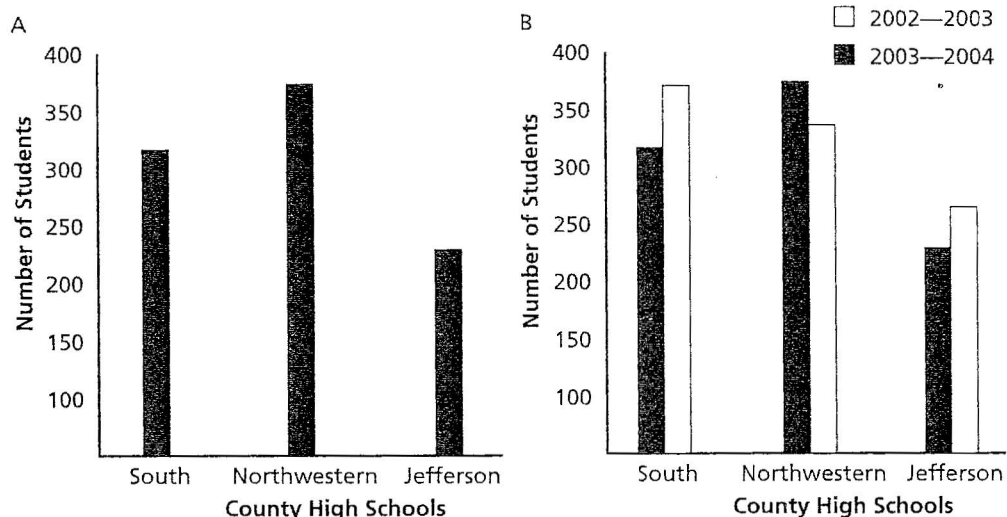


The Work of Scientists • Enrich

Bar Graphs

A bar graph is one of the three types of graphs that scientists commonly use. A line graph, which you learned about in your book, is a good choice to use when the manipulated variable is continuous, meaning that there are other points between the ones tested. A bar graph, by contrast, is a good choice to use when the manipulated variable is not a number. For example, if you were a life scientist studying birds, you might use a bar graph to show the number of birds—the responding variable—in each of several fields around the city. The fields are the manipulated variable. Bar Graph A is a graph of similar data. The manipulated variable in this case includes three high schools in a county. Because the manipulated variable is not a number and not continuous, a bar graph is a good choice to display the data. Each of the three high schools has a position along the horizontal axis. The responding variable is the number of students at a high school. The vertical axis is labeled with the responding variable, and a scale on the vertical axis covers the range of the data collected. In Bar Graph A, a bar for each school shows how many students are enrolled at that school.

Bar Graph B shows a variation on the basic bar graph. This graph includes a second manipulated variable—school year. Additional labels could have been added to the horizontal variable to explain this second manipulated variable. Instead, each year has different shading, as indicated by the small box to the upper left of the graph. Each school now has two bars, which touch each other. This grouping of bars ensures that the reader of the graph understands that the bar graph shows data for two years for each school.



Answer the following questions on a separate sheet of paper.

1. What is the responding variable and the manipulated variable in the data displayed in Bar Graph A?
2. Why isn't a line graph a good choice to display the data used to create Bar Graph A?
3. In Bar Graph A, how many students attend the largest school in the county?
4. What are the responding variable and the manipulated variables in the data displayed in Bar Graph B?
5. Why are the bars in Bar Graph B shaded differently?
6. Which school had the most students in 2002–2003, and which had the most students in 2003–2004?