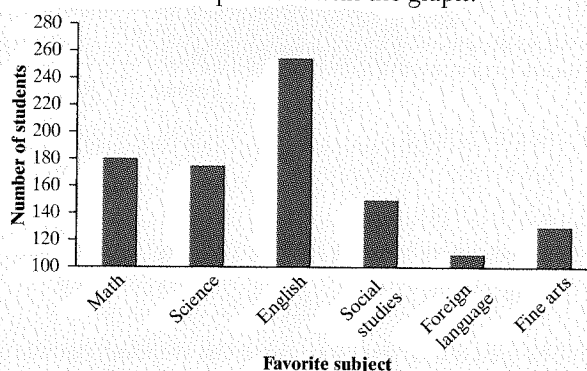


31. For which of the following would it be inappropriate to display the data with a single pie chart?
- (a) The distribution of car colors for vehicles purchased in the last month.
 - (b) The distribution of unemployment percentages for each of the 50 states.
 - (c) The distribution of favorite sport for a sample of 30 middle school students.
 - (d) The distribution of shoe type worn by shoppers at a local mall.
 - (e) The distribution of presidential candidate preference for voters in a state.

32. The following bar graph shows the distribution of favorite subject for a sample of 1000 students. What is the most serious problem with the graph?



- (a) The subjects are not listed in the correct order.
 - (b) This distribution should be displayed with a pie chart.
 - (c) The vertical axis should show the percent of students.
 - (d) The vertical axis should start at 0 rather than 100.
 - (e) The foreign language bar should be broken up by language.
33. In the 2010–2011 season, the Dallas Mavericks won the NBA championship. The two-way table below displays the relationship between the outcome of each game in the regular season and whether the Mavericks scored at least 100 points.

	100 or more points	Fewer than 100 points	Total
Win	43	14	57
Loss	4	21	25
Total	47	35	82

Which of the following is the best evidence that there is an association between the outcome of a game and whether or not the Mavericks scored at least 100 points?

- (a) The Mavericks won 57 games and lost only 25 games.
- (b) The Mavericks scored at least 100 points in 47 games and fewer than 100 points in only 35 games.
- (c) The Mavericks won 43 games when scoring at least 100 points and only 14 games when scoring fewer

- (d) The Mavericks won a higher proportion of games when scoring at least 100 points (43/47) than when they scored fewer than 100 points (14/35).
 - (e) The combination of scoring 100 or more points and winning the game occurred more often (43 times) than any other combination of outcomes.
34. The following partially complete two-way table shows the marginal distributions of gender and handedness for a sample of 100 high school students.

	Male	Female	Total
Right	x		90
Left			10
Total	40	60	100

If there is no association between gender and handedness for the members of the sample, which of the following is the correct value of x ?

- (a) 20.
- (b) 30.
- (c) 36.
- (d) 45.
- (e) Impossible to determine without more information.

35. **Marginal distributions aren't the whole story** Here are the row and column totals for a two-way table with two rows and two columns:

a	b	50
c	d	50
60	40	100

Find *two different* sets of counts a , b , c , and d for the body of the table that give these same totals. This shows that the relationship between two variables cannot be obtained from the two individual distributions of the variables.

36. **Fuel economy** (Introduction) Here is a small part of a data set that describes the fuel economy (in miles per gallon) of model year 2012 motor vehicles:

Make and model	Vehicle type	Transmission type	Number of cylinders	City mpg	Highway mpg
Aston Martin Vantage	Two-seater	Manual	8	14	20
Honda Civic Hybrid	Subcompact	Automatic	4	44	44
Toyota Prius	Midsized	Automatic	4	51	48
Chevrolet Impala	Large	Automatic	6	18	30

- (a) What are the individuals in this data set?
- (b) What variables were measured? Identify each as cat-