7.2 Exercises

Concept Check

Fill-in-the-Blank. Complete each sentence using information found in this section.

1. Pictures of numerical information are _____.
2. To emphasize comparative amounts, the best way to present the information is to use _____ graphs.
3. To help understand percentages or parts of a whole, the preferred method is to use _____ graphs.
4. A/An _____ graph is used to indicate tendencies or trends over time.
5. The largest whole number that belongs to a class in a histogram is the _____ class limit.
6. The number of data items in a class is the _____.

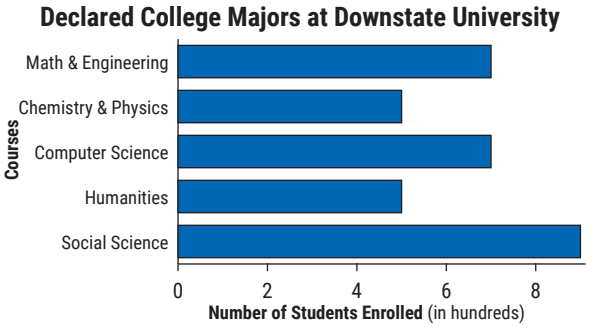
True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

7. Graphs should always be clearly labeled, easy to read, and have appropriate titles.
8. Circle graphs show trends over a period of time.
9. The frequency is the number of data items in a class.
10. Numbers that are halfway between the upper limit of one class and the lower limit of the next class are the class boundaries.

Applications

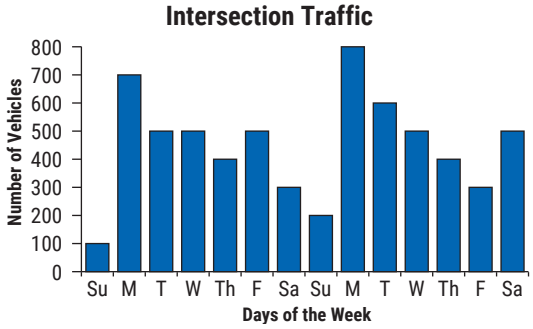
Answer the questions using the given graphs.

1. The following bar graph shows the number of students in five fields of study at a university.



   a. Which field(s) of study has the largest number of declared majors?
   b. Which field(s) of study has the smallest number of declared majors?
   c. How many declared majors are indicated in the entire graph?
   d. What percent are computer science majors? Round your answer to the nearest tenth of a percent.

2. The following bar graph shows the number of vehicles that crossed one intersection during a two-week period.



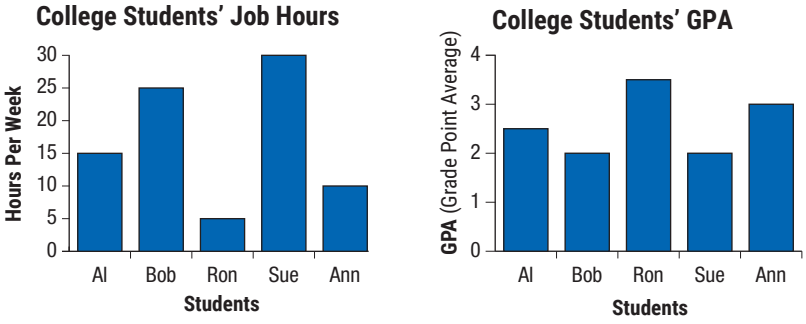
a. On which day did the highest number of vehicles cross the intersection? How many crossed that day?

b. What was the mean number of vehicles that crossed the intersection on the two Sundays?

c. What was the total number of vehicles that crossed the intersection during the two weeks?

d. About what percent of the total traffic was counted on Saturdays? Round your answer to the nearest tenth of a percent.

3. The following bar graphs show the number of hours worked each week and the GPA's of five college students. When comparing the following two graphs, assume that all five students graduated with comparable grades from the same high school.



a. Who worked the most hours per week?

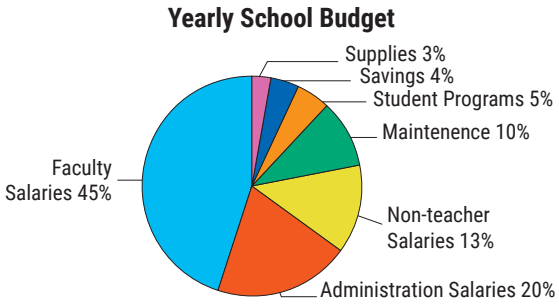
b. Who had the lowest GPA?

c. If Ron spent 30 hours per week studying for his classes, then the length of his total work week is the sum of the time he spent studying and the time he spent working. What percent of his work week did he spend studying? Round your answer to the nearest tenth of a percent.

d. Which two students worked the most hours? Which two students had the lowest GPAs? Do you think that this is typical?

e. Do you think that the two graphs shown here could be set as one graph? If so, show how you might do this.

4. The following circle graph represents the various areas of spending for a school with a total budget of $34,500,000.



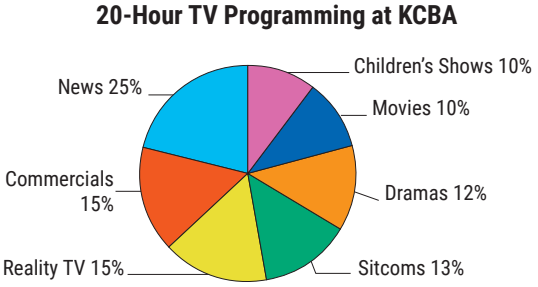
a. What amount will be allocated to each category?

b. What percent will be for expenditures other than salaries?

c. How much will be spent on maintenance and supplies?

d. How much more will be spent on teachers' salaries than on administration salaries?

5. The following circle graph represents the types of shows broadcast on television station KCBA. The station is off the air from 2 a.m. to 6 a.m., so they have only 20 hours of daily programming. Sports are not shown in the graph because they are considered special events.

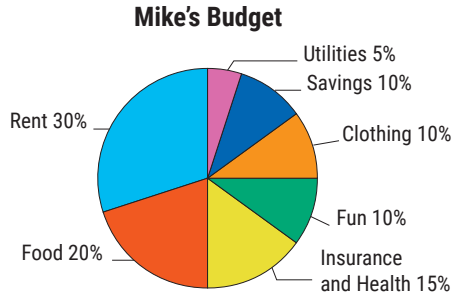


a. In the 20-hour period shown, how much time (in minutes) is devoted daily to each category?

b. What category has the most time devoted to it?

c. How much total time (in minutes) is devoted to drama, reality TV, and sitcoms?

6. Mike just graduated from college and decided that he should try to live within a budget. The circle graph shows the categories he chose and the percents he allowed. His beginning take home salary is $24,000.

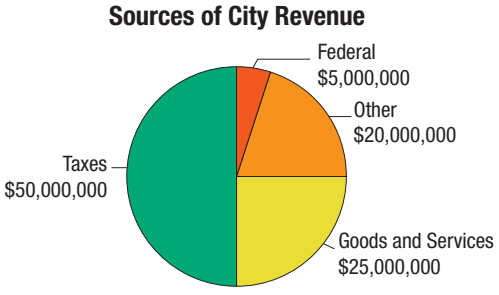


a. How much did he budget for each category?

b. What category was smallest in his budget?

c. What total amount did he budget for food, clothing, and rent?

7. The following circle graph represents the various sources of income for a city government with a total income of $100,000,000.

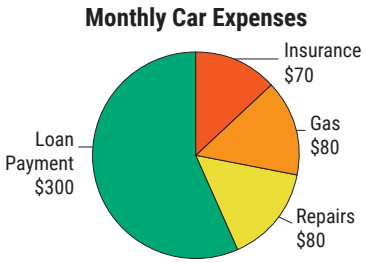


a. What is the city's largest source of income?

b. What percent of income comes from good and services?

c. What is the ratio of income from taxes to the total income?

8. The following circle graph shows Sally's car expenses for the month of June.

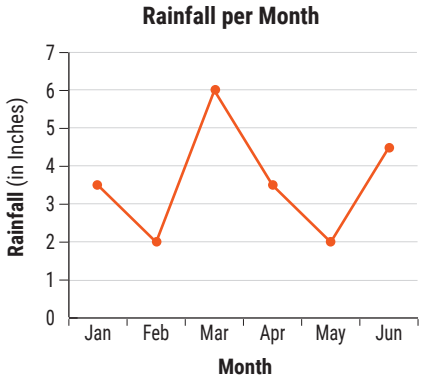


a. What were her total car expenses for the month?

b. What percent of her expenses did she spend on each category? Round your answers to the nearest tenth of a percent.

c. What was the ratio of her insurance expenses to her gas expenses?

9. The following line graph shows the total monthly rainfall in a certain city over five months.



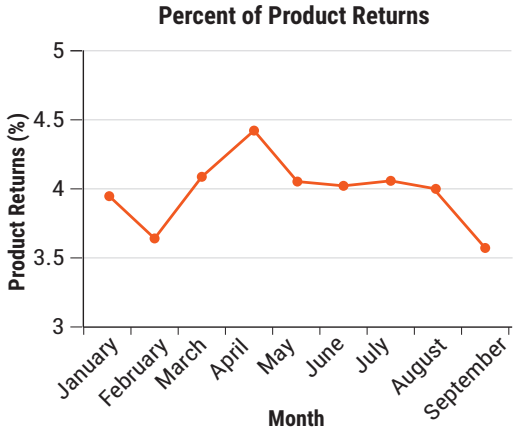
a. Which months had the least rainfall?

b. What was the most rainfall in a month?

c. What month had the most rainfall?

d. What was the mean rainfall over the six-month period (to the nearest hundredth)?

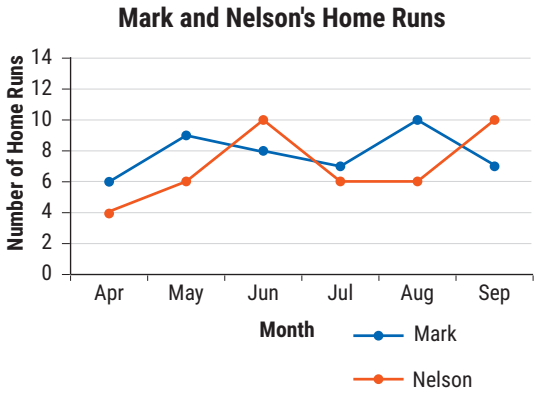
10. The following line graph shows the average percent of product returns experienced at a new shoe store during the first nine months of business.



a. During what month or months were mortgage rates highest?

b. During what month or months were mortgage rates lowest?

11. The following line graph shows the number of home runs hit each month of a baseball season by two players, Mark and Nelson.



a. During which month did Mark hit the most home runs?

b. How much higher was Mark's total for that month than for his lowest month?

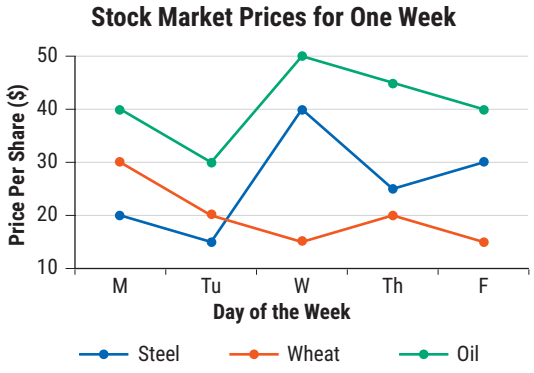
c. In what months did Nelson hit fewer home runs than Mark?

d. What was the difference between Nelson and Mark's home runs in July?

e. What percent of Nelson's total home runs did he hit in May?

f. What percent of Mark's home runs did he hit in April? Round your answer to the nearest percent.

12. The following line graphs show the stock market prices for oil, steel, and wheat over the course of a week. Assume that on Monday morning you had 100 shares of each of the three stocks shown.



a. If you held the stock all week, on which stock would you have lost money?

b. How much money would you have lost on that stock?

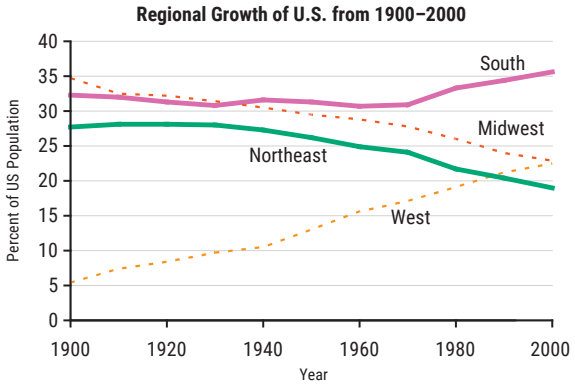
c. On which stock would you have gained money?

d. How much money would you have gained on that stock?

e. On which stock could you have made the most money if you had sold it at the best time?

f. How much money could you have made had you sold that stock at the best time?

13. The following line graph shows the change in the percent of the US population living in each of four major regions during the twentieth century. [1]



a. Approximately what percent of the population was in each of the four regions in 1900?

b. Approximately what percent of the population was in each of the four regions in 2000?

c. Which region seems to have had the most stable percent of the population between 1900 and 2000?

d. What is the difference between the highest and lowest percent for this region?

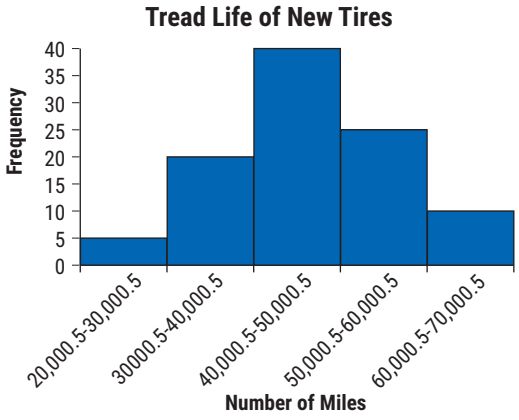
e. Which region has had the most growth?

f. What was its lowest percent and when?

g. What was its highest percent and when?

h. Which region has had the most decline?

14. The following histogram summarizes the tread life for 100 types of new tires.



a. How many classes are represented?

b. What is the width of each class?

c. Which class has the highest frequency?

d. What is this frequency?

e. What are the class boundaries of the second class?

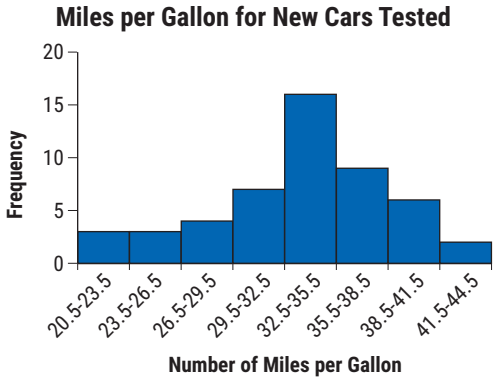
f. How many tires were tested?

g. What percent of tires were in the first class?

h. What percent of the tires lasted more than 50,000 miles?

1 Source: U.S. Census Bureau, decennial census of population, 1900 to 2000

15. A certain number of new cars were evaluated to find how many miles per gallon could be driven with a gallon of gas. The data is summarized in the following histogram. Assume the miles per gallon are whole numbers.



a. How many classes are represented?

b. What is the class width?

c. Which class has the smallest frequency?

d. What is this frequency?

e. What are the class limits for the third class?

f. How many cars were tested?

g. How many cars tested below 30 miles per gallon?

h. What percent of the cars tested about 38 miles per gallon?

Writing & Thinking

16. State three properties or characteristics that should be true of all graphs so that they can communicate numerical data quickly and easily.

17. List the four types of graphs discussed in the text and briefly give the purpose of each.

18. Give three different and specific examples where graphs are used (outside of a class).

19. Compare and contrast a bar graph and a histogram.