



# Bar and Line Graphs

MATH CONTENT TOPICS: Q.6.a, Q.6.c

MATH PRACTICES: MP.1.a, MP.1.b, MP.1.e, MP.2.c, MP.3.a, MP.4.c, MP.5.a

## 1 Learn the Skill

Graphs organize and present data visually. **Bar graphs** use vertical or horizontal bars to show and often compare data. **Line graphs** often show how a data set changes over time. Graphs may include scales and keys that give detail about the data.

**Scatterplots** are a type of line graph that show how one set of data affects another. The relationship between data sets is known as its **correlation**. A correlation may be positive (extending upward from the origin to x- and y-points), or negative (extending downward from the y-axis to the x-axis), or it may not exist at all.

## 2 Practice the Skill

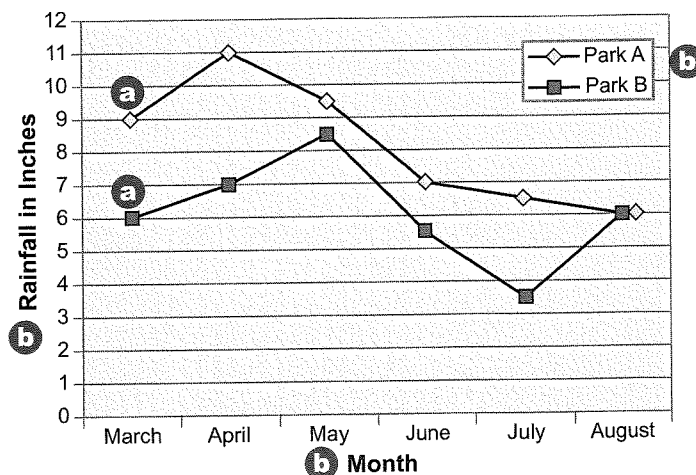
By practicing the skill of interpreting bar and line graphs, you will improve your study and test-taking abilities, especially as they relate to the GED® Mathematical Reasoning Test. Read the example and strategies below. Then answer the question that follows.

**a** Multiple sets of data can appear on a bar graph or a line graph. When it occurs in a line graph, such as this one, you will see two or more line patterns. The lines usually will appear in different colors, as they do in this graph.

**b** When using a graph, first examine its different parts. The title describes the topic of the graph. Labels along the vertical and horizontal axes describe the data. The scale of the vertical axis shows the interval being used. You will find categories along the horizontal axis. This line graph also has a key that shows the color code used for the two different parks.

This line graph shows the monthly rainfall through the spring and summer at two state parks.

**MONTHLY RAINFALL IN TWO STATE PARKS**



1. During which month was the difference in rainfall between the two parks the greatest?

A. March  
B. April  
C. June  
D. July

### TEST-TAKING TECH

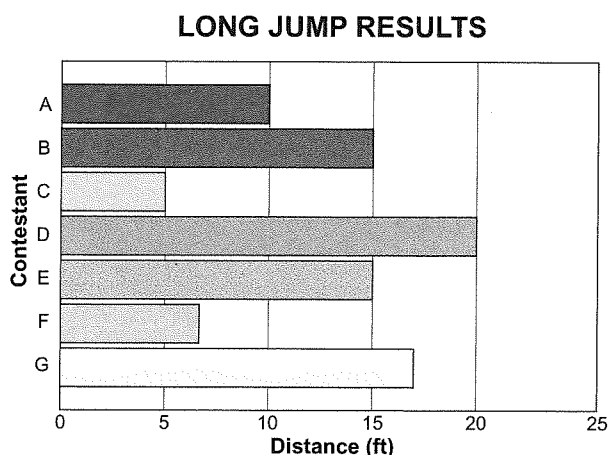
Some of the questions on the GED® Mathematical Reasoning Test will require you to interact on-screen with a graph or grid by clicking on it to select the correct answer. These items are called hot spots.

### 3 Apply the Skill

## ★ Spotlighted Item: HOT SPOT

**DIRECTIONS:** Study the information and graph, and read each question. Then mark on the graph the **best** answer to each question.

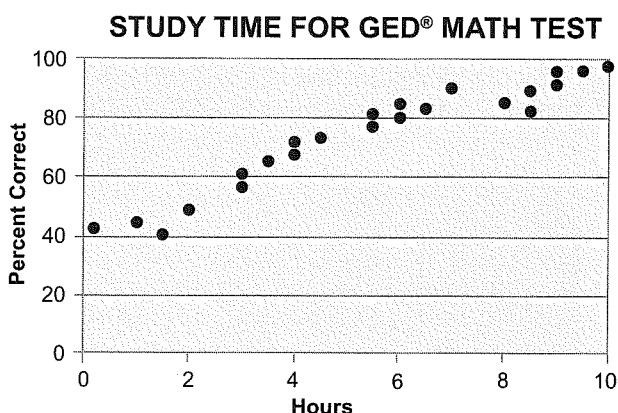
Fred records the long jump results in a track meet. He creates the following bar graph to show the results online.



- Which contestant jumped exactly half as far as the contest winner? Circle that bar on the graph.
- Katie and Alana jumped the same distance. How far did they jump? Circle the distance in the scale on the graph.
- Place an **X** on the name of the participant that disproves the statement "No contestant jumped farther than 18 feet."
- Contestant C significantly improved his long jump on his next attempt. In fact, he tripled his previous distance. Record Contestant C's new distance on the graph by extending his bar to the proper distance.
- Contestant D foot-faulted on his last attempt, so he reverts to his previous best distance of 17 feet. Adjust Contestant D's result by marking on his bar with an **X** the correct new long distance.

**DIRECTIONS:** Study the information and scatter plot, and read each question. Then mark on the scatter plot the **best** answer to each question.

An educational company compared student scores on the GED® Mathematical Reasoning Test with the amount of hours they prepared for it. Their findings are shown in the scatter plot below.

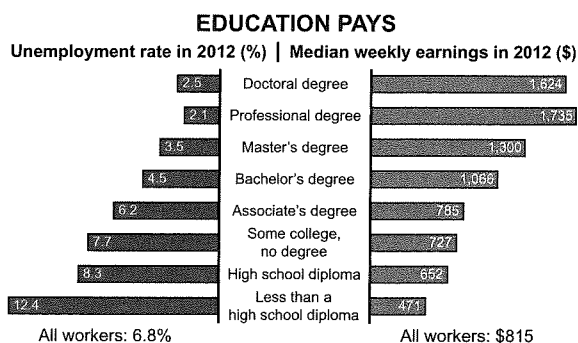


- Anton hopes to earn at least an 80% on the GED® Mathematical Reasoning Test. Circle on the scale the amount of hours that Anton should plan to study for the test.

**DIRECTIONS:** Study the information and graph, and read each question. Then mark on the graph the **best** answer to each question.

The following graph shows the effect that increasing levels of education have on earnings.

- Circle on the graph the levels of education that resulted in unemployment below the national average in 2012.



Source: BLS

**1 Learn the Skill**

Like bar and line graphs, circle graphs show data visually. Whereas a line graph shows how data changes over time, a **circle graph** shows how parts of data compare to a whole. For example, a circle graph of sales from each department in a store can show at a glance the most productive department, as well as how each department's sales compares to that of the whole store.

Values of circle graph sections may be expressed as fractions, decimals, percents, or even as whole numbers. In some cases, you may need to convert from one form to another, such as from fractions to percents.

**2 Practice the Skill**

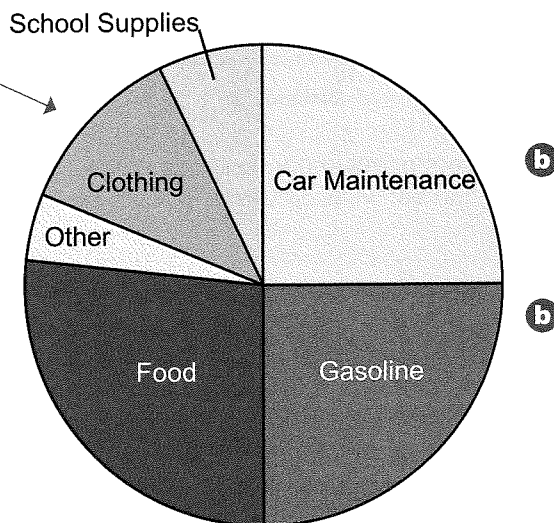
By practicing the skill of interpreting circle graphs, you will improve your study and test-taking abilities, especially as they relate to the GED® Mathematical Reasoning Test. Study the graph and information below. Then answer the question that follows.

**a** Some circle graphs, such as this one, are labeled with only categories, rather than categories and percent. Regardless of how a circle graph is labeled, the whole circle represents 1, or 100%.

**b** Use a category's size to estimate its value. Note that car maintenance and gasoline each represent about a quarter of the whole, or 25%. This helps you estimate the percentages of other categories.

Jerry creates a circle graph showing his monthly budget.

**JERRY'S BUDGET**



1. Approximately what percentage per month does Jerry budget for food?

A. 10%  
B. 20%  
C. 30%  
D. 45%

**USING LOGIC**

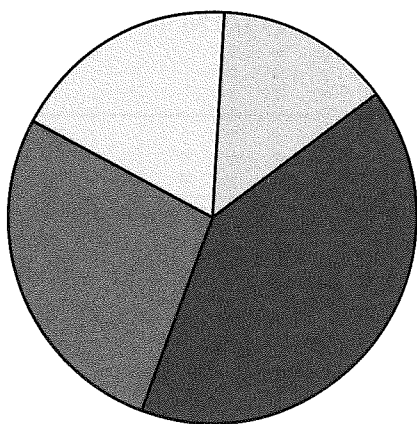
Since the section for food is larger than the section for car maintenance or gasoline, you can estimate that Jerry budgets more than 25% for food.

### 3 Apply the Skill

## ★ Spotlighted Item: DRAG-AND-DROP

**DIRECTIONS:** Study the graph and table. Then complete the graph by dragging the labels to the correct sections of the graph.

#### 2. SOURCES OF TUITION MONEY

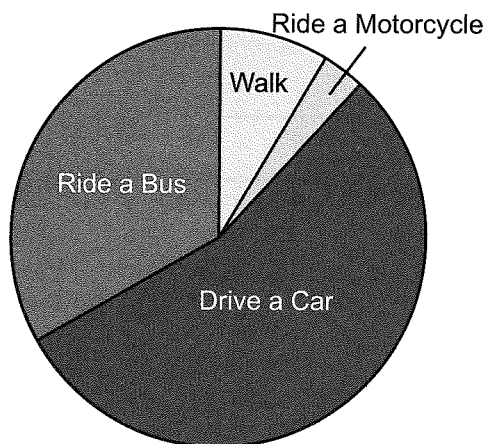


Financial Aid	45%
Salary	30%
Scholarships	20%
Parents	15%

**DIRECTIONS:** Study the information and graph, read each question, and choose the **best** answer.

The circle graph below shows the methods of transportation that employees use to get to work.

#### HOW EMPLOYEES GET TO WORK



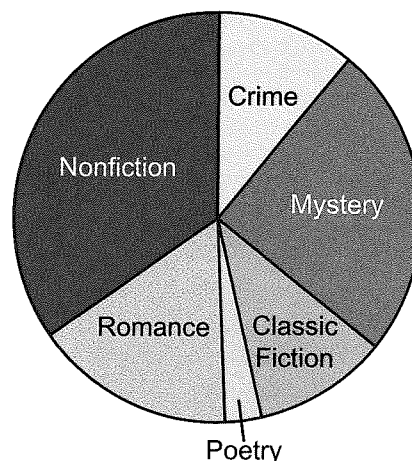
3. About what part of the employee population drives a car to work?

- A. 25%
- B. 30%
- C. 50%
- D. 60%

**DIRECTIONS:** Study the information and graph, read each question, and choose the **best** answer.

A library creates a circle graph of the types of books checked out by readers last September.

#### WHAT PEOPLE READ LAST SEPTEMBER



4. Which categories of books could a librarian make the best argument to order this August?

- A. nonfiction and mystery
- B. mystery and romance
- C. nonfiction and crime
- D. classic fiction and poetry