

TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION



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In last month's *Take It to the MAT*, we examined some data from a survey of students' preferences in novel genre. A double bar graph of the data is shown at right. We concluded that males like science fiction best and females like mystery best. It was also determined that females prefer both mystery and adventure to that of males. In this issue, we'll address the validity of that last conclusion.

One aspect of the data that may call our conclusions into question is the fact that there were half again as many females surveyed as males. There is no doubt as to which genre males preferred and which females preferred. Comparing the genres for a particular gender is easy, but comparing between the genders is problematic due to the different number of surveys.

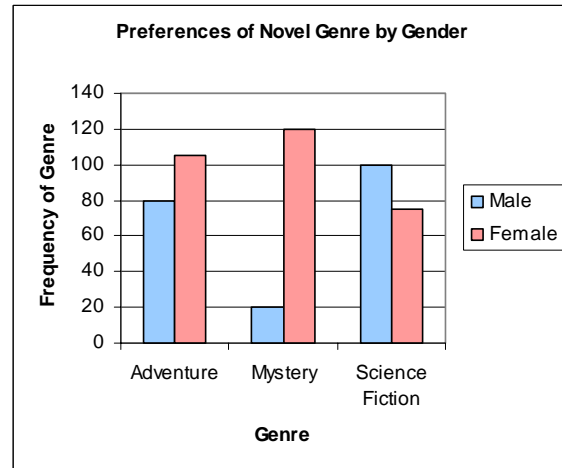
What is needed is a way to put the two genders on an even plane with each other—to compare apples to apples, as it were. The way to do that is not to look at the *absolute* frequencies of genre responses, but to look at the *relative* frequencies of the responses. That is, how many people favor a particular genre relative to the entire survey. The term *relative frequency* is often used in texts, but it would be easier to simply call it the *fraction* or *percentage* of a group.

The table of responses has been reconstructed with percentages of genre when divided by gender. For example, 10% of males preferred mystery novels. The figure 10% in the table is *not* to be interpreted as ten percent of mystery lovers were male.

Now, we create a *percentage double bar graph*. Any conclusions we draw between the genders will have more validity. By comparing *percentages* of responses rather than the *number* of responses, the fact that more females were surveyed is not a factor.

The female affinity for mysteries is still clear, but the difference between males and females with respect to science fiction is more pronounced. What is really interesting is the "reversal" of the adventure genre. Where *more* females preferred adventure, a greater *percentage* of males prefer it.

This illustrates the difference between the phrases *how many* and *what fraction*.



	Male	Female
Adventure	80	105
Mystery	20	120
Science Fiction	100	75
Total	200	300

	Male	Pct.	Female	Pct.
Adventure	80	40%	105	35%
Mystery	20	10%	120	40%
Science Fiction	100	50%	75	25%
Total	200	100%	300	100%

