

## 207 QUA - Ch 8

**1- A Population consists of the following three values ( 1 - 2 - 3 ) .**

- a- List all possible samples of size 2 (including possible repeats) and compute the mean of every sample?**
- b- Find the mean of the distribution of the sample mean and the population mean, compare the two values?**
- c- Compare the dispersion of the population with that of the sample mean?**

**2- Suppose you're statistics instructor gave six examinations during the semester, you receive the following grades (percent correct) 79 , 64, 84 , 82 , 92 and 77 .**

**Instead of averaging the six scores the instructor indicated he would randomly select two grades and compute the final percent correct based on the two percent.**

- a- How many different samples of two test grades are possible?**
- b- List all possible samples of size 2) and compute the mean with each?**
- c- Compute the mean of the sample means and compare it to the population mean?**

**3-The quality control department employees five technicians during the day shift. Listed below is the number of times each technician instructed the production Forman to shut down the manufacturing process last week.**

Technician	Shutdowns
Taylor	4
Hurley	3
Gupate	5
Rousche	3
Huang	2

- a- How many different samples of two technicians are possible from this population?**
- b- List all possible samples of size two observations and compute the mean for each sample?**
- c- Compute the mean of the sample means and compare it with the population mean?**

**4 - Mattel Corporation produces a remote-controlled Car that requires three AA batteries. The mean life of these batteries in this product is 35 hours. The distribution of the battery lives closely follows the normal probability distribution with standard deviation of 5.5 hours, As apart of its testing program Sony tests samples of 25 batteries.**

- a- What can you say about the shape of the distribution of the sample mean?**
- b- What proportion of the samples will have a mean useful life of more than 36 hours?**
- c- What is the stander error of the distribution of the sample mean?**
- d- What proportion of the samples will have a mean useful life greater than 34.5 hours?**
- e- What proportion of the samples will have a mean between 34.5 and 36 hours?**

**5- Recent studies indicate that the typical 50-year –old woman spends 350\$ per year. for personal –care product. The distribution of the amounts spent follows a normal distribution with standard deviation of \$45 per year. We select a random sample of 40 women. The mean amount spent for those sampled is \$335. What is the likelihood of finding a sample mean this large or larger from the specified population?**

**6- Crossett trucking company claims that the mean weight off it's delivery trucks when they are fully loaded is 6000 pounds and the standard deviation is 150 pound. Assume that the population follows the normal distribution. Forty trucks are randomly selected and weighed. Within what limits will 95% of the sample means occur?**

**7 - Nike's annual report says that the average American by 6.5 pairs of sports shoes per year. Suppose the population standard deviation is 2.1 and that a sample of an 81 customers will be examined next year.**

- a - What is the standard error of the mean in this experiment?**
- b - What is the probability that the sample mean is between six and seven pairs of sports shoes?**
- c - What is the probability that the difference between the sample mean and the population mean is less than 0.25 pairs?**
- d - What is the likelihood the sample mean is greater than seven pairs?**