R-assignment 5 and experimental design

1. A study wants to investigate whether cell phones distract driving. The subjects tested were driving in a simulator. The car ahead breaks and the drivers reaction time were measured. The study wants to compare the reaction time of subjects who drive while talking on a cellphone with subjects who drive without talking on a cell-phone. The study wants to compare the result of 60 subjects.

(A) Design a completely randomized experiment in which 30 subjects get assigned to drive while talking on the cell-phone and the other 30 drives without talking on the cell phone. Use the **sample** command in R to randomly assign the subjects to the two groups. Include your R-code. (See lecture notes for the R-code.)

(B) Describe the design of a matched pairs experiment using the same 60 subjects.

(C) Which of the two designs above do you think will produce the more precise results.

2. Suppose a researcher wants to test whether changing diet reduce high blood pressure. 32 men with high blood pressure were randomly assigned to one of the following diets given in the table:

	Vegetarian diet	Normal diet
restricted salt	8	8
unrestricted salt	8	8

The following subjects have agreed to participate:
H.A. I.A U.A R.B T.B. P.C. Q.C. T.C. T.E. F.F K.F. I.H. O.H. P.H. I.I. L.I. P.I. Q.I. A.J. K.J. P.J. T.J. I.K. P.M. S.M. P.R U.R. Q.S. S.S Y.S G.W O.W

(A) Identify the factors and the treatments.
(B) Describe the design of the experiment
(C) Use R to assign the subjects who will receive a vegetarian diet with restricted salt. Include the R-code.