

77) a) The blocks are the different diagnoses (asthma, etc). Within any given diagnosis, we are looking for differences in patients' health and satisfaction with medical care between doctors and nurse practitioners.

b) Blocking will control the variability in subjects' responses due to their diagnosis. This will allow researchers to look separately at the health and satisfaction for patients with each of the three diagnoses, as well as better assess the relative effectiveness of nurses and doctors.

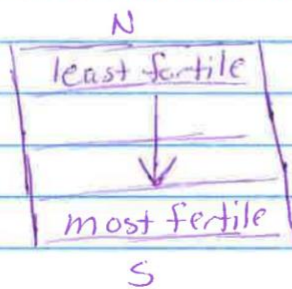
#77

A THE DIFFERENCE IN SOIL FERTILITY AMONG PLOTS IS A POTENTIAL LURKING VARIABLE.

A COMPLETELY RANDOMIZED DESIGN could assign one of the varieties of corn to more fertile plots just by chance. If those plots produced extremely high yields, so we would not know if the high yields were due to the corn varieties or to soil fertility.

A RANDOMIZED BLOCK DESIGN will allow researchers to control for the variability due to soil fertility by blocking.

B



The researcher should use the rows as blocks because all the plots in the same row have the same amount of fertility and so they are as similar as possible.

Blocks are predetermined and homogeneous

C RANDOMIZED BLOCK DESIGN

BLOCK 1	A ₁	C ₃	E ₅	B ₂	D ₄
BLOCK 2	B ₂	A ₁	C ₃	D ₄	E ₅
BLOCK 3	E ₅	D ₄	C ₃	B ₂	A ₁
BLOCK 4	B ₂	A ₁	C ₃	E ₅	D ₄
BLOCK 5	B ₂	A ₁	C ₃	D ₄	E ₅
BLOCK 6	E ₅	D ₄	A ₁	B ₂	C ₃

① LET THE DIGITS 1-5 CORRESPOND TO THE 5 VARIETIES OF CORN (A-E)

② USE TECHNOLOGY TO ASSIGN LETTERS TO EACH ROW FROM LEFT TO RIGHT (W→E) SELECT #'s 1-5 WITH NO REPEATS

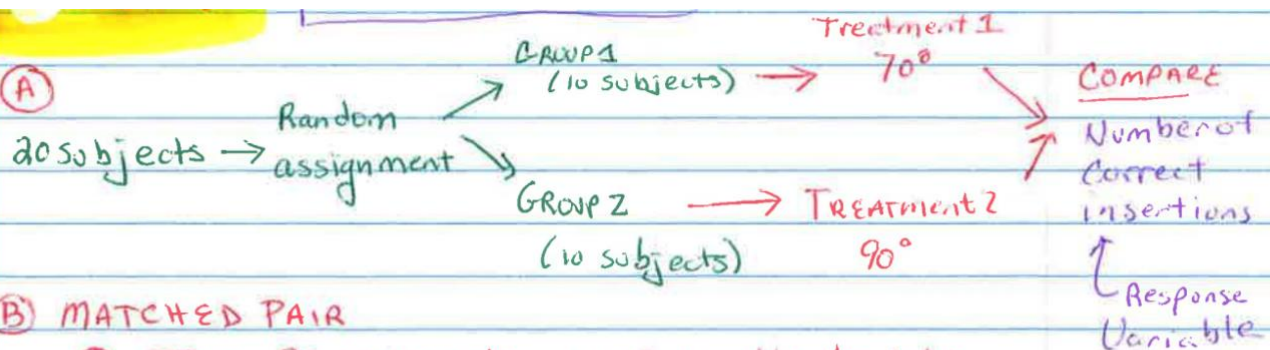
③ Row 1: $\text{randINT NoRep}(1, 5) = 1, 3, 5, 2, 4$
Assign numbers to corn varieties (A-E)
See the table for BLOCK 1

④ Repeat the process for the other 5 rows (5 blocks)

81) (a) If all rats from litter 1 were fed diet A and we found diet A to be better, we would not know if this was because of the diet itself, or because litter one was different from litter 2.

(b) A better design would be a randomized block design with the litters as the blocks. In this case, each diet would be given to some rats of each litter

85 (A)



(B) MATCHED PAIR

- ① The 20 subjects perform the task twice.
- ② Subjects will perform the task at 70° and 90°
- ③ Use a fair coin Head for 70° and Tails for 90°
- ④ For EACH subject flip the coin to determine which temperature they do first