# CONSTRUCTING RASCH SCALES

## PRE-REQUISITES

### THEORY

### SOFTWARE REQUIRED

The following software is required for the development of scales.

1) R/ R Studio\* or SPSS

2) Quest (ACER)

3) Microsoft Excel (2010 and above)

\* R and R-Studio scripts are optional as they help expedite the task of converting the raw data (files with responses) to suitable formats and automated build of script files for the Quest software. The format conversion of raw data for Quest compatible software can be done using SPSS also (Manual prepared by Kumaresh and Manjunath).

##### INSTALLATION

**For R installation**

https://cran.r-project.org/doc/manuals/r-release/R-admin.html#Installing-R-under-Windows

**R-Studio installation**

http://www.dummies.com/how-to/content/how-to-install-and-configure-rstudio.html

**R-scripts needed**

scale\_construction\_prep\_v31\_08\_2015.R

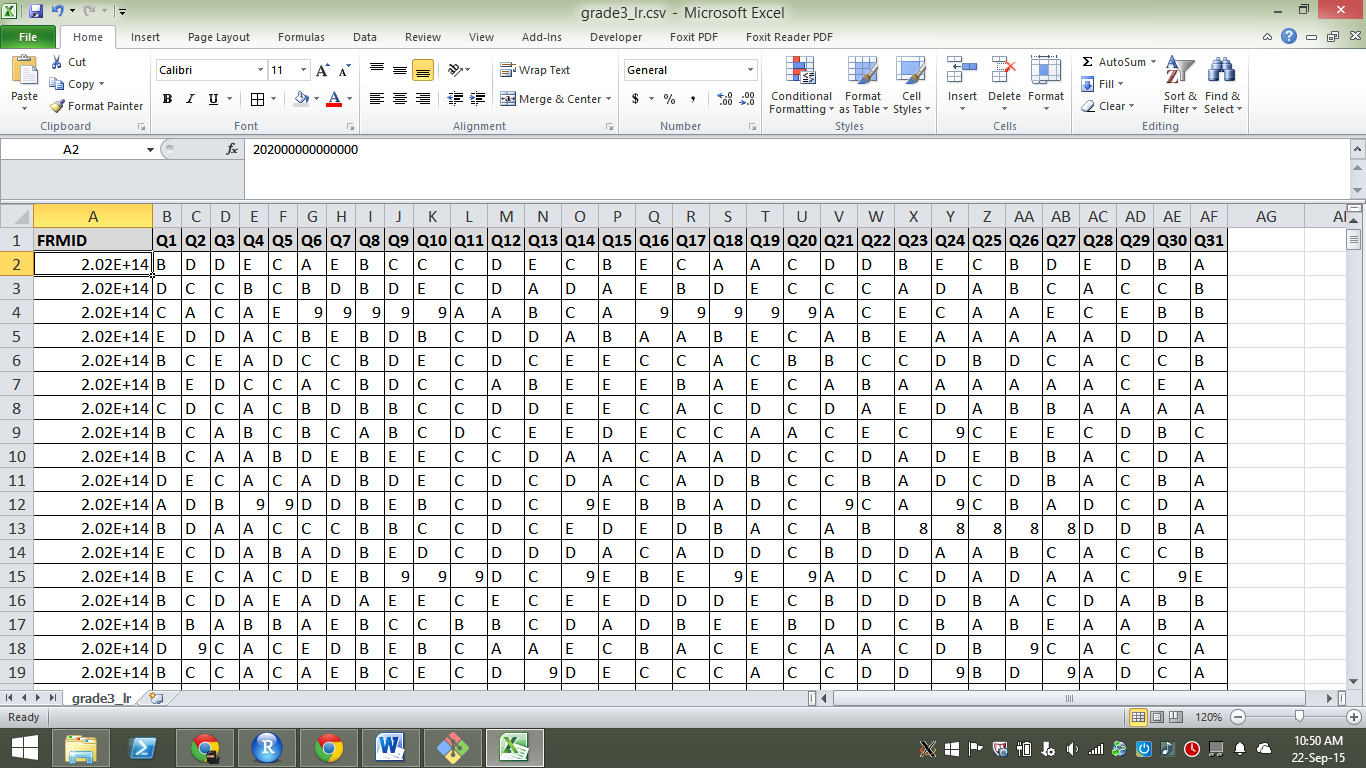
## DATA PREPARATION

The data for construction of scales should be prepared in the prescribed format.

1) Copy all the raw responses (either through OMR reading or manual tabulation) into a single sheet by grade and subject. Usually the scales are constructed for each subject by linking the grades from the lowest to the highest.

2) The spreadsheet should only have the formID(or any other identifier) and the responses to all questions. The responses on one student should be in one row.

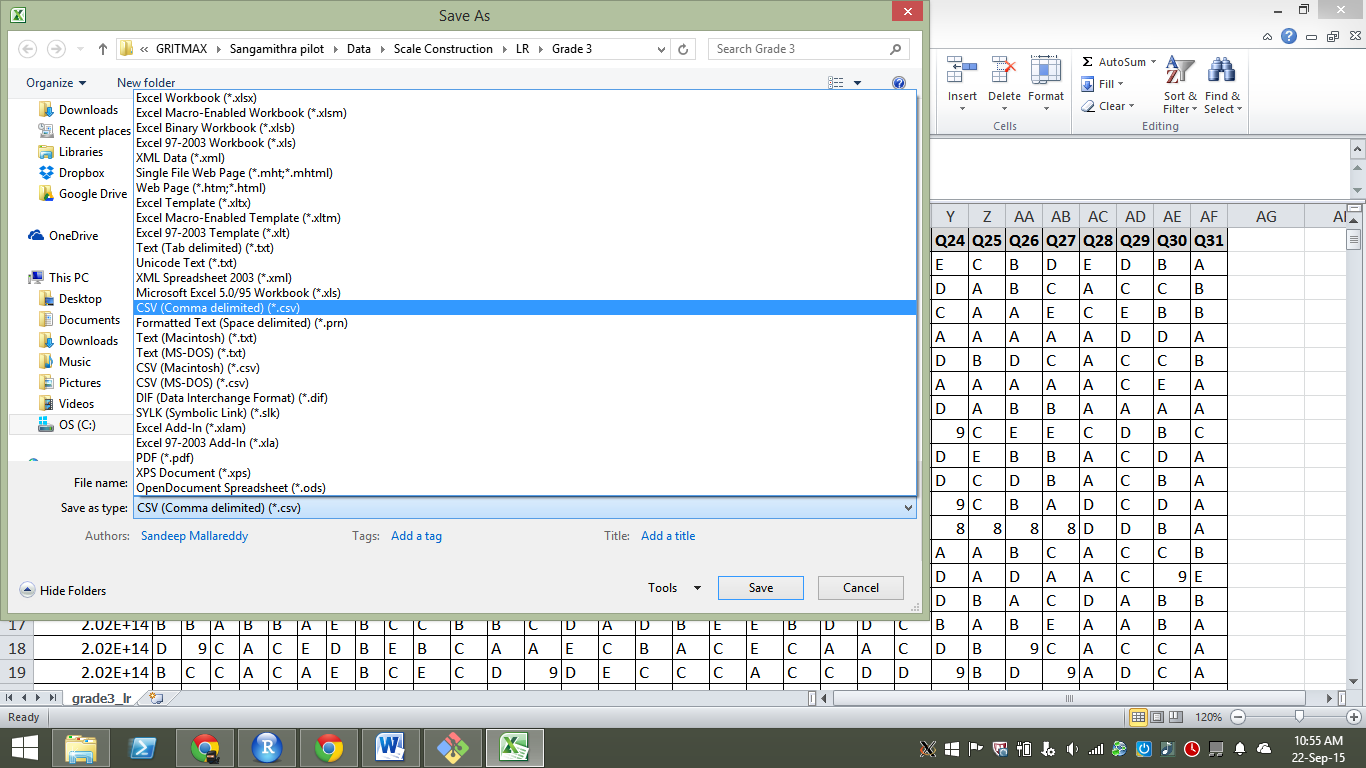
### Figure : Format of the data for scale construction



3) Save the file in the .**csv (comma separated values)**.

The file name should be ideally “grade {number}\_{subject}.csv”. *e.g.* grade3\_maths.csv

### Figure : Saving the file in csv format



**Note: The .csv format doesn’t allow more than one sheet to be stored.**

## DATA CLEANING

The next step entails cleaning the data. The data cleaning step entails the following

1) Convert all blank responses to number ‘9’

2) Replace multiple responses for a question (AB,ABC,ABCD, ABCDE etc) to’8’

3) For subjects which have only 4 options, if responses contain ‘E’, convert them to 8

4) Check all responses, question by question to ensure that only A,B,C,D,E,8,9 are the only responses in each column

### Figure : Checking for valid responses

