

# Charts, Tables, and Graphs

The Mathematics sections of the SAT also include some questions about charts, tables, and graphs. You should know how to (1) read and understand information that is given; (2) calculate, analyze, and apply the information given; and (3) spot trends and predict some future trends. When you encounter a chart, table, or graph, you should

- Focus on understanding the important information given.
- Not memorize the information, but rather refer to it when you need to.
- Review any additional information given with a graph (headings, scale factors, and legends, for example).
- Read the question and possible choices, noticing key words.
- Look for obvious large changes, high points, low points, and trends. Obvious information often leads to an answer.

## Charts and Tables

Charts and tables are often used to give an organized picture of information, or data. Be sure that you understand what is given. Column headings and line items show important information. These titles give the numbers meaning.

### Samples

Questions 1 and 2 are based on the following chart:

<b>Burger Sales for the Week of August 8 to August 14</b>		
<i>Day</i>	<i>Hamburgers</i>	<i>Cheeseburgers</i>
Sunday	120	92
Monday	85	80
Tuesday	77	70
Wednesday	74	71
Thursday	75	72
Friday	91	88
Saturday	111	112

1. On which day were the most burgers (hamburgers and cheeseburgers) sold?

- A. Saturday
- B. Monday
- C. Thursday
- D. Friday
- E. Sunday

Working from the answers is probably the easiest method of answering this question:

- A. Saturday      $111 + 112 = 223$
- B. Monday      $85 + 80 = 165$
- C. Thursday      $75 + 72 = 147$
- D. Friday      $91 + 88 = 179$
- E. Sunday      $120 + 92 = 212$

The correct answer is A.

Another method is to *approximate* the answers.

2. On how many days were more hamburgers sold than cheeseburgers?

- A. 7
- B. 6
- C. 5
- D. 4
- E. 3

Hamburgers outsold cheeseburgers every day except Saturday. The correct answer is B.

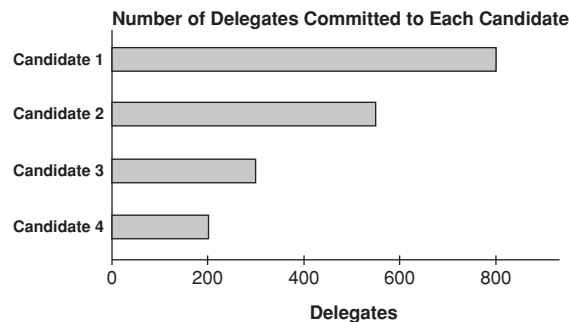
## Graphs

Information can be displayed in many ways. The three basic types of graphs you should know are bar graphs, line graphs, and pie graphs (or pie charts). You should also be familiar with a graph called the scatter plot.

### Bar Graphs

Bar graphs convert the information in a chart into separate bars or columns. Some graphs list numbers along one edge and list places, dates, people, or things (individual categories) along another edge. Always try to determine the relationship between the columns in a graph or chart.

### Sample



1. The preceding bar graph shows that Candidate 1 has how many more delegates committed than Candidate 2?

- A. 150
- B. 200
- C. 250
- D. 400
- E. 550

Notice that the graph shows the Number of Delegates Committed to Each Candidate, with the numbers given along the bottom of the graph in increases of 200. The names are listed along the left side. Candidate 1 has approximately 800 delegates (possibly a few more). The bar graph for Candidate 2 stops about three quarters of the way between 400 and 600. Consider that halfway between 400 and 600 is 500, so Candidate 2 is at about 550:

$$800 - 550 = 250.$$

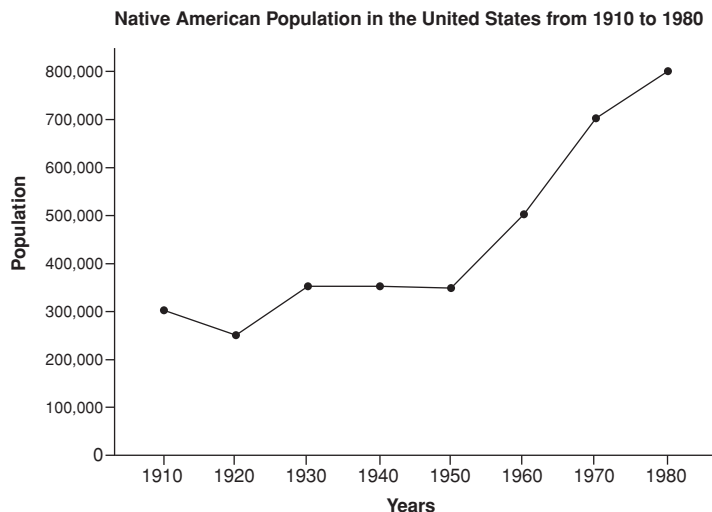
The correct answer is C.

## Line Graphs

Line graphs convert data into points on a grid. These points are then connected to show a relationship among the items, dates, and times, for example. Notice the slopes of the lines connecting the points. These lines show increases and decreases. The sharper the slope *upward*, the greater the *increase*. The sharper the slope *downward*, the greater the *decrease*. Line graphs can show trends, or changes, in data over a period of time.

## Samples

Questions 1 and 2 are based on the following graph.



**1.** In which of the following years were there about 500,000 Native Americans?

- A. 1930
- B. 1940
- C. 1950
- D. 1960
- E. 1970

The information along the left side of the graph shows the number of Native Americans in increases of 100,000. The bottom of the graph shows the years from 1910 to 1980. Notice that in 1960 about 500,000 Native Americans were in the United States. Using the edge of a sheet of paper as a straight edge or ruler helps you see that the dot in the 1960 column lines up with 500,000 on the left. The correct answer is D.

2. During which of the following time periods was there a decrease in the Native American population?

- A. 1910 to 1920
- B. 1920 to 1930
- C. 1930 to 1940
- D. 1960 to 1970
- E. 1970 to 1980

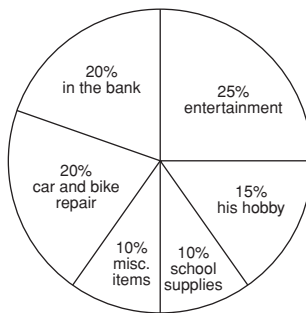
Because the slope of the line goes down from 1910 to 1920, there must have been a decrease. If you read the actual numbers, you will notice a decrease from 300,000 to 250,000. The correct answer is A.

## Circle Graphs, or Pie Charts

A circle graph, or pie chart, shows the relationship between the whole circle (100%) and the various slices that represent portions of that 100%. The larger the slice, the higher the percentage.

### Samples

Questions 1 and 2 are based on the following circle graph.



How John spends his monthly paycheck

1. If John receives \$100 on this month's paycheck, how much will he put in the bank?

- A. \$2
- B. \$20
- C. \$35
- D. \$60
- E. \$80

John puts 20% of his income in the bank, and 20% of \$100 is \$20, so he will put \$20 in the bank. The correct answer is B.

2. What is the ratio of the amount of money John spends on his hobby to the amount he puts in the bank?

- A.  $\frac{1}{6}$
- B.  $\frac{1}{2}$
- C.  $\frac{5}{8}$
- D.  $\frac{5}{7}$
- E.  $\frac{3}{4}$

To answer this question, you must use the information in the graph to make a ratio:

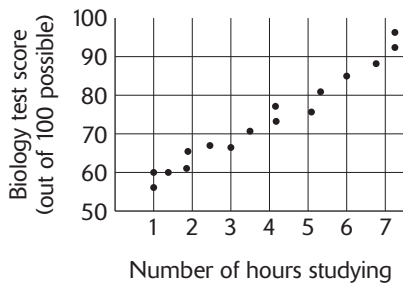
$$\frac{\text{his hobby}}{\text{in the bank}} = \frac{15\%}{20\%} = \frac{15}{20} = \frac{3}{4}$$

Notice that the ratio  $15\%/20\%$  reduces to  $\frac{3}{4}$ . The correct answer is E.

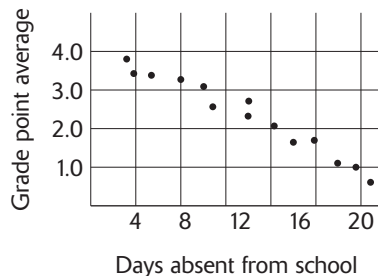
## Scatter Plot

A *scatter plot* is a graph representing a set of data and showing a relationship or connection between the two quantities given. The graph is typically placed in one part of a coordinate plane (the upper right quarter, called Quadrant I). When the data is placed on the scatter plot, usually a relationship can be seen. If the points appear to form a line, a linear relationship is suggested.

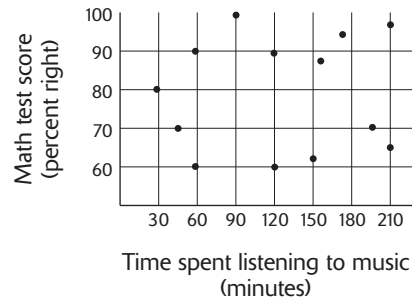
If the line goes up to the right, that is, one quantity increases as another increases, then the relationship is called a *positive correlation*. For example:



If the line goes down to the right, that is, one quantity decreases as another increases, then the relationship is called a *negative correlation*. For example:



If the data does not appear to show any line or any relationship between the quantities, the scatter plot is said to show *no correlation*. For example:



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## A Summary of Strategies for Charts, Tables, and Graphs

- Examine the entire graph, noticing labels and headings.
  - Focus on the information given.
  - Look for major changes—high points, low points, and trends.
  - Don't memorize the chart, table, or graph; refer to it.
  - Skimming questions can be helpful.
  - Circle or underline important words in the question.
  - Pay special attention to which part of the chart, table, or graph the question is referring to.
  - If you don't understand the graph, reread the labels and headings.
  - Don't get stuck on any one question!
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