4. Why a Parameter? Given the results described in Exercise 3, is the mean of 140.0 executives expressed with μ or $\bar{x}$? Explain why the mean of 140.0 executives is a parameter instead of a statistic.

Finding μ, σ, and Unusual Values. ***In Exercises 5–8, assume that a procedure yields a binomial distribution with n trials and the probability of success for one trial is p. Use the given values of n and p to find the mean μ and standard deviation σ. Also, use the range rule of thumb to find the minimum usual value $\mu - 2\sigma$ and the maximum usual value $\mu - 2\sigma$.***

5. Guessing on ACT Random guesses are made for the 60 multiple-choice questions on the math portion of the ACT test, so $n = 60$ and $p = 1/5$ (because each question has possible answers of a, b, c, d, e, and only one of them is correct).

6. Gender Selection In an analysis of preliminary test results from the XSORT gender-selection method, 14 babies are born and it is assumed that 50% of babies are girls, so $n = 14$ and $p = 0.5$.

7. Identity Theft In a Gallup poll of 1013 randomly selected adults, 66% said that they worry about identity theft, so $n = 1013$ and $p = 0.66$.

8. Clinical Trial In a clinical trial of the cholesterol drug Lipitor, 94 subjects were treated with 80 mg of Lipitor, and 6.4% of them developed headaches, so $n = 94$ and $p = 0.064$.

9. Gender Selection In a test of the YSORT method of gender selection, 291 babies are born to couples trying to have baby boys, and 239 of those babies are boys (based on data from the Genetics & IVF Institute).

a. If the gender-selection method has no effect and boys and girls are equally likely, find the mean and standard deviation for the numbers of boys born in groups of 291.

b. Is the result of 239 boys unusually high? Does it suggest that the YSORT gender-selection method appears to be effective?

10. Mendelian Genetics When Mendel conducted his famous genetics experiments with peas, one sample of offspring consisted of 580 peas, and Mendel theorized that 25% of them would be yellow peas.

a. If Mendel's theory is correct, find the mean and standard deviation for the numbers of yellow peas in such groups of 580 offspring peas.

b. The actual results consisted of 152 yellow peas. Is that result unusually high? What does this result suggest about Mendel's theory?

11. Are 20% of M&M Candies Orange? Mars, Inc. claims that 20% of its M&M plain candies are orange, and a sample of 100 such candies is randomly selected.

a. Find the mean and standard deviation for the number of orange candies in such groups of 100.

b. Data Set 20 in Appendix B consists of a random sample of 100 M&Ms, including 25 that are orange. Is this result unusually high? Does it seem that the claimed rate of 20% is wrong?

12. Are 14% of M&M Candies Yellow? Mars, Inc. claims that 14% of its M&M plain candies are yellow, and a sample of 100 such candies is randomly selected.

a. Find the mean and standard deviation for the number of yellow candies in such groups of 100.

b. Data Set 20 in Appendix B consists of a random sample of 100 M&Ms, including 8 that are yellow. Is this result unusually low? Does it seem that the claimed rate of 14% is wrong?