring it. A small portion of the grade is based on having the handout in class.
3. A review of how we completed the data table in class will be used to remind students of the patterns that we discovered. (For example, how the costs are related to the number of people on the bike tour.)
4. Students will then be told that we will be creating a table that will illustrate the same relationships using Excel.

5. Students will be instructed to open Excel on each of their computers. A projection device will be used to show students how to do this, along with all other operations.
6. A review of rows, columns and cells (including naming cells) will be done before creating spreadsheet.
7. Students will begin by labeling columns on the spreadsheet, such as Number of Customers.
8. Students will then be encouraged to think about the relationship between the columns. Students will work as a group to develop formulas for each column. For example, the income for the tour (\$350.00/customer) is based on the number of customers in column A. Therefore, the formula for the income, which is listed in column B would be =A3*350. Students would then be instructed to copy this formula to all cells being used in column B.
9. Each of the five other columns would then be completed using the same procedure.
10. After the data has been completed, students will be instructed to make a chart or graph using the Chart Wizard function of Excel. Students will be given freedom of choice as to how to best represent the data in the table.

Evaluation

Students will be evaluated based on the data table and graph that they print. A rubric has been developed for grading data table and graphs. Students will attach a copy of the rubric to their work before turning it in to be graded.

Accommodations

Based on a survey that was given to students before this activity, it was determined that most students are familiar with Excel. However, students do work at different speeds. Students who have strong keyboard skills will be asked to assist those who do not in order to keep the pace of the lesson moving.