

1. A study was conducted by the Florida Game and Fish Commission to assess the amounts of chemical residues found in the brain tissue of pelicans. In a test for DDT, random samples of juveniles and nestlings yielded the following results:

<u>Juveniles</u>	<u>Nestlings</u>
$n_1 = 10$	$n_2 = 13$
$\bar{y}_1 = .041$	$\bar{y}_2 = .026$
$s_1 = .017$	$s_2 = .006$

Is there sufficient evidence, at the 5% level, to support concluding that the variance in measurements of DDT levels is greater for juveniles than it is for nestlings?

2. Suppose that we wish to compare the variation in diameters of machine parts produced by Company A with their competitors, Company B. A random sample of $n = 10$ of Company A's parts yielded a sample variance of $s_1^2 = .0003$. In contrast, the sample variance of the diameter measurements for 20 of Company B's parts was $s_2^2 = .0001$. Do the data provide enough evidence to indicate a smaller variation in diameters for Company B? Test with $\alpha = .05$. Give a bound for the p-value associated with these data.

3. A firm wishes to explore the number of sick days taken by employees with children and employees without children. Summary statistics are given in the table below:

	<u>Employees with Children</u>	<u>Employees without Children</u>
n	14	10
\bar{y}	16.2	14.9
s^2	12.7	26.4

Is there sufficient evidence to indicate a significant difference in the variance of number of sick days taken for employees with and without children? Test at $\alpha = .1$. What can you say about the p-value?

4. Recall that in Example 9.4, we used a two-sample t-test to compare the success indices for two groups of managers. The use of the t-test was based on the *assumption* that the population variances were equal for the two groups. Check this assumption at $\alpha = .1$. Summary statistics are given in the table below.

TTEST PROCEDURE						
Variable: SUCCESS						
GROUP	N	Mean	Std Dev	Std Error	Minimum	Maximum
1	12	65.33333333	6.61036835	1.90824897	53.00000000	78.00000000
2	15	49.46666667	9.33401358	2.41003194	34.00000000	68.00000000
Variances		T	DF	Prob> T		
Unequal		5.1615	24.7	0.0001		
Equal		4.9675	25.0	0.0000		
For HO: Variances are equal, F' = 1.99				DF = (14,11)	Prob>F' = 0.2554	