

PSYC 60 – Statistics  
Spring 2012  
Quiz 3 – Example (v1.1)

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Student #: A\_\_\_\_\_

### **Instructions**

Calculators (simple & graphing) will be allowed along with one page with both sides of handwritten notes. You will receive a copy of the z- and t-table with this quiz. You will have the full class period (50 minutes minus setup time).

### **Test selection**

For each of the following scenarios, select the appropriate statistical method.

1. A university wants to know if its students have an IQ that is above the population ( $\mu = 100, \sigma = 15$ ). The gather sample data on the incoming class.

- a. z-test
- b. t-test – 1 sample
- c. t-test – 2 sample, dependent
- d. t-test – 2 sample, independent
- e. confidence interval

2. A psych grad student wants to determine how dress affects how much money people will donate to “homeless” individuals. On one day she dresses in dirty and tattered clothing and records the amounts donated by people she solicits. One week later she repeats the experiment but is dressed cleanly.

- a. z-test
- b. t-test – 1 sample
- c. t-test – 2 sample, dependent
- d. t-test – 2 sample, independent
- e. confidence interval

3. A behavioral scientist is timing how quickly a mouse can get through a maze based on the kind of cheese at the end of the maze. She tests each mouse with cheddar and gruyere on separate days and counterbalances the order.

- a. z-test
- b. t-test – 1 sample
- c. t-test – 2 sample, dependent
- d. t-test – 2 sample, independent
- e. confidence interval

4. You are interested in estimating the average age of students in your stats class. You poll 20 students.

- a. z-test
- b. t-test – 1 sample

- c. t-test – 2 sample, dependent
- d. t-test – 2 sample, independent
- e. confidence interval

**t Test, 2-sample - Dependent**

Questions 5-8 use the following information:

Perform a 2-sample dependent t-test to determine if the AFTER values are significantly greater than the BEFORE values. Assume alpha = 0.05.

ID	Before	After	After-Before
A:	7	9	2
B:	2	3	1
C:	9	10	1
D:	2	8	6
Avg	5	7.5	2.5
SS	38	29	17

5. What are the degrees of freedom?

- a. 2
- b. 3
- c. 4
- d. 7
- e. 8

7. What is the critical t value?

- a. 1.199
- b. 2.216
- c. 2.353
- d. 2.415
- e. 2.763

6. What is the standard error? (you must decide which standard error is appropriate for this test)

- a. 1.78
- b. 1.55
- c. 1.19
- d. 4.25
- e. 2.58

8. What is the calculated t value?

- a. 0.28
- b. 1.78
- c. 2.10
- d. 2.35
- e. 4.26

### **t Test, 2-sample - Independent**

Questions 9-11 used the following information:

Perform a test to determine if the average lifespan is different for the following two regions. Assume  $\alpha = 0.05$ .

	Mean	SS	n
Coastal	72 years	210	14
Urban	68 years	325	17

9. What are the degrees of freedom?

- a. 13
- b. 14
- c. 16
- d. 31
- e. 29

10. What is the pooled variance?

- a. 5.45
- b. 18.45
- c. 23.34
- d. 60.31
- e. 418.90

11. What is the critical t value?

- a. 1.998
- b. 2.045
- c. 2.156
- d. 2.218
- e. 2.234

Questions 12-13 use the following information:

Given the following:

	Mean	n
Sample A	68	10
Sample B	72	30

Pooled variance = 4.5

12. What is the standard error? (you must decide which standard error is appropriate for this test)

- a. 0.12
- b. 0.77
- c. 1.23
- d. 4.50
- e. 7.89

13. Which sample contributes more to the standard error and why?

- a. Sample A – because it has a lower mean
- b. Sample A – because it has a lower n
- c. Sample B – because it has a higher mean
- d. Sample B – because it has a higher n
- e. Both sample contribute equally

Questions 14-15 use the following information:

	Mean	SS	n
Sample A	12.2	33	18
Sample B	4.3	78	12

Standard error = 0.74

Null hypothesis:  $\mu_A = \mu_B$

14. What is the t statistic? (use Sample A - Sample B)

- a. 0.14
- b. 1.56
- c. 5.67
- d. 8.23
- e. 10.68

15. Assuming you were performing a 2-tailed test for a difference in sample means, what can you decide?

- a. Sample A is significantly greater than sample B
- b.  $p > .05$
- c. Retain the null hypothesis
- d. Type II Error

### **Conceptual**

Rather than give you a few random questions for the quiz example, I've outlined the conceptual topics you should be fluent with. The actual test will have the multiple choice conceptual questions you've seen before.

Explain why we use weighted averages and pooled variances, and why we can not just take the average of the two sample averages/variances

Explain why we have to counterbalance

Know the criteria for using each of the 4 tests we have learned, and the differences in terms of standard error, degrees of freedom, finding t critical, calculating t

Know the difference between the 3 standard errors we have learned

From a description of an experiment

Identify the IV/DV

Explain potential confounds

Explain the importance of the following to an scientific experiment

Manipulation

Control

Random Assignment

Explain the difference between causation/correlation