Lab Assignment Math 220

1. In a study of computer assisted learning, 12 normal ability school children were assigned at random to each of two learning programs. After they learned the program, they attempted to recognize 24 Blissymbols (pictograph used to help learning disabled children). Here are the counts correct for one of the programs.

12,22,9,14,20,15,9,10,11,11,15,6.

Get a 95% CI for μ, the mean counts correct for this program.

1) The CI is (9.9, 15.8).

2). Perform a t test to see if μ is smaller than 15, the mean count correct of the other program. Write down H_0, H_1, the test statistic and the p-value for this test.

$H_0 : \mu = 15$,

$H_1 : \mu < 15$.

The t test statistic is -1.615.

The p-value for this test is

0.135/2=0.0675.

2. A study compared the breaking strength of fabrics treated by two commercial durable press processes. Five swathes of the same fabric were assigned at random to each process. Here are the data, in pounds of pull needed to tear the fabric.

Permafresh: 29.9, 30.7, 30.0, 29.5, 27.6

Hylite: 28.8, 23.9, 27.0,22.1, 24.2

1). Get a 95% CI for the mean difference in breaking strength of this fabric treated by the two processes.

The CI for $\mu_1 - \mu_2$ is $(1.08, 7.60)$.

2). Test if the two processes produce different mean breaking strengths for this fabric. Write down H_0, H_1, the test statistic and the p-value. You can assume the two population variances are not equal.

$H_0 : \mu_1 = \mu_2$,

$H_a : \mu_1 \neq \mu_2$.

The t test statistic is 3.331,

the p-value for this test is 0.018.

3). What the p-value would be if you want to test if the Permafresh process is more superior than the Hylite process?

$H_0 : \mu_1 = \mu_2$,

$H_1 : \mu_1 > \mu_2$.
For this one tailed test, the p-value would be 0.018/2=0.009.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	df
strength	Equal variances assumed	4.999	.056	3.331	8
	Equal variances not assumed			3.331	5.476

Independent Samples Test

		t-test for Equality of Means			
		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence ... Lower
strength	Equal variances assumed	.010	4.34000	1.30292	1.33546
	Equal variances not assumed	.018	4.34000	1.30292	1.07650

Independent Samples Test

		t-test for Equality of Means	
		95% Confidence Interval of the ...	
		Upper	
strength	Equal variances assumed	7.34454	
	Equal variances not assumed	7.60350	