Mr Murphy
AP Statistics
3.3 Completely Randomized Experiments
Homework Worksheet

1. A medical study of heart surgery investigates the effect of a drug called a beta-blocker on the pulse rate of the patient during surgery. The pulse rate will be measured at a specific point during the operation. The investigators will use 20 patients facing heart surgery as subjects. You have a list of these patients, numbered 1 to 20, in alphabetical order.

(a) Describe a a completely randomized experiment to test the effect of beta-blockers on pulse rate during surgery.

(b) Use the section from the random digits table below to carry out the randomization required by your design and report the result.

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96746 12149 37823 71868 18442 35119 62103 39244 96927 19931
36809 74192 77567 88741 48409 41903 43909 99477 25330 64359
40085 16925 85117 36071 15689 14227 06565 14374 13352 49367
81982 87209 36759 58984 68288 22913 18638 54303 00795 08727
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2. Is the right hand of right-handed people generally stronger that the left? Paul Murky of Murky Research designs an experiment to test this question. He fastens an ordinary bathroom scale to a shelf five feet from the floor, with the end of the scale projecting out from the shelf. Subjects squeeze the scale between their thumb and their fingers on the top. A scale which reads in pounds will be used to measure hand strength. You have recruited 10 right-handed people to serve as subjects.

(a) How would you conduct the experiment as a completely randomized design?

(b) Are there potential flaws with this method?

(c) Use the random digits below to do the randomization required by your design and report your results.

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55588  99404  70708  41098  43563  56934  48394  51719
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3. We wish to determine whether or not a new type of fertilizer is more effective than the type currently in use. Researchers have subdivided a 20-acre farm into twenty 1-acre plots. Wheat will be planted on the farm, and at the end of the growing season the number of bushels harvested will be measured. Describe a completely randomized design. What is the explanatory variable? What is the response variable? How many treatments are there? Are there any possible extraneous variables that would confound the results?