

MTH 3220 Lab 7 Answer Sheet

Due Thu., Oct. 31

1 Part A

1.1 Memory Data Set

1. NA
2. Write out the ANOVA table below (you may round the values to a few decimal places).

3. NA. *Don't* print the histogram and normal probability plot. Just answer the following question.

Based on the histogram and normal probability plot, does the normality assumption of the errors ϵ_{ijk} appear to be met (Yes/No)?

4. *Don't* print the plot of the residuals vs fitted values. Just answer the following question.

Based on the plot, does the constant standard deviation assumption appear to be met (Yes/No)?

5. *Don't* print the interaction plot. Just describe the nature of the interaction effect below.

6. Which cell means differ from each other? Make a check mark to the right of any that differ below:

verbal:20min-none:20min -----
 none:40min-none:20min -----
 verbal:40min-none:20min -----
 none:60min-none:20min -----
 verbal:60min-none:20min -----
 none:40min-verbal:20min -----
 verbal:40min-verbal:20min -----
 none:60min-verbal:20min -----
 verbal:60min-verbal:20min -----
 verbal:40min-none:40min -----
 none:60min-none:40min -----
 verbal:60min-none:40min -----
 none:60min-verbal:40min -----
 verbal:60min-verbal:40min -----
 verbal:60min-none:60min -----

2 Part B

2.1 Memory Data Set (Cont'd)

1. Give the value of the sample grand mean: $\bar{X}... =$ -----

2. a) The three level means for reinforcement are (round to one decimal place):

Mean for None: $\bar{X}_{1..} =$ -----

Mean for Verbal: $\bar{X}_{2..} =$ -----

b) The three level means for isolation are (round to one decimal place):

Mean for 20 Min: $\bar{X}_{.1.} =$ -----

Mean for 40 Min: $\bar{X}_{.2.} =$ -----

Mean for 60 Min: $\bar{X}_{.3.} =$ -----

c) Give the values of the six cell means (round to one decimal place):

	20 Min.	40 Min.	60 Min.
None	$\bar{X}_{11.} =$ -----	$\bar{X}_{12.} =$ -----	$\bar{X}_{13.} =$ -----
Verbal	$\bar{X}_{21.} =$ -----	$\bar{X}_{22.} =$ -----	$\bar{X}_{23.} =$ -----

3. NA. *Don't* print the boxplots.

3 Part C

3.1 Electrical Stimulation of Muscles Data Set

1. NA
2. NA
3. *Don't* print the interaction plots. Just answer the following questions.

Based on the interaction plots, does it appear that there is a **three-factor interaction** effect between `NumberOfTrts`, `TrtLength`, and `TypeOfCurrent` (Yes/No)?

Explain your answer.

4. Please answer the following questions.
 - a) Look at the results of the F test for the **three-factor interaction**.

Give the following values:

F statistic =

Numerator df =

Denominator df =

P-value =

Is the interaction effect statistically significant (Yes/No)?

- b) Now look at the results of the F tests for the **two-factor interactions**. Give the following values:

F test statistic for the `TrtLength:TypeOfCurrent` interaction =

P-value =

F test statistic for the `NumberOfTrts:TypeOfCurrent` interaction =

P-value =

F test statistic for the `NumberOfTrts:TrtLength` interaction =

P-value =

Which, if any, of the two-factor interactions are statistically significant?

c) Now look at the results of the F tests for the **main effects**. Give the following values:

F test statistic for the `TypeOfCurrent` main effect =

P-value =

F test statistic for the `TrtLength` main effect =

P-value =

F test statistic for the `NumberOfTrts` main effect =

P-value =

In light of the presence or absence of significant two- or three-factor interaction effects, does it make sense interpret the results (p-values) of any of these F tests for main effects? If so, which one(s)?

5. **Don't** print the histogram or normal probability plot. Just answer the following question.

Does the normality assumption appear to be met (Yes/No)?

6. **Don't** print the plot of the residuals versus the fitted values. Just answer the following question.

Does the constant standard deviation assumption appear to be met (Yes/No)?