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Question 4

Below is the source table for a study on sleep aids, comparing the effectiveness of three (3) different treatments. Note that some of the elements of the table are missing.

	SS	df	MS	F
Between Treatments	782.00			
Within Treatments		34		
Total	2,147.00			

(1 point possible)

4a. What is **SS_{Within}** ?

Answer: 1365

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(1 point possible)

4b. What is **df_{Total}** ?

Answer: 36

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(1 point possible)

4c. What is **MS_{Within}** ? (Round to 2 decimal places.)

Answer: 40.15

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(1 point possible)

4d. What is the **F statistic**? (Round to 2 decimal places, and use your rounded answer from 4c.)


Answer: 9.74

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(1 point possible)

4e. Using an F-critical of 3.28, what is the appropriate conclusion of the test?

☐ At least one of the sleep aids performs better than the others. ☐ The three sleep aids perform equally well.

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4f. You decide to perform a post-hoc analysis on these groups means using a Bonferroni correction. How many group mean comparisons will you do?

Answer: 3

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4g. What should be the new significance level for your post-hoc tests, assuming an original $\alpha=0.05$? (Round to 3 decimal places.)

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Answer: 0.017

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4h. Here are the results from your post-hoc analysis. These are the p-values from the actual t-tests. They are not adjusted, so be sure to compare them to the significance level you calculated above.

	T-Statistic	P-Value
Group 1 - Group 2	1.90	0.137
Group 1 - Group 3	3.79	0.004
Group 2 - Group 3	3.44	0.028

(1 point possible)
What do you conclude?

- ☐ The Sleep Aid 1 group and Sleep Aid 2 group were significantly different from Sleep Aid 3 group, but not from each other.
- ☐ The Sleep Aid 1 group and Sleep Aid 2 group were significantly different from one another.
- ☐ The Sleep Aid 1 was significantly different the Sleep Aid 3 group. ✓

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