1.

According to an annual consumer spending survey, the average monthly Bank of America  
Visa credit card charge was $1838 (*U.S. Airways Attaché Magazine,* December 2003). A  
sample of monthly credit card charges provides the following data.

236 1710 1351 825 7450  
316 4135 1333 1584 387  
991 3396 170 1428 1688

a. Compute the mean and median.  
b. Compute the first and third quartiles.  
c. Compute the range and interquartile range.  
d. Compute the variance and standard deviation.  
e. The skewness measure for these data is 2.12. Comment on the shape of this distribution. Is it the shape you would expect? Why or why not?  
f. Do the data contain outliers?

2

The U.S. Census Bureau provides statistics on family life in the United States, including  
the age at the time of first marriage, current marital status, and size of household   
(U.S. Census Bureau website*,* March 20, 2006).

The following data show the age at the time of first marriage for a sample of men and a sample of women.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Men | 26 | 23 | 28 | 25 | 27 | 30 | 26 | 35 | 28 |
| 21 | 24 | 27 | 29 | 30 | 27 | 32 | 27 | 25 |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Women | 20 | 28 | 23 | 30 | 24 | 29 | 26 | 25 |
| 22 | 22 | 25 | 23 | 27 | 26 | 19 |  |  |

a. Determine the median age at the time of first marriage for men and women.  
b. Compute the first and third quartiles for both men and women.  
c. Twenty-five years ago the median age at the time of first marriage was 25 for men and 22 for women. What insight does this information provide about the decision of when to marry among young people today?

3. Dividend yield is the annual dividend per share a company pays divided by the current market price per share expressed as a percentage. A sample of 10 large companies provided the following dividend yield data (*The Wall Street Journal,* January 16, 2004).

|  |  |
| --- | --- |
| **Company** | Yield % |
| Altria | 5 |
| American | 0.8 |
| Caterpillar | 1.8 |
| Eastman | 1.9 |
| ExxonMobil | 2.5 |
| General | 3.7 |
| JPMorgan | 3.5 |
| McDonald’s | 1.6 |
| United | 1.5 |
| Wal-Mart | 0.7 |

1. What are the mean and median dividend yields?
2. What are the variance and standard deviation?
3. Which company provides the highest dividend yield?

4.

The U.S. Department of Education reports that about 50% of all college students use a  
student loan to help cover college expenses

A sample of students who graduated with student loan debt is shown here.  
The data, in thousands of dollars, show typical amounts of debt upon graduation.  
10.1 14.8 5.0 10.2 12.4 12.2 2.0 11.5 17.8 4.0  
a. For those students who use a student loan, what is the mean loan debt upon graduation?  
b. What is the variance? Standard deviation?

5.

Small business owners often look to payroll service companies to handle their employee  
payroll. Reasons are that small business owners face complicated tax regulations and   
penalties for employment tax errors are costly. According to the Internal Revenue Service,  
26% of all small business employment tax returns contained errors that resulted in a tax  
penalty to the owner . The tax penalty for a sample of 20 small business owners follows:

820 270 450 1010 890 700 1350 350 300 1200

390 730 2040 230 640 350 420 270 370 620

a. What is the mean tax penalty for improperly filed employment tax returns?  
b. What is the standard deviation?  
c. Is the highest penalty, $2040, an outlier?

6.

Public transportation and the automobile are two methods an employee can use to get to work  
each day. Samples of times recorded for each method are shown. Times are in minutes.  
Public Transportation: 28 29 32 37 33 25 29 32 41 34  
Automobile: 29 31 33 32 34 30 31 32 35 33  
a. Compute the sample mean time to get to work for each method.  
b. Compute the sample standard deviation for each method.  
c. On the basis of your results from parts (a) and (b), which method of transportation  
should be preferred? Explain.  
d. Develop a box plot for each method. Does a comparison of the box plots support your  
conclusion in part (c)?

7.

The National Association of Realtors reported the median home price in the United States  
and the increase in median home price over a five-year period (The Wall Street Journal, January 16, 2006). Use the sample home prices shown here to answer the following questions.  
995.9 48.8 175.0 263.5 298.0 218.9 209.0  
628.3 111.0 212.9 92.6 2325.0 958.0 212.5  
a. What is the sample median home price?  
b. In January 2001, the National Association of Realtors reported a median home price  
of $139,300 in the United States. What was the percentage increase in the median  
home price over the five-year period?  
c. What are the first quartile and the third quartile for the sample data?  
d. Provide a five-number summary for the home prices.  
e. Do the data contain any outliers?  
f. What is the mean home price for the sample? Why does the National Association of  
Realtors prefer to use the median home price in its reports?