Exam #3 Objectives

For Exam #3, a well-prepared student should be able to

- identify the variable, population, parameter, sample, and statistic for a given situation
- understand how a sampling distribution is constructed from a population distribution
- define count and proportion for a value of a categorical variable
- describe the binomial setting and the binomial distribution
- use a table or computing technology to determine a binomial probability or a cumulative binomial probability
- compute the mean and standard deviation for a binomial random variable
- determine when and how a binomial distribution can be approximated by a normal distribution
- understand the connection between the sampling distribution of success counts in simple random samples and the relevant binomial distribution
- compute the mean and standard deviation for the sampling distribution of counts for a binomial variable
- compute the mean and standard deviation for the sampling distribution of proportions for a binomial variable
- compute the mean and standard deviation for the sampling distribution of means for a quantitative variable
- understand and use the fact that if a population distribution is normal, then the sample mean distribution is normal
- understand and use the fact that a sample mean distribution is more normal than the population distribution with larger sample sizes resulting in more normal sample distributions
- interpret the meaning of a confidence interval, including the confidence level, the estimate, and the margin of error
- compute a confidence interval for a population mean given the population standard deviation and assuming the sample distribution for means is essentially normal
- form an appropriate null hypothesis and alternative hypothesis
- describe the structure of a significance test, including the roles of the statistic, the P-value, and the significance level (if relevant)
- carry out a significance test for a population mean using the givens and assumptions as in Chapter 6
- interpret the result of a significance test in everyday language related to the given context