ST 370 Project Proposal

All elements of this form must be typed. The proposal (one per group) is due 10/10/07 by 11:59pm via email. Email proposals to nail@stat.ncsu.edu. Subject line ST370-003 Group x.

Objectives: (3-5 sentences)
To determine the effect of bleach pen and stain on number of swipes used to remove stains. We will use three different types of bleach pens on ketchup, barbeque sauce, and jelly (in that order) and record how long it takes/how many swipes it takes to remove the stain, with a 90 second maximum. All the t-shirts will be 100% cotton white Hanes t-shirts. We will replicate each experiment twice and randomize the order the bleach pens are used.

Response Variable (numeric)
This group needs to make up their minds on a single response variable. They can either use No. of swipes used to remove stains or Application Time of bleach pen, but their writing should consistently reflect one response. In the objective above, I used number of swipes used to remove stains.

Experimental Unit
Hanes T-Shirt Piece of fabric

Factors and Levels
given as “Factor (levels1, level2,…)”
Bleach Pen (Tide, Gain, generic)
Stain (Ketchup, Barbeque, Jelly)

Number of treatments
9

Number of replicates
2

Number of measurements per replicate
1

Total number of observations
18

Amount of time planned for data collection
2-4 hours

Controlled variables
The way stain (very strong intensity or light intensity) is made on t-shirt, same type of shirt used throughout experiment. Will have same type of ketchup, barbeque sauce, and jelly used respectively throughout entire experiment. Length of time stain is left on fabric.

Blocking variable, if used (not required)
None. Hanes T-shirt: By purchasing two t-shirts instead of 18 t-shirts, the students can save money. They can cut each t-shirt into 9 pieces of fabric, and then use piece of...
Instructor use only:  
Group Number _____________  
Score _____________

fabric as the experimental unit, and t-shirt as a blocking variable. The 9 pieces of fabric from shirt 1 should each get one of the 9 treatments. The 9 pieces of fabric from shirt 2 should each get one of the 9 treatments.

Important sources of experimental error not addressed by the experimental design:
Time taken to dry stain.
Amount of stain could affect our results. This has now been accounted for by making it a controlled variable.
Length of time that stain has been present could affect results. This has now been accounted for by making it a controlled variable.

Describe how randomization will be used:
The 9 pieces of fabric from shirt 1 should be randomly assigned to treatments.
The 9 pieces of fabric from shirt 2 should be randomly assigned to treatments.
We now have 18 pieces of fabric, each of which has been assigned to a treatment according to a randomized complete block design. We need to determine in what order we will perform the experiment on the experimental units. Two choices:
1. Block on order. For shirt 1, randomly decide which treatment to perform first, second, etc. Perform all treatments for shirt 1 first. Then repeat the process for shirt 2
OR
2. Label each experimental unit 1-18. Note the exp units have already been assigned to treatments. Now randomly choose the experimental units to go first, second, etc....
(I like 1 better.)
1. Order in which bleach pen is applied to different type of stains.
2. We will assign each bleach pen a number and will use a calculator to decide the order the bleach pens will be applied to the shirts.
3.