

## **Analyzing Backpack Weights: Teacher Notes**

This activity can be adapted as a classroom activity, student group project, or as an individual student project – depending on the experience that students have in data analysis.

### **Part A:**

This part of the activity allows students to perform calculations of the means, standard deviations, and five-point summaries using a graphing calculator. The students are then asked to create a summary table (using Fathom) which includes those same values in order to verify their results. The students should address any discrepancies found by comparing their results.

### **Part B:**

This part of the activity has two types of open-ended problems. First, the students are asked to consider two graphs generated using Fathom and to generate a list of questions that could be answered by analysis of the graphs. Complete justification should accompany each question. Second, the students are provided with a list of questions and are asked to generate appropriate graphs (using Fathom) that could be used to answer the questions. Again, complete justifications should accompany their results.

### **Part C:**

In this part of the activity, students are asked to determine how well the Normal Cumulative Distribution models two different graphs generated by the students. The focus here is to provide students with the opportunity to obtain a deeper understanding of the measure of the standard deviation.

### **Part D:**

This part of the activity allows students to verbalize their understanding of standard deviation as well as the effects of changes in parameters.

### **Extensions and Modifications:**

- Students could be allowed to gather their data from their own school and compare their results to the data provided in the student Fathom file.
- Students can exchange questions that they generate with each other and be allowed to create graphs that would best address each others' questions.
- Students can investigate other probability distribution functions and determine how well these distributions model their data.