

Name: \_\_\_\_\_ Person #: \_\_\_\_\_ Recitation Section: \_\_\_\_\_

### PSY207 Problem Set 4, Chapters 12 – 14

*Using the space provided, report your answers to each question. Please show ALL your calculations, feel free to do so with additional sheets of paper, and make clear what your final answer is. Please round your answers to two decimal places.*

**1.)** In an effort to improve reading scores, two new methods of reading interventions were tested. With three groups (A: control, B: method 1, C: method 2), we obtain the data below:

A	B	C
T = 5	T = 25	T = 30
SS = 12	SS = 20	SS = 14
n = 5	n = 5	n = 5
M = 1	M = 5	M = 6

$$\Sigma X^2 = 356 \quad N = 15 \quad G = 60$$

**a.)** Complete your ANOVA Summary Table.

Source	SS	df	MS	F
Between Treatment				
Within Treatment				
Total				

**b.)** Using an alpha level of .05, what is the  $F_{crit}$  value and can we conclude that there is a significant difference between treatments?

$F_{critical} =$  \_\_\_\_\_

**c.)** Use the Tukey's HSD test to determine which of the treatments are significantly different from each other. Use the  $\alpha = .05$  level of significance for all tests.

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d.) Calculate the proportion of variance account for ( $\eta^2$ )

$$\eta^2 = \underline{\hspace{2cm}}$$

2.) A researcher has decided to test whether a new drug therapy is effective at reducing anxiety symptoms. She tests four individuals at three different levels of medication and finds the results in the table below. Can we conclude that there is a difference in anxiety levels at different medication levels?

Subject	Treatment A	Treatment B	Treatment C	P	$P^2/k$	
A	6	2	3			$G = 48$
B	5	1	5			$\Sigma X^2 = 294$
C	0	5	10			
D	1	8	2			$k = 3$

$$T = 12 \quad T = 16 \quad T = 20 \quad \therefore \sum \frac{P^2}{k} = \underline{\hspace{2cm}}$$

$$\Sigma X_A^2 = \underline{\hspace{2cm}} \quad \Sigma X_B^2 = \underline{\hspace{2cm}} \quad \Sigma X_C^2 = \underline{\hspace{2cm}}$$

a.) Complete your ANOVA Summary Table.

Source	SS	df	MS	F
Between Treatment				
Within Treatment				
Between Subjects				
Error				
Total				

b.) Using an alpha level of .05, what is the  $F_{crit}$  value and can we conclude that there is a significant difference between treatments?

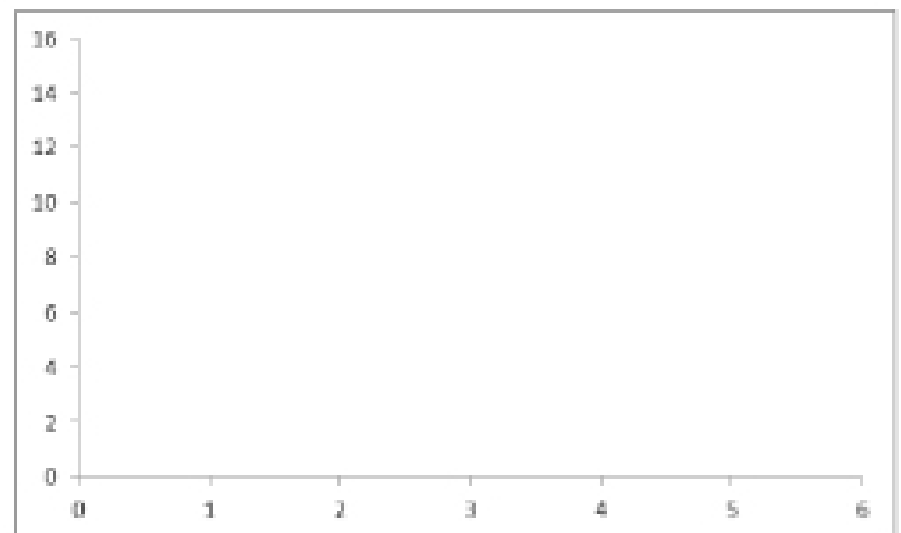
$$F_{critical} = \underline{\hspace{2cm}}$$

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3.) Use the following data to complete parts a – g.

X	Y
1	2
4	7
3	5
2	1
5	14
3	7

a.) Plot the data using the graph to the right.



b.) Does there seem to be a relationship? If so is it...  
Circle one

Positive, Negative, or None

c.) Calculate the Pearson correlation coefficient ( $r$ ).

d.) Using an alpha level of .05, report your degrees of freedom ( $df$ ) and if your correlation coefficient is significant?

e.) What is your coefficient of determination ( $r^2$ ).

$$r^2 = \underline{\hspace{2cm}}$$

f.) Find the regression equation for predicting  $\hat{Y}$  from X.

g.) Use the regression equation to find  $\hat{Y}$  given the following X values.

X	$\hat{Y}$
1	
4	
3	
2	
5	
3	