



GRADED EXAMPLES

Statistics for Psychologists

Name: Craig A. Wendorf, Ph.D., Professor and Chair of Psychology
Location: D240 Science Center, University of Wisconsin – Stevens Point
Contact: cwendorf@uwsp.edu, 715-346-2304 (with voicemail)

Types of Graded Student Work

My Statistics for Psychologists course involves two basic types of written material to be graded: essay questions and problem-based questions. This document provides a few graded examples of each type of graded work.

For an extensive explanation of my grading guidelines:

<http://www4.uwsp.edu/psych/cw/teaching/Wendorf-GradingRubricExplanation.pdf>

Samples of Graded Work

A 4-Point Short Essay Question from Statistics with a Sample Student Answer

1. What is a standardized score and how is it interpreted? Answer the question by defining a standardized score and by describing the major properties or features of a standardized score.

A standardized score is an average or most common/likely score. Though it is not always the most frequently occurring score, it can be used to represent what most peoples scores were. The standardized score is usually a score found near the center of a frequency distribution. Standardized scores while useful, are somewhat irrelevant without additional information such as the standard deviation.

Category	Unacceptable	Partial	Good
Theories & Concepts (0-3 Points)	<input checked="" type="checkbox"/> Inappropriate <input checked="" type="checkbox"/> Incorrect <input checked="" type="checkbox"/> Incomplete	<input type="checkbox"/> Relevancy Vague <input type="checkbox"/> Major Inaccuracies <input type="checkbox"/> Lacking	<input type="checkbox"/> Relevancy Implied <input type="checkbox"/> Relevancy Described <input type="checkbox"/> No Inaccuracies <input type="checkbox"/> Thorough
Writing Style & Integration (0-1 Points)	<input type="checkbox"/> Improper Format for Question <input type="checkbox"/> Several Grammatical/Spelling Errors <input type="checkbox"/> Unclear or Haphazard Organization	<input checked="" type="checkbox"/> Proper Format for Question <input checked="" type="checkbox"/> Few Grammatical/Spelling Errors <input checked="" type="checkbox"/> Focused and Integrated Organization	

- This answer is wrong. The student confused a z-score (standardized score) with a measure of central tendency (perhaps the median).
- The answer is probably also too short (it was about one-third of an 8.5" x 11" sheet of paper). While the writing is a bit informal and there are a few errors, it (barely) meets expectations.

A 4-Point Problem-Based Question from Statistics with a Sample Student Answer

Study 1 (Nonexperimental): An instructor hypothesized that the students who earn a B or higher spend a significantly different number of hours per week outside of class on course work than those who receive a C or lower. She collects the following data on two independent samples of students.

B or higher: 9, 4, 7, 11, 1, 5, 3, 2, 1
C or lower: 3, 2, 0, 3, 2, 1, 4, 3, 3

2. Given the data for the study above, use SPSS to obtain an independent samples *t* test and a confidence interval for the difference between the means (using $\alpha = .01$).
- a. On your SPSS output, calculate "by hand" the statistical significance test and the confidence interval using the descriptive statistic information given to you. [You do not need to recalculate the means and standard deviations.] Use appropriate marks (e.g., arrows, circles, etc.) to show that your calculations match the statistics provided by SPSS. (3 pts.)
- b. Describe your findings in an appropriate APA-style Results section. Be sure to interpret the findings of the study. What do the analyses tell you about the difference between the groups? (1 pt.)

T-Test
[Data Set 2]

Study 2

Group Statistics

Group	N	Mean	Std. Deviation	Std. Error
Hours Group (C or Higher)	9	4.7778	3.56283	1.1876
Hours Group (D or E)	9	2.3333	1.22474	.4083

Levene's Test for Equality of Variances

	F	Sig.
Hours	8.294	.011

t-test for Equality of Means

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
Hours	1.946	16	.069	2.4444	1.25585	Lower: -2.1784, Upper: 5.10873

Handwritten calculations:

$$g_{\text{high}} SE = 3.56283 / \sqrt{9} = 1.1876$$

$$g_{\text{low}} SE = 1.22474 / \sqrt{9} = .4083$$

$$SE_D = \sqrt{1.1876^2 + .4083^2}$$

$$SE_D = 1.2558$$

$$t = \frac{4.7778 - 2.3333}{1.2558} = 1.944$$

95% CI

$$CI_M = M \pm (CV)(SE)$$

$$= 2.4444 \pm (2.120)(1.2558)$$

$$CI_M = (-2.179, 5.1067)$$

Fail to reject the Null hypothesis

Problem Grade:

Category	Unacceptable	Problematic	Satisfactory	Good
Procedures & Formulae (0-3 Points)	<input type="checkbox"/> Inappropriate <input type="checkbox"/> Incorrect <input type="checkbox"/> Incomplete	<input type="checkbox"/> Relevancy Vague <input type="checkbox"/> Major Inaccuracies <input type="checkbox"/> Lacking	<input type="checkbox"/> Relevancy Implied <input type="checkbox"/> Minor Inaccuracies <input type="checkbox"/> Too Broad	<input checked="" type="checkbox"/> Relevancy Described No Inaccuracies Thorough
Writing Style & Integration (0-1 Points)	<input checked="" type="checkbox"/> Improper Format for Question <input type="checkbox"/> Several Grammatical/Spelling Errors <input type="checkbox"/> Unclear or Haphazard Organization	<input type="checkbox"/> Proper Format for Question Few Grammatical/Spelling Errors Focused and Integrated Organization		

- This student did a very good job with the calculation part of the problem (Problem 2a). The SPSS is printout is correct. The hand calculations are on the printout and they match the SPSS printout. The student clearly indicated that she understood how the calculations match the output by using arrows and boxes.
- However, the second part of the problem (Problem 2b) is virtually missing. There is a slight interpretation of the output ("fail to reject the null hypothesis"), but there is no written description or explanation of the results in appropriate APA style.