

# Elementary Statistical Methods

## Exam Three Review

1. A certain type of lottery ticket costs \$1, the average prize is \$0.55, and the standard deviation of the prizes is \$2.25. If 100 of these tickets are bought, find the probability that the average prize for these 100 tickets is over \$1.
2. In a random sample of 500 women from a certain country, the average height was 65.32 inches, and the standard deviation was 2.04 inches.
  - (a) Find a 99% confidence interval for the average height of women in this country.
  - (b) Based on this confidence interval, are you confident that the average height of women in the country is over 65 inches?
3. A package of M&M's contains 47.9 grams of candy, according to the information on the front of the package. Suppose the contents of five randomly selected packs of M&M's were weighed, resulting in the following measurements: 47.28, 48.31, 47.21, 48.85, 46.37.
  - (a) Find a 95% confidence interval for the average mass of the contents of a package of M&M's
  - (b) Based on this confidence interval, do you believe that the average mass of a package of M&M's is greater than 47.9 grams?
4. In a random sample of 400 Texans, 165 approved of a certain political candidate.
  - (a) Find a 99% confidence interval for the proportion of Texans who approve of this candidate.
  - (b) Based on this confidence interval, do you believe that a majority of Texans support this candidate?
5. Suppose you would like to estimate the gas mileage of a new type of vehicle with a margin of error of at most 0.2 mpg and a confidence level of 95%. A preliminary sample indicates that the standard deviation of gas mileage is 5 mpg. What sample size is required?