

Name: _____

ID: 810-_____

Assignment 1

Part I

1. Using the rules of logarithms, solve the following:

a. $\log(\frac{47}{23})$ b. $\log(13 * 27)$ c. $\log(8^6)$

2. Using the rules of exponents, solve the following:

a. $4^2 * 4^6$ b. $(3^4)^3$ c. $\frac{7^5}{7^2}$ d. $(\frac{7}{13})^8$

3. Students' scores on an exam range from 35 to 98, with a mean score of 74. Which of the following is the most realistic value for the standard deviation: -10, 0, 3, 12, or 63? Clearly explain what's unrealistic about each of the other values.

§ Read the following and answer the questions (4-7)

Jesse and Mallory each run an average of 4 miles per day. However, they don't always run the same number of miles as each other each day.

4. Determine 7 observations that could possibly be the number of miles Jesse ran each day this week.
5. Determine 7 observations that could be how many miles Mallory ran each of these days, if the distance of Mallory's runs varies more than Jesse's.
6. Determine 7 observations that could be how many miles Mallory ran each of these days, if the distance of Mallory's runs has the same variance as the distance of Jesse's runs.
7. In this context, explain why the variance is a useful descriptive statistic to use in addition to the mean to describe the running habits of Jesse and Mallory.
8. In what case or cases would the mean, mode, and median all equal each other?
9. In the case of severe skewness what is the best measure of central tendency and why?
10. Fill the table below to calculate the following terms (show your work)

student	language art (X)	reading (Y)	X ²	Y ²	XY
Karl	5	4	25		20
Jennifer	4	5	16	25	
Andy	3	5		25	15
Sue	1	3	1	9	
Thomas	2	2	4		4
sum	15	19	55	79	62

- a. Mean and standard deviation of Language Art scores
- b. Mean and standard deviation of Reading scores
- c. Covariance and correlation of Language Art and Reading scores

Part II (SPSS)

You have just administered your second biology quiz of the semester. You have scanned your 'bubble sheets' through the optical scanner and you now have a tab delimited file in the structure presented below. Answer each question below by providing SPSS output and/or a brief response.

1. Import the tab delimited file into SPSS according to the file layout
 - a. Add variable labels
 - b. Add value labels
 - c. Recode all missing values to '9' (missing values are present in ethnic and Required)
 - i. Set 9 as 'Not specified' within the variable view
 - d. Why are the start and end positions presented in the layout blank? In what instance would they be critical?

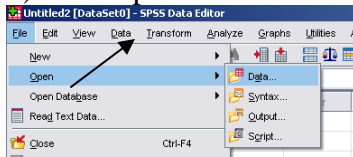
Field Description	Variable Name	Start Position	End Position	Format	Valid Values
Student Identifier	ID			A2	
Student Gender	Gender			F1.0	1=Female 2=Male
Student Ethnicity	Ethnic			F1.0	1=Asian 2=African American 3=Hispanic 4=Native American 5=White
Course Requirement Flag	Required			F1.0	0=No, Course is NOT required 1=Yes, Course IS required
Score Student Received on Quiz 1	Q1Score			F2.0	
Item Responses for Quiz 2	Item1 - Item12			12(F1.0)	0=Incorrect 1=Correct

2. Compute a total QUIZ 2 Score for each student
3. Using SPSS, describe your data set in any way you see fit (must use the concepts we discussed in class—you may want to describe the students, the items, the total scores etc.)
4. Select and run descriptive statistics:
 - a. Select the females from the data file. What is their mean Total Quiz 2 Score?
 - b. Select the males from the data file. What is their mean Total Quiz 2 Score?
 - c. Use an alternate SPSS Menu option that will reduce the number of steps to compare group means.
5. Which student(s) achieved the highest grade? How can you describe the score(s), above and beyond a raw score, within the data file?
Report your transformed score for the highest achieving student(s).

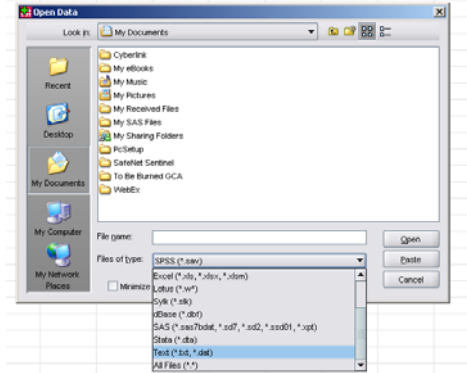
Appendix (SPSS Help)

Importing Data:

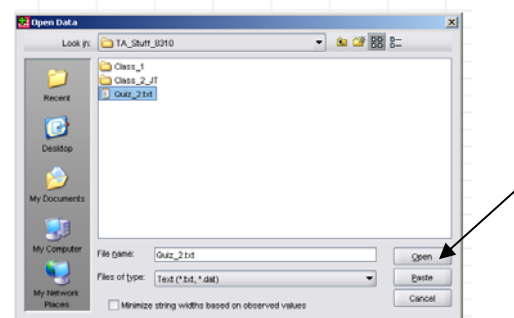
1) File>Open>Data



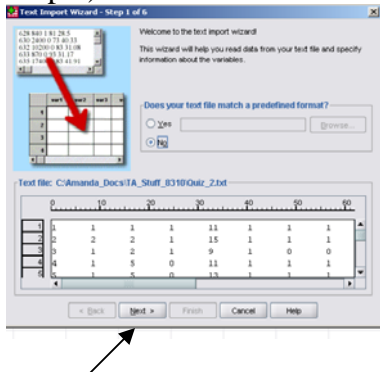
2) Window appears >Click down arrow>select 'Text'



3) Locate file>Click Open



4) Proceed through 'Import Wizard' based on tab delimited file
Step 1) Next>



Step 2) Delimited>No>Next

Text Import Wizard - Step 2 of 6

How are your variables arranged?

☒ Delimited - Variables are delimited by a specific character (i.e., comma, tab).

☐ Fixed width - Variables are aligned in fixed width columns.

Are variable names included at the top of your file?

☐ Yes

☒ No

Text file: C:\Amanda_Docs\TA_Stuff_8310\Quiz_2.txt

	1	2	3	4	5	6	7	8
1	1	1	1	1	11	1	1	1
2	2	2	1	15	1	1	1	1
3	1	2	1	9	1	0	0	
4	1	5	0	11	1	1	1	

< Back Next > Finish Cancel Help

Step 3) Leave defaults [first case begins on line 1>Each line represents a case>We want to import all cases>Next

Text Import Wizard - Delimited Step 3 of 6

The first case of data begins on which line number? 1

How are your cases represented?

☒ Each line represents a case

☐ A specific number of variables represents a case: 17

How many cases do you want to import?

☒ All of the cases

☐ The first 1000 cases.

☐ A random percentage of the cases (approximate): 10 %

Data preview

	1	2	3	4	5	6	7	8
1	1	1	1	11	1	1	1	1
2	2	2	1	15	1	1	1	1
3	1	2	1	9	1	0	0	

< Back Next > Finish Cancel Help

Step 4) Leave defaults [Tab delimiters appear between variables>No text qualifiers]>Next

Text Import Wizard - Delimited Step 4 of 6

Which delimiters appear between variables?

☒ Tab ☐ Space

☐ Comma ☐ Semicolon

☐ Other:

What is the text qualifier?

☒ None

☐ Single quote

☐ Double quote

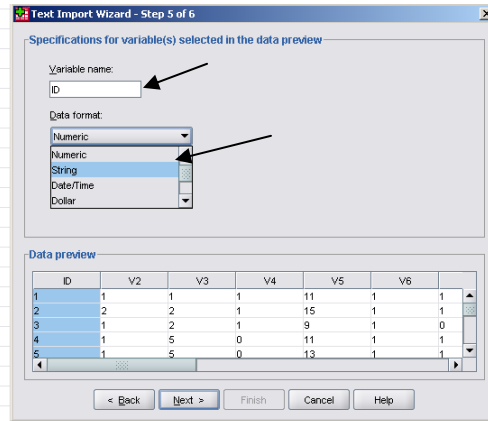
☐ Other:

Data preview

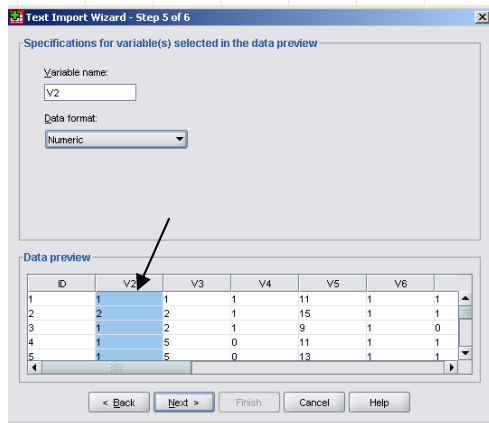
	V1	V2	V3	V4	V5	V6	
1	1	1	1	11	1	1	1
2	2	2	1	15	1	1	1
3	1	2	1	9	1	0	
4	1	5	0	11	1	1	1
5	1	5	0	13	1	1	
6	2	3	0	12	1	1	
7	1	3	1	10	0	1	
8	2	4	1	6	1	0	

< Back Next > Finish Cancel Help

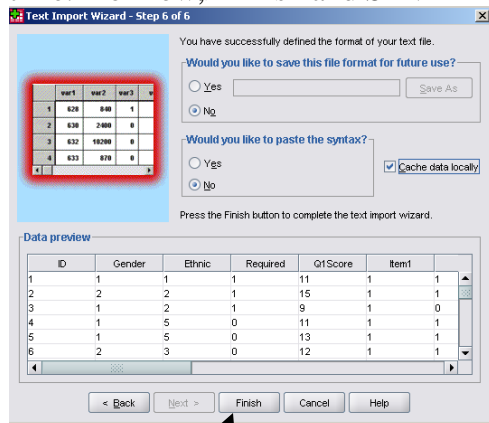
Step 5) Set the variable specifications [A=String and F=Numeric within the Layout]



Remember: Click on Current Variable Label (it will highlight column and allow you to change specifications). Once all variables have been specified>Next

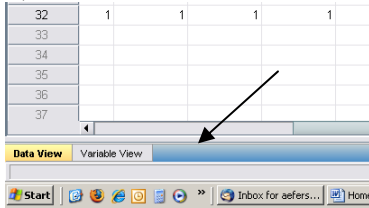


Step 6) This screen will allow you to paste the syntax— We will review this at a later time. For now,>Finish and SAVE YOUR FILE!

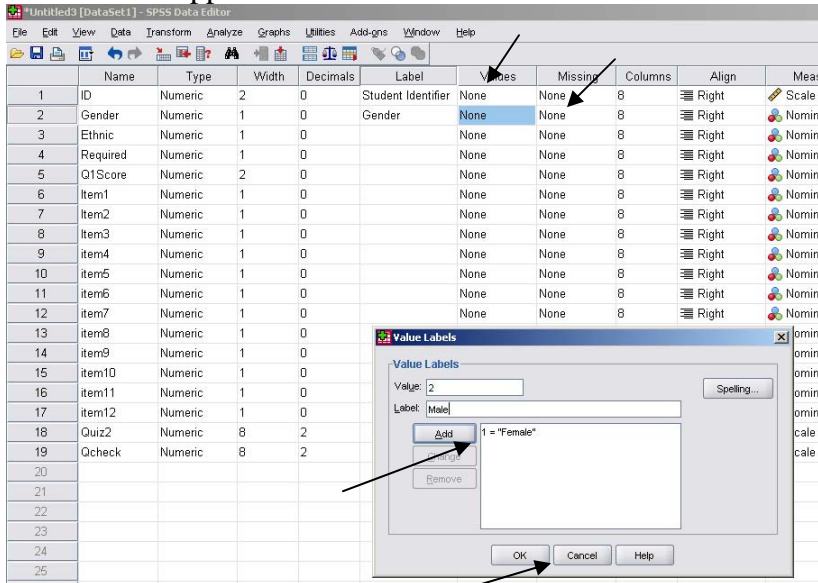


Adding Variable Labels & Value Labels

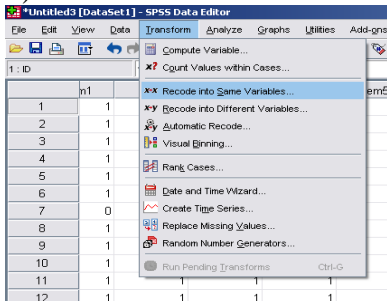
1) Click on the 'Variable View' Tab at the bottom of your screen



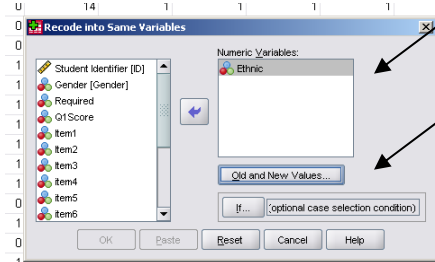
2) Add Field Description from Layout to the 'Label' area> Click on Values, a new window will appear>Set Value and Label>Add>OK

Recoding a Variable

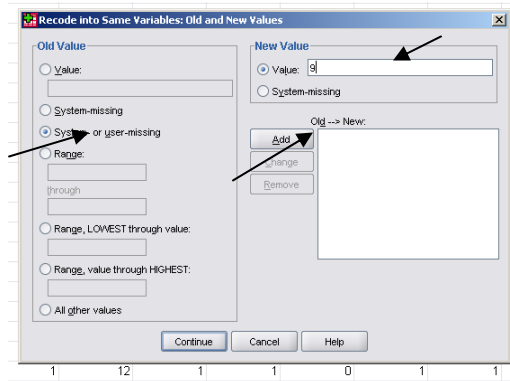
1) Transform>Recode into Same Variable



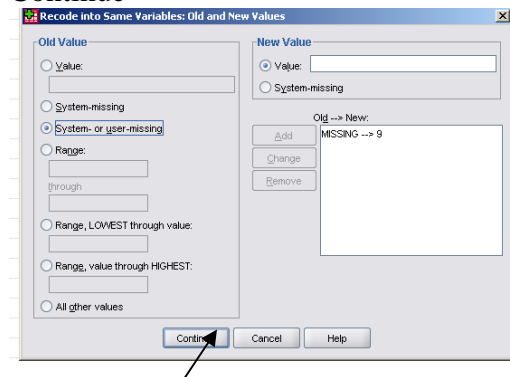
2) Select Ethnic>Click on Arrow to the Right>You should see variable under 'Numeric Variables'>Old and New Values



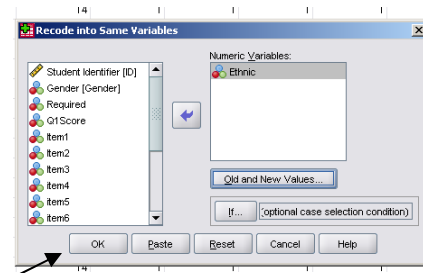
3) Select the System or User Missing Radio Button on the Right>Type '9' in the Value box>Add



Continue

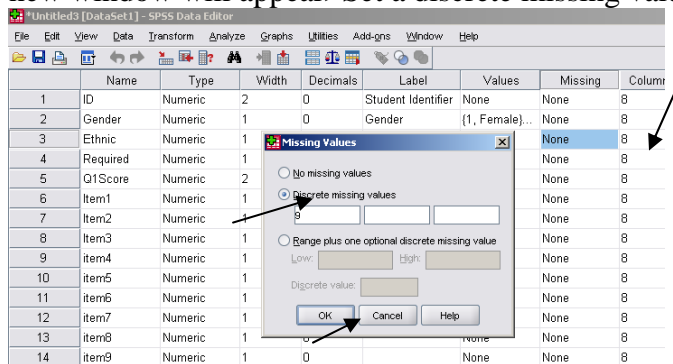


OK



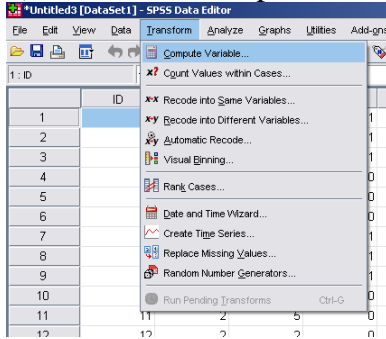
You should see a change in your data file (all missing ethnicities should be coded as '9')

Return to the 'Variable View' Tab>Click in the 'Missing' Cell within the Ethnic Row>A new window will appear>Set a discrete missing value to '9'>Click OK



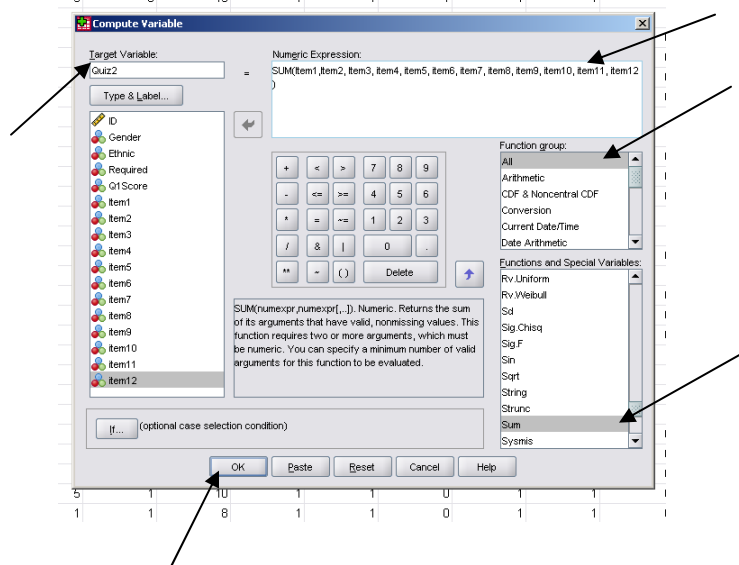
Computing a new Variable

1) Transform>Compute Variable



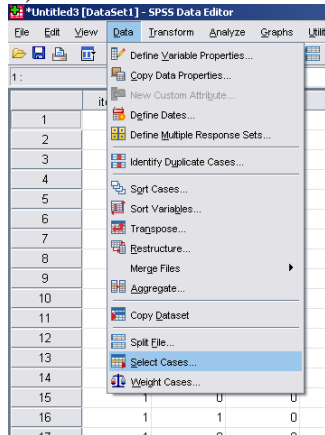
2) Place Name of New Variable in the Top Left Hand Side Box under 'Target Variable'> Within Function Group, Click All> Scroll for the 'SUM' Function, Click on Sum. The function will appear under 'Numeric Expression'> Between the parentheses, insert each variable you want to add together (all the items on the quiz)>OK

Check your data file, you should now see a new variable called 'Quiz2' at the end. Note: Using the SUM function instead of the '+' key is important when working with many variables (a vector) that may contain missing data. The 'SUM' function handles missing data (meaning, it will skip the missing and still provide a total).

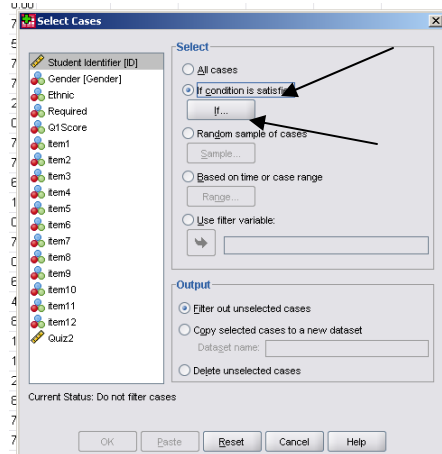


Selecting Cases

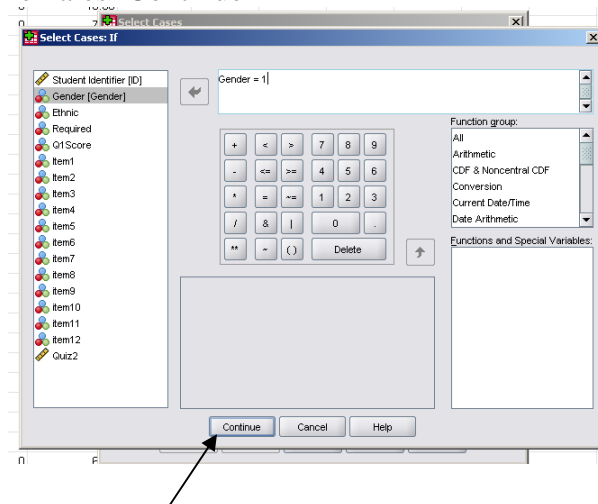
1) Data>Select Cases



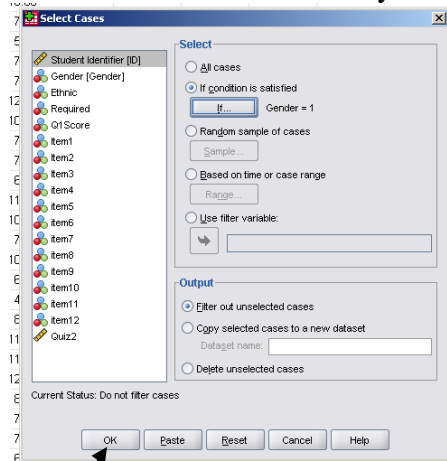
Select 'If Condition is Satisfied Radio Button'>Click 'IF' Push Button



Shuffle Gender over into window using the arrow>Specify that Gender = 1 for females>Continue



OK>You should see that only certain cases are active in your data file



For Transformation Question: Look at Analyze>Descriptive Statistics> Descriptives