A white paper with black text

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A math problem with black text

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1. ;
3. No because both differences come from within the level . You would need to compare observations from across levels of and to determine an interaction effect.
4. A graph of a factor

   Description automatically generated As evidenced by the parallel treatment effects, the factors do not interact.

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1. through have the same mean, , so the implication is that Factor *by itself* does not impact the treatment mean.
2. A graph with a line and a line

   Description automatically generated with medium confidenceLevel is represented by the blue line and is represented by the red line. There does appear to be interactions between the two factors, as evidenced by the non-parallel nature of the lines. These interactions are important because the lines converge to the mean .
3. A graph with a line and a line

   Description automatically generated with medium confidenceApplying the natural log transformation to the response variable does not appear to reduce the interaction effect.

A paper with text and numbers

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1. A screenshot of a table

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2. A table of numbers and numbers

   Description automatically generatedA table of numbers and a number

   Description automatically generated
3. A graph with blue dots

   Description automatically generatedAs evidenced by the residual plot, there doesn’t seem to be any outliers or nonconstant variance.
4. The assumption of normality is reasonable here, as evidenced by the qqplot.

A graph with blue dots

Description automatically generated

A close-up of a question

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1. The different color lines denote the different levels of Ingredient A. Because they are non-parallel there seems to an interaction effect seems to exist between A and B.

A graph of a line

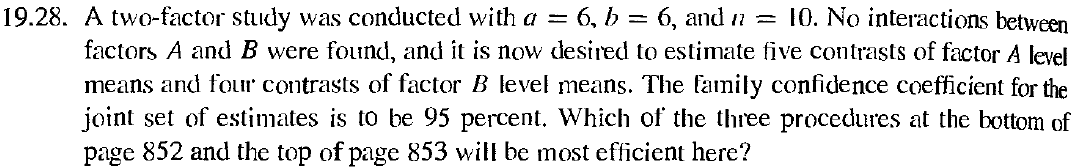
Description automatically generated with medium confidence

1. Ingredient A seems to account for the most variability, as evidenced by its greatest Type III SS value:

A screenshot of a table

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1. The of testing whether interaction occurs is 122.23, which is greater than . The corresponding -value is , which is much less than . Hence there exists significant statistical evidence to conclude that Factors A and B interact to affect the response.
2. For Factor A, and for Factor B, . These values are both greater than . Both -values are less than , significantly less than . Thus there exists significant statistical evidence to conclude that Factors A and B both independently exert a mean effect on the response.
3. The upper bound is given by .
4. Yes because they both confirm the existence and significance of an interaction effect.



The most efficient procedure will have the smallest coefficient. To that end, let’s examine:; . We conclude that the Bonferroni procedure is most efficient.

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1. The statistic is with a value of , so we proceed with the Tukey tests:

A screenshot of a computer

Description automatically generatedA screenshot of a graph

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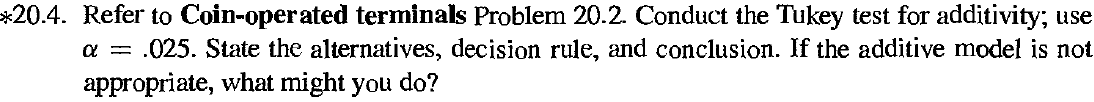
A screenshot of a graph

Description automatically generated

1. Let , , , and . Three possible contrasts are,
2. As observed by the contrasts, at a significance level there is no difference strength between mean temperatures 15 and 10, and 20 and 5. However, there is a significant difference between the jump from 5-10 to 15-20. Hence we can conclude there is a significant jump in tile strength at 12.5 degrees Celsius.

A screenshot of a computer screen

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A screenshot of a computer

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We have and . We have for the additive model. The corresponding value is 0.00079, which is less than . We then reject and conclude there exists significant statistical evidence to suggest that interaction effects are present between terminal location and week number.