



d. (7) Find the probability that the average height of 9 randomly selected women is between 62–65 in.

e. (7) Find the probability that, of 150 women, more than 100 with height between 62–65 in.

2. (10) A machine is programmed to put 737 grams of sugar into a container. Due to uncontrolled variation in the process, there is variation in content from container to container. To estimate the mean amount of sugar per container, a sample of 50 boxes is selected and its mean is 739.5 grams. If  $\sigma = 7.5$  grams. Construct a 95%-confidence interval for  $\mu$ .



4. (13: 7,4,2) We would like to start an ISP (Internet Service Provider) and need to estimate the average internet usage of households in one week for our business plan and model. Assume that a previous survey of household usage has shown  $\sigma = 36.95$  minutes. Assume the distribution of internet usage is normally distributed.

a. (7) If the desired margin of error 3 minutes. Find the minimum sample size.

b. (4) If the desired margin of error is 1 minutes. Find the minimum sample size.

c. (2) State the relationship between your answer in part (a) and part (b): The minimum sample size in part (b) is (approximately) \_\_\_\_\_ times the minimum sample size in part (a).

5. (Total 15) The number of times a student uses the Library Quiet Room is described by the following table:

<i>Number of monthly usage</i>	<i>Probability</i>
0	0.05
1	0.25
2	0.50
3	0.20

a. (2) Find the expected number of monthly usage of Library Quiet Room by a student.

b. (5) Find the standard deviation for the number of monthly usage of Library Quiet Room by a student.

c. (8) In a sample of 100 students, find the approximate probability that the average number of monthly usage of Library Quiet Room is at most 1.8 times for each student.

6. (Total 17) A state licensing exam that is given annually has been designed such that the scores are normally distributed with mean 68 and standard deviation 15.

a. (4) What is the percentage of the scores between 65 and 89?

b. (6) If 45% of the test-takers passed the test and licensed, what is the lowest passing score?

c. (7) If there are 650 people take the test, find the probability that more than 300 of them pass the test.