Name: Answer Key

EDUC/PSY 6600

Research Design & Analysis I

Unit 0 Assignment

Introduction: APA, ~~SPSS~~ R, Stats

*Please complete the following exercises. Feel free to work with classmates, but each student must turn in **UNIQUE** work, not photocopies or identical replicates. When applicable, use **APA format** in communicating your results in text. **Show your work!** If any question involves any math at all, show your work. When it doubt, write it out. Always show more than you think you need.*

1) WRITE-UP - Textbook Problems (hand in the hard copy...this packet)

Cohen Chap		Exercises	Pts	Off
1	A	1, *2, *3, 4, 6, *7, 8	5	
	B	*2, 3, 7	5	

2) PUBLICATION – Supplementary Reading (upload both the pdf of article & your typed summary)

Your own research: Journal article		Pts	Off
Find & Upload	Find a **journal article** directly related to your area of research for which you are able to obtain an electronic copy (digital or scanned hard copy). Search for the term **ANOVA** specifically. Do **not** pay to get this article.	5	
Half Page	Read your article and summarize the **use or abuse of APA format**, focusing on the terms and concepts we covered in this unit.	5	

3) SUMMARY – Supplementary Reading (you may handwrite it here or type it and upload it to Canvas)

APA format – additional readings		Pts	Off
One Page	Read (AR1) the article by **Wilkinson et al., 1999** and **summarize**. Also, read (AR2) the **APA Publication Manual** focusing on pages 137-149 (pdf pages 16-28) but do **not** summarize (for future reference).	10	
2 fixes	Skim the **3 example articles** on Canvas and find and tell how to fix two errors (total, not 2 per article) that do not strictly follow the APA format	10	

4) R– Section C: Ihno's data set – add to the skeleton R notebook and knit to .pdf & upload

Cohen Chap		Exercises	Pts	Off
1	C	1, *2, 3, *4, 5, 6 (this will be used to start other unit homeworks)	10	

Grading		Earned	Possible
CORRECTNESS	*a subset of spot-checked items: must show work, especially items from back of book or done in class*		50
COMPLETENESS	*more than one item is missing or skipped: 25/50 roughly half the assignment is completed: 10/50*		50
			100

Answers will Vary

1 A	1. Scales of a variables	
Give **two examples** of each of the following:		
a. Nominal Scale	- city of birth - political party	Groups
b. Ordinal Scale	- military rank - birth order	Have order
c. Interval Scale	- time of day - IQ	equally spaced
d. Ratio Scale	- milligrams of drug - yards jumped	Zero pt = Something "none"
e. Continuous variable	- strength of grip - depth of depression	
f. Discrete variable	- # of college credits - # of siblings	

1 A	*2. Scales of a variables				
What **type of scale** is being used for each of the following measures? *(check the box in front of the correct answer)*					
a. Number of arithmetic problems correctly solved	☐ Nominal	☐ Ordinal	☐ Interval	☒ Ratio	BB
b. Class standing (rank)	☐ Nominal	☒ Ordinal	☐ Interval	☐ Ratio	
c. Type of phobia	☒ Nominal	☐ Ordinal	☐ Interval	☐ Ratio	BB
d. Body temperature	☐ Nominal	☐ Ordinal	☒ Interval CF	☐ Ratio K	
e. Self-esteem (questionnaire)	☐ Nominal	☒ Ordinal	☐ Interval	☐ Ratio	BB
f. Annual income in dollars	☐ Nominal	☐ Ordinal	☐ Interval	☒ Ratio	
g. Theoretical orientation towards psychotherapy	☒ Nominal	☐ Ordinal	☐ Interval	☐ Ratio	BB
h. Place in a dog show	☐ Nominal	☒ Ordinal	☐ Interval	☐ Ratio	
i. Hear rate in beats per minute	☐ Nominal	☐ Ordinal	☐ Interval	☒ Ratio	BB

= Back of Book

1	A	*3. Scales of a variables

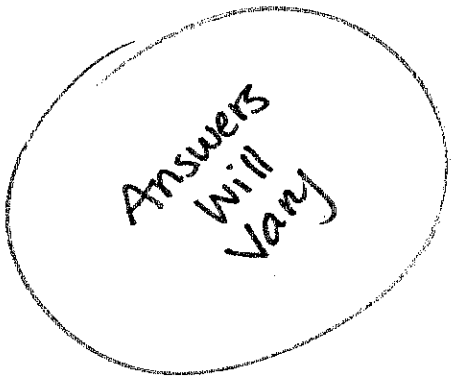
What **type of scale** is being used for each of the following measures? *(check the box in front of the correct answer)*

a.	Number of people in a social network	☒ Discrete ☐ Continuous BB
b.	Intelligence	☐ Discrete ☒ Continuous
c.	Size of vocabulary	☒ Discrete ☐ Continuous BB
d.	Blood pressure	☐ Discrete ☒ Continuous
e.	Need for achievement	☐ Discrete ☒ Continuous BB

1	A	4. Population vs. Sample

a. Give two examples of a **population** that does not consist of individual people.

- families
- households



b. For each population described in (a), indicate how you might **obtain a sample**.

- Ads in newspaper
- Hospital billing

1 A 6. Example variables

Patients are randomly assigned to one of four types of psychotherapy. The progress of each subject is rated at the end of 6 months.

a. What is the **independent** variable?	type of psychotherapy
b. What is the **dependent** variable?	progress
c. What kind of **scale** is formed by the levels of the **independent** variable?	Nominal

1 A *7. Observational vs. Experimental

What **kind of study** is each of the following: *(check the box in front of the correct answer)*

a. Comparing pet owners with those who don't own pets on an empathy measure.	☒ Observational ☐ Experimental	BB
b. Comparing men and women with respect to performance on a video game that simulates landing a space shuttle	☒ Observational ☐ Experimental	BB
c. Comparing participants run by a male vs. female experimenter with respect to the number of tasks completed in 1 hour	☐ Observational ☒ Experimental	BB
d. Comparing the solution times of participants given a hint with those not given a hint.	☐ Observational ☒ Experimental	BB

1 A 8. Statistic vs. Parameter

What **kind of value** is each of the following: *(check the box in front of the correct answer)*

a. The average income for 100 US citizens selected at random from various telephone books	☒ Statistic ☐ Parameter
b. The average income of citizens in the United States "ALL"	☐ Statistic ☒ Parameter
c. The highest age among respondents to a sex survey in a popular magazine	☒ Statistic ☐ Parameter

1	B	*2. Summation Notation

Find the value of each of the following expressions: *(write your solution in the box)*

X = (2, 4, 6, 8, 10)
Y = (3, 5, 7, 9, 11)

a. $\Sigma (X + Y)$	$(2+3) + (4+5) + (6+7) + (8+9) + (10+11)$ $5 + 9 + 13 + 17 + 19$ 65 BB
b. $\Sigma (X Y)$	$(2 \cdot 3) + (4 \cdot 5) + (6 \cdot 7) + (8 \cdot 9) + (10 \cdot 11)$ $6 + 20 + 42 + 72 + 110$ 250
c. $(\Sigma X)(\Sigma Y)$	$(2+4+6+8+10) \cdot (3+5+7+9+11)$ $30 \cdot 35$ 1050 BB
d. $\Sigma(X^2 + Y^2)$	$(2^2+3^2) + (4^2+5^2) + (6^2+7^2) + (8^2+9^2) + (10^2+11^2)$ $13 + 41 + 85 + 145 + 221$ 505
e. $\Sigma (X - Y)$	$(2-3) + (4-5) + (6-7) + (8-9) + (10-11)$ $-1 + -1 + -1 + -1 + -1$ -5 BB
f. $\Sigma (X + Y)^2$	$(2+3)^2 + (4+5)^2 + (6+7)^2 + (8+9)^2 + (10+11)^2$ $5^2 + 9^2 + 13^2 + 17^2 + 21^2$ $25 + 81 + 169 + 289 + 441$ 1005
g. $\Sigma (x + 7)$	$(2+7) + (4+7) + (6+7) + (8+7) + (10+7)$ $9 + 11 + 13 + 15 + 17$ 65 BB
h. $\Sigma (Y - 2)$	$(3-2) + (5-2) + (7-2) + (9-2) + (11-2)$ $1 + 3 + 5 + 7 + 9$ 25

1	B	3. "Sum of the Squares" vs. "Square of the Sum"

Make up your own set of **five numbers** and demonstrate that $\Sigma X_i^2 \neq (\Sigma X_i)^2$

Your numbers: 0, 1, 2, 3, 4

ΣX_i^2	$(\Sigma X_i)^2$
$0^2 + 1^2 + 2^2 + 3^2 + 4^2$	$(0 + 1 + 2 + 3 + 4)^2$
$0 + 1 + 4 + 9 + 16$	10^2
30	100

30 ← NOT EQUAL → 100

Answers will vary

1	B	7. Rounding Decimals

Round off the following numbers to **FOUR** decimal places:

(Assuming digits to the right of those shown are zero):

a. 0.76995	0.7700
b. 3.141627	3.1416
c. 2.7182818	2.7183
d. 6.89996	6.9000
e. 1.000819	1.0008
f. 22.55555	22.5556

APA	Your own research: **Journal article you submitted** for the unit 0 homework

One HALF page summary:

Read your article and **summarize the use or abuse of APA format**, focusing on the terms and concepts we covered in this unit.

*(you may choose to **type** this summary and include a printed copy here instead of hand writing OR upload a typed document to CANVAS)*

APA	Additional Reading: (AR1) article by **Wilkinson et al., 1999 (plus others if you want)**

One page summary:

*(you may choose to **type** this summary and include a printed copy here instead of hand writing OR upload a typed document to CANVAS)*

APA	Example Articles: find 2 error in 3 example journal articles

Skim the **3 example articles** on Canvas and find and tell how to fix two errors (total, not 2 per article) that do not strictly follow the APA format and describe how to fix each error.

	☐ Article 1 ☐ Article 2 ☐ Article 3	☐ Article 1 ☐ Article 2 ☐ Article 3
Find Error	Location in article Describe mistake	Location in article Describe mistake
How to fix?		