1-

A snack food company produces bags of peanuts labeled as containing 4 ounces.  A consumer reports organization wants to see if the weight is actually less than 4 ounces. They randomly choose 40 bags and their contents are weighed. They find the average weight is 3.5 ounces with a standard deviation of s = 0.9 ounces. Is this sufficient evidence to conclude that the bags contain less than 4 ounces of peanuts?

1. State the null and alternative hypotheses.    
     
   H0:   
   Ha: 
2. What is the value of the one-sample *t* statistic?  Do not pool variances.   
     
   *t* = Round to 3 places.
3. What is the *P*-value for the t test?   
     
   *P*-value = Round to 4 places.
4. Is there sufficient evidence that the bags contain less than 4 ounces of peanuts?
5. Give a 95% confidence interval for the mean weight of peanuts in each bag. (The t critical value is 2.009.)   
     
   From ounces to ounces.  Round each number to 2 places.

2-

Simple random sample of high-interest mortgages and low-interest mortgages were obtained.  For the 61 high-interest mortgages, the borrowers had a mean FICO credit score of 585 and a standard deviation of 51.5.  For the 22 low interest mortgages, the borrowers had a mean FICO score of 636 and a standard deviation of 36.8.  Test the claim that the mean FICO score of borrowers with high-interest mortgages is lower than the mean FICO score of borrowers with low-interest mortgages.

1. State the null and alternative hypotheses.    
     
   H0:   
   Ha: 
2. What is the value of the two-sample *t* statistic?  Do not pool variances.  
     
   *t* = Round to 3 places.
3. What is the *P*-value for the t test?  Use degrees of freedom of 21 or technology.   
     
   *P*-value = Round to 4 places.
4. Does the FICO credit rating score appear to affect mortgage payments?
   * There is sufficient evidence to show that the mean FICO score of borrowers with high-interest mortgages is lower than the mean FICO score of borrowers with low-interest mortgages.
   * There is not sufficient evidence to show that the mean FICO score of borrowers with high-interest mortgages is lower than the mean FICO score of borrowers with low-interest mortgages.
5. Give a 90% confidence interval for the mean difference between FICO scores of high-interest and low-interest borrowers.  Answer using technology or if completed by hand use degrees of freedom of 52.05.    
     
   From a score of to a score of .  Round each number to 2 places.

3-

According to the National Institute on Alcohol Abuse and Alcoholism, 50% of college students nationwide engage in “binge drinking” behavior, having 5 or more drinks in one occasion during the past two weeks. A college president wonders if the proportion of students enrolled at her college that binge drink is actually lower than the national proportion. In a commissioned study, 347 students are selected randomly from a list of all students enrolled at the college. Of these 156 admitted to having engaged in binge drinking.

1. What is the sample proportion?   
     
   hatp=Round to 4 places.
2. What is the standard error of the sample proportion?    
     
   sigma_hatp=  Round to 4 places.
3. Give a 95% confidence interval for the true proportion of students who binge drink at her college.      
     
   From to   Round to 2 places. Do not enter as a percent.
4. State the null and alternative hypotheses.    
     
   H0:   
   Ha: 
5. Give the test statistic.  
     
     = Round to 3 places.
6. State the p-value for this test.     
     
   *P*-value = Round to 4 places.
7. Do the students at this college binge drink less than students do nationwide? (Significance level of α = 0.10.)
   * Yes, because the *P*-value is less than the level of significance alpha
   * Yes, because the *P*-value is greater than the level of significance alpha
   * No, because the *P*-value is less than the level of significance alpha
   * No, because the *P*-value is greater than the level of significance alpha

4-

The *P*-value for a test was *P* = 0.026.

1. Is this significant at the 5% level?
   * Maybe
   * Yes
   * No
2. Is this significant at the 1% level?
   * Maybe
   * No
   * Yes

5-

A significance test was reported in an article said the result was significant at the 1% level. Are such results always, sometimes, or never significant at the 5% level?

* Always.
* Sometimes.
* Never

6-

You wish to test the following claim (H_a) at a significance level of alpha = 0.002.

H_o : mu = 78.4  
H_a : mu > 78.4

You believe the population is normally distributed, but you do not know the standard deviation.

| **Data** |
| --- |
| 74.4 |
| 87.8 |
| 70.5 |
| 79.5 |
| 66.1 |
| 79.7 |
| 94.4 |
| 69.6 |
| 85.0 |
| 76.4 |
| 85.3 |
| 85.9 |
| 81.5 |
| 69.1 |
| 61.4 |
| 92.5 |
| 77.1 |
| 71.8 |
| 78.0 |
| 101.6 |
| 89.6 |
| 81.8 |
| 68.5 |
| 80.3 |
| 98.5 |
| 82.9 |
| 101.6 |
| 98.5 |
| 99.4 |
| 77.7 |
| 88.5 |
| 72.6 |
| 65.3 |
| 95.6 |
| 85.9 |
| 70.5 |
| 76.7 |
| 82.1 |
| 76.1 |
| 101.6 |
| 92.9 |
| 99.4 |
| 85.0 |
| 77.1 |
| 66.1 |

Use StatCrunch.

* Copy and paste the data into an empty column in Statcrunch
* Select Stat → T Statistics → One Sample → From data
* Select the column the data is in
* Enter the appropriate null claim and alternative hypothesis.
* Press Compute!

1. What is the test statistic for this sample?  
     
   test statistic = Round to 3 decimal places
2. What is the p-value for this sample?  
     
   p-value = Use Technology Round to 4 decimal places.
3. The p-value is...
   * less than (or equal to) alpha
   * greater than alpha
4. This test statistic leads to a decision to...
   * reject the null
   * accept the null
   * fail to reject the null
5. As such, the final conclusion is that...
   * There is sufficient evidence to warrant rejection of the claim that the population mean is greater than 78.4.
   * There is not sufficient evidence to warrant rejection of the claim that the population mean is greater than 78.4.
   * The sample data support the claim that the population mean is greater than 78.4.
   * There is not sufficient sample evidence to support the claim that the population mean is greater than 78.4.