

i SNE4231 ordinary exam in Statistics Fall 2023**UiO • Institutt for spesialpedagogikk**
Det utdanningsvitenskapelige fakultet**SNE4231 Written exam in statistics****Ordinary exam - Autumn 2023****October 6th - 9:00-12:00****Information about the exam**

- This exam is composed of three parts, namely Exercise 1, Exercise 2, and a set of multiple-choice questions.
You answer exercise 1 by uploading one file (doc or docx).
You answer exercise 2 by typing your answer directly in Inspira.
You respond to the multiple-choice questions directly in Inspira.
- All answers must be as brief as possible, including justifications. Avoid lengthy explanations and be very succinct. Most questions will be answered with one or very few words (or number(s) or other item(s)).
- Make sure you answer both Exercise 1 and Exercise 2 of the exam. You must pass both exercises to receive a final passing grade. It is not necessary to pass the multiple-choice questions.
- The exam must be answered in English.

Do not write your name in your answers!

1 Exercise 1

Exercise 1

1. [Click this file](#) to download the data file to the computer.
2. Open the file in Jamovi. There will be 4 variables in this dataset, namely Group, Reg, ScoreA, and ScoreB. These are simulated data for 100 participants. "Group" codes whether they are assigned to Group 1 or Group 2. "Reg" codes whether they are registered for an activity (YES or NO). "ScoreA" and "ScoreB" are their scores in two different aptitude tests.
3. Check and correct, if necessary, the definitions and measurement scales for the variables.
4. For each one of the 4 variables:
 - a) Present an appropriate graph or table to illustrate its contents.
 - b) Calculate and list appropriate descriptive statistics, including full normality check when relevant.
5. Carry out the steps listed below for each of the following four pairs of variables: (1) Group & Reg ; (2) ScoreA & Group ; (3) ScoreB & Reg ; (4) ScoreA & ScoreB.
 - a) Present an appropriate graph of the two variables.
 - b) Run an appropriate inferential statistical analysis to test whether there exists a statistical association between the two variables. Briefly justify your choice of analysis and state the associated null hypothesis.
 - c) Report the results of the analysis formatted according to APA rules.
 - d) State your conclusion regarding the null hypothesis and your conclusion regarding whether or not a relationship exists.
6. Determine if there is a difference between the scores of the two aptitude tests for these participants:
 - a) Present an appropriate graph for the comparison of the two test scores.
 - b) Run an appropriate inferential statistical analysis to test whether there exists a difference. Briefly justify your choice of analysis and state the associated null hypothesis.
 - c) Report the results of the analysis formatted according to APA rules.
 - d) State your conclusion regarding the null hypothesis and your conclusion regarding whether or not a difference exists.
7. Paste the necessary element(s) from the Jamovi output (not the entire analyses!) into a single Word document along with your answers.
8. Upload the Word document below.

Note: You are required to use the methods and criteria taught in this course for making the necessary decisions and running the analyses.



Upload your file here. Maximum one file.

The following file types are allowed: **.doc,.docx** Maximum file size is **2 GB**

 Select file to upload

Maximum marks: 0

Maximum marks: 0

3 3.1

In a normally distributed variable, the proportion of values that lie two or more standard deviations away from the mean is about...

Select one alternative:

- ☐ 32%
- ☐ 5%
- ☐ 16%
- ☐ 1%

Maximum marks: 1

4 3.2

Three of the following statements about the standard deviation are true. Which one is **false**?

Select one alternative:

- ☐ The standard deviation is a measure of dispersion around the mean
- ☐ The standard deviation is calculated based on squared deviations from the mean
- ☐ The standard deviation is the absolute value of deviations from the mean
- ☐ The standard deviation equals the square root of variance

Maximum marks: 1

5 3.3

What is the 90th percentile?

Select one alternative:

- ☐ The range of values around the mean with 90% confidence
- ☐ A value exceeded by up to 90% of the data
- ☐ The value equal to or exceeding 90% of the data
- ☐ The 90% of the data around the mean

Maximum marks: 1

6 3.4

A person's standardized score on an ability test was 70. (This is an IQ-type score.) Three of the following statements about this person are true. Which one is **false**?

Select one alternative:

- ☐ S/he scored 70% correct
- ☐ S/he scored lower than 97.5% of the population
- ☐ S/he scored two standard deviations below the mean
- ☐ S/he is at the 2nd percentile

Maximum marks: 1

7 3.5

If I toss a coin twice, what is the probability of coming up with two "heads"?

Select one alternative:

- ☐ 0.25
- ☐ 0.050
- ☐ 0.50
- ☐ 0.025

Maximum marks: 1

8 3.6

Which of the following statements about the mean is **true**?

Select one alternative:

- ☐ The mean sets square deviations to zero
- ☐ The mean is greater than half of the measured values
- ☐ The mean counterbalances positive and negative deviations
- ☐ The mean is equally distant from all measured values

Maximum marks: 1

9 3.7

What is the probability (p value) that is computed for a statistical test?

Select one alternative:

- ☐ The probability that our findings were due to random chance
- ☐ The probability of our data exceeding the value of the test statistic
- ☐ The probability of a statistic at least as large as we observed if the null hypothesis is true
- ☐ The probability of the null hypothesis based on the observed data

Maximum marks: 1

10 3.8

How can we achieve random sampling?

Select one alternative:

- ☐ By appropriate selection
- ☐ By calculation of the distribution
- ☐ By stratification
- ☐ By drawing lots

Maximum marks: 1