Feedback — Quiz 4

Help

You submitted this quiz on **Sun 1 Jun 2014 9:39 AM PDT**. You got a score of **12.00** out of **12.00**.

Question 1

In a random sample of 100 patients at a clinic, you would like to test whether the mean RDI is x or more using a one sided 5% type 1 error rate. The sample mean RDI had a mean of 12 and a standard deviation of 4. What is the largest value of x ($H_0 : \mu = x$ versus $H_a : \mu > x$) would you reject for? Give at least one decimal place in your answer.

You entered:

11.342

Your Answer		Score	Explanation
11.342	✔	1.00	
Total		1.00 / 1.00	

Question 2

A pharmaceutical company is interested in testing a potential blood pressure lowering medication. Their first examination considers only subjects that received the medication at baseline then two weeks later. The data are as follows (SBP in mmHg)

Subject	Baseline	Week 2
1	140	132
2	138	135
3	150	151
4	148	146
5	135	130

Consider testing the hypothesis that there was a mean reduction in blood pressure? Give the

P-value for the associated two sided test. Give at least 3 decimal places in your answer and express your P-value as a proportion and not a percentage.

You entered:

0.08652

Your Answer		Score	Explanation
0.08652	✔	1.00	
Total		1.00 / 1.00	

Question 3

A sample of 9 men yielded a sample average brain volume of 1,100cc and a standard deviation of 30cc. What is the complete set of values of μ_0 that a test of $H_0 : \mu = \mu_0$ would fail to reject the null hypothesis in a two sided 5% Students t-test?

Your Answer		Score	Explanation
◉ 1077 to 1123	✔	1.00	
○ 1031 to 1169			
○ 1081 to 1119			
○ 1080 to 1120			
Total		1.00 / 1.00	

Question 4

Researchers conducted a blind taste test of Coke versus Pepsi. Each of four people was asked which of two blinded drinks given in random order that they preferred. The data was such that 3 of the 4 people chose Coke. Assuming that this sample is representative, report a P-value for a test of the hypothesis that Coke is preferred to Pepsi using a one sided exact test. Give the answer as either a proportion to two decimal places or a percentage to the nearest percentage point.

You entered:

0.3173105

Your Answer		Score	Explanation
0.3173105	✔	1.00	Correct!
Total		1.00 / 1.00	

Question 5

Infection rates at a hospital above 1 infection per 100 person days at risk are believed to be too high and are used as a benchmark. A hospital that had previously been above the benchmark recently had 10 infections over the last 1,787 person days at risk. What is the (one sided) P-value for the relevant test of whether the hospital is *below* the standard? Express your answer as either a proportion to two decimal places or a percentage to the nearest percentage point.

You entered:

0.03066625

Your Answer		Score	Explanation
0.03066625	✔	1.00	
Total		1.00 / 1.00	

Question 6

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 two

year period appear to differ between the treated and placebo groups? Assuming normality of the underlying data and a common population variance, give a pvalue for a two sided t test.

Your Answer		Score	Explanation
Less than 0.01	✔	1.00	
Less than 0.05, but larger than 0.01			
Less than 0.10 but larger than 0.05			
Larger than 0.10			
Total		1.00 / 1.00	

Question 7

Brain volumes for 9 men yielded a 90% confidence interval of 1,077 cc to 1,123 cc. Would you reject in a two sided 5% hypothesis test of $H_0 : \mu = 1,078$?

Your Answer		Score	Explanation
It's impossible to tell.			
Yes you would reject.			
No you wouldn't reject.	✔	1.00	
Where does Brian come up with these questions?			
Total		1.00 / 1.00	

Question 8

Researchers would like to conduct a study of 100 healthy adults to detect a four year mean brain volume loss of $.01\ mm^3$. Assume that the standard deviation of four year volume loss in this population is $.04\ mm^3$. What would be the power of the study for a 5% one sided test versus a null hypothesis of no volume loss? Express your answer as either a percentage to the nearest percentage point or as a proportion to two decimal places.

You entered:

0.7989855

Your Answer		Score	Explanation
0.7989855	✔	1.00	Correct!
Total		1.00 / 1.00	

Question 9

Researchers would like to conduct a study of n healthy adults to detect a four year mean brain volume loss of $.01\ mm^3$. Assume that the standard deviation of four year volume loss in this population is $.04\ mm^3$. What would be the value of n needded for 90%power of type one error rate of 5%one sided test versus a null hypothesis of no volume loss? Express n as an integer. (Remember to always round up for sample size calculations.)

You entered:

138

Your Answer		Score	Explanation
138	✔	1.00	Correct!
Total		1.00 / 1.00	

Question 10

As you increase the type one error rate, α, what happens to power?

Your Answer		Score	Explanation
◉ You will get larger power.	✔	1.00	
○ No, for real, where does Brian come up with these problems?			
○ It's impossible to tell given the information in the problem.			

○ You will get smaller power.	
Total	1.00 / 1.00

Question 11

The Daily Planet ran a recent story about Kryptonite poisoning in the water supply after a recent event in Metropolis. Their usual field reporter, Clark Kent, called in sick and so Lois Lane reported the story. Researchers sampled 288 individuals and found mean blood Kryptonite levels of 44, both measured in Lex Luthors per milliliter (LL/ml). They compared this to 288 sampled individuals from Gotham city who had an average level of 42.04. Report the Pvalue for a two sided Z test of the relevant hypothesis. Assume that the standard deviation is 12 for both groups.Express your answer as either a percentage to the nearest percentage point or as a proportion to two decimal places.

You entered:

0.05

Your Answer		Score	Explanation
0.05	✔	1.00	
Total		1.00 / 1.00	

Question 12

Suppose that a researcher performs 10 hypothesis tests and wants a familywise error rate of no more than 5%. What alpha level should she compare her pvalues to in order to ensure the desired error rate? Express it as a proportion to two decimal places.

Your Answer		Score	Explanation
◉ 0.005	✔	1.00	
○ 0.05			
○ 0.0005			

○ 0.1	
Total	1.00 / 1.00