

Try to learn this material. Problems like this will be in your final. It will not help if someone else does the problems for you. Working together with other students it's much better than getting help from a tutor.

Perform a test to compare the two population means. You may assume that the samples are independent and that the variable under consideration is normally distributed on both populations. The two population standard deviations cannot be assumed to be equal.

- 1) A researcher was interested in comparing the resting pulse rate of people who do not exercise regularly and people who do exercise regularly. Independent random samples of 16 people aged 30–40 who do not exercise regularly and 12 people aged 30–40 who do exercise regularly were selected and the resting pulse rate of each person was measured. The summary statistics are as follows.

Sample 1 Do not exercise regularly	Sample 2 Exercise regularly
$\bar{x}_1 = 72.8$	$\bar{x}_2 = 68.8$
$s_1 = 10.9$	$s_2 = 8.2$
$n_1 = 16$	$n_2 = 12$

Do the data provide sufficient evidence to conclude that the mean resting pulse rate of people who do not exercise regularly is greater than the mean resting pulse rate of people who exercise regularly? Perform a nonpooled t-test at the 5% significance level. **USE THE CALCULATOR AND MAKE THE DECISION BASED ON THE P-VALUE.**

- a) State the claim, null and the alternative hypothesis. Indicate what tail test is this. Show graphs shading rejection region. Find the point estimate and indicate the possibilities of the location in the graph.
- b) Use a feature in the calculator to solve the problem. Indicate the feature used and the results obtained.
- c) Write a conclusion. Make sure you explain how the p-value helps to decide on the conclusion. Must use words from the problem.

- 2) a) Use the data from problem 1 to **construct a 90% confidence interval** estimate for the difference between the resting pulse rate of people who do not exercise regularly and people who exercise regularly from the 30-40 age group.

Do the problem completely with the calculator, specify the feature used and the results. Indicate the point estimate and the confidence interval.

- b) Are the results of this interval supporting the claim of problem 1? Explain why or why not.**

Construct the indicated confidence interval for the difference between population proportions $p_1 - p_2$. Assume that the samples are independent and that they have been randomly selected.

3) In a random sample of 300 women, 69% favored stricter gun control legislation. In a random sample of 200 men, 60% favored stricter gun control legislation. Construct a 90% confidence interval estimate for the difference between the population proportions $p_1 - p_2$.

a) Describe IN WORDS both populations and the attribute.

Population 1 =

Population 2 =

Attribute under consideration =

b) Use the calculator to find the interval. Write all answers as percents with one decimal place.

The **point estimate (observed difference in proportions)** is _____%

The 90% confidence interval is (_____%, _____%)

b) **Use the interval obtained in part (a)** to find the margin of error of this interval. Show how you find it. PLEASE, do not use the formulas given in the book, get it out of the interval!!!!!!

The margin of error is _____%

c) Complete the following statement.

I am 90% confident that the proportion of women who favor stricter gun control legislation is between _____% and _____% more than the proportion of men who favor similar legislation.

d) Use the point estimate and margin of error to complete the following statement, which is typical of the statement that would be reported in a newspaper or magazine.

According to a statistical study, the percentage of women who favor stricter gun control is%..... more/less (circle one) than the percentage of men who favor similar legislation, with a margin of error of%..... (at the level of confidence)

e) Does the interval suggest that the two proportions may be equal? Explain why or why not.

- 4) Use the data from problem 3 to test the claim that the proportion of women who favor stricter gun control legislation is larger than the proportion of men who favor similar legislation. Use a 5% significance level.

Show both hypothesis, the graph, shade, indicate the possible locations of the point estimate, what feature of the calculator you are using to solve, the results obtained. Make sure you explain how the p-value helps to decide on the conclusion. Must use words from the problem.

Use the nonpooled t-interval procedure to obtain the required confidence interval for the difference between two population means. You may assume that the samples are independent and that the variable under consideration is normally distributed on both populations. The two population standard deviations cannot be assumed to be equal.

- 5) A researcher was interested in comparing the GPAs of students at two different colleges. Independent random samples of 8 students from college A and 13 students from college B yielded the following GPAs.

College A	College B	
3.7	3.8	2.8
3.2	3.2	4.0
3.0	3.0	3.6
2.5	3.9	2.6
2.7	3.8	4.0
3.6	2.5	3.6
2.8	3.9	
3.4		

- a) Determine a 90% confidence interval for the difference, $\mu_1 - \mu_2$, between the mean GPA of all college A students and the mean GPA of all college B students.

USE THE DATA OPTION IN YOUR CALCULATOR

The observed difference between the means is _____

The 90% confidence interval is _____

The point estimate for the difference between the two population means is _____

- b) Does this interval suggest that the mean GPAs of the students at the two different colleges may be equal? Why or why not?

c) THIS IS PROBLEM 5 CONTINUED. YOU ARE USING THE SAME DATA SET AS IN PROBLEM 5. USE THE DATA OPTION OF THE CALCULATOR TO DO THIS PROBLEM

At the 5% significance level, test the claim that the mean GPA of the students is lower for college A than for college B.

Show both hypothesis, the graph, shade, indicate the possible locations of the point estimate, what feature of the calculator you are using to solve, the results obtained, what helps you reach a conclusion, and write the conclusion using words from the problem.