

ECO 261-Fall 2009

Problem Set-1

**Due by September 15, Tuesday**

1) Consider the following data:

17 62 15 65  
28 51 24 65  
39 41 35 15  
39 32 36 37  
40 21 44 37  
59 13 44 56  
12 54 64 59

a) Construct a frequency distribution.

b) Draw a histogram (frequency distribution graph).

2) Ten economists were asked to predict the percentage growth in the Consumer Price Index over the next year.

Their forecasts were

3.6 3.1 3.9 3.7 3.5  
3.7 3.4 3.0 3.7 3.4

Compute the sample mean, median and the mode.

3) The demand for bottled water increases during the hurricane season in Florida. A random sample of 7 hours showed that the following numbers of 1- gallon bottles were sold in one store:

40 55 62 43 50 60 65

a) Describe the central tendency measures of the data.

b) Comment on symmetry or skewness.

4) The time (in seconds) that a random sample of employees took to complete a task is

23 35 14 37 28 45  
12 40 27 13 26 25  
37 20 29 49 40 13  
27 16 40 20 13 66

a) Find the mean.

b) Find the variance and the standard deviation.

c) Find the coefficient of variation.

5) A random sample of data has a mean of 75 and a variance of 25.

a) Use Chebychev's theorem to determine the percent of observations between 65 and 85. Comment on it.

b) Use the empirical rule to find the approximate percent of observations between 65 and 85. Comment on it.

6) Use Chebychev's theorem to approximate each of the following observations if the mean is 250 and the standard deviation of 20. Approximately what proportion of observations is between (use the population notation)

a) Between 190 and 310?

b) Between 210 and 290?

c) Between 230 and 270?

7) The annual percentage returns on common stocks over a 7-year period were as follows:

4.0% 14.3% 19.0% -14.7% -26.5% 37.2% 23.8%

Over the same period the annual percentage returns on U.S. Treasury bills were as follows:

6.5% 4.4% 3.8% 6.9% 8.0% 5.8% 5.1%

a) Compare the means of the population distributions.

b) Compare the standard deviations of these two population distributions.

c) Compare the coefficient of variation of these two distributions.

8) Consider a symmetric distribution with a mean of 450 and a variance of 625. Approximately what proportion of observations of the population is

a) Greater than 425?

b) Less than 500?

c) Greater than 525?

9) Following is a random sample of seven  $(x, y)$  pairs of data points

(1,5) (3,7) (4,6) (5,8) (7,9) (3,6) (5,7)

a) Compute the covariance.

b) Compute the correlation coefficient.