Problem Set #10: Factorial ANOVA

1. A small study was conducted to examine whether expertise and/or empathy affect helping behavior. A confederate in a computer lab pretended to have trouble getting a computer program to run. The subjects in the experiment were either Novices (Intro to Computer Science students) or Experts (senior Computer Science majors). The subjects were also classified as being low or high in empathy on the basis for a short survey. The dependent measure was how many minutes passed before the subject attempted to help the confederate.
   1. Conduct a Two-Way ANOVA by hand to determine if there is a significant relationship between the variables in question (set alpha = .05). For the omnibus test, Fcrit = 3.24; for the main effects and interaction effect test, Fcrit = 4.49.  Be sure to report the F statistics appropriately and to describe and interpret any significant main effects or interactions.
   2. If an interaction exists, sketch a graph of the effect

|  |  |  |
| --- | --- | --- |
|  | Novice | Expert |
| Low Empathy | Σ(x) = 15  Mean = 3  Σ(x2) = 47 | Σ(x) = 20  Mean = 4  Σ(x2) = 86 |
| High Empathy | Σ(x) = 15  Mean = 3  Σ(x2) = 51 | Σ(x) = 5  Mean = 1  Σ(x2) = 7 |

1. Fill in the blanks of this ANOVA table below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | SS | df | MS | F | p-value |
| Model  Error  Total | 2000.00 | 224 | 34.00 |  | .001 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | SS | df | MS | F | p-value |
| A  B  AxB |  | 2  2  4 | 42.00 | 4.00 | .006  .025  .004 |