Feedback — Quiz 3

Help

You submitted this quiz on **Sat 24 May 2014 1:12 PM PDT**. You got a score of **9.00** out of **9.00**.

Question 1

In a population of interest, a sample of 9 men yielded a sample average brain volume of 1,100cc and a standard deviation of 30cc. What is a 95% Student's T confidence interval for the mean brain volume in this new population?

Your Answer		Score	Explanation
(•) [1077,1123]	✔	1.00	Correct!
( ) [1080, 1120]			
( ) [1031, 1169]			
( ) [1092, 1108]			
Total		1.00 / 1.00	

Question 2

A diet pill is given to 9 subjects over six weeks. The average difference in weight (follow up - baseline) is -2 pounds. What would the standard deviation have to be for the 95% T confidence interval to lie entirely below 0? Give your answer to two decimal places.

You entered:

2.60

Your Answer		Score	Explanation
2.60	✔	1.00	
Total		1.00 / 1.00	

Question 3

In an effort to improve efficiency, hospital administrators are evaluating a new triage system for their emergency room. In an validation study of the system, 5 patients were tracked in a mock ER under both the new and old triage system. Their waiting times were recorded. Would it be better to use an independent group or paired T confidence interval in this setting?

Your Answer		Score	Explanation
(•) A paired interval	✔	1.00	
( ) It's necessary to use both			
( ) Independent groups			
( ) You could use either			
Total		1.00 / 1.00	

Question 4

Refer to the setting of the previous question. To further test the system, administrators selected 20 nights and randomly assigned the new triage system to be used on 10 nights and the standard system on the remaining 10 nights. They calculated the nightly median waiting time (MWT) to see a physician. The average MWT for the new system was 3 hours with a variance of 0.60 while the average MWT for the old system was 5 hours with a variance of 0.68. Consider the 95% confidence interval estimate for the differences of the mean MWT associated with the new system. Assume a constant variance. What is the interval? Subtract in this order (New System - Old System).

Your Answer		Score	Explanation
(•) [-2.75, -1.25]	✔	1.00	Correct!
( ) [1.25, 2.75]			
( ) [-2,70, -1.29]			
( ) [1.29, 2.70]			

Total	1.00 / 1.00

Question 5

Suppose that you create a 95% T confidence interval. You then create a 90% interval using the same data. What can be said about the 90% interval with respect to the 95% interval?

Your Answer		Score	Explanation
(•) The interval will be narrower.	✔	1.00	
( ) The interval will be wider			
( ) It is impossible to tell.			
( ) The interval will be the same width, but shifted.			
Total		1.00 / 1.00	

Question 6

To further test a hospital triage system, administrators selected 200 nights and randomly assigned a new triage system to be used on 100 nights and a standard system on the remaining 100 nights. They calculated the nightly median waiting time (MWT) to see a physician. The average MWT for the new system was 4 hours with a standard deviation of .5 hours while the average MWT for the old system was 6 hours with a standard deviation of 2 hours. Consider the hypothesis of a decrease in the mean MWT associated with the new treatment. What does the interval suggest vis a vis this hyptothesis?

Your Answer	Score	Explanation
( ) When subtracting (old - new) the interval contains 0. There is not evidence suggesting that the new system is effective.		
( ) When subtracting (old - new) the interval is entirely above zero. The new system does not appear to be effective.		
( ) When subtracting (old - new) the interval contains 0. The new system appears to be effective.		

◉When subtracting (old - new) the interval is entirely above zero. The new system appears to be effective.	✔	1.00
Total		1.00 / 1.00

Question 7

Suppose that 18 obese subjects were randomized, 9 each, to a new diet pill and a placebo. Subjects' body mass indices (BMIs) were measured at a baseline and again after having received the treatment or placebo for four weeks. The average difference from follow-up to the baseline (followup - baseline) was −3 kg/m2 for the treated group and 1 kg/m2 for the placebo group. The corresponding standard deviations of the differences was 1.5 kg/m2 for the treatment group and 1.8 kg/m2 for the placebo group. Does the change in BMI over the four week period appear to differ between the treated and placebo groups? Assuming normality of the underlying data and a common population variance, calculate the relevant *90%* t confidence interval. Subtract in the order of (Treated - Placebo) with the smaller (more negative) number first.

Your Answer		Score	Explanation
◉[-5.364, -2.636]	✔	1.00	
○[2.636, 5.364]			
○[-5.531, -2.469]			
○[2.469, 5.531]			
Total		1.00 / 1.00	

Question 8

Consider a discrete distribution with an unknown parameter. The maximum likelihood estimate gives:

Your Answer	Score	Explanation
○The value that intersects with a horizontal line chopping the likelihood off at 1/8th.		

The value that minimizes the likelihood function.		
The value of the parameter that makes the observed data most probable given the model.	✔	1.00
The value of the data that makes it maximizes the likelihood.		
Total		1.00 / 1.00

Question 9

To obtain the posterior in Bayesian inference we:

Your Answer		Score	Explanation
Multiply the likelihood by the prior.	✔	1.00	
Multiple the likelihood times the posterior.			
Multiply the prior times the z statistic.			
Multiply the prior times the posterior.			
Total		1.00 / 1.00	