

IT2120 - Probability and Statistics

Department of Information Technology, Faculty of Computing

Year 2 semester 1 (2025)

Tutorial 06

1. Random samples of size 225 are drawn from a population with mean 100 and standard deviation 20. Find the mean and standard deviation of the sample mean. Calculate $P(\bar{X} < 97.5)$.
2. Random samples of size 64 are drawn from a population with mean 32 and standard deviation 5. Find the mean and standard deviation of the sample mean. Calculate $P(\bar{X} > 33.5)$.
3. A population has mean 75 and standard deviation 12.
 - (a) Random samples of size 121 are taken. Find the mean and standard deviation of the sample mean.
 - (b) How would the answers to part (a) change if the size of the samples were 400 instead of 121?
4. A population has mean 5.75 and standard deviation 1.02.
 - (a) Random samples of size 81 are taken. Find the mean and standard deviation of the sample mean.
 - (b) How would the answers to part (a) change if the size of the samples were 25 instead of 81?
5. According to the National Association of Theater Owners, the average price for a movie in the United States in 2012 was \$7.96. Assume the population standard deviation is \$0.50 and that a sample of 40 theaters were randomly selected.
 - (a) What is the probability that the sample mean will be less than \$7.75?
 - (b) What is the probability that the sample mean will be less than \$8.10?
 - (c) What is the probability that the sample mean will be more than \$8.20?