**Box and Whiskers**
**(2-3 day lesson)**

## Day 1: Vocabulary Development and Construction

**Vocabulary:** box-and-whiskers plot, upper extreme, lower extreme, lower quartile (1st quartile), median/middle quartile (2nd quartile), upper quartile (3rd quartile), interquartile range, range

Quick review the terms median and range.

I begin my lesson with how to construct a box-and-whiskers plot. I use a story about a rowdy family who lives in an apartment building. I use the apartment building, so students can relate the "upper" and "lower" concepts easily. Then, I let the apartment fall over (to the right) on a number line, so students can transition the vocabulary to a number line. I start with a set of numbers lined up numerically highest to lowest.

The family consists of two sets of brothers: the Extreme brothers (UE, LE) and the Quartile brothers (LQ, MQ, UQ). The two sets of brothers are also cousins to each other. I explain how the group argues all the time, and the other apartment tenants complain to the manager about the problem. The apartment manager decides to separate the brothers to help cut down on the chaos. The Quartile brothers aren't too bad at getting along, so they can stay on the floors that are not so far apart. MQ is the calmest, so he goes in the middle. I show how MQ divides the apartment in half – the Upper portion and the Lower portion. UQ and LQ need a little more distance between each other, so they have to live in the middle of the Upper and Lower portions of the building. This is where I talk about the interquartile range, which is the distance between UQ AND LQ.

Since their cousins, the Extreme brothers are the worst behaved and have to "extremely" separated, UE must go to the top floor to live, and LE must go to the bottom floor to live. This where I talk about the range, which is the distance between UE and LE.

I now begin the construction on the BWP by connecting the ideas of the having five points, which are the Q and E brothers, hovering over a number line. I show them how to plot the points. Then, I explain how the box connects the Q brothers, and the E brothers are the whiskers.

At this point, I'm able to make connections to the actual vocabulary in this lesson and continue with the concept development.

**Day 2: Analyzing the BWP**

It is very important that the students understand how to read and interpret the data show by the BWP. We work on a variety of word problems where the students must look at BWP's and first identify the parts. I then stress the importance of how the BWP is divided into four parts. You must really work on their understanding that, even though the parts may not appear to be equal in length, they represent ¼ of the data. Then, they must make real-life decisions based on the information. The book uses the "fishing trip" example on deciding which boat would be the best choice based on the number of fish they've caught. You must make sure to stress "reliability" when making the choices, which is based on how evenly the data is distributed – the more evenly divided the sections, the more reliable the situation.