Inferences from two samples.

Test the given hypothesis. Assume that the samples are independent and that they have been randomly selected

1) Use the given sample data to test the claim that $p_1 > p_2$. Use a significance level of 0.01. 1) ______________

Sample 1	Sample 2
$n_1 = 85$	$n_2 = 90$
$x_1 = 38$	$x_2 = 23$

2 Prop Z Test

Ho: $P_1 = P_2$

H1: $P_1 > P_2$

Out put: z= 2.66 p value = 0.0039

P value < alpha (significance = 0.01); therefore, reject Ho.

Note: when a two samples test is conducted, we generate the 1 -2 alpha CI for one tailed tests; and a 1 - alpha interval for two-tailed test.

This is a right tailed test, therefore 1 - 2(0.01) = 0.98 C-Level is: $0.0266 < p1-p2 < 0.3564$

Test the indicated claim about the means of two populations. Assume that the two samples are independent simple random samples selected from normally distributed populations. Do not assume that the population standard deviations are equal.

2) A researcher wishes to determine whether people with high blood pressure can reduce their blood pressure, measured in mm Hg, by following a particular diet. Use a significance level of 0.01 to test the claim that the treatment group is from a population with a smaller mean than the control group. Use the traditional method of hypothesis testing. 2) ______________

Treatment Group	Control Group
$n_1 = 101$	$n_2 = 105$
$\bar{x}_1 = 120.5$	$\bar{x}_2 = 149.3$
$s_1 = 17.4$	$s_2 = 30.2$

2 Samples T test

Ho: $\mu_1 = \mu_2$ H_1: $\mu_1 < \mu_2$

Note: The statement "Do not assume that the population standard deviations are equal." implies using Pooled OFF on Calculator.

Construct the indicated confidence interval for the difference between the two population means. Assume that the two samples are independent simple random samples selected from normally distributed populations. Do not assume that the population standard deviations are equal.

3) A researcher was interested in comparing the amount of time spent watching television by women and by men. Independent simple random samples of 14 women and 17 men were selected, and each person was asked how many hours he or she had watched television during the previous week. The summary statistics are as follows. 3) ______

Women	Men
$\bar{x}_1 = 12.8$ hrs	$\bar{x}_2 = 14.0$ hrs
$s_1 = 3.9$ hrs	$s_2 = 5.2$ hrs
$n_1 = 14$	$n_2 = 17$

Construct a 99% confidence interval for $\mu_1 - \mu_2$, the difference between the mean amount of time spent watching television for women and the mean amount of time spent watching television for men.

A) -5.71 hrs $< \mu_1 - \mu_2 < 3.31$ hrs
B) -5.84 hrs $< \mu_1 - \mu_2 < 3.44$ hrs
C) -5.85 hrs $< \mu_1 - \mu_2 < 3.45$ hrs
D) -5.72 hrs $< \mu_1 - \mu_2 < 3.32$ hrs

2 Samples T Interval

4) A researcher was interested in comparing the heights of women in two different countries. Independent simple random samples of 9 women from country A and 9 women from country B yielded the following heights (in inches). 4) ______

Country A	Country B
64.1	65.3
66.4	60.2
61.7	61.7
62.0	65.8
67.3	61.0
64.9	64.6
64.7	60.0
68.0	65.4
63.6	59.0

Construct a 90% confidence interval for $\mu_1 - \mu_2$, the difference between the mean height of women in country A and the mean height of women in country B.

(Note: $\bar{x}_1 = 64.744$ in., $\bar{x}_2 = 62.556$ in., $s_1 = 2.192$ in., $s_2 = 2.697$ in.)

A) 0.17 in. $< \mu_1 - \mu_2 < 4.21$ in.
B) 0.14 in. $< \mu_1 - \mu_2 < 4.24$ in.
C) 0.16 in. $< \mu_1 - \mu_2 < 4.22$ in.
D) 0.15 in. $< \mu_1 - \mu_2 < 4.23$ in.

Enter data Country A on L1, Country B, L2 2 Samples T Interval

1) H_0: $p_1 = p_2$. H_1: $p_1 > p_2$.
Test statistic: $z = 2.66$. Critical value: $z = 2.33$.
Reject the null hypothesis. There is sufficient evidence to support the claim that $p_1 > p_2$.
2) H_0: $\mu_1 = \mu_2$.
H_1: $\mu_1 < \mu_2$.
Test statistic: $t = -8.426$.
Critical value: -2.364.
Reject the null hypothesis. There is sufficient evidence to support the claim that the treatment group is from a population with a smaller mean than the control group.
3) A
4) C