Midterm Exam - Results ×

Attempt 1 of 1

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Attempt Feedback

0.5 is added.

Attempt Score **34.5 / 37 - A**

Overall Grade (Highest Attempt) **34.5 / 37 - A**

Midterm Exam

Principles, Techniques, and Planning Experiments

Rats Experiment

You are interested in studying the effect of three different diets on weight gain in laboratory rats. You randomly select 48 rats to include in your experiment. Because you believe that the initial weight of the rat might have an effect on weight gain, you first classify each rat into one of three weight groups (Light, Medium, and Heavy). You find that there are 16 rats in each group. Within in each group, you randomly assign four rats to receive diet A, four to receive diet B, four to receive diet C, and four to receive no diet to serve as a control group. You then monitor the rats for three weeks and then record the weight for each rat.

Use this information to answer the following three questions.

Question 1 1 / 1 point

Which of the following statements about the experimental units for this experiment is most correct?

- ○ Each treatment group of 4 rats serves as an experimental unit.
- ◉ The experimental units are the individual rats.
- ○ The experimental unit is the change in weight for each rat.
- ○ Each weight group of 16 rats serves as an experimental unit.

Question 2 1 / 1 point

Which of the following statements about the design of this experiment is most correct?

- ◉ This is an example of a completely randomized block design.
- ○ This is an example of a completely randomized design.
- ○ This is an example of a split-plot design.
- ○ This is a non-standard experimental design.

Question 3 1 / 1 point

Which of the following statements about the treatment factors and treatments for this experiment is most correct?

- (selected) There is one treatment factor in this experiment, the type of diet, and there are four possible treatments.
- There is one treatment factor in this experiment, the type of diet, and there are three possible treatments.
- There are two treatment factors in this experiment, the type of diet and the weight group, and there are nine possible treatments.
- There are two treatment factors in this experiment, the type of diet and the weight group, and there are 12 possible treatments.

Tomatoes Experiment

You are interested in studying the effect of the type of fertilizer on the number of tomatoes produced by a tomato plant. You have selected three different types of fertilizer to use in your experiment. You randomly select 40 tomato plants and assign (at random) 10 plants to receive fertilizer A, 10 to receive fertilizer B, 10 to receive fertilizer C, and 10 to receive no fertilizer to serve as a control group. After two months of caring for the plants, you then count the number of tomatoes produced by each plant.

Use this information to answer the next three questions.

Question 4 1 / 1 point

Which of the following statements about the design of this experiment is most correct?

- This is a non-standard experimental design.
- (selected) This is an example of a completely randomized design.
- This is an example of a split-plot design.
- This is an example of a completely randomized block design.

Question 5 1 / 1 point

Which of the following statements about the treatment factors and treatments for this experiment is most correct?

- There is one treatment, the type of fertilizer, and there are three different treatment factors.
- (selected) There is one treatment factor, the type of fertilizer, and there are four possible treatments.
- There is one treatment, the type of fertilizer, and there are four possible treatment factors.
- There is one treatment factor, the type of fertilizer, and there are three possible treatments.

Question 6 1 / 1 point

Which of the following statements about the experimental units for this experiment is most correct?

- The experimental units are the number of tomatoes produced each day by each plant.
- (selected) The experimental units are the individual tomato plants.
- Each group of 10 tomato plants serves as an experimental unit.
- The experimental units are the fertilizers.

One-Way ANOVA

Blood Pressure Experiment

You are planning a completely randomized experiment to investigate the effect on blood pressure from a specific ingredient in a drug. You will use four different amounts for this ingredient (2.5 mL, 5 mL, 7.5 mL, and 10 mL). You randomly select 40 participants to be in the study and then randomly assign 10 participants to each of the four treatments. After two weeks, you record the change in blood pressure for each participant (final blood pressure minus beginning blood pressure).

Use this information to answer the next four questions.

Question 7 1 / 1 point

Beyond testing if there is any effect from this ingredient, you would like to make make more specific comparisons between the ingredient amounts. You have some specific comparisons in mind, but are unsure if there might be other interesting comparisons to make after the data have been collected. You are also unsure of the number of comparisons you will be making.

In this scenario, which of the following procedures designed to control family-wise error rates would be **most appropriate** when performing multiple comparisons?

- ○ Dunnett
- ○ Bonferroni
- ○ Tukey
- ◉ Scheffe

Question 8 1 / 1 point

You use the following one-way ANOVA model to analyze the data from this experiment:

$$y_{ij} = \mu + \tau_i + \varepsilon_{ij}$$

In the context of this experiment, which of the following options represents a valid linear contrast that could be estimated and tested?

- ○ $\tau_1 - \tau_2 + \frac{\tau_3+\tau_4}{2}$
- ○ $\frac{\tau_1\tau_2}{2} - \frac{\tau_3\tau_4}{2}$
- ○ $\tau_1 - \frac{\tau_2+\tau_3+\tau_4}{4}$
- ◉ $\tau_1 - \frac{\tau_2+\tau_3+\tau_4}{3}$

Question 9 1 / 1 point

You use the following one-way ANOVA model to analyze the data from this experiment:

$$y_{ij} = \mu + \tau_i + \varepsilon_{ij}$$

You would like to test the hypothesis that the average effect from the first two treatments (2.5 mL and 5 mL) is equal to the average effect from the last two treatments (7.5 mL and 10 mL). Which of the following options **best represents** the corresponding null hypothesis for this test?

○ $H_0 : \frac{\tau_1+\tau_2}{4} = \frac{\tau_3+\tau_4}{4}$

○ $H_0 : \tau_1 + \tau_2 = \tau_3 + \tau_4$

◉ $H_0 : \frac{\tau_1+\tau_2}{2} = \frac{\tau_3+\tau_4}{2}$

○ $H_0 : \tau_1 = \tau_2 = \tau_3 = \tau_4 = 0$

Question 10 0 / 1 point

After fitting the one-way ANOVA model, you compute the MSE to be 25. You also compute the sample means for each treatment as $\bar{y}_{1.} = 115, \bar{y}_{2.} = 110, \bar{y}_{3.} = 105, \bar{y}_{4.} = 120.$

You would like to perform a test to determine if there is a **quadratic trend** between the amount of the ingredient in the drug and the change in blood pressure. Compute the value of the test-statistic that would be used to test for this trend. **Round any intermediate calculations to four decimal places, but round your *final answer to two decimal places*.**

Answer:

40.00

40.00 is for F test, sqrt of 40.00 = 6.32 for t test
Correct Answer: 6.32

Study Methods Experiment

You are investigating the effectiveness of different study methods on student performance for a standardized test. You randomly select 24 students to participate in your study. You randomly assign 6 students to prepare using flashcards, 6 students to prepare using online practice tests, 6 students to prepare using group study sessions, and 6 to prepare without any additional materials to serve as a control group. After allowing one week for students to prepare, the standardized test is administered and a score between 0 and 100 is recorded for each student.

Use this information to answer the next four questions.

Question 11 1 / 1 point

Below is a table containing the scores for each student that participated in the experiment (Note: The information found in this table only applies to this problem and is different than the information provided in other questions):

Method	Response
Flashcards	78
Flashcards	82
Flashcards	81
Flashcards	75
Flashcards	87
Flashcards	78
Online Tests	83
Online Tests	85
Online Tests	79
Online Tests	80
Online Tests	84
Online Tests	86
Group Study	85
Group Study	86
Group Study	90
Group Study	87
Group Study	91
Group Study	89

No Materials	78
No Materials	75
No Materials	68
No Materials	80
No Materials	76
No Materials	76

You would like to test the hypothesis that there is no effect of study method on student performance on the standardized test. Compute the value of the F-statistic that would be used to test this hypothesis. **Round any intermediate calculations to four decimal places, but round your *final answer to two decimal places.***

Answer:

13.79

Question 12 2 / 2 points

Below is an ANOVA table that was reported for this experiment (Note: This table only applies to this problem and the information in it will be different than that found in other problems):

Source	Degrees of Freedom	Sum of Squares	Mean Squares	F-statistic
Model	3	475.86	158.620	13.5261
Error	20	234.54	11.727	
Corrected Total	23	710.40		

You calculate the mean score for students that participated in the group study sessions to be 87.54. You would like to use this estimate along with the information in the ANOVA table to compute a 95% confidence interval for the population mean score of students participating in group study sessions. In the boxes provided, do the following:

- In the first box, provide the lower bound of the 95% confidence interval.
- In the second box, provide the upper bound of the 95% confidence interval.

Round any intermediate calculations to four decimal places, but round your *final answers to two decimal places.* Please follow these instructions as rounding errors will result in an incorrect answer.

Answer for blank # 1: 84.62

Answer for blank # 2: 90.46

Question 13 1 / 1 point

Below is part of the ANOVA summary table for this experiment (Note: This table only applies to this problem and the information in it will be different than that found in other problems):

Source	Sum of Squares	Degrees of Freedom
Model	500	3
Error	1500	20
Total	2000	23

Which of the following conclusions can be drawn from the information available about this experiment? (Use a significance level of $\alpha = 0.05$ when drawing conclusions).

- ○ The p-value for testing the effect of study method **is above** 0.05. There **is** significant evidence to conclude that study method has an effect on test score.
- ◉ The p-value for testing the effect of study method **is above** 0.05. There **is not** significant evidence to conclude that study method has an effect on test score.
- ○ The p-value for testing the effect of study method **is below** 0.05. There **is** significant evidence to conclude that study method has an effect on test score.
- ○ The p-value for testing the effect of study method **is below** 0.05. There **is not** significant evidence to conclude that study method has an effect on test score.

Question 14 0 / 1 point

Below is a table containing the scores for each student that participated in the experiment (Note: This table only applies to this problem and the information in it will be different than that found in other problems):

Method	Response
Flashcards	78
Flashcards	82
Flashcards	81
Flashcards	75
Flashcards	87
Flashcards	82
Online Tests	83
Online Tests	85
Online Tests	79
Online Tests	80
Online Tests	84
Online Tests	83
Group Study	85
Group Study	86
Group Study	90
Group Study	87
Group Study	91
Group Study	85
No Materials	78
No Materials	75
No Materials	68
No Materials	80
No Materials	76
No Materials	77

You use the following one-way ANOVA model for these data: $y_{ij} = \mu + \tau_i + \varepsilon_{ij}$ where $\varepsilon_{ij} \overset{iid}{\sim} \mathcal{N}(0, \sigma^2)$. Compute the upper bound for a 95% one-sided confidence interval for σ^2. **Round any intermediate calculations to four decimal places, but round your *final answer to two decimal places.***

Answer:

7.29

Use critical value of 1-alpha, so X 0.95, not X 0.05
Correct Answer: 21.09

Question 15 4 / 4 points

You are performing an experiment to compare five treatments using a completely randomized design. The number of experimental units per treatment group is 9. You would like to construct simultaneous 95% confidence intervals for different contrasts involving the treatment means $\sum_{i=1}^{5} c_i \mu_i$. Each confidence interval is of the form $\sum_{i=1}^{5} c_i \hat{\mu}_i \pm w \times SE(\sum_{i=1}^{5} c_i \hat{\mu}_i)$, where w depends on the procedure being used to control the family-wise error rate for the intervals.

Consider the following four tasks:

- Using the Bonferroni procedure to construct confidence intervals for all treatment means as well as all pairwise comparisons between treatment means.
- Using the Scheffe procedure to construct confidence intervals for all treatment means as well as all pairwise comparisons between treatment means.
- Using the Tukey procedure to construct confidence intervals for all pairwise comparisons between treatment means.
- Using the Dunnett procedure to construct confidence intervals for comparisons between each of the last four treatments with the first treatment.

In the four boxes below, provide the value for w that would be used when constructing the simultaneous confidence intervals for these four scenarios. Please provide your answers in the order that the scenarios were presented above. **Round any intermediate calculations to four decimal places, but round your *final answers to two decimal places* in the boxes below.**

Answer for blank # 1: 3.12

Answer for blank # 2: 3.23

Answer for blank # 3: 2.86

Answer for blank # 4: 2.54

Question 16 1 / 1 point

You are performing an experiment to compare five treatments using a completely randomized design. The number of experimental units per treatment group is 9. You would like to construct simultaneous 95% confidence intervals for different contrasts involving the treatment means $\sum_{i=1}^{5} c_i \mu_i$. Specifically, you would like to construct intervals for the following contrasts:

- $\tau_2 - \tau_1$
- $\tau_3 - \tau_1$
- $\tau_4 - \tau_1$
- $\tau_5 - \tau_1$

Which of the following methods produces the narrowest confidence intervals for these contrasts?

- ○ Bonferroni
- ○ Scheffe
- ◉ Dunnett
- ○ Tukey

Question 17 1 / 1 point

You are investigating the effectiveness of different study methods on student performance for a standardized test. You wish to compare three different study methods with a control group using a completely randomized design. Previous studies have suggested that σ^2 is 10. You would like to compute the number of students that should be assigned to each study method in order to detect a minimum difference of $\Delta = 3$ with 90% power. You may assume that the significance level is $\alpha = 0.05$.

Which of the following options gives the correct value for the number of replicates to use for each study method?

- ○ 16
- ○ 17
- ○ 32
- ◉ 33

Question 18 1 / 1 point

Of the options provided, which **most accurately** describes a potential weakness of using the Bonferroni procedure when performing multiple comparisons?

- ◉ Compared to other methods, it can be very conservative when many tests are being conducted.
- ○ Unlike the Dunnett procedure, it cannot be used to test treatment vs control contrasts.
- ○ Because it is specifically designed to account for all possible contrasts between treatment means, it can be very conservative.
- ○ Unlike the Tukey procedure, it cannot be used to test all pairwise comparisons.

Experiments with Two or More Crossed Factors

Weight Experiment

You are interested in studying the effect of two factors, diet and exercise, on weight. To do this, you adopt a completely randomized design. Some individuals will be asked to diet while others will not. Likewise, some individuals will be asked to exercise while others will not. You randomly select 16 individuals to participate in the study and then randomly assign 4 individuals to each of the four combinations of diet and exercise. You then monitor participants for one month and record the change in weight (final weight minus beginning weight) for each participant at the end of the study.

Use this information to answer the next six questions.

Question 19 0 / 1 point

You analyze the data from this experiment using the following model:

$y_{ijk} = \mu + \alpha_i + \beta_j + \varepsilon_{ijk}$ where $\varepsilon_{ijk} \overset{iid}{\sim} \mathcal{N}(0, \sigma^2)$.

where α_i refers to the effect of diet i and β_j refers to the effect of exercise j. Furthermore, $i = 1$ indicates no diet. Likewise, $j = 1$ indicates no exercise.

Below is the partial ANOVA table produced by this analysis (Note: This table only applies to this problem and the information found in it will be different than that found in other problems):

Source	Sums of Squares
Diet	300
Exercise	800
Error	650
Total	2900

Compute the upper bound for the 95% confidence interval for σ^2. **Round any intermediate calculations to four decimal places, but round your *final answer to two decimal places*.**

Answer:

29.07

Use critical value of 1-alpha, so X 0.95, not X 0.05
Correct Answer: 110.32

Question 20 2 / 2 points

You analyze the data for this experiment using the following model:

$y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$

where α_i refers to the effect of diet i, β_j refers to the effect of exercise j, and $(\alpha\beta)_{ij}$ refers to the effect of an interaction between diet i and exercise j. Furthermore, $i = 1$ indicates no diet. Likewise, $j = 1$ indicates no exercise.

Below is the partial ANOVA table produced by this analysis (Note: This table only applies for this problem and the information in it will be different than that found in other problems):

Source	Sums of Squares	Degrees of Freedom
Diet	300	1
Exercise	800	1
Diet*Exercise	1200	1
Error	600	12
Total	2900	15

In addition to this, you have computed the sample means for each treatment as $\bar{y}_{11} = 13.50$, $\bar{y}_{12} = 6.25$, $\bar{y}_{21} = 7.00$, $\bar{y}_{22} = 3.75$. You would like to use this information to construct a 95% confidence interval for the expected weight change for an individual that both diets and exercises. In the boxes below, provide the following:

- Put the lower bound for the confidence interval in the first box.
- Put the upper bound for the confidence interval in the second box.

Round any intermediate answers to four decimal places, but round your *final answer to two decimal places*.

Answer for blank # 1: -3.95

Answer for blank # 2: 11.45

Question 21 1 / 1 point

You analyze the data using the following two-way complete model:

$$y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$$

where α_i refers to the effect of diet i, β_j refers to the effect of exercise j, and $(\alpha\beta)_{ij}$ refers to the effect of an interaction between diet i and exercise$j$.

Below is the partial ANOVA table obtained from analyzing the data using this model (Note: This table only applies to this problem and will contain information that is different from that found in other problems):

Source	Sum of Squares	Degrees of Freedom
Diet	200	1
Exercise	700	1
Diet*Exercise	1000	1
Error	1600	12
Total	3500	15

Which of the following options provides a conclusion that can be drawn using the information available? (Use a significance level of $\alpha = 0.05$ when drawing conclusions).

- ○ All three effects (diet, exercise, and their interaction) are significant.
- ○ The interaction is significant, but neither diet nor exercise are significant.
- ◉ Both the interaction and exercise are significant.
- ○ Both the interaction and diet are significant.

Question 22 1 / 1 point

You analyze the data from this experiment using the following model:

$$y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$$

where α_i refers to the effect of diet i, β_j refers to the effect of exercise j, and $(\alpha\beta)_{ij}$ refers to the effect of an interaction between diet i and exercise j. Furthermore, $i = 1$ indicates no diet. Likewise, $j = 1$ indicates no exercise.

Below is the partial ANOVA table produced by this analysis (Note: This table only applies to this problem and the information found in it will be different than that found in other problems):

Source	Sums of Squares	Degrees of Freedom
Diet	300	1
Exercise	800	1
Diet*Exercise	1200	1
Error	500	12
Total	2900	15

Use this information to compute the **width** of the 95% confidence interval for the expected difference in weight change between the group that diets and exercises and the group that doesn't diet but still exercises. (The width is defined as the upper bound of the interval minus the lower bound).

Round any intermediate answers to four decimal places, but round your *final answer to two decimal places*.

Answer:

19.89

Question 23 1 / 1 point

The observed responses for the experiment can be found in the following table (Note: This table only applies for this problem and will contain information that is different than that found in other problems):

Diet	Exercise	Response
No	No	10
No	No	12
No	No	15
No	No	15
No	Yes	5
No	Yes	7
No	Yes	8
No	Yes	7
Yes	No	8
Yes	No	9
Yes	No	7
Yes	No	5
Yes	Yes	3
Yes	Yes	5
Yes	Yes	4
Yes	Yes	3

You analyze the data using the following model:

$$y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$$

where α_i refers to the effect of diet i, β_j refers to the effect of exercise j, and $(\alpha\beta)_{ij}$ refers to the effect of an interaction between diet i and exercise j.

Using the information provided, compute the F-statistic that would be used to test the significance of the interaction effect. **Round any intermediate calculations to four decimal places, but round your *final answer to two decimal places*.**

Answer:

2.65

Question 24 3 / 3 points

The observed responses can be found in the following table (Note: This table only applies for this problem and the values in it will be different than those found in other problems):

Diet	Exercise	Response
No	No	10
No	No	12
No	No	15
No	No	18
No	Yes	5
No	Yes	7
No	Yes	8
No	Yes	7
Yes	No	8
Yes	No	9
Yes	No	7
Yes	No	6
Yes	Yes	3

Yes	Yes	5
Yes	Yes	4
Yes	Yes	2

You analyze the data using the following model:

$$y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$$

where α_i refers to the effect of diet i, β_j refers to the effect of exercise j, and $(\alpha\beta)_{ij}$ refers to the effect of an interaction between diet i and exercise j.

Use the available information to compute the sums of squares for each main effect as well as the interaction. In the boxes provided below, do the following:

- Put the sum of squares for the diet factor in the first box.
- Put the sum of squares for the exercise factor in the second box.
- Put the sum of squares for the interaction between the diet and exercise factors in the third box.

Round any intermediate calculations to four decimal places, but give your *final answers to two decimal places*. Even if your answer is an integer (e.g., 54) still provide an answer out to two decimal places (e.g., 54.00).

Answer for blank # 1: 90.25

Answer for blank # 2: 121.00

Answer for blank # 3: 9.00

Question 25 1 / 1 point

Consider a model with three factors (denoted as A, B, and C) that includes the main effects for each factor and all two-way interactions. The partial ANOVA output for this model is found below:

Source	Sums of Squares	Degrees of Freedom
A	200	1
B	400	2
C	100	2
A*B	500	2
A*C	800	2
B*C	200	4
Error	4000	58
Total	6200	71

Using the information available, select the option that correctly indicates which of the two-way interactions are significant. Use a significance level of $\alpha = 0.05$.

- ○ None of the interactions are considered significant.
- ○ Only interaction A*C is considered significant.
- ○ All three interactions are considered significant.
- ◉ Interactions A*B and A*C are considered significant while interaction B*C is not.

Question 26 1 / 1 point

Consider the following two-way main effects model:

$$y_{ijk} = \mu + \alpha_i + \beta_j + \varepsilon_{ijk} \text{ for } i = 1, 2, j = 1, 2, 3$$

Which of the following options shows two quantities that would be estimable given this model? (Both quantities shown need to be estimable for the answer to be correct).

○ 1. $\mu + \alpha_1 + \beta_1$
2. $\beta_3 - \beta_1 + \alpha_1 + \alpha_2$

○ 1. $\alpha_1 + \beta_1$
2. $\beta_3 - \beta_1 + \alpha_1 + \alpha_2$

◉ 1. $\mu + \alpha_1 + \beta_1$
2. $\beta_3 - \beta_1 + \alpha_2 - \alpha_1$

○ 1. $\alpha_1 + \beta_1$
2. $\beta_3 - \beta_1 + \alpha_2 - \alpha_1$

Question 27 1 / 1 point

Which of the following options provides the model equation that would be used for an experiment with three factors where it is assumed that all main effects and interactions between factors are important. Assume that the Latin symbols used for these three factors are α, β, and γ and that multiple replicates are made for each possible treatment.

○ $y_{ijk} = \mu + \alpha_i + \beta_j + \gamma_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_{jk} + (\alpha\beta\gamma)_{ijk} + \varepsilon_{ijk}$

○ $y_{ijk} = \mu + \alpha_i + \beta_j + \gamma_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_{jk} + \varepsilon_{ijk}$

○ $y_{ijkl} = \mu + \alpha_i + \beta_j + \gamma_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_{jk} + \varepsilon_{ijkl}$

◉ $y_{ijkl} = \mu + \alpha_i + \beta_j + \gamma_k + (\alpha\beta)_{ij} + (\alpha\gamma)_{ik} + (\beta\gamma)_{jk} + (\alpha\beta\gamma)_{ijk} + \varepsilon_{ijkl}$

Question 28 1 / 1 point

Consider a model with three factors (denoted as A, B, and C) that includes the main effects for each factor and all two-way interactions. The partial ANOVA output for this model is found below:

Source	**Sums of Squares**	**Degrees of Freedom**
A	200	1
B	500	2
C	100	2
A*B	500	2
A*C	800	2
B*C	200	4
Error	4000	58
Total	6200	71

Using the information available, compute the value of the F-statistic that would be used to test the hypothesis of no effect from factor B. **Round any intermediate calculations to four decimals places, but round your *final answer to two decimal places*.**

Answer:

3.63

Question 29 1 / 1 point

Consider the following two-way complete model:

$y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$ for $i = 1, 2, j = 1, 2$

You are interested in testing if the effect for the last level of the second factor (i.e., β_2) is equal to the effect of the first level of the second factor (i.e. β_1) when the first factor is fixed at the first level (i.e., α_1).

Which of the following options gives the correct values for constants $c_{11}, c_{12}, c_{21}, c_{22}$ that would be used for testing this hypothesis?

○
- $c_{11} = 0$
- $c_{12} = 0$
- $c_{21} = 1$
- $c_{22} = -1$

○
- $c_{11} = 1$
- $c_{12} = -1$
- $c_{21} = 1$
- $c_{22} = -1$

○
- $c_{11} = 1$
- $c_{12} = 0$
- $c_{21} = 0$
- $c_{22} = -1$

◉
- $c_{11} = -1$
- $c_{12} = 1$
- $c_{21} = 0$
- $c_{22} = 0$

Question 30 1 / 1 point

You are performing an experiment with two factors, Factor A and Factor B, both of which have two levels, denoted as Low and High. Which of the following tables containing the treatment means provides clear evidence of an interaction between the two factors?

○

	Factor B: Low	Factor B: High
Factor A: Low	60	40
Factor A: High	15	5

○

	Factor B: Low	Factor B: High
Factor A: Low	20	15
Factor A: High	10	5

○

	Factor B: Low	Factor B: High
Factor A: Low	20	60
Factor A: High	25	65

◉

	Factor B: Low	Factor B: High
Factor A: Low	20	50
Factor A: High	60	30

Done