KFUPM Term 121 Date: 17/11/2012

Mathematics & Statistics STAT 319 Duration: 25 minutes

Quiz# 3

Name: ID #: Section 4 Serial #:

Q1. The breaking strength of a rivet has a mean value of 1000 psi and a standard deviation of 90 psi.

a. What is the probability that the sample mean breaking strength for a random sample of 40 rivets is between 950 and 1040?

b. If the sample size had been 15 rather than 40, could the probability requested in part a, be calculated from the given information? Explain.

Q2. A study of the ability of individuals to walk in a straight line reported that accompanying data on cadence (strides per seconds) for a sample of n – 20 randomly selected healthy men:

.95	.81	.93	.95	.93	.86	1.05	.92	.85	.81
.92	.96	.92	1.00	.78	1.06	1.06	.96	.85	.92

A normality test supports the assumption that the population distribution of cadence is approximately normal. A descriptive summary of the data from MINITAB follows:

Variable	n	Mean	Median	StDev	SEMean
Cadence	*20*	*0.9255*	*0.9300*	*0.0809*	*0.0181*

where StDev= standard deviation and SEMean= standard error of the mean.

a. Calculate and interpret a 95% confidence interval for a population mean cadence.

b. Use your finding in part a, to test the claim that population mean is 1.2 cadence.

***Q*3**. A random sample of 100 lightning flashes in a certain region resulted in a sample average radar echo duration of 0.81 sec and a sample standard deviation of 0.34 sec.

a. Calculate the maximum error in estimating the true mean echo duration μ with 99% confidence level for the true average echo duration.

b. If we wish to estimate μ to be within ± 0.06 and with 98% confidence, determine the sample size required to insure these conditions.

With My Best Wishes