READING GRAPHS AND TABLES

INTRODUCTION

Sometimes being a skillful reader means more than just having the ability to read words. It can also mean being able to read the visual information presented in graphs and tables. As a student, you will probably encounter a number of graphs and tables in your textbooks. Such visual material can help you understand important ideas and details as you read. Knowing how to interpret graphics will probably also help you in your career work as well, for occupations in our computerized age increasingly rely on graphics to convey information.

There are several types of graphics.

Tables are well-organized lists of statistical information. See the table example in Exercise 1.

Graphs are used to visually illustrate information. There are several types of graphs:

Circle graphs are used to show in what proportion parts make up the whole. See the circle graph example in Exercise 2.

Line graphs are used to visually display increases or decreases in amounts using solid or segmented lines. See the line graph example in Exercise 3.

Bar Graphs employ a variety of bars to show differences in amounts. See the bar graph example in Exercise 4.

Graphs and tables present information by using lines, images, or numbers as well as words. They often compare quantities or show how things change over a period of time. Reading a graph or table involves four steps:

Step 1. Read the title and any subtitles. This first step is important. It gives you a concise summary of all the information in the graph or table. Usually, the title can be turned into a question, beginning with the word or words what, how, how many, or how much.

For example, the title in the table illustrated in Exercise 1 is Additional Years United States Males May Expect to Live. This could be changed to - How many additional years may United States males expect to live?

Step 2. Read all labeled information at the top, bottom, or along side of the graphic. These labels may include names, dates, percentages, dollars, figures, or images.
Also read the "legend." The "legend" which contains the key terms or symbols that will be found on the graph or table may be boxed or set off to one side for easy identification.

Step 3. Compare the information given in the graphic to answer the question you formulated from the title or other questions. If there is not enough information given within the graphic, scan the text for additional information.

Step 4. Summarize the information that is necessary to answer the question satisfactorily.

EXERCISE I

I. Using the above four steps, answer the questions about the following table.

ADDITIONAL YEARS UNITED STATES MALES MAY EXPECT TO LIVE
(Life expectancy)

<table>
<thead>
<tr>
<th>AGE</th>
<th>NEVER SMOKED REGULARLY</th>
<th>CIGARETTES SMOKED BY DAILY AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-9</td>
</tr>
<tr>
<td>25</td>
<td>48.6</td>
<td>44.0</td>
</tr>
<tr>
<td>30</td>
<td>43.9</td>
<td>39.3</td>
</tr>
<tr>
<td>35</td>
<td>39.2</td>
<td>34.7</td>
</tr>
<tr>
<td>40</td>
<td>34.5</td>
<td>30.2</td>
</tr>
<tr>
<td>45</td>
<td>30.0</td>
<td>25.9</td>
</tr>
<tr>
<td>50</td>
<td>25.6</td>
<td>21.8</td>
</tr>
<tr>
<td>55</td>
<td>21.4</td>
<td>17.9</td>
</tr>
<tr>
<td>60</td>
<td>17.6</td>
<td>14.5</td>
</tr>
<tr>
<td>65</td>
<td>14.1</td>
<td>11.3</td>
</tr>
</tbody>
</table>

Source: Hammond Study

a. What type of information is reported in the table?

b. What information is listed in the first column of the table?

c. What information is listed in the fifth column of the table?
d. Comparing men age 25 who never smoked regularly to men age 25 who smoked 20 cigarettes a day, how many additional years can the nonsmokers expect to live?


e. Comparing men age 25 who never smoked regularly to men age 65 who never smoked regularly, how many additional years can the men age 65 expect to live?


f. What is the important point of the information in the table?


EXERCISE II.

Read the heading and labels, compare the data, and decide what are the important points of the information in the circle graphs.

PERCENT DISTRIBUTION OF LABOR FORCE AGE 18 TO 64

1970

40%

34%

13%

13%

1982

42%

20%

19%

Source: National Center for Educational Statistics 1982
a. What is the purpose of the graph?

b. In 1970, what percentage of the labor force had attended one to three years of college?  

In 1982, what was the percentage?

c. In 1970, what percentage of the labor force had attended four or more years of college?  

In 1982, what was the percentage?

d. In 1970, the proportion of workers with a college background was 26 percent. In 1982, what was the percentage?

e. Which educational group changed the most (either by increasing or decreasing) between 1970 and 1982?
EXERCISE III.

Read the headings and labels, compare the data, and decide what are the important points of the information in the line graph.

**UNEMPLOYMENT RATE BY YEARS OF EDUCATION**

Legend
- — 1-3 YEARS OF HIGH
- — 1-3 YEARS OF COLLEGE
- —- 8 YRS OR LESS OF SCHOOL
- —— 4 YEARS OR MORE OF COLLEGE
- —- 4 YEARS OF HIGH SCHOOL

a.  What type of information is reported in the line graph?

b.  What type of information is reported from left to right across the bottom of the graph?

c.  What is represented by the line at the top of the graph and the line at the bottom of the graph?

d.  Between what years was there the greatest increase in unemployment?
e. Between what years was there the greatest decrease in unemployment?

f. In 1975, approximately what percent of those who had four years of college were unemployed?

g. In 1975, approximately what percent of those who had four years of high school were unemployed?

h. What is the important point of the information in the line graph?

EXERCISE IV. Follow the four steps to answer the questions about the following bar graphs.

**Bachelor's Degrees Conferrred in Five Most Popular Fields of Study: 1974-75**

1. Education
2. Social Sciences
3. Business and Management
4. Letters
5. Biological Sciences

Source: National Center for Education Statistics
a. What was the approximate number of degrees conferred on both men and women in these fields?
   Education ____________________________________________
   Social Science ____________________________________________
   Business and Management ____________________________________________
   Letters ____________________________________________
   Biological Science ____________________________________________

b. For those receiving bachelor's degrees in 1974 - 1975, what were the leading fields of study based on the number of degrees granted in descending order of popularity?

   For Men
   Most popular
   ___________________
   ___________________
   ___________________
   ___________________
   ___________________
   Least popular
   ___________________

   For Women
   Most popular
   ___________________
   ___________________
   ___________________
   ___________________
   ___________________
   Least popular
   ___________________

d. How many women were given degrees in education?
   ____________________________________________
e. How many men were given degrees in biological sciences?

f. Overall, who received, more bachelor degrees in the five most popular fields of study from 1974 - 1975, and approximately how many did they receive?
ANSWER KEY

I. Table

a. This table indicates the additional years United States males may expect to live in relation to the amount of cigarettes they smoked daily.

b. The first column indicates men’s ages.

c. The fifth column indicates additional years males may expect to live if they smoked 20 to 39 cigarettes daily.

d. When comparing men age 25 who never smoked regularly to men age 25 who smoked 20 cigarettes a day, men who never smoked can expect to live 6.2 years. Those who never smoked can expect to live an additional 48.6 years, and those who smoked a pack of cigarettes a day (20 to 39 cigarettes) can expect to live an additional 42.4 years (48.6 - 42.4 = 6.2).

e. When comparing men age 25 who never smoked regularly to men age 65 who never smoked regularly, the men who are 25 and have never smoked can expect to live 5.5 years. Men age 25 can expect to live a total of 73.6 years (25 + 48.6 = 73.6), and men age 65 can expect to live a total of 79.1 years (65 + 14.1 = 79.1); 79.1 - 73.6 = 5.5. (Life expectancy is no longer for people who have lived many years than for people who have lived few years.)

f. There is a direct relationship between the number of additional years a man can expect to live and the number of cigarettes he has smoked; the more cigarettes he has smoked, the fewer additional years he can expect to live.

II. Circle Graph

a. This graph shows the distribution of the labor force from ages 18 to 64.

b. In 1970, 13% of the of the labor force had attended one to three years of college. In 1982, 19% of the labor force had attended one to three years of college.

c. In 1970, 13% of the labor force had attended four or more years of college. In 1982, 20% of the labor force had attended four or more years of college.

d. In 1982, the percentage was 39%.

e. The group that changed the most between 1970 and 1982 was the group with four or more years of college.
III. Line Graph

a. The line graph indicates unemployment rates for people who have completed various years of school.

b. The base line of the graph indicates the years 1965 through 1980.

c. The line at the top of the graph represents people who have completed 1 to 3 years of high school, and the line at the bottom of the graph represents people who have completed 4 years or more of college.

d. The greatest increase in unemployment was between 1970 and 1975.

e. The greatest decrease in unemployment was between 1975 and 1980.

f. Approximately, 1 percent of those who had four years of high school were unemployed.

g. Approximately, 8 percent of those who had four years of high school were unemployed.

h. The more years of school people have completed, the less likely they are to be unemployed.

IV. Bar Graph

a. Education 168,700
Social Science 136,800
Business and Management 135,500
Letters 57,900
Biological Science 52,200

b. For men

Most popular  business and management
social science
education
biological sciences

Least popular  letters
c. For women

Most popular
- education
- social science
- letters
- business and management

Least popular
- biological sciences

d. Approximately 123,700 women were given degrees in education.

e. Approximately 38,000 men were given degrees in biological science.

f. Women received more bachelor degrees in education and letters.
   Men received more bachelor degrees in social science, business and management, and biological sciences.

<table>
<thead>
<tr>
<th></th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>45</td>
<td>123.7</td>
</tr>
<tr>
<td>Social Science</td>
<td>87</td>
<td>49.8</td>
</tr>
<tr>
<td>Business &amp; Management</td>
<td>118</td>
<td>17.5</td>
</tr>
<tr>
<td>Letters</td>
<td>27</td>
<td>30.9</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>38</td>
<td>14.2</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>315,000</td>
<td>236,100</td>
</tr>
</tbody>
</table>