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KINESIOLOGY AND HEALTH SCIENCE

KINE 2049 3.0 Research Methods in Kinesiology

Quiz #2

December 1, 2010

- 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 36 questions.

- Time allowed - 45 minutes.

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

Student Number: _____

Lab Day:_____ Lab Time: _____

Lab Instructor: _____

VERSION A

1. Which question [or questions] below would be best to ask if you wanted to judge the quality of a **Methods** section in a research paper?

A) Is there sufficient detail to allow another researcher to replicate the study?
B) Is there enough detail provided to summarize the background of the specific problem?
C) Is there meaning provided for the research topic?
D) Is there an explanation of the particular problem?
E) Is there a description of the scope of the investigation?

2. What is a fact [or characteristic] called that was derived from measuring a population?

A) Statistic
B) Sample
C) Sub sample
D) Parameter
E) Pseudo-sample

3. What do you call a sample that is **not** representative of a population?

A) Biased
B) Bigoted
C) A sampling error
D) A small sample
E) An inconclusive sample
F) A flawed procedure

4. The textbook describes a famous case of sampling error which occurred during the 1936 presidential election in the United States. Why were the results of the study wrong?

A) The sample size was too small
B) The sample size was too large
C) Mail ballots were used
D) An improper cross section of subjects was chosen
E) A] and C]
F) B] and D]

5. Which statement best describes **quota sampling**?

A) An acceptable method of selecting a random sample
B) An acceptable method of selecting a representative sample
C) A form of random sampling
D) A convenient method of sampling that does not produce a representative sample
E) A technique to obtain a self-selected sample

6. A variable such as body weight could be considered a dependent variable in one experiment and an independent variable in another experiment.

A) True
B) False

7. What is a **confounding variable**?

A) A variable that is controlled by the researcher
B) A variable that is unintentionally allowed to vary
C) Any variable that is held constant by the researcher during an experiment
D) A variable that will strengthen the results of a research project
E) A variable that can provide alternate explanations for the findings of a research project

8. In an experiment the _____ variable is the manipulated variable; the _____ variable is the measured variable and the _____ is the constant variable.

A) Dependent, independent, control,
B) Independent, dependent, control
C) Control, independent, dependent
D) Dependent, control, independent
E) Independent, control, dependent
F) Control, dependent, independent

9. Which of the following samples will give a more "accurate" representation of the population?

A) A large sample based on the accidental sampling technique
B) A small sample based on simple random sampling
C) A large sample based on simple random sampling
D) A small cluster sample

10. What terms best describe **secondary variance**?

A) Consistent and wanted
B) Consistent and unwanted
C) Inconsistent and unwanted
D) Inconsistent and wanted
E) None of the above

11. Which of the following would be considered **error variance**?

A) Velocity varied as a result of string tension in a tennis racket
B) Rebound accuracy differed as a result of string type in a tennis racket
C) An inaccurately calibrated scale added 2 pounds of tension to every measurement
D) A researcher performs imprecise measurements on a subject

12. What would a researcher like to accomplish when conducting research?

A) Maximize primary variance
B) Minimize error variance
C) Minimize primary variance
D) Maximize error variance
E) A] and B]
F) C] and D]
G) A] and D]

13. Which of the following would **not** be considered an example of a threat to **internal validity** of an experiment?

A) Local history
B) Pre-testing
C) Instrumentation
D) Statistical regression
E) Experimental mortality
F) Expectancy

14. An experiment has two [2] independent variables [called $IV_{1\ and}\ IV_2$]. IV_1 has 3 levels and IV_2 has 2 levels. How many treatment conditions are there?

A) 2
B) 3
C) 4
D) 5
E) 6
F) 7

15. Suppose you want to investigate if caffeine is an effective ergogenic [helpful] aid for endurance exercise. You decide to test two [2] levels of caffeine and a placebo and measure running time to exhaustion. You decide to use a repeated measures design and realize that it is important to control for possible treatment order effects by counterbalancing. How many possible treatment orders are there?

A) 1
B) 2
C) 3
D) 4
E) 5
F) 6
G) 7
H) 8

16. Which of the following is **not** an ethical behaviour/guideline for conducting research with humans?

A) Getting informed consent of the participant
B) Telling participants they must continue until the study has been completed
C) Keeping participants' identity anonymous
D) Telling participants they are free to withdraw at any time

17. Reliability is mostly a matter of _____, while validity is mostly about _____.

A) consistency; accuracy
B) accuracy; consistency
C) similarity; dissimilarity
D) similarity; consistency
E) dissimilarity; similarity
F) consistency; similarity

18. Which of the following statements is not a factor threatening **external validity**?

A) Experimental mortality
B) Pre-test sensitization
C) Over generalizing
D) Hawthorne effect

19. Which of the following is necessary in obtaining informed consent?

A) A description of the statistical analyses that will be carried out
B) A description of the purpose of the research
C) A description of the reliability and validity of test instruments
D) A comprehensive list of the researcher's publications.

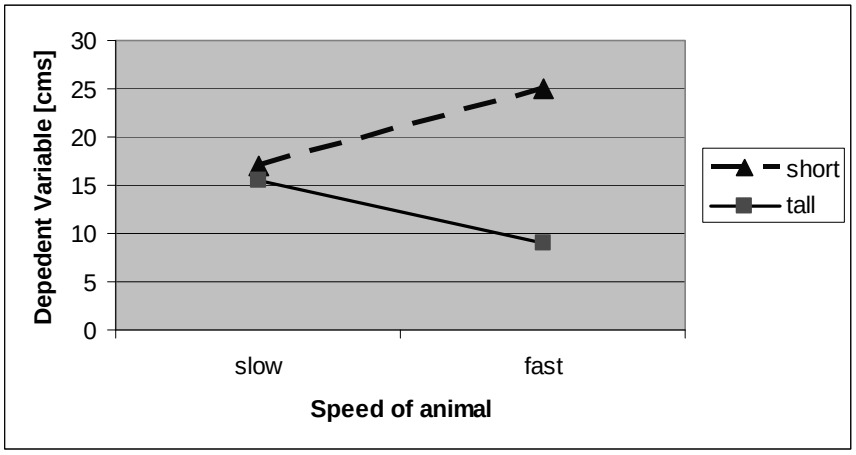
20. A researcher wants to study the effectiveness of a "new" type of teaching method. She teaches one class with the "new" teaching method and a second class with the old, conventional teaching method, and then compares performance of the two classes. This is an example of what type of experimental design?

A) quasi-experimental
B) pre-test/post-test
C) pre-test only
D) repeated measures

21. What is one method of testing **construct validity**?

A) compare an established test to the new one
B) see if results can be generalized to other settings
C) see if test scores predict future performance
D) test two extreme groups

22. The figure to the right represents the results of a study that investigated the effects on performance [accuracy measured in cm's.], as a function of height of the animal and the speed of the animal.



You have been asked to evaluate the results from this study. As described in the textbook there are 3 outcomes to evaluate [i, ii, and iii]. What do the results indicate?

i] "Height" main effect; ii] "Speed of animal" main effect; iii] "Height and Speed" interaction

A) i] Yes, ii] Yes, iii] Yes
B) i] Yes, ii] Yes, iii] No
C) i] Yes, ii] No, iii] Yes
D) i] No, ii] Yes, iii] Yes
E) i] No, ii] No, iii] Yes
F) i] No, ii] No, iii] No

23. A study of the effects of Creatine supplementation on performance in the 60 m sprint was undertaken. Concern about inter-subject differences led the authors to adopt a pre-test/post-test, randomized design where sprint time was tested before and after supplementation. Subjects were classified as either being athletes or non-athletes, and then were stratified by age, athletic status and gender into one of 3 dose conditions. Three age groups [in years] were considered (18-26, 27-39, and 40-59). In this investigation the dependent variable[s] was _____ ; and the independent variable[s] was/were _____ ?

A) creatine dose; age
B) athlete status; sprint time
C) athlete status; creatine dose and age
D) sprint time; athlete status and creatine dose and age
E) sprint time; creatine dose

24. If the **external validity** of a study is low then which statement is correct?

A) The dependent variable has likely been studied in a poorly controlled setting without accounting for potential confounding variables.
B) The sample in use is representative of the population.
C) The parameter of interest was not operationally defined for the study sample.
D) The experimental setting may not reflect the 'real world' situation very well.

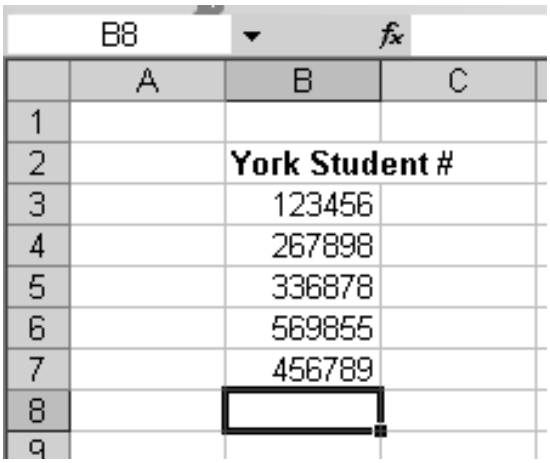
25. Which of the following are **disadvantages** associated with repeated-measures experiments?

A) Repeated measures experiments are more costly than independent groups designs because they use more subjects
B) Using repeated measures experiments increases the chance of carry-over effects from one treatment condition to another
C) In repeated-measures experiments, there is a large chance that the study groups will not be equivalent on some important variable\
D) A and C
E) A and B

26. Which of the following is an **invalid** name to use in an Excel spreadsheet?

A) Amarks
B) mEaN
C) Test.scores
D) grade_point_average
E) G2010

27. Assume you have a spreadsheet like the one to the right. You need to determine how many students are in the list [column B]. The best way to do this would be to use:

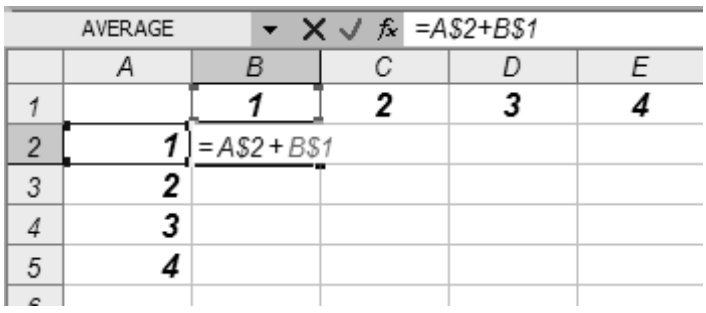


A) The COUNT function
B) The COUNTA function
C) The MIN function
D) The MAX function
E) The NUMBER function
F) The MOD function
G) The COUNTIF function

28. Assume the following formula has been entered in cell B2.

=A$2+B$1

What will appear in cell **D2** as a result of this formula?



A) 1
B) 2
C) 3
D) 4
E) 5
F) 7
G) 16

The next **3** questions are designed so that each answer is independent of the previous question. Use the spreadsheet to the right to answer the next **3** questions.

C6

	A	B	C	D
1	**First #**	**Second #**		
2	13	20	=IF(A2>B2,"yes","no")	60
3	12	2	=IF(A3>B3,1,2)	
4	44	333	=IF(A4>B4,"yes",$D$2)	
5	3	50	=IF(A5>B5,"yes",IF(B4<A4,"no",B3+2))	
6				
7				

29. What will appear in Cell **C2**?

A) yes
B) no
C) 13
D) 20
E) #N/A
F) 60

30. What will appear in cell **C4**?

A) yes
B) no
C) 13
D) 20
E) #N/A
F) 60

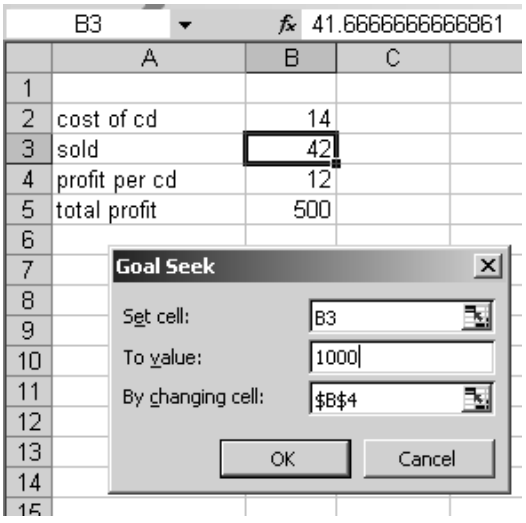
31. What will appear in cell **C5**?

A) yes
B) no
C) 2
D) 4
E) #N/A
F) 60

32. Assume that you are selling a Health CD that retails for $14.00. The CD costs $2 to produce which means you earn $12 per CD that you sell. If your goal is to earn $1000 profit how would you configure the **Goal Seek tool** to answer this question? In other words, to solve this problem, what values do you put into the text boxes respectively called:

i] **Set Cell**: ii] **To value**: and iii] **By changing cell**:

A) i] B3 ii] 1000 iii] $B$4
B) i] B3 ii] 1000 iii] $B$3
C) i] B3 ii] 1000 iii] $B$5
D) i] B5 ii] 1000 iii] $B$3
E) i] B5 ii] 1000 iii] $B$4



33. [2 marks] The spreadsheet to the right lists the marks that students earned in several subjects.

J20

	A	B	C	D	E	F	G	H	I
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly
2	Maths	76	89	43	48	51	76	87	56
3	English	55	85	78	61	47	87	91	73
4	Science	65	82	39	58	52	65	57	45
5	History	45	91	56	72	49	56	78	56
6	Geography	51	84	54	64	47	64	67	67
7	Art	43	63	49	62	39	89	64	63
8	Computer Studies	63	95	45	59	41	92	89	52
9	French	35	91	65	26	28	51	92	56
10									
12	Number of students	above 70							
13	Maths								
14	English								
15	Science								
16	History								
17	Geography								
18	Art								
19	Computer Studies								
20	French								

What formula would you enter in cell **B13** and then fill down the column if you wanted to know how many students scored over 70 in each of the subjects listed, [Maths, English, etc.]?

A) =COUNTIF (B2:I2,">70")
B) =COUNTA (B2:I2,">70")
C) =COUNTIF ($B$2:$I$2,">70")
D) =COUNT (B2:I2,">70")
E) =COUNTIF (B$2:I$2,">70")
F) =COUNTA ($B$2:$I$2,">70")

34. [2 marks] Assume the following formula has been entered in cell **B2**.

	A	B	C
1	black		
2	blue		
3	red		
4			

=IF(OR(A1="blue", B1="red"),"My Colour", "No Colour")

What will appear as a result of this formula?

A) My Colour
B) No Colour
C) Black
D) Blue
E) Red
F) #N/A
G) #Value

35. [2 marks] Assume the following formula has been entered in cell B12.

=VLOOKUP (4,$B$2:$C$6,2)

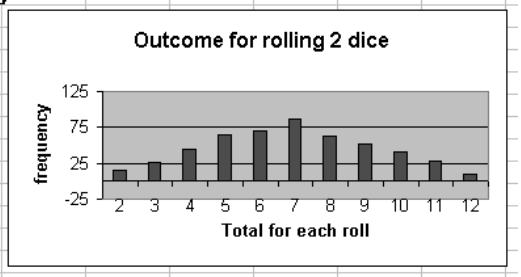
What will appear as a result of this formula?

	A	B	C
1	**col 1**	**col 2**	**col 3**
2	0	0	3
3	2	5	6
4	4	10	9
5	6	15	12
6	8	20	15
7			

A) 10
B) 5
C) 3
D) 6
E) 4
F) 9
G) 0

36. [2 marks] The spreadsheet to the right is the solution to the dice tossing study from Lab # 7. What formula would you enter into **<u>G3</u>** [and then fill down the column] to calculate the frequency?

	B	C	D	F	G
1					
2	**Die # 1**	**Die # 2**	**Total**	**Total**	**Frequency**
3	4	5	9	2	15
4	2	6	8	3	27
5	1	3	4	4	45
6	1	3	4	5	64
7	5	1	6	6	70
8	1	6	7	7	87
9	1	5	6	8	62
10	1	1	2	9	52
11	3	6	9	10	40
12	6	3	9	11	28
13	2	1	3	12	10
14	2	3	5		500
15	6	4	10		
499	6	4	10		
500	2	5	7		
501	6	2	8		
502	4	3	7		



A) =COUNTIF (D$3:D$502, F3)
B) =COUNTIF ($D$3:$D$502, $F$3)
C) =COUNTIF (D3:D502, F3)
D) =COUNTIF ($D$3:$D$502, $F$3)
E) =COUNTIF (F$3:F$13, $D$3:$D$502)
F) =COUNTIF ($F$3:$F$13, D3:D502)

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)