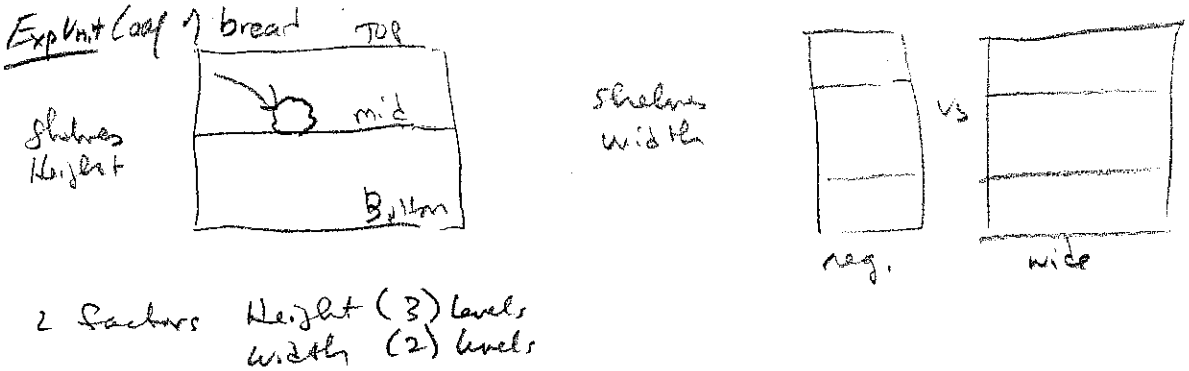
Study Diagrams for two examples in the textbook.

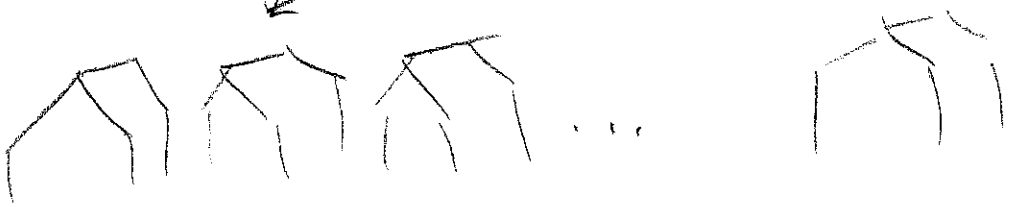
a) 2-factor Factorial design

Table 19.7 contains an illustration that we shall employ in this chapter and the next. The Castle Bakery Company supplies wrapped Italian bread to a large number of supermarkets in a metropolitan area. An experimental study was made of the effects of height of the shelf display (factor A: bottom, middle, top) and the width of the shelf display (factor B: regular, wide) on sales of this bakery's bread during the experimental period (Y, measured in cases). Twelve supermarkets, similar in terms of sales volume and clientele, were utilized in the study. The six treatments were assigned at random to two stores each according to a completely randomized design, and the display of the bread in each store followed the treatment specifications for that store. Sales of the bread were recorded, and these results are presented in Table 19.7.



2 factors Height (3) levels
width (2) levels

6 Trt Combinations TR TW MR MW BR BW } CRD
Assigned at random to stores



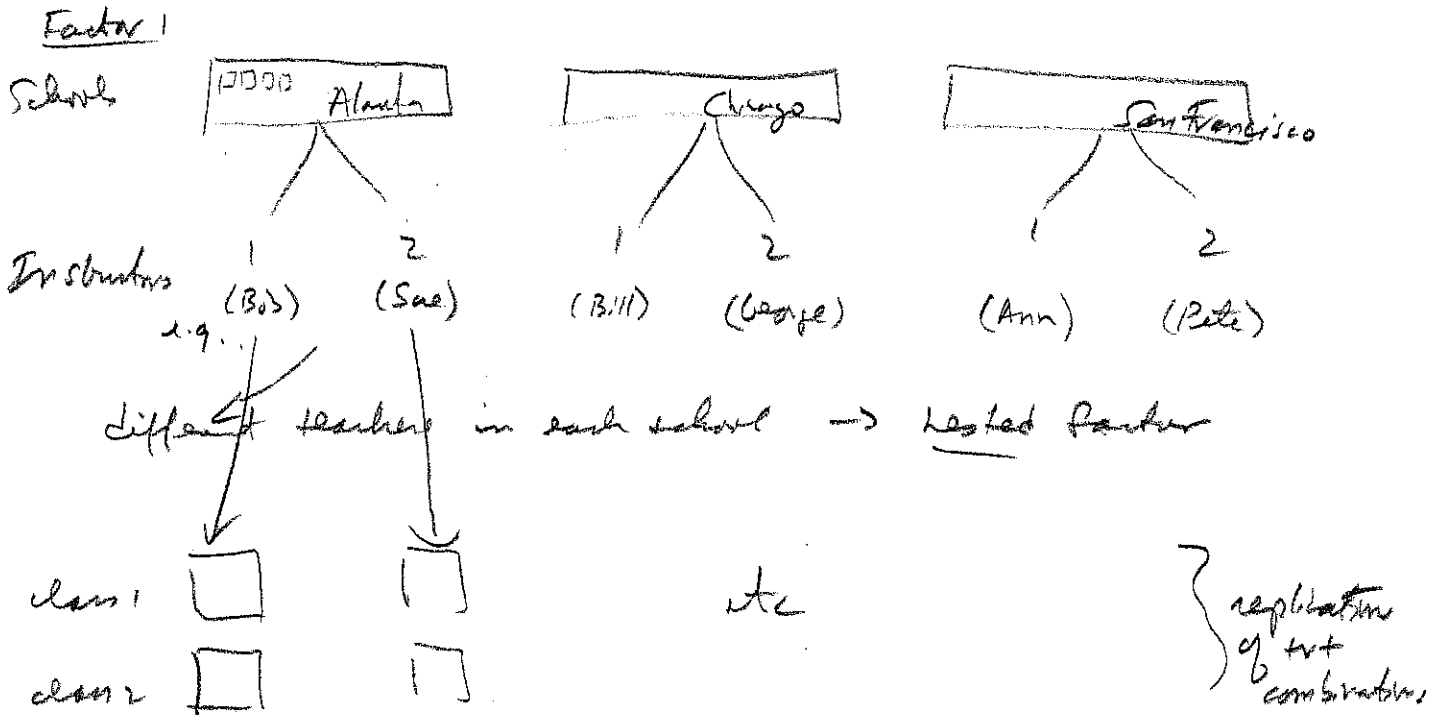
12 Stores

s.t. 2 stores get each of the 6 trt combinations => 2 replications

b) 2-factor Nested design

A large manufacturing company operates three regional training schools for mechanics, one in each of its operating districts. The schools have two instructors each, who teach classes of about 15 mechanics in three-week sessions. The company was concerned about the effect of school (factor A) and instructor (factor B) on the learning achieved. To investigate these effects, classes in each district were formed in the usual way and then randomly assigned to one of the two instructors in the school. This was done for two sessions, and at the end of each session a suitable summary measure of learning for the class was obtained. The results are presented in Table 26.1.

Exp. Unit = class of students Resp Var = summary measure of learning



classes at each school randomly assigned instructors within that school