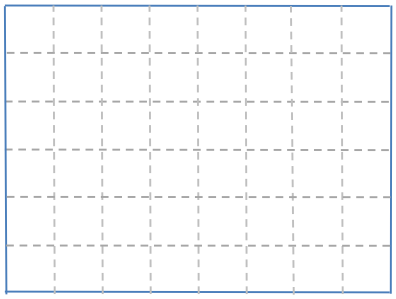
1. Let's examine an experiment involving plant species (Species A and Species B) and fertilizer (control, F1 to F3). The plants will be grown in a greenhouse and the outcome of interest is the plant's height. We want to assign all combinations of fertilizer and species and have 48 pots.
   a. What is the experimental unit in this problem? Is there replication? Is it crossed or nested?

   b. Due to the lay out of the greenhouse, we need to arrange the 48 pots as "columns" of 4 pots in 12 "rows". Design an experiment by assigning the "id" variable (from 4_homeworkGreenhouseDesign.sas) to this drawing. Be very specific how you are doing this assignment.

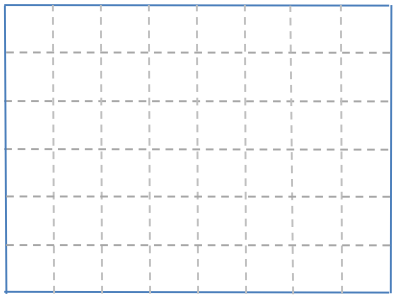


   c. Analyze the results of this experiment using the data in 4_homeworkGreenhouseData.sas. Include and interpret a profile plot for both the interaction model and the additive model, as well as a statistical conclusion and scope of inference.

2. Suppose we have the same greenhouse as the previous problem, but that this greenhouse experiment is being done the winter and the surrounding buildings/tree mean that the southern side of the greenhouse gets noticeably more sunshine than the northern side.

   a. What is the experimental unit in this problem? Is there replication? Is it crossed or nested?

   b. Design an experiment by assigning the "id" variable (from 4_homeworkGreenhouseDesign.sas) to this drawing. Be very specific how you are doing this assignment.



South

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c. Analyze the results of this experiment using the data in 4_homeworkGreenhouseData.sas, making sure to make any changes to the SAS data set to incorporate any updates to your experiment. Include in this a profile plot for both the interaction model and the additive model, as well as a statistical conclusion and scope of inference.