

**Homework Assignment #7 (due by 11:59pm CST on Sunday, June 27th)**

Please study CH11 to finish this homework assignment. You can calculate the answers following steps in the textbook (Five Steps in Hypothesis Testing: A Summary on Page 381-382), practice and weekly materials on Blackboard. Also, please familiar with how to interpret the results using your own words following each definition (See interpretation on Page 382; Learning Check 11.3 on page 382). Please continue to remind yourself about the issue of rounding error and should develop a general classroom rule to round to a specific decimal point (i.e., **2 decimal points**) for all calculations.

Problem set 1: Use the following data to answer questions 1-5 (40 points):

A researcher is interested in whether there is a significant difference between the mean age of marriage across three racial groups. Based on the data below, answer these questions.

Race	N	Mean
Black	<b>318</b>	<b>22.17</b>
White	<b>772</b>	<b>24.78</b>
Other	<b>110</b>	<b>23.55</b>
All Groups	1,200	23.58

1. Calculate the value of the between group sum of squares (SSB, 15 pts).

Race	Y bar for each group	Total mean	Group mean – Total mean	Square of the difference	The number of cases	Nk*Square of the difference
Black	<b>22.17</b>	23.58				
White	<b>24.78</b>	23.58				
Other	<b>23.55</b>	23.58				
						Sum up=

2. Calculate the degrees of freedom for the between group sum of squares. Then, use this quantity to calculate the mean square between (8 pts).
3. If the F statistic calculated for these data is 12.56, what is the value of the mean square within (6 pts)?
4. Following answer of #3, calculate the within group sum of squares and the number of degrees of freedom for the within group sum of squares (8 pts).
5. Imagine you are interested in whether there is a significant difference between the mean age of marriage across educational groups. If the critical value for an F statistic of 12.56 is 2.99, are these results statistically significant or not (7 pts)?

Problem set 2: Use the following data to answer questions 6-10 (40 points):

We take another look at health based on the practice question on Page 393-394, this time examining the relationship between educational attainment and perceived quality of health care. Data for three groups are presented based on the HINTS2012 data set. Present the five-step model for these data, using  $\alpha = .01$ . QUALITYCARE is measured on a five-point scale: 1—excellent, 2—very good, 3—good, 4—fair, and 5—poor. Note how a lower score indicates a higher quality of care. *Chapter Exercises #1 and #3 on pages 393-394 are helpful to complete this problem set.*

Less Than High School	Some College	College Graduate
<b>3</b>	1	2
4	<b>2</b>	2
<b>3</b>	2	2
<b>3</b>	2	1
4	<b>3</b>	<b>1</b>
<b>4</b>	<b>2</b>	1

6. Find the answers for the worksheet (20 pts).

Less Than High School	Some College	College Graduate
<b>3</b>	1	2
4	<b>2</b>	2
<b>3</b>	2	2
<b>3</b>	2	1
4	<b>3</b>	<b>1</b>
<b>4</b>	<b>2</b>	1
Sum Y1=	Sum Y2=	Sum Y3=
Mean Y1=	Mean Y2=	Mean Y3=
Sum up square of Y1=	Sum up square of Y2=	Sum up square of Y3=
n1= 6	n2= 6	n3= 6
Total mean =		
N = 18		

7. Calculate the degrees of freedom for SSB and SSW (6 pts).

8. Calculate Mean Square within and Mean Square between (6 pts).

9. What's the F statistic in this data (4 pts)?

10. Make decision if alpha was set up at .05, and please use Appendix E (Page 473-475 to discuss your decision making (4 pts).

Problem set 3: Use the following data to answer questions 11-12 (20 points):  
 Based on a sample of 21 Monitoring the Future respondents, we present their racial/ethnic background and the numbers of school days missed in the past 4 weeks (Please see details on Page 394-395).

White	Black	Hispanic
4	1	4
5	2	3
3	2	5
4	1	1
4	3	5
4	4	2
6	3	2

11. Complete the five-step model for these data, set alpha at .05. (15 pts).

$\bar{Y}_1 =$	$\bar{Y}_2 =$	$\bar{Y}_3 =$
$\sum Y_1 =$	$\sum Y_2 =$	$\sum Y_3 =$
$\sum Y_1^2 =$	$\sum Y_2^2 =$	$\sum Y_3^2 =$
$n_1 = 7$	$n_2 = 7$	$n_3 = 7$
$\bar{Y} =$		
$N =$		

12. If alpha were set at .01, would your decision change? Explain (5 pts).