Bar graphs are convenient for showing comparisons among items. The bars may be either horizontal or vertical, and their heights or lengths are used to show the amounts of different items. Figure 1.4 is an example of a typical bar graph. The graph shows life expectancy for American men and American women born in various years from 1960 through 2005.
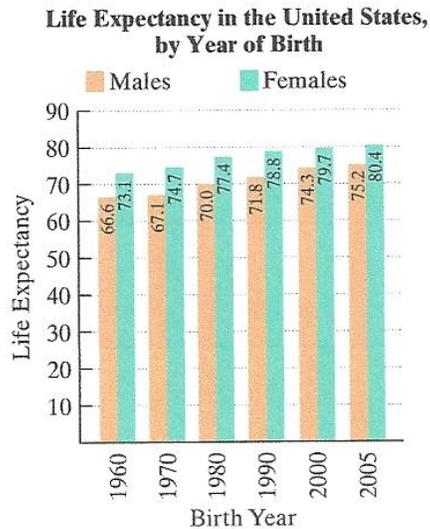
FIGURE 1.4
Source: National Center for Health Statistics

1) Use the data for men in Figure 1.4 to find each of the following:

    a. a man's increased life expectancy, for each subsequent birth year. (Round to hundredths.)

    b. the life expectancy of a man born in 2008.

    c. Write a mathematical model that estimates the life expectancy, L, of a man born x years after 1960.

    d. Use the mathematical model from part (c) to estimate the life expectancy of a man born in 2020.

Line graphs are often used to illustrate trends over time. Some measure of time, such as months or years, frequently appears on the horizontal axis. Amounts are generally listed on the vertical axis. Points are drawn to represent the given information. The graph is formed by connecting the points with line segments. Figure 1.5 (in text book) is an example of a typical line graph. The graph shows the average age at which women in the United States married for the first time from 1890 through 2007.

2) The line graphs in Figure 1.6 below show the percentage of high school seniors who used alcohol or marijuana during the 30 days prior to being surveyed for the University of Michigan's Monitoring the Future study.

    a. Find an estimate for the percentage of seniors who used marijuana in 1990.

    b. In which five-year period did the percentage of seniors who used marijuana decrease at the greatest rate?

    c. In which year labeled on the horizontal axis did 50% of the seniors use alcohol?

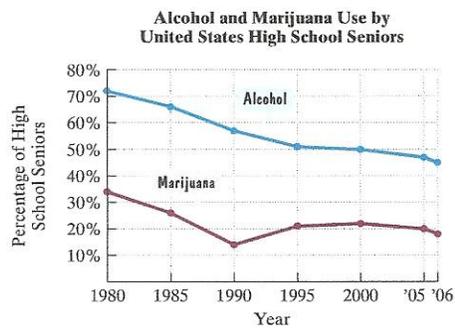Alcohol and Marijuana Use by United States High School Seniors

FIGURE 1.6

3) The bar graph in Figure 1.7 below shows the average cost of tuition and fees for public four-year colleges, adjusted for inflation.

    a. Find the yearly increase in tuition and fees. Round to the nearest dollar.

    b. Write a mathematical model that estimates the average cost of tuition and fees, T, at public four-year colleges for the school year ending x years after 2000.

    c. . Use the mathematical model from part (b) to project the average cost of tuition and fees at public four-year colleges for the school year ending in 2014.
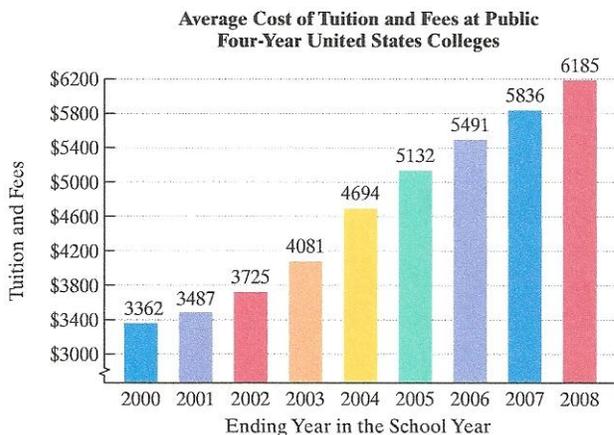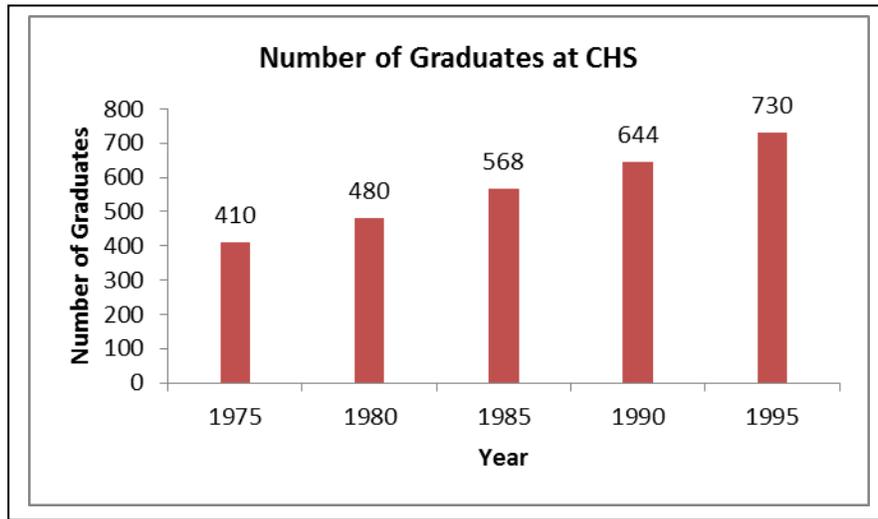

Average Cost of Tuition and Fees at Public Four-Year United States Colleges

FIGURE 1.7
Source: The College Board

4) Refer to the graph of the number of graduates at CHS from 1975 to 1995.

Number of Graduates at CHS

Year	Number of Graduates
1975	410
1980	480
1985	568
1990	644
1995	730

a) Estimate the yearly increase in the number of graduating students at CHS.

b) Write a mathematical model that estimates the number of graduating students at CHS, G, x years after 1975.

c) Use your mathematical model to estimate the number of graduating seniors in 2000.