1.07 Estimation and Inference

Question 1
An analyst samples market capitalization (market cap) values from several stocks in an index composed of 250 stocks. From this sample, the standard deviation of market cap is $9.6 billion and the standard error of the mean market cap is $1.2 billion. The number of stocks in the sample is *closest* to:
A. 8
B. 31
C. 64

Question 2
A manager attempts to replicate the performance of a bond index through sampling. First the bonds are classified by geography, next they are separated into different maturity categories, finally they are divided into different sectors. After this, the manager combines samples drawn from each subgroup. This process is *most* accurately described as:
A. systematic sampling.
B. simple random sampling.
C. stratified random sampling.

Question 3
A sample is drawn from a population. Which of the following *best* describes all the requirement(s) for the sample mean to be an accurate estimate of the population mean?
A. The sample size is a least 30.
B. The sample size is a least 30 and the population has a finite variance.
C. The sample size is at least 30 and the population has a finite variance and is normally distributed.

Question 4
An analyst is estimating the standard error of the sample mean for a population and compiles the following information:

Population variance	12.3
Sample variance	10.7
Sample size	30

The most appropriate estimate of the standard error of the sample mean is *closest* to:
A. 0.410
B. 0.597
C. 0.640

Question 5
An analyst takes a number of samples from a nonnormally distributed collection of 3,000 hedge fund returns. The population has a finite variance. Each sample contains 60 hedge fund returns, and the variance of the sample mean is 8. Which of the following *best* describes the population variance?
A. It can be estimated accurately at 7.5.
B. It can be estimated accurately at 480.
C. It cannot be estimated accurately since the population is not normally distributed.

Question 6
The sampling distribution of the mean *most* accurately captures the distribution of all sample means from:
A. the same random sample.
B. different random samples of the same size.
C. different random samples of different sizes.

Question 7
Simple random sampling *most likely*:
A. Produces more precise estimates than stratified random sampling.
B. Guarantees that population subdivisions are represented in the sample.
C. Gives each member of the population an equal chance of being selected.

Question 8
A large private equity fund contains 100 individual companies. If the standard deviation of revenue for all the companies is $2 million, then the standard error for a sample of 36 companies (in USD millions) is *closest* to:
A. 0.111
B. 0.200
C. 0.333

Question 9
As the size of a sample drawn from a population increases, the standard error of the sample *most likely*:
A. approaches zero.
B. produces a wider confidence interval.
C. approximates the standard deviation of the population.

Question 10
An analyst calculates a mean gross margin percentage of 29.5% from a sample of 50 companies in an industrial fund that contains 1,000 companies. The actual mean gross margin percentage of all the companies in this fund is 30.1%. The discrepancy between the analyst's estimate and the actual value is *best* described as:

A. sampling error.
B. standard error.
C. standard deviation.