

23. An oil company claims that the sulfur content of its diesel fuel is at most .15 percent. To check this claim, the sulfur contents of 40 randomly chosen samples were determined; the resulting sample mean and sample standard deviation were .162 and .040. Using the 5 percent level of significance, can we conclude that the company's claims are invalid?
24. A company supplies plastic sheets for industrial use. A new type of plastic has been produced and the company would like to claim that the average stress resistance of this new product is at least 30.0, where stress resistance is measured in pounds per square inch (psi) necessary to crack the sheet. The following random sample was drawn off the production line. Based on this sample, would the claim clearly be unjustified?

30.1 32.7 22.5 27.5
 27.7 29.8 28.9 31.4
 31.2 24.3 26.4 22.8
 29.1 33.4 32.5 21.7

Assume normality and use the 5 percent level of significance.

25. It is claimed that a certain type of bipolar transistor has a mean value of current gain that is at least 210. A sample of these transistors is tested. If the sample mean value of current gain is 200 with a sample standard deviation of 35, would the claim be rejected at the 5 percent level of significance if
- (a) the sample size is 25;
 - (b) the sample size is 64?
26. A manufacturer of capacitors claims that the breakdown voltage of these capacitors has a mean value of at least 100 V. A test of 12 of these capacitors yielded the following breakdown voltages:

96, 98, 105, 92, 111, 114, 99, 103, 95, 101, 106, 97

Do these results prove the manufacturer's claim? Do they disprove them?

27. A sample of 10 fish were caught at lake A and their PCB concentrations were measured using a certain technique. The resulting data in parts per million were

Lake A: 11.5, 10.8, 11.6, 9.4, 12.4, 11.4, 12.2, 11, 10.6, 10.8

In addition, a sample of 8 fish were caught at lake B and their levels of PCB were measured by a different technique than that used at lake A. The resultant data were

Lake B: 11.8, 12.6, 12.2, 12.5, 11.7, 12.1, 10.4, 12.6