



TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION



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In our last issue of *Take It to the MAT* for this school year, we will finish our exploration of comparative bar graphs by looking at *stacked bar graphs*. It will again be in the context of the novel genre survey from previous issues.

In the April 2004 issue we saw that comparing the *absolute frequency* of genre responses by gender could lead to incorrect conclusions. While it is true that more females preferred adventure (see *Figure 1*), a larger *percentage* of males preferred that genre (see *Figure 2*). The issue stemmed from the fact that many more females participated in the survey. By creating a *relative frequency* graph, we can compare apples to apples.

While bar graphs are good tools to compare part to part, they are not very good at comparing part to whole. Even though we have a percentage scale, we must repeatedly look at that scale to see what portion of the whole a given part is. There is a graph that is good for comparing part to whole—the circle graph.

Circle graphs for the male and female responses to genre preference are shown at right. It's very clear which genre is preferred by either gender. While it's fairly easy to compare the preference of a particular genre between the genders in this case—there are only two graphs—if we had several circle graphs, comparison would be more difficult.

A method that blends comparing part to part and part to whole is the *stacked bar graph*. Essentially, we'll take the relative frequency bar graph and stack the bars of each gender. Shading is done to differentiate the different genres.

The advantage of the stacked bar graph of genre using percentage as a scale is that we can quickly compare part to part both within and between genders, as well as compare part to whole within the respective genders. It combines the advantages of the multi-bar and circle graphs.

If one looks closely, the stacked bar graph is essentially a circle graph that has been “unwrapped.” Think of the stacked bars as multi-colored strips, then take the strips and form them into a circle. Having kids do this with paper and scissors is an excellent tactile method to reinforce the similarities and differences between bar and circle graphs.

