Quick Questions 11 Sampling and the Sampling Distribution of the Means

I. Place the number of the appropriate formula next to the concept it defines.

1.	$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$
2.	$\mu_{\bar{x}}$
3.	$\bar{x} \pm 2.58\frac{\sigma}{\sqrt{n}}$
4.	$\bar{x} \pm 1.96\frac{\sigma}{\sqrt{n}}$
5.	$\bar{x} \pm 2.58\frac{s}{\sqrt{n}}$

A. The 99% confidence interval __3__

B. Standard error of the mean __1__

C. Used when the population variance is unknown and the sample is large __5__

D. The 95% confidence interval __4__

E. The mean of the sampling distribution of the means __2__

II. Answer the following true or false and fill in the blank questions.

A. The primary cause of sampling error is poor collection techniques. T [F]

B. The standard error of the mean is halved when the sample size is doubled. T [F]

C. A one-number estimate of the population mean is called a _point_ estimate of the mean.

D. A range for a population parameter is called the _confidence_ _interval_.

E. A _stratified_ _random_ _sample_ may be more accurate than a simple random sample because a small diverse section of the population might not be chosen with a simple random sample.

III. Calculate the 95% and 99% confidence intervals for the population mean given a sample of 36 resulted in a mean of 55 and a standard deviation of 18.

95% CI→ $z = 1.96$

$$\bar{x} \pm Z\frac{s}{\sqrt{n}}$$

$$55 \pm 1.96\frac{18}{\sqrt{36}}$$

$$55 \pm 1.96(3)$$

$$55 \pm 5.9$$

$$49.1 \leftrightarrow 60.9$$

99% CI→ $z = 2.58$

$$\bar{x} \pm Z\frac{s}{\sqrt{n}}$$

$$55 \pm 2.58\frac{18}{\sqrt{36}}$$

$$55 \pm 2.58(3)$$

$$55 \pm 7.7$$

$$47.3 \leftrightarrow 62.7$$