

## CHAPTER 2 SECTION 2: GRAPHICAL AND TABULAR DESCRIPTIVE TECHNIQUES

### MULTIPLE CHOICE

35. Which of the following statements about pie charts is false?
- A pie chart is a graphical representation of a relative frequency distribution.
  - You can always determine frequencies for each category by looking at a pie chart.
  - The total percentage of all the slices of a pie chart is 100%.
  - The area of a slice of a pie chart is the proportion of all the individuals that fall into that particular category.

ANS: B                      PTS: 1                      REF: SECTION 2.2

36. Which of the following situations is best suited for a pie chart?
- The number of dollars spent this year on each type of legal gambling.
  - The percentage of a charitable donation that goes to administrative costs vs. directly to the charity.
  - The number of students in your class who received an A, B, C, D, F on their exam.
  - All of these choices are true.

ANS: B                      PTS: 1                      REF: SECTION 2.2

37. Which situation identifies when to use pie charts and/or bar charts?
- You want to describe a single set of data.
  - Your data is nominal.
  - You want to show the number or the percentage of individuals in each category.
  - All of these choices are true.

ANS: D                      PTS: 1                      REF: SECTION 2.2

38. Suppose you measure the number of minutes it takes an employee to complete a task, where the maximum allowed time is 5 minutes, and each time is rounded to the nearest minute. Data from 130 employees is summarized below. How long did it take most employees to complete the task?

Time (minutes)	1	2	3	4	5
Frequency	15	30	40	25	20

- 5 minutes
- 3 minutes
- 40 minutes
- 20 minutes

ANS: B                      PTS: 1                      REF: SECTION 2.2

39. Car buyers were asked to indicate the car dealer they believed offered the best overall service. The four choices were Carriage Motors (C), Marco Chrysler (M), Triangle Auto (T), and University Chevrolet (U). The following data were obtained:

T	C	C	C	U	C	M	T	C	U
U	M	C	M	T	C	M	M	C	M
T	C	C	T	U	M	M	C	C	T
T	U	C	U	T	M	M	C	U	T

What percentage of car buyers identified Carriage Motors as having the best overall service?

- $1/4 = 0.25$  or 25%
- $14/40 = 0.35$  or 35%
- 14%
- None of these choices.

ANS: B                      PTS: 1                      REF: SECTION 2.2

### TRUE/FALSE

40. A bar chart is used to represent interval data.

ANS: F                      PTS: 1                      REF: SECTION 2.2

41. One of the advantages of a pie chart is that it clearly shows that the total percentages of all the categories add to 100%.

ANS: T                      PTS: 1                      REF: SECTION 2.2

42. Bar and pie charts are graphical techniques for nominal data. The former focus the attention on the *frequency* of the occurrences of each category, and the later emphasizes the *proportion* of occurrences of each category.

ANS: T                      PTS: 1                      REF: SECTION 2.2

43. A relative frequency distribution lists the categories and their counts.

ANS: F                      PTS: 1                      REF: SECTION 2.2

44. A frequency distribution lists the categories and the proportion with which each occurs.

ANS: F                      PTS: 1                      REF: SECTION 2.2

45. From a pie chart you are able to find the frequency for each category.

ANS: F                      PTS: 1                      REF: SECTION 2.2

**COMPLETION**

46. Two types of graphs that organize nominal data are \_\_\_\_\_ and \_\_\_\_\_.

ANS:

pie charts; bar charts

bar charts; pie charts

PTS: 1

REF: SECTION 2.2

47. A bar chart is used to represent \_\_\_\_\_ data.

ANS:

nominal

categorical

qualitative

PTS: 1

REF: SECTION 2.2

48. A pie chart is used to represent \_\_\_\_\_ data.

ANS:

nominal

categorical

qualitative

PTS: 1

REF: SECTION 2.2

49. A(n) \_\_\_\_\_ chart is often used to display frequencies; a(n) \_\_\_\_\_ chart graphically shows relative frequencies.

ANS: bar; pie

PTS: 1

REF: SECTION 2.2

50. A pie chart shows the \_\_\_\_\_ of individuals that fall into each category.

ANS:

percentage

relative frequency

proportion

PTS: 1

REF: SECTION 2.2

51. We can summarize nominal data in a table that presents the categories and their counts. This table is called a(n) \_\_\_\_\_ distribution.

ANS: frequency

PTS: 1

REF: SECTION 2.2

52. A(n) \_\_\_\_\_ distribution lists the categories of a nominal variable and the proportion with which each occurs.

ANS: relative frequency

PTS: 1 REF: SECTION 2.2

53. A(n) \_\_\_\_\_ chart is not able to show frequencies. It can only show relative frequencies.

ANS: pie

PTS: 1 REF: SECTION 2.2

54. In a pie chart, each slice is proportional to the \_\_\_\_\_ of individuals in that category.

ANS:  
percentage  
proportion  
relative frequency

PTS: 1 REF: SECTION 2.2

55. A category in a pie chart that contains 25% of the observations is represented by a slice of the pie that is equal to \_\_\_\_\_ degrees.

ANS: 90

PTS: 1 REF: SECTION 2.2

### SHORT ANSWER

56. Identify the type of data for which each of the following graphs is appropriate.

- Pie chart
- Bar chart

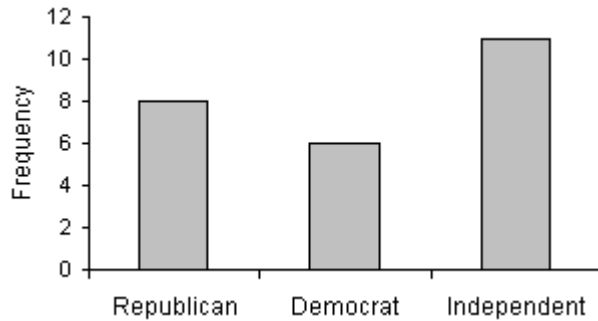
ANS:

- Nominal
- Nominal

PTS: 1 REF: SECTION 2.2

57. Twenty-five voters participating in a recent election exit poll in Minnesota were asked to state their political party affiliation. Coding the data as 1 for Republican, 2 for Democrat, and 3 for Independent, the data collected were as follows: 3, 1, 2, 3, 1, 3, 3, 2, 1, 3, 3, 2, 1, 1, 3, 2, 3, 1, 3, 2, 3, 2, 1, 1, and 3. Construct a frequency bar chart from this data. What does the bar chart tell you about the political affiliations of those in this sample?

ANS:



The bar graph shows most of the people surveyed were Independents (11 out of 25 = 44.0%); Republicanism followed with  $8/25 = 32.0\%$  and Democrats made up 6 of the 25, or 24.0%.

PTS: 1

REF: SECTION 2.2

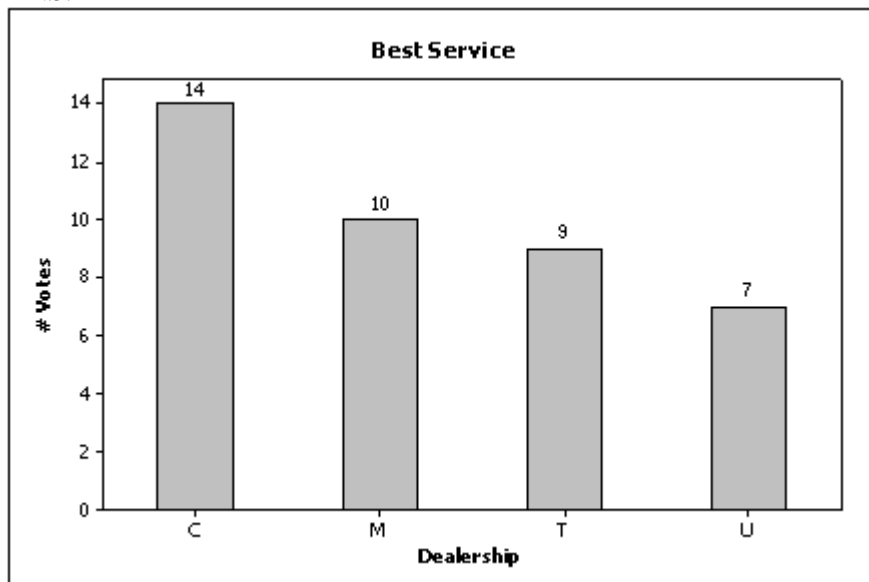
### Car Buyers

Forty car buyers were asked to indicate which car dealer offered the best overall service. The four choices were Carriage Motors (C), Marco Chrysler (M), Triangle Auto (T), and University Chevrolet (U). The following data were obtained:

T C C C U C M T C U  
 U M C M T C M M C M  
 T C C T U M M C C T  
 T U C U T M M C U T

58. {Car Buyers Narrative} Construct a frequency bar chart of this data. Which car dealer came in last place in terms of overall service?

ANS:

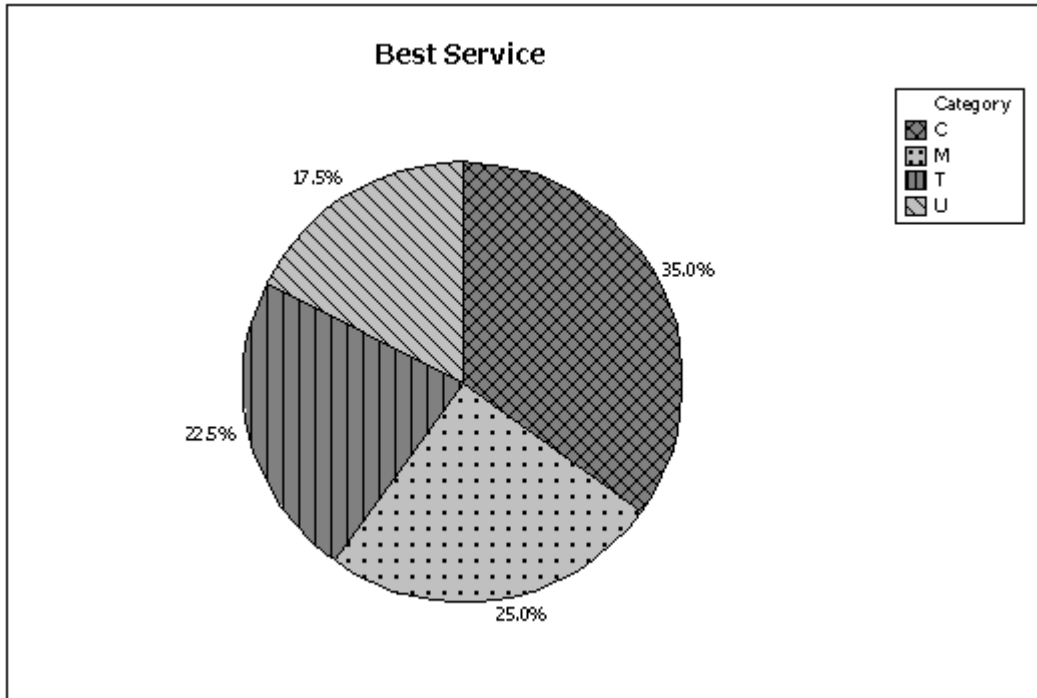


University Chevrolet (U) received the fewest votes for best overall service (7 out of 40, or 17.5%) and came in last place.

PTS: 1                      REF: SECTION 2.2

59. {Car Buyers Narrative} Construct a pie chart of this data. Which car dealer offered the best overall service?

ANS:



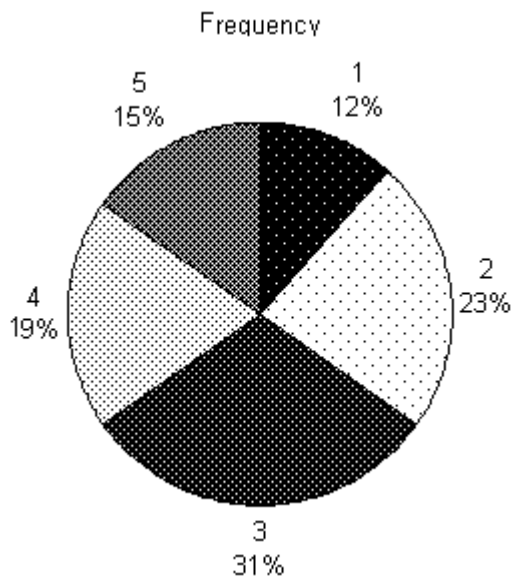
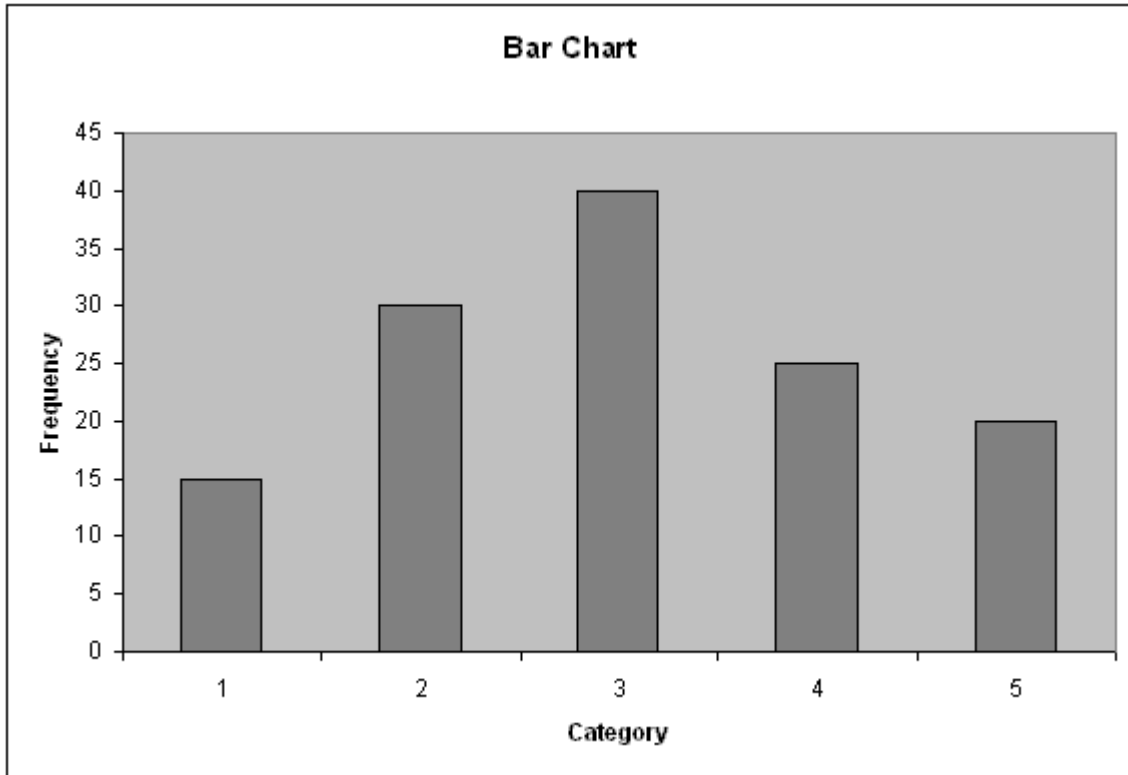
Carriage Motors (C) received the most votes (35.0%).

PTS: 1                      REF: SECTION 2.2

60. Suppose you measure the number of minutes it takes an employee to complete a task, where the maximum allowed time is 5 minutes, and each time is rounded to the nearest minute. Data from 130 employees is summarized below. Construct a frequency bar chart and a pie chart from this data. How long did it take most employees to complete the task?

Time (minutes)	1	2	3	4	5
Frequency	15	30	40	25	20

ANS:



The most common time to complete the task was 3 minutes, which was recorded for 40 of the 130 (31%) of the employees.

PTS: 1

REF: SECTION 2.2

### Business School Graduates

A sample of business school graduates were asked what their major was. The results are shown in the following frequency distribution.

Major of Graduates	Number of graduates
Accounting	58
Finance	42
Management	38
Marketing	52
Other	10

61. {Business School Graduates Narrative} How many graduates were surveyed?

ANS:

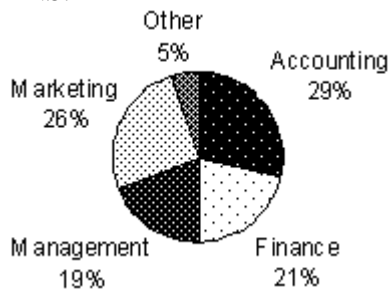
200; you get this by totaling the counts for each major.

PTS: 1

REF: SECTION 2.2

62. {Business School Graduates Narrative} Draw a pie chart to summarize this data. Which major was the most popular?

ANS:

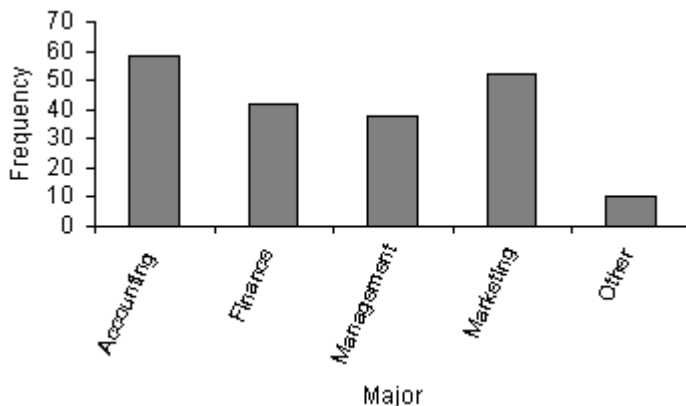


The most popular major was accounting (29.0%), followed by marketing (26%).

PTS: 1

REF: SECTION 2.2

63. {Business School Graduates Narrative} If you were only given the frequency bar chart below, would you be able to reconstruct the original observations in the data set?





ANS:

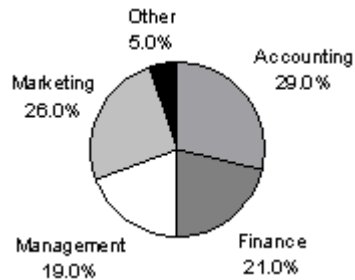
No; you cannot reconstruct the original data from this graph because the scale on the frequency (Y) axis is not precise enough. For example, you can't tell exactly what number of students majored in finance; it appears to be 40 on this bar chart, but the actual value is 42, as seen on the original table.

PTS: 1

REF: SECTION 2.2

64. {Business School Graduates Narrative} Draw a pie chart of this data. Are you able to reconstruct the original data from this pie chart alone?

ANS:



No; you cannot reconstruct the original data from this pie chart alone, because you don't know how many observations are in each category.

PTS: 1

REF: SECTION 2.2