

1. Suppose that the heights of women in the US are normally distributed with a mean of 65 inches and a standard deviation of 3 inches.
- (a) Suppose we take a simple random sample of size 20 and compute  $\bar{x}$ , the sample average height. What is the probability that  $\bar{x} > 68$  inches? You may use your calculator.
- (b) The probability that a randomly selected female has a height bigger than 70 inches is about 0.048. Using this value of  $p$ , what is the probability that exactly 5 of the 20 females sampled are taller than 70 inches? Hint: use the Binomial distribution.
- (c) Now, suppose that for this SRS of size 20 we compute  $\bar{x} = 67.2$  inches. Construct a 95% confidence interval for the population average  $\mu$ , assuming that  $\sigma = 3$ . Write your answer in the form  $\bar{x} \pm M$ .