1. Solution: A.

A is correct. A population is defined as all members of a specified group. The S&P 500 Index consists of 500 companies, so this group is the population of companies in the index.

B is incorrect because there are several Dow Jones component stocks that are not traded on the NYSE, making the NYSE group a subset of the total population of stocks included in the Dow Jones average.

C is incorrect because although the Lehman Aggregate Bond Index is representative of the US bond market, it is a sampling of bonds in that market and not the entire population of bonds in that market.

2. Solution: A.

A is correct. A frequency distribution is a tabular display of data summarized into a relatively small number of intervals.

B is incorrect because intervals cannot overlap. Each observation is placed uniquely into one interval.

C is incorrect because a frequency distribution is summarized into a relatively small number of intervals.

3. Solution: B.

B is correct. Observations within 8% of the sample mean will cover an interval of 8/4 or two standard deviations. Chebyshev's Inequality says the proportion of the observations P within k standard deviations of the arithmetic mean is at least $1 - 1/k^2$ for all k > 1. So, solving for k = 2: P = $1 - 1/4$ = 75%. Given 2,000 observations, this implies at least 1,500 will lie within 8.0% of the mean.

A is incorrect because 720 shows P = 720/2,000 = 36.0% of the observations. Using P to solve for k implies 36.0% = $1 - 1/k^2$, where k = 1.25. This result would cover an interval only 4% × 1.25 or 5% around the mean (i.e. less than two standard deviations).

C is incorrect because 1,680 shows P = 1,680/2,000 = 84.0% of the observations. Using P to solve for k implies 84.0% = $1 - 1/k^2$, where k = 2.50. This result would cover an interval of 4% × 2.5, or

10% around the mean (i.e., more than two standard deviations).

4.   Solution: B.

B is correct. The covariance is 26.56, calculated as follows. First, expected returns are:

$$E(R_{FI}) = (0.25 \times 25) + (0.50 \times 15) + (0.25 \times 10)$$
$$= 6.25 + 7.50 + 2.50 = 16.25 \text{ and}$$
$$E(R_{DI}) = (0.25 \times 30) + (0.50 \times 25) + (0.25 \times 15)$$
$$= 7.50 + 12.50 + 3.75 = 23.75.$$

Covariance is:

$$\mathrm{Cov}(R_{FI}, R_{DI}) = \sum_i \sum_j P\left(R_{FI,i}, R_{DI,j}\right)\left(R_{FI,i} - ER_{FI}\right)\left(R_{DI,j} - ER_{DI}\right)$$
$$= 0.25[(25 - 16.25)(30 - 23.75)] + 0.50[(15 - 16.25)$$
$$(25 - 23.75)] + 0.25[(10 - 16.25)(15 - 23.75)]$$
$$= 13.67 + (-0.78) + 13.67 = 26.56.$$

5.   Solution: C.

The probability is P(EPS met consensus | DriveMed expands) =

$$\frac{P(DriveMed\ expands\ |\ EPS\ met\ consensus)}{P(DriveMed\ expands)}P(EPS\ met\ consensus)$$

The probability P(DriveMed expands) is found by taking each of the three conditional probabilities in the statement of the problem, such as P(DriveMed expands | EPS exceeded consensus); multiplying each one by the prior probability of the conditioning event, such as P(EPS exceeded consensus); then adding the three products.

The calculation is unchanged from the problem in the text above: P(DriveMed expands) = 0.75(0.45) + 0.20(0.30) + 0.05(0.25) = 0.41, or 41 percent. The other probabilities needed, P(DriveMed expands | EPS met consensus) = 0.20 and P(EPS met consensus) = 0.30, are givens. So,

P(EPS met consensus | DriveMed expands)

= [P(DriveMed expands | EPS met consensus)/P(DriveMed expands)]P(EPS met consensus)

= (0.20/0.41)(0.30) = 0.487805(0.30) = 0.146341

After taking account of the announcement on expansion, your updated probability that last quarter's EPS for DriveMed just met consensus is 14.6 percent compared with your prior

probability of 30 percent.