This is a Class 2 exam

Lebanon Evangelical School
for Boys and Girls
Loueizeh - Baabda

Stage Exam 04

27MAR2023

Do NOT write in this box. Your MARK will be placed here.

Subject :	A Level : Psychology 1
Class :	12A
Teacher :	Nour Bazzi
Duration :	1 hour 30 minutes
Calculators will be allowed and formulas are given. Good luck	

Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

PART I – MULTIPLE CHOICE (60%)

1. Ranked scales are a kind of:

a. Closed question X
b. Qualitative question
c. Open Question

2. The most representative sampling technique is:

a. Volunteer Sample
b. Stratified Sample X
c. Opportunity Sample

3. The most sensitive measure of central tendency is the:

a. Mean X
b. Median
c. Mode

4. Qualitative analysis is:

a. Reductionist
b. Easy to analyze
c. Prone to being subjective X

5. Deception can be dealt with by:

a. Changing names to numbers
b. Debriefing participants X
c. Confidentiality

6. The effect of an interviewer's expectations is called:

a. Interviewer bias X
b. Social desirability bias
c. Observer bias

7. Which of the following is an example of a researcher effect?

a. Interviewer smiles at a participant X
b. Interviewer tells the participant what to say
c. Interviewer deceives the participant

8. Reliability is defined as

a. Consistency X
b. Trueness of data collected
c. Dependability

9. Which variable is measured by the experimenter

a. DV X
b. IV
c. EV

10. The null hypothesis is a statement of:

a. No difference/relationship X
b. The opposite to the alternate
c. No Association

11. Counterbalancing is used to deal with

a. Participant variables
b. Random Allocation X
c. Order effects

12. Variable that changes systematically with the IV

a. Extraneous variable
b. Confounding variable X
c. Dependent variable

13. Laboratory experiments may have high validity because:

a. Variables can be carefully controlled X
b. Participants generally don't know they are being studied
c. It is easy to measure the IV

14. A type I error occurs when a researcher

a. Rejects a true null hypothesis X
b. Accepts a false null hypothesis
c. Rejects a false null hypothesis

15. All correlations fall between:

a. -1.0 and +1.0 X
b. 0 and +1
c. -10 and +10

16. Data that is in categories is:

a. Nominal data X
b. Ordinal data
c. Interval data

17. A question that suggests what answer is required is:

a. An open question
b. A leading question X
c. A qualitative question

18. Choosing whoever happens to be there best describes:

a. A random sample
b. A volunteer sample
c. An opportunity sample X

19. A weakness of standard deviation is:

a. Not all values used in final calculations
b. Very hard to calculate
c. May hide extreme values X

20. Anonymity is a way to deal with:

a. Lack of informed consent
b. Invasion of privacy X
c. Right to withdraw

21. Interviewer bias is a bigger problem in:

a. Structured interviews
b. Semi-structured interviews X
c. Questionnaires

22. Ecological validity is best defined as:

a. Being able to generalize findings beyond a particular study X
b. The naturalness of the study
c. Being true

23. Which would not be a useful way to operationalize (study) aggression?

a. Number of punches thrown
b. Distance between the people
c. Feeling angry X

24. Order effects are a problem in:

a. Repeated measures X
b. Independent groups
c. Participant measures

25. Predictive validity:

a. A test measures what it intended to measure
b. A test generalizes to other situations
c. A test that has the ability to forecast performance somewhere else X

26. The 5% level of significance is generally used because it:

a. Avoids accepting a false null hypothesis
b. Avoids rejecting a true null hypothesis
c. Is a good compromise between Type I and Type II errors. X

27. When looking up the critical value required, you need to know the n value, the significance level and the:

a. Type of experiment
b. Null hypothesis
c. Direction of hypothesis X

28. Data that has equal interval units is:

a. Nominal Data
b. Ordinal Data
c. Interval Data X

29. Participant variables are a problem in:

a. Matched pairs
b. Repeated measures
c. Independent groups X

30. Demand characteristics:

a. Affect the reliability of the study
b. Change the IV in the study
c. Communicate the aims of the study X

PART II – Subjective (40%)

1. A researcher plans to study students' food preferences in the school cafeteria. To do this, he wants the sample to reflect the age range of students in the school and decides to use a stratified sample. 100 are 10-12 years old, 400 are 13-15, and 500 are 16-18. The researchers want to recruit 50 participants. How many participants of each age group should he recruit?

   Find the frequency of each subgroup in the total population. **(4 pts)**

   10% of 50

   40% of 50

   50% of 50

2. You have SET A: 8,10,12,15,18,20,24

   a. Calculate the mean (1 pts)

   Add them all then divide by 7.

   15.28

   b. What is the median? (1/2 pts)

   15

   c. Calculate the range in the data set. (1/2 pts)

   24-8 = 16

   d. Calculate the Standard Deviation. (1 ½ pts)

$$S = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}}$$

(8-15.28)^2 + (10-15.28)^2 + (12-15.28)^2 ..... ADD THE SQUARE ROOT OF THEM ALL THEN USE THE FORMULA. N= 7

3. In a new data SET B: 8,10,12,15,18,20,60: Would you use the mean or median in this case? Why? **(1 pts)**

The median, because mean is sensitive to extreme values and we have 60 as an extreme value

4. Answer the following questions (1 ½ pts)

3 Students who have a computer at home do better in exams than those who don't"
(a) Identify the IV and DV in this hypothesis.
(b) State a null hypothesis for this study.
(c) Rewrite the experimental hypothesis so that it is non-directional (two-tailed).

4 For each of the following, decide whether it is a directional (one-tailed) or non-directional (two-tailed) hypothesis.
(a) Boys score differently on aggressiveness tests than girls. (1)
(b) Participants remember words that are early in a list better than the words that appear later in the list. (1)

a. IV: Having a computer or not
DV: Exam performance

b. There is no difference in exam performance of students who own computers at home and those who don't.

c. There is a difference in the exam performance of students who own computers at home and those who don't.

d. Two tailed

e. One tailed

5. WILCOXON SIGNED RANKS TEST **(8 pts)**

Brandon wants to see if people are made happier by watching videos of cats falling off shelves. He asks 9 classmates to rate their happiness on a 1-10 scale, then he shows them a 3 minute clip of "EPIC CAT FAILS".

Calculate whether people give significantly higher Happiness scores after watching "EPIC CAT FAILS" by using the Wilcoxon test.

Level of significance is 5%

STEPS	
STEP 1	State the alternate hypothesis
STEP 2	Place raw data in table - GIVEN
STEP 3	Find differences and rank
STEP 4	Calculate observed (calculate) value of T
STEP 5	Is the result in the right direction?
STEP 6	Find critical value of T
STEP 7	Report the conclusion

RAW DATA TABLE

PARTICIPANTS	CONDITION A BEFORE WATCHING	CONDITION B AFTER WATCHING	Difference	RANK
1	3	9	-6	7
2	7	4	3	4.5
3	2	5	-3	4.5
4	6	10	-4	6
5	6	5	1	2
6	8	8	0	OMIT
7	5	5	0	OMIT
8	7	8	-1	2
9	8	9	-1	2

Alternate Hypothesis: People give significantly higher happiness scores after watching 'Epic Cat fails' videos.

T (positive) = 4.5 + 2= 6.5

T (negative)= 7 + 4.5 + 6 + 2 + 2= 21.5

Critical values for the Wilcoxon Signed Ranks test

	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
n	0.1	0.05	0.02
n = 5	0	–	–
6	2	0	–
7	3	2	0
8	5	3	1
9	8	5	3
10	11	8	5
11	13	10	7
12	17	13	9

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

N = 7 (we omitted 2 out of 9)

Level of significance is 0.05 and it's one tailed

Critical value of T is 3

Observed value of T = 6.5 which is not less than or equal to crticial value (3), this means there is no significance of alternate hypothesis.

6. MANN-WHITNEY U TEST **(8 pts)**

A company wants to compare the effectiveness of advertising for two rival products (Starbucks and DD). They carry out market research at a local shopping centre. 12 participants are shown adverts for two rival brands of coffee, which they then rate on the overall likelihood of them buying the product (out of 10, with 10 being "definitely going to buy the product"). Half of the participants give ratings for one product; the other half give ratings for the other product

(INDEPENDENT GROUPS DESIGN)

Levels of significance is 5%.

STEPS

STEP 1 State the alternate hypothesis (Two-tailed)

STEP 2 Place raw data in table (given)

STEP 3 Rank each data set

STEP 4 Add each set of ranks

STEP 5 Calculate observed (calculated) value of U

STEP 6 Is the result in the right direction?

STEP 7 Find the critical value of U

STEP 8 Report the conclusion

RAW DATA TABLES

STARBUCKS GROUP

Participant	Rating	RANK
1	3	3
2	4	4
3	2	1.5
4	6	7.5
5	2	1.5
6	5	5.5

OBSERVED VALUE OF U

$$U_a = n_a n_b + \frac{n_a(n_a + 1)}{2} - \Sigma R_a$$

$$U_b = n_a n_b + \frac{n_b(n_b + 1)}{2} - \Sigma R_b$$

To get the rank for each data set, first step is to combine both groups of participants into ONE table (total 12). Find the frequency of the rating scores (how many times did the score

show up). Do the ranking for each score. Go back to the separate data set group table, add the rank that was already calculated to each participant.

DUNKIN DONUTS GROUP

PARTICIPANT	RATING	RANK
1	9	11
2	7	9
3	5	5.5
4	10	12
5	6	7.5
6	8	10

SUM OF Ranks A = 23

SUM OF RANKS B = 55

N of A = 34

N of B = 2

We take the lowest which is 2

Alternate hypothesis: There is a difference in the overall likelihood/rating of starbucks coffee and Dunkin Donuts.

Critical value from the table = 5

Level of significance is 5%

Observed value of U is 2 which is less than or equal to Critical value (5). This means the difference is significant.

Critical values for the Mann-Whitney *U* test

n_a \ n_b	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$p \leq 0.025$ (one-tailed), $p \leq 0.05$ (two-tailed)																
5	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
6	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
7	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
8	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
9	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
10	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
11	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
12	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
13	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
14	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
15	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
16	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
17	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
18	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
19	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
20	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

7. SPEARMAN'S RHO TEST **(8 pts)**

We are using this test to study the correlation between the co-variables: attractiveness and age.

Researcher is trying to test the hypothesis that there is a positive correlation between a person's age and their level of attractiveness.

STEPS	
STEP 1	**State the alternate hypothesis**
STEP 2	**Place raw data in table and perform calculations**
STEP 3	**Calculated observed (calculated) value of *rho***
STEP 4	**Is the result in the right direction?**
STEP 5	**Find the critical value of *rho***
STEP 6	**Report the conclusion**

RAW DATA TABLE

Participant number	Column A Age	Column B Attractiveness score
1	52	5
2	36	16
3	47	8
4	32	6
5	30	15
6	21	11
7	40	9
8	41	5
9	25	17
10	36	3
$n = 10$		

Alternate hypothesis is One tailed, positive correlation between age and attractiveness.

Calculate the Ranks of Column A and Column B separately then find the difference between ranks of Column A and Column B (RANK COLUMN A – RANK COLUMN B). Then find the root square of that difference.

FORMULA

$$rho = 1 - \frac{6\Sigma d^2}{n(n^2 - 1)}$$

Critical values for Spearman's rank

	Level of significance for a one-tailed test				
	0.05	0.025	0.01	0.005	0.0025
	Level of significance for a two-tailed test				
n	0.10	0.05	0.025	0.01	0.005
5	0.900	1.000	1.000	1.000	1.000
6	0.829	0.886	0.943	1.000	1.000
7	0.714	0.786	0.893	0.929	0.964
8	0.643	0.738	0.833	0.881	0.905
9	0.600	0.700	0.783	0.833	0.867
10	0.564	0.648	0.745	0.794	0.830
11	0.536	0.618	0.709	0.755	0.800
12	0.503	0.587	0.678	0.727	0.769
13	0.484	0.560	0.648	0.703	0.747
14	0.464	0.538	0.626	0.679	0.723
15	0.446	0.521	0.604	0.654	0.700
16	0.429	0.503	0.582	0.635	0.679
17	0.414	0.485	0.566	0.615	0.662
18	0.401	0.472	0.550	0.600	0.643
19	0.391	0.460	0.535	0.584	0.628
20	0.380	0.447	0.520	0.570	0.612
21	0.370	0.435	0.508	0.556	0.599
22	0.361	0.425	0.496	0.544	0.586

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

The critical values table in your exam paper goes up to $n = 30$ but we ran out of space!

In the table find intersection of n= 10 and One tailed 0.05 level of significance. It is 0.564

Compare Critical value and observed value. If observed value of rho is less than or equal to critical value, then the positive correlation is significant. Otherwise, it is not significant.

8. A class of psychology students want to investigate whether there is any relationship between how hungry you feel and how good the food you are about to eat looks. **(4 pts)**

In order to assess hunger and how the food looks the students devise two ranked scales.

(a) Give an example of what these ranked scales might look like.

On a scale of 1 to 5, 1 being not hungry at all and 5 being starving, how would you rate your hunger right now?

On a scale of 1 to 5, 1 being the food looks bad and 5 food looks extremely delicious (good), how would you rate the food that you are about to eat?

(b) Describe **one** problem with measuring hunger this way.

The feeling of Hunger cannot be quantified over a scale. There are other ways to measure how hungry a person might feel.

c.. The students find a strong positive correlation between the co-variables. Sketch a graph to show what this would look like.

Draw a scatter plot graph. The dots should be all close to the line.

(d) One of the students concludes that hunger might have caused the food to look better. What is wrong with this conclusion?

The relationship being studied is a correlation and not a causation.

(e) Describe **one** ethical issue that might arise in conducting this study and say how it could be dealt with.

One ethical issue might be lack of debriefing

9. Which levels of significance usually have Type I error and Type II error? Why? (1 ½ PTS)

Please check slide 109

10. What are the characteristics of a normal distribution graph? Draw a sketch too. (1 ½ PTS)

Please check slide 106

11. What are the characteristics of a positive skew? Draw a sketch too. (1 ½ PTS)

Please check slides 107 - 108

12. What are the characteristics of a negative skew? Draw a sketch too. (1 ½ PTS)

Please check slides 107-108

PART I – MULTIPLE CHOICE (60%)

1. Ranked scales are a kind of:

a. Closed question
b. Qualitative question
c. Open Question

2. The most representative sampling technique is:

a. Volunteer Sample
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c. Opportunity Sample

3. The most sensitive measure of central tendency is the:

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b. Participants generally don't know they are being studied
c. It is easy to measure the IV

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b. Accepts a false null hypothesis
c. Rejects a false null hypothesis

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b. 0 and +1
c. -10 and +10

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23. Which would not be a useful way to operationalize (study) aggression?

a. Number of punches thrown
b. Distance between the people
c. Feeling angry

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b. Independent groups
c. Participant measures

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c. Direction of hypothesis

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30. Demand characteristics:

a. Affect the reliability of the study
b. Change the IV in the study
c. Communicate the aims of the study

PART II – Subjective (40%)

1. A researcher plans to study students' food preferences in the school cafeteria. To do this, he wants the sample to reflect the age range of students in the school and decides to use a stratified sample. 220 are 10-12 years old, 400 are 13-15, and 500 are 16-18. The researchers want to recruit 50 participants. How many participants of each age group should he recruit?

   Find the frequency of each subgroup in the total population. **(4 pts)**

2. You have SET A: 8,10,12,15,18,20,24

   a. Calculate the mean (1 pts)

   b. What is the median? (1/2 pts)

   c. Calculate the range in the data set. (1/2 pts)

   d. Calculate the Standard Deviation. (1 ½ pts)

$$S = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}}$$

3. In a new data SET B: 8,10,12,15,18,20,60: Would you use the mean or median in this case? Why? **(1 pts)**

4. Answer the following questions (1 ½ pts)

3 Students who have a computer at home do better in exams than those who don't"
(a) Identify the IV and DV in this hypothesis.
(b) State a null hypothesis for this study.
(c) Rewrite the experimental hypothesis so that it is non-directional (two-tailed).

4 For each of the following, decide whether it is a directional (one-tailed) or non-directional (two-tailed) hypothesis.
(a) Boys score differently on aggressiveness tests than girls. (1)
(b) Participants remember words that are early in a list better than the words that appear later in the list. (1)

5. WILCOXON SIGNED RANKS TEST **(8 pts)**

Brandon wants to see if people are made happier by watching videos of cats falling off shelves. He asks 9 classmates to rate their happiness on a 1-10 scale, then he shows them a 3 minute clip of "EPIC CAT FAILS".

Calculate whether people give significantly higher Happiness scores after watching "EPIC CAT FAILS" by using the Wilcoxon test.

Level of significance is 5%

STEPS	
STEP 1	State the alternate hypothesis
STEP 2	Place raw data in table - GIVEN
STEP 3	Find differences and rank
STEP 4	Calculate observed (calculate) value of T
STEP 5	Is the result in the right direction?
STEP 6	Find critical value of T
STEP 7	Report the conclusion

RAW DATA TABLE

PARTICIPANTS	CONDITION A BEFORE WATCHING	CONDITION B AFTER WATCHING
1	3	9
2	7	4
3	2	5
4	6	10
5	6	5
6	8	8
7	5	5
8	7	8
9	8	9

Critical values for the Wilcoxon Signed Ranks test

	Level of significance for a one-tailed test		
	0.05	0.025	0.01
	Level of significance for a two-tailed test		
n	0.1	0.05	0.02
n = 5	0	–	–
6	2	0	–
7	3	2	0
8	5	3	1
9	8	5	3
10	11	8	5
11	13	10	7
12	17	13	9

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

6. MANN-WHITNEY U TEST **(8 pts)**

A company wants to compare the effectiveness of advertising for two rival products (Starbucks and DD). They carry out market research at a local shopping centre. 12 participants are shown adverts for two rival brands of coffee, which they then rate on the overall likelihood of them buying the product (out of 10, with 10 being "definitely going to buy the product"). Half of the participants give ratings for one product; the other half give ratings for the other product

(INDEPENDENT GROUPS DESIGN)

Levels of significance is 5%.

STEPS

STEP 1 State the alternate hypothesis (Two-tailed)

STEP 2 Place raw data in table (given)

STEP 3 Rank each data set

STEP 4 Add each set of ranks

STEP 5 Calculate observed (calculated) value of U

STEP 6 Is the result in the right direction?

STEP 7 Find the critical value of U

STEP 8 Report the conclusion

RAW DATA TABLES

STARBUCKS GROUP

Participant	Rating
1	3
2	4
3	2
4	6
5	2
6	5

OBSERVED VALUE OF U

$$U_a = n_a n_b + \frac{n_a(n_a + 1)}{2} - \Sigma R_a$$

$$U_b = n_a n_b + \frac{n_b(n_b + 1)}{2} - \Sigma R_b$$

DUNKIN DONUTS GROUP

PARTICIPANT	RATING
1	9
2	7
3	5
4	10
5	6
6	8

CRITICAL VALUES TABLES:

Critical values for the Mann-Whitney *U* test

n_a \ n_b	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
$p \leq 0.025$ (one-tailed), $p \leq 0.05$ (two-tailed)																
5	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
6	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
7	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
8	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
9	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
10	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
11	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
12	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
13	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
14	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
15	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
16	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
17	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
18	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
19	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
20	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127

The calculated value must be equal to or less than the critical value in this table for significance to be shown.

7. SPEARMAN'S RHO TEST **(8 pts)**

We are using this test to study the correlation between the co-variables: attractiveness and age.

Researcher is trying to test the hypothesis that there is a positive correlation between a person's age and their level of attractiveness.

STEPS	
STEP 1	**State the alternate hypothesis**
STEP 2	**Place raw data in table and perform calculations**
STEP 3	**Calculated observed (calculated) value of *rho***
STEP 4	**Is the result in the right direction?**
STEP 5	**Find the critical value of *rho***
STEP 6	**Report the conclusion**

RAW DATA TABLE

Participant number	Column A Age	Column B Attractiveness score
1	52	5
2	36	16
3	47	8
4	32	6
5	30	15
6	21	11
7	40	9
8	41	5
9	25	17
10	36	3
$n = 10$		

FORMULA

$$rho = 1 - \frac{6\Sigma d^2}{n(n^2 - 1)}$$

CRITICAL VALUES TABLE

Critical values for Spearman's rank

	Level of significance for a one-tailed test				
	0.05	0.025	0.01	0.005	0.0025
	Level of significance for a two-tailed test				
n	0.10	0.05	0.025	0.01	0.005
5	0.900	1.000	1.000	1.000	1.000
6	0.829	0.886	0.943	1.000	1.000
7	0.714	0.786	0.893	0.929	0.964
8	0.643	0.738	0.833	0.881	0.905
9	0.600	0.700	0.783	0.833	0.867
10	0.564	0.648	0.745	0.794	0.830
11	0.536	0.618	0.709	0.755	0.800
12	0.503	0.587	0.678	0.727	0.769
13	0.484	0.560	0.648	0.703	0.747
14	0.464	0.538	0.626	0.679	0.723
15	0.446	0.521	0.604	0.654	0.700
16	0.429	0.503	0.582	0.635	0.679
17	0.414	0.485	0.566	0.615	0.662
18	0.401	0.472	0.550	0.600	0.643
19	0.391	0.460	0.535	0.584	0.628
20	0.380	0.447	0.520	0.570	0.612
21	0.370	0.435	0.508	0.556	0.599
22	0.361	0.425	0.496	0.544	0.586

The calculated value must be equal to or exceed the critical value in this table for significance to be shown.

The critical values table in your exam paper goes up to $n = 30$ but we ran out of space!

8. A class of psychology students want to investigate whether there is any relationship between how hungry you feel and how good the food you are about to eat looks. **(4 pts)**

In order to assess hunger and how the food looks the students devise two ranked scales.

(a) Give an example of what these ranked scales might look like.

(b) Describe **one** problem with measuring hunger this way.

c.. The students find a strong positive correlation between the co-variables. Sketch a graph to show what this would look like.

(d) One of the students concludes that hunger might have caused the food to look better. What is wrong with this conclusion?

(e) Describe **one** ethical issue that might arise in conducting this study and say how it could be dealt with.

9. Which levels of significance usually have Type I error and Type II error? Why? (1 ½ PTS)

10. What are the characteristics of a normal distribution graph? Draw a sketch too. (1 ½ PTS)

11. What are the characteristics of a positive skew? Draw a sketch too. (1 ½ PTS)

12. What are the characteristics of a negative skew? Draw a sketch too. (1 ½ PTS)