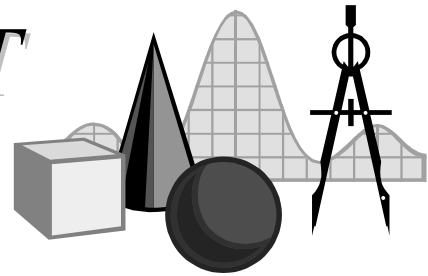


# TAKE IT TO THE MAT

A NEWSLETTER ADDRESSING THE FINER POINTS OF MATHEMATICS INSTRUCTION



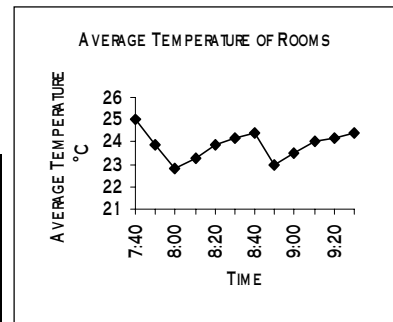
Math Audit Team  
 Regional Professional Development Program  
 March 27, 2000 — High School Edition

One strand of the Nevada State Standard *Data Analysis* is *Data Collection and Organization*. An element of this strand is the creation and interpretation of graphs. No single issue of *Take It to the MAT* could adequately address all types of graphs and their nuances, therefore this edition will focus on one particular type of graph, the *line graph*.

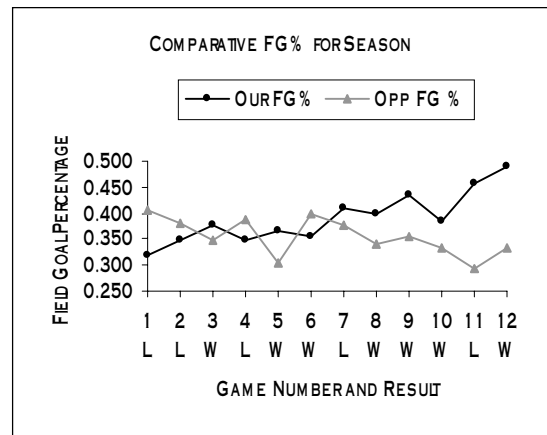
Line graphs—sometimes called line plots or broken line graphs—are primarily used to display trends. Data used in line graphs is often gathered over time at particular intervals, giving us what is known as a *time-series*. The information collected does not always have to be related to time, but the independent variable for a line graph should have some order. Below are some examples of line graphs, both appropriate and inappropriate.

In the first case, the temperatures of the classrooms at City H.S. have been recorded at ten-minute intervals and averaged. This *time-series* graph shows precisely how temperature varies with time. What might account for this pattern?

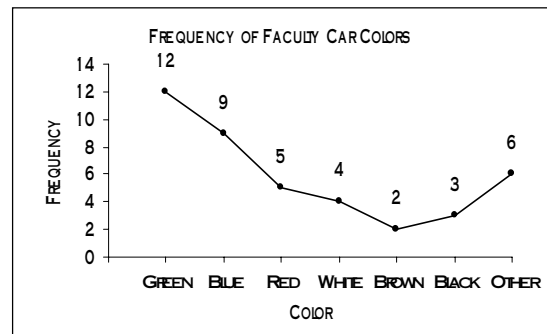
Time	7:40	7:50	8:00	8:10	8:20	8:30
Avg. Temp (°C)	25.0	23.9	22.8	23.3	23.9	24.2
Time	8:40	8:50	9:00	9:10	9:20	9:30
Avg. Temp (°C)	24.4	23.0	23.5	24.0	24.2	24.4



In the next graph, displayed is the field goal percentage of the 8<sup>th</sup> grade basketball team and its opponent for each game. Here, we can make game-by-game comparisons between our team and each opponent, and see trends over the season. In addition, whether the team won or lost is noted on the graph's axis. Again, some very clear trends can be detected in the graph of the basketball data. Even if you are not a sports nut, you should be able to see at least three trends from this data.



The last case we will consider is the various car colors in the faculty parking lot at City H.S. This is displayed in the third graph along with the raw data. This shows a common mistake students make in creating line graphs. What trend is shown? Really, none—changing the order of the colors changes the shape of the graph, but is meaningless. What type of graph would represent the data more appropriately?



*Line graphs show trends.* While the ability to construct graphs is an important skill, appropriate selection and construction of them is equally as important.