

**Stating Conclusions.** In Exercises 25–28, assume a significance level of  $\alpha = 0.05$  and use the given information for the following:

- a. State a conclusion about the null hypothesis. (Reject  $H_0$  or fail to reject  $H_0$ .)
  - b. Without using technical terms, state a final conclusion that addresses the original claim.
25. Original claim: The percentage of blue M&Ms is greater than 5%. The hypothesis test results in a  $P$ -value of 0.0010.
26. Original claim: Fewer than 20% of M&M candies are green. The hypothesis test results in a  $P$ -value of 0.0721.
27. Original claim: Women have heights with a mean equal to 160.00 cm. The hypothesis test results in a  $P$ -value of 0.0614.
28. Original claim: Women have heights with a standard deviation equal to 5.00 cm. The hypothesis test results in a  $P$ -value of 0.0055.

**Terminology.** In Exercises 29 and 30, use the given information to answer the following:

- a. Identify the null hypothesis and the alternative hypothesis.
- b. What is the value of  $\alpha$ ?
- c. What is the sampling distribution of the sample statistic?
- d. Is the test two-tailed, left-tailed, or right-tailed?
- e. What is the value of the test statistic?
- f. What is the  $P$ -value?
- g. What is the critical value?
- h. What is the area of the critical region?

**29. Gender Selection** A 0.01 significance level is used for a hypothesis test of the claim that when parents use the XSORT method of gender selection, the proportion of baby girls is greater than 0.5. Assume that sample data consist of 55 girls born in 100 births, so the sample statistic of 0.55 results in a  $z$  score that is 1.00 standard deviation above 0.

**30. Gender Selection** A 0.05 significance level is used for a hypothesis test of the claim that when parents use the XSORT method of gender selection, the proportion of baby girls is different from 0.5. Assume that sample data consist of 55 girls born in 100 births, so the sample statistic of 0.55 results in a  $z$  score that is 1.00 standard deviation above 0.

**Type I and Type II Errors.** In Exercises 31–34, identify expressions that identify the type I error and the type II error that correspond to the given claim. (Although conclusions are usually expressed in verbal form, the answers here can be expressed with statements that include symbolic expressions such as  $p = 0.1$ .)

31. The proportion of people who write with their left hand is equal to 0.1.
32. The proportion of gamblers who consistently win in casinos is equal to 0.001.
33. The proportion of female statistics students is greater than 0.5.
34. The proportion of husbands taller than their wives is less than 0.9.