1. The average number of calories in a 1.5-ounce chocolate bar is 225. Suppose that the distribution of calories is approximately normal with standard deviation of 12. Find the probability that a randomly selected chocolate bar will have between 200 and 220 calories.

2. The average teacher’s salary in North Dakota is $35,500. Assume a normal distribution with standard deviation of $4,900. For a sample of 75 teachers, what is the probability that the sample mean is greater than $36,000?

3. A theater owner has found that 7% of patrons do not show up for the performance that they purchased tickets for. If the theater has 200 seats, find the probability that 15 or more patrons will not show up for the sold out performance.

4. A study of 415 kindergarten students showed that they have seen on average 5000 hours of television. If the standard deviation of the population is 825, find the 95% confidence interval of the mean for all students. For full credit show the formula used and the interval used on the calculator.

5. A meteorologist who sampled 13 storms found that the average speed at which they traveled across Kansas was 15 mph. The standard deviation of those storms was 1.7 mph. Find the 90% confidence interval of the mean. For full credit show the formula used and the interval used on the calculator.

6. A random sample of 205 college students was asked if they believed that places could be haunted and 65 of them responded yes. Estimate the true proportion of college students who believe in the possibility of haunted places with 95% confidence. For full credit show the formula used and the interval used on the calculator.

7. Find the 99% confidence interval for the variance and standard deviation of the lengths of popular children’s animated films if 11 films have a variance of 64. For full credit show the formula used and the interval used on the calculator.
8. A federal report stated that 86% of children under the age of 18 were covered by health insurance in 2000. How large a sample is needed to estimate the true proportion of covered children with a 96% confidence interval and error of .025.

9. A researcher wishes to estimate, within $25, the true average amount of postage a community college spends each year. If she wishes to be 95% confident, how large a sample is necessary? The standard deviation is known to be $80.

10. The prices (in dollars) for a particular model of digital camera with 6.0 megapixels and an optical 3X zoom lens are shown below for 10 online retailers. Estimate the true mean price for this particular model with 95% confidence. Assume a normal distribution.

   225 240 215 206 211 210 193 250 225 202

11. The average credit card debt for college seniors is $5,262. If the debt is normally distributed with a standard deviation of $1,300, find these probabilities:

   a) That a senior selected at random owes at least $3,000
   b) That a senior selected at random owes between $5,000 and $6,000

12. To qualify for seal training, the navy tests recruits for stress tolerance. The scores are normally distributed, with a mean of 62 and a standard deviation of 8. If only the top 15% of recruits are selected, find the cutoff score. Round to the nearest whole number. Show your graph.

13. The mean time it takes students to complete a statistics exam is 40 minutes with a standard deviation of 5 minutes. Assuming the times are normally distributed, find the probability that a student completes the exam in less than 32 minutes.

14. The national average mathematics SAT score is 480. Suppose that nothing is known about the shape of the distribution and that the standard deviation is 60. If a random sample of 200 scores were selected and the sample mean were calculated to be 450, would you be surprised.

15. The probability of winning on a slot machine is 5%. If a person plays the machine 500 times, find the probability of winning 30 times. Use the normal approximation to the binomial distribution.