

1. Fizz Bottling company routinely checks its production line to ensure that bottles are being filled properly. The bottles are labeled to contain 12 fluid ounces and varying from the 12 oz. standard causes problems. Underfilling the bottles erodes customer satisfaction and overfilling the bottles wastes product and raises costs unnecessarily. An analysis of the most recent sample of 50 bottles found a mean of 12.03 ounces. Based on historical information, the standard deviation of this production line is .07 ounces.
 - a) Perform an appropriate hypothesis test. What should the production manager conclude at the 1% level of significance?
 - b) What is the p -value associated with the sample result?

2. TurboRead advertises that the mean increase in reading speed for graduates of its speed reading course is at least 200 words per minute. Historical data has consistently tracked the standard deviation of course graduates at 40 wpm. A sample of 110 graduates has been tested and the increase in reading speed (WPM) found a mean increase in reading speed of 192.4 wpm.
 - a) Testing at the 5% level of significance, what conclusion should be reached?
 - b) Testing at the 1% level of significance, what conclusion should be reached?
 - c) What is the p -value associated with the sample result?

3. OkayData, makers of a particular brand of computer printer, claim that the mean cost of repair during the first two years of ownership is no more than \$25. A random sample of registered owners reported the following costs of repair: \$52.00, 17.50, 0.00, 87.00, 8.75, 32.00, 6.50, 41.00. Using an α level of 0.05, does their claim hold up to the evidence gathered in this sample?

4. Parking at State University during Thursday night basketball games has received a great deal of attention lately as season-ticket holders have complained that they've found themselves walking long distances to the game in cold winter weather. In response to the complaints, the campus parking manager recently stated that there are plenty of spaces available if they would "give it half a try." She also stated that "at least 20% of spaces are available between 6:30 and 7:30 on game nights." To test this claim, the Alumni Association randomly sampled 100 parking spaces and found that 15 spaces were open.
 - a) Testing at the 1% level of significance, what conclusion should be reached?
 - b) Testing at the 12% level of significance, what conclusion should be reached?
 - c) What is the p -value associated with the sample result?