

**2.25** The following are the burning times (in minutes) of chemical flares of two different formulations. The design engineers are interested in both the mean and variance of the burning times.

Type 1		Type 2	
65	82	64	56
81	67	71	69
57	59	83	74
66	75	59	82
82	70	65	79

- Test the hypothesis that the two variances are equal. Use  $\alpha = 0.05$ .
- Using the results of (a), test the hypothesis that the mean burning times are equal. Use  $\alpha = 0.05$ . What is the  $P$ -value for this test?
- Discuss the role of the normality assumption in this problem. Check the assumption of normality for both types of flares.

**2.29** The diameter of a ball bearing was measured by 12 inspectors, each using two different kinds of calipers. The results are as follows:

Inspector	Caliper 1	Caliper 2
1	0.265	0.264
2	0.265	0.265
3	0.266	0.264
4	0.267	0.266
5	0.267	0.267
6	0.265	0.268
7	0.267	0.264
8	0.267	0.265
9	0.265	0.265
10	0.268	0.267
11	0.268	0.268
12	0.265	0.269

- Is there a significant difference between the means of the population of measurements from which the two samples were selected? Use  $\alpha = 0.05$ .
- Find the  $P$ -value for the test in part (a).
- Construct a 95 percent confidence interval on the difference in mean diameter measurements for the two types of calipers.