Some Basic Item Analysis for Ability and Knowledge Tests

Item Difficulty

Once your variables are scored 0 for incorrect and 1 for correct, find the mean of each of the items to obtain the item difficulty.

Menus

Analyze -> Descriptive Statistics-> Descriptives…

Syntax[1]

(Before running a syntax file, find your downloaded data file and drag it over to the desktop)

```
GET FILE=' C:\Users\newsomj\Desktop\examdata.sav'.

DESCRIPTIVES VARIABLES=q1 TO q10.
```

Item Discrimination Index

Computation of the item discrimination index requires a total score on the test, which I have already computed for the exam data. For your project you will first need to create an new variable which is a composite summed score, using the Transform menu or COMPUTE command in syntax.

Find the Percentiles for the Total Score

Menus

Analyze -> Descriptive Statistics -> Frequencies…

Highlight the scale total score (*mctotal*) on the left and move it over to the box on the right hand side using the arrow button in the middle.

Click on *Statistics* button. Under *Percentile Values*, check the box next to *Percentile(s)*. Then enter values, such as 33 (click add) and 67 (click add), which is the Kelly (1939) method. [note: percentiles need to be in whole numbers not decimals].

Syntax

(Before running a syntax file, find your downloaded data file and drag it over to the desktop)

```
GET FILE=' C:\Users\newsomj\Desktop\examdata.sav'.

FREQUENCIES VARIABLES=mctotal
  /percentiles=33 67.
```

Obtain the Proportion Correct for Top and Bottom Scorers[2]

Menus

Data -> Select Cases

Choose *If condition is satisfied* click on *if…* and then enter the condition to select the bottom scorers, such as mctotal <= 14. Check *Continue* and then *OK*.

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[1] If the lab SPSS on the computer will not access the data file, the following syntax may work instead:

```
CD ' C:\Users\newsomj\Desktop'.
GET FILE='examdata.sav'.
```

[2] Another somewhat simpler method is to use to split the file at the top and bottom percentile cutoffs and generate the descriptive once, and SPSS will print the statistics separately for each of the groups.

Data -> Select Cases
Choose *All Cases*

Data -> Select Cases
Choose *If condition is satisfied* click on *if…* and then enter the condition to select the top scorers, such as mctotal > 20.39. Check *Continue* and then *OK*

Data -> Select Cases
Choose *All Cases*

Analyze -> Descriptive Statistics-> Descriptives…
Move over the desired variables (e.g. Q1 through Q10)
Click OK

Syntax

```
TEMPORARY.
SELECT IF mctotal LE 14.
DESCRIPTIVES VARIABLES=q1 TO q10.

TEMPORARY.
SELECT IF mctotal GT 20.39.
DESCRIPTIVES VARIABLES=q1 TO q10.
```

Compute Discrimination Index
Download the MS Excel sheet item discrimination index.xlsx from the data page: http://web.pdx.edu/~newsomj/data.htm and enter values from the output.