



KINESIOLOGY AND HEALTH SCIENCE

KINE 2049 3.0 Research Methods in Kinesiology

Quiz #2

November 28, 2011

- This exam is worth 20% of the total course mark.
- This is a closed book exam.
- Calculators may NOT be used.
- Dictionaries are NOT permitted.
- NOTE: The answers to the multiple-choice questions are to be done on the separate answer sheet provided (Scantron Sheet). There are a total of 35 questions.
- Time allowed - 45 minutes.

First Name: _____ Surname: _____
(Print neatly) (Print neatly)

Student Number: _____

Lab Day: _____ Lab Time: _____

Lab Instructor: _____

VERSION A



1. Assume that a test accurately indicates participants' scores on a future criterion (e.g. high school grades are used to indicate university GPA scores). This test would clearly have which of the following?
 - A. Face validity
 - B. Concurrent validity
 - C. Predictive validity
 - D. Content validity

2. When evaluating tests and assessments, "**reliability**" refers to asking ourselves which of the following questions?
 - A. Does it measure what it is supposed to measure?
 - B. Are there ways to avoid subjective judgments when measuring something?
 - C. Does it give consistent results?
 - D. Does it measure multiple constructs?

3. Which of the following terms describes the ability to generalize from the sample of individuals on which a study was conducted to the larger target population of individuals?
 - A. Internal validity
 - B. Population validity
 - C. Ecological validity
 - D. Temporal validity

4. A physical or mental change that occurs in participants over time that affects their performance on the dependent variable is called _____.
 - A. Instrumentation
 - B. Maturation
 - C. Regression
 - D. None of above

5. **Internal validity** refers to which of the following?
 - A. The ability to infer that a casual relationship exists between 2 variables
 - B. The extent to which study results can be generalized to and across populations of persons, settings, and times
 - C. The use of effective measurement instruments in the study
 - D. The ability to generalize the study results to individuals not included in the study

6. To determine whether noise affects the ability to solve math problems, a researcher has one group solve math problems in a quiet room and another group solve math problems in a noisy room. The group solving problems in the noisy room completes 15 problems in one hour and the group solving problems in the quiet room completes 22 problems in one hour. In this experiment, the independent variable is _____ and the dependent variable is _____.
- A. The number of problems solves; the difficulty of the problems
 - B. The number of problems solved; the noise level in the room
 - C. The noise level in the room; the number of problems solved
 - D. The noise level in the room; the difficulty of the problems
7. Counterbalancing is _____.
- A. Usually based on random selection of participants
 - B. Only used when one pre-test variable needs to be controlled
 - C. Chosen to control for such things as order and carry-over effects
 - D. All of the above
8. Which of the following designs does an excellent job of controlling for alternate hypotheses that threaten the internal validity of an experiment?
- A. Post-test-only design with random assignment and non-equivalent groups
 - B. Post-test-only control-group design with random assignment
 - C. Pre-test/post-test control-group design with random assignment
 - D. Both b and c are acceptable designs
9. This type of design is one where all participants participate in all experimental treatment conditions.
- A. Factorial design
 - B. Repeated measures design
 - C. Replicated design
 - D. Pre-test-post-test control-group design
10. A factorial design is one in which _____.
- A. Only one independent variable is studied to determine its effect on the dependent variable
 - B. Only two independent variables are simultaneously studied to determine their independent and interactive effects on the dependent variable
 - C. Two or more independent variables are simultaneously studied to determine their independent and interactive effects on the dependent variable
 - D. Two dependent variables are studied to determine their interactive effects

11. A measurement technique is said to have "**concurrent validity**" if it possesses which of the following characteristics?
- A. It can be used to forecast a future state of the individual or object being measured.
 - B. It agrees with other measures of the same variable.
 - C. It accurately reflects the attributes of the concept being measured.
 - D. It agrees with theoretical predictions about how the variable being measured is related to other variables.
 - E. It seems comprehensive and matches the conceptual definition of the variable.
12. Which of the following statements best describes the relationship between internal validity and external validity?
- A. Improving one tends to improve the other.
 - B. They are unrelated.
 - C. Improving one tends to decrease the other.
 - D. Internal validity is a subset of external validity.
 - E. External validity is a subset of internal validity.
13. Giving placebos in drug experiments is necessary to
- A. counteract the random assignment of subjects.
 - B. counteract the side effects of the drug.
 - C. control for the effects of suggestion and expectation.
 - D. keep control subjects from knowing they have been given the drug.
14. A friend states that since he has been taking vitamin C, he has not had a single cold. His observation has little value in assessing the effects of vitamin C because
- A. there was no control group for comparison.
 - B. he has not calculated a correlation coefficient.
 - C. of the effect of the observer on the observed.
 - D. he does not specify his dosage of vitamin C.
15. To investigate the effects of a particular study method on student performance, two different methods are tried, each with a different group of subjects. If only the experimenter knows which method is under investigation, the procedure being used is described as
- A. double-blind
 - B. single-blind
 - C. self-fulfilling prophesy
 - D. representative sampling

Use the information below to answer the **next 3 questions**.

A researcher decides to investigate the relationship between public speaking experience and self-confidence. She obtains subjects from a pool of volunteers and randomly assigns them to one of two conditions.

In the first condition, subjects receive a one-week public speaking course consisting of two hours each day practicing various types of speeches, receiving critiques, and evaluating each other's work. In the second condition, subjects do not attend this class. All subjects fill out a questionnaire at the end of the week. The questionnaire includes three items measured on a 7-point Likert-type scale which asks subjects about their confidence in their own abilities to meet challenges, overcome obstacles, and solve problems which they may encounter. These items are then added together to create a "self-confidence scale".

16. What kind of design has the researcher used?
- A. pre-test/post-test control group design
 - B. post-test only control group design
 - C. quasi-equivalent control group design
 - D. static group comparison design
 - E. Solomon four-group design
17. Which of the following is the treatment group?
- A. The group that received the public speaking class
 - B. The group that didn't get the public speaking class
 - C. The group that scored high on the self-confidence scale
 - D. The group that scored low on the self-confidence scale
 - E. None of the above
18. The fact that the subjects were volunteers can be used to support which of the following statements?
- A. The experiment has external validity (or generalizability) flaws
 - B. The experiment has internal validity flaws
 - C. The experiment is not replicable
 - D. The experiment does not have equivalent control and treatment groups
 - E. None of the above
19. Assume that it is a fact that heart disease occurs twice as frequently among males as females. Given a sample of 120 subjects selected by stratified random sampling, how many females would you expect in the sample?
- | | | | |
|-------|-------|-------|--------|
| A. 5 | C. 20 | E. 40 | G. 100 |
| B. 10 | D. 30 | F. 80 | |

20. If a well-designed study demonstrates a convincing advantage of one type of treatment over another, but is based on a sample of 5 people in each group, then the study is likely to have:

- A. High internal and low external validity
- B. High external and low internal validity
- C. Low internal and low external validity
- D. High external and high internal validity

21. When a researcher promises to provide **anonymity**, it means

- A. The researchers knows the identity of the participants but does not make the names public
- B. The researchers knows the identity of the participants but changes their names in the data files and research reports
- C. The researcher does not know the identity of the participants
- D. All of the above

22. A researcher has created a type of ruler that measures a person's shoe size. According to this researcher's theory, scores on this measurement instrument are an indicator of interpersonal social skills. Most psychologists would probably expect to find that this new measure is _____ and _____.

- A. highly reliable; valid
- B. unreliable; invalid
- C. highly reliable; invalid
- D. unreliable; valid

Use this information for the next two [2] questions.

A researcher is planning a study on memory using a three-way factorial design. The independent variables will be type of material [words versus object], amount of material [20 versus 40 versus 60 items], and amount of time to study [2 minutes versus 5 minutes].

23. This study would be described as a _____ factorial design.

- A. 2 x 2
- B. 2 x 3
- C. 2 x 3 x 2
- D. 3 x 3
- E. 2 x 2 x 2

24. How many experimental conditions are in the study?

- A. 3
- B. 7
- C. 12
- D. Can not be determined with the information provided

25. In a factorial design, a “main effect” is
- A. the effect of one independent variable on another independent variable
 - B. the effect of one independent variable on the dependent variable
 - C. the effect of one independent variable at a single level of another independent variable
 - D. a finding that is theoretically interesting, intriguing or unexpected.

Computer applications:

26. You have the choice of a) receiving \$50,000 per day for a month or b) receiving a penny on day one of the month and having the amount you receive double each day of the month. Which choice will result in more money at the end of a month?

- A. Receiving \$50,000 per day
- B. Receiving a penny on day one which then doubles each day
- C. The end result will be the same after 30 days.
- D. None of the above as I already have too much money!

27. If a researcher wanted to know how the performance of each subject in her experiment compared to the group of subjects, what Excel function should she use?

- A. Array
- B. PercentileRank
- C. Percentile
- D. Compare
- E. COUNT
- F. COUNTIF

28. In Excel, I need to write a formula that works this way:

If cell A1 is less than 20, then multiply it by 1,
 If A1 is greater than or equal to 20 but less than 50, then multiply it by 2
 If A1 is greater than or equal to 50 and less than 100, then multiply it by 3
 And if A1 is great or equal to than 100, then multiply it by 4

Which formula below solves this problem?

- A. =IF(A1<20, A1*1, IF(A1<50, A1*2, IF(A1<100, A1*3, A1*4)))
- B. =IF(A1<100, A1*3, IF(A1<50, A1*2, IF(A1<20, A1*1, A1*4)))
- C. =IF(A1>=20, A1*1, IF(A1>=50, A1*2, IF(A1>=100, A1*3, A1*4)))
- D. =COUNTIF(A1<20, A1*1, IF(A1<50, A1*2, IF(A1<100, A1*3, A1*4)))
- E. =COUNTIF(A1<100, A1*3, IF(A1<50, A1*2, IF(A1<20, A1*1, A1*4)))
- F. =COUNTIF(A1>=20, A1*1, IF(A1>=50, A1*2, IF(A1>=100, A1*3, A1*4)))

29. In Excel, I'm trying to use a function to return 25 if cell A1 > 100 and cell B1 < 200. Otherwise, it should return 0.

Which formula below solves this problem?

- A. =IF(OR(A1>100,B1<200),25,0)
- B. =IF(AND(A1>100,B1<200),25,0)
- C. =VLOOKUP(A1:B1,\$B\$3:\$C\$8. 25)
- D. =VLOOKUP(A1:B1,\$B\$3:\$C\$8. 25,0)
- E. =RandBetween(A1:B1,25,0)
- F. =RandBetween(A1:B1,0,25)

30. Suppose sales have to be greater than or equal to \$100K **but** less than \$200K for a salesman to receive a 12% commission. What formula would you write in C5 and fill down column C to calculate the bonus earned?

- A. =IF(AND(B5>=B2, B5<B3),B5*B1,"No bonus")
- B. =IF(AND(B5>=B2, B5<B3),"No bonus", B5*B1)
- C. =IF(AND(B5>=\$B\$2, B5<\$B\$3),B5*\$B\$1,"No bonus")
- D. =IF(AND(B5>=\$B\$2, B5<\$B\$3), "No bonus", B5*\$B\$1)
- E. =IF(OR(B5>=B2, B5<B3),B5*B1,"No bonus")
- F. =IF(OR(B5>=\$B\$2, B5<\$B\$3),B5*\$B\$1,"No bonus")

	A	B	C
1	Bonus	12%	
2	Minimum \$	100000	
3	Maximum	200000	
4		Sales	Bonus
5	Salesman	87925	12000
6	Salesman	100000	17400
7	Salesman	145000	No bonus
8	Salesman	200750	21438
9	Salesman	178650	No bonus
10	Salesman	99555	17640
11	Salesman	147000	No bonus
12	Salesman	213450	14721.6
13	Salesman	122680	No bonus
14	Salesman	92500	No bonus

31. Assume the formula shown in B2 has been filled down column B and across to column F. What value will appear in C3?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 6
- F. 8
- G. 16

	A	B	C	D	E
1		1	2	3	4
2		1	=A\$2*\$B1		
3		2			
4		3			
5		4			
6		5			
7					

Use the spreadsheet to the right to answer **the next 2 questions.**

32. What will be the result from this formula if a value of 3 is entered in cell A2?
 =VLOOKUP(A2,\$B\$3:\$E\$8,2)

	A	B	C	D	E
1					
2					
3		2	red	horse	1
4		4	blue	dog	2
5		6	green	cat	3
6		8	pink	cow	4
7		10	yellow	pig	5
8		12	white	frog	6

- A. red
- B. blue
- C. green
- D. horse
- E. dog
- F. cat

33. What formula would you write if you wanted to enter a value [between 2 and 10], in cell A2 and find the corresponding value in column E?

- A. =VLOOKUP(A2,B3:E8,3)
- B. =VLOOKUP(A2,\$B\$3:\$E\$8,4)
- C. =VLOOKUP(A2,\$B\$3:\$E\$8,3)
- D. =VLOOKUP(4,\$B\$3:\$E\$8,A2)
- E. =VLOOKUP(4,\$B\$3:\$E\$8,2-10)
- F. =VLOOKUP(4,B3:E8,A2)

34. How many subjects will be selected if you use the advanced filter based upon the criteria shown in A1:D3 of this spreadsheet?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

	A	B	C	D
1	Gender	Score	Colour	Fruit
2	male		red	
3		>3		
4				
5	Gender	Score	Colour	Fruit
6	male	1	red	apple
7	male	2	yellow	pear
8	female	3	blue	cherry
9	female	2	red	grape
10	female	5	pink	banana
11				

35. While on a long car trip you decide to pass the time by recording the colour of cars that you pass on the road. You record the colour of each car on your laptop using Excel. When you arrive at your destination you want to determine the total for each colour. What formula do you enter in F3 to be filled down to F6?

- A. =VLOOKUP (E3,A1:C10,5)
- B. =VLOOKUP (E3,\$A\$1:\$C\$10,5)
- C. =IF(A1:C10="red",+1,0)
- D. =IF(\$A\$1:\$C\$10="red",+1,0)
- E. =COUNTIF(A1:C10,E3)
- F. =COUNTIF(\$A\$1:\$C\$10,E3)

	A	B	C	D	E	F
1	red	white	blue			
2	silver	silver	red		Car colour	
3	blue	red	silver		red	
4	white	white	red		silver	
5	red	silver	white		blue	
6	blue	blue	red		white	
7	silver	red	blue			
8	white	blue	silver			
9	blue	silver	white			
10	red	white	silver			
11						

Function List

AND(logical1,logical2, ...)

AVERAGE(number1,number2, ...)

COUNT(value1,value2, ...)

COUNTA(value1,value2, ...)

COUNTIF(range,criteria)

DAVERAGE(database,field,criteria)

IF(logical_test,value_if_true,value_if_false)

OR(logical1,logical2,...)

MIN(number1,number2, ...)

MAX(number1,number2,...)

MEDIAN(number1,number2, ...)

MOD(number,divisor)

RANDBETWEEN(bottom,top)

STDEV(number1,number2,...)

SUM(number1,number2, ...)

VLOOKUP(lookup_value,table_array,col_index_num)