

NOTES FOR EXERCISES IN SESSION 9B
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- \* add10:1,4 (add9:1(b); add10:2,3).

Schedule today:

- further review of random effects models (L9–13/14/15),
- past home assignments: questions?, possibly a review of home assignment 4,
- you work on the (new) exercises on your own, perhaps including catch-up from previous sessions (?).

Notes on the software for random effects models:

- Minitab/SAS: the General Linear Model menu/`proc glm` give:
  - \* correct ANOVA table and estimates of variance components,
  - \* (least squares) means but no standard errors,only for balanced or almost balanced data,
- Stata: the `anova` command gives:
  - \* by specific request (see do-files), a correct ANOVA table,
  - \* no variance components or (least squares) means,only for balanced data,
- Stata/R: the `mixed` command/library `nlme` give: all statistics correctly for hierarchical data structures (possibly unbalanced),
- SAS/R: `proc mixed`/library `lme4` give: all statistics correctly.

What you should be able to do after today's session...

- construct ANOVA table outlines for and analyse basic, balanced random effects designs.