

VERBAL AND PERCEPTUAL TEST

VERBAL

PERCEPTUAL

VERBAL AND PERCEPTUAL TEST		VERBAL		PERCEPTUAL	
CREATIVE	M. CHOICE	CREATIVE	M. CHOICE	CREATIVE	M. CHOICE
M'	26	22	30	4	12
N'	16	14	28	2	11
O'	15	14	27	1	9
P'	26	21	32	5	8
Q'	25	20	24	5	1
R'	35	18	31	17	21
S'	38	25	31	13	22
T'	15	13	28	2	8
U'	40	29	33	11	21
V'	17	13	33	4	12
W'	38	22	30	16	20
X'	17	16	28	1	10
Y'	26	26	27	0	4
Z'	20	14	29	6	13
A2	37	22	27	15	22
B2	38	26	40	12	22
C2	27	18	32	9	14
D2	34	27	30	7	13
E2	24	17	31	7	17
F2	26	22	33	4	15
G2	23	18	25	5	9
H2	34	23	36	11	18
I2	27	16	27	11	13
J2	17	15	27	2	12
K2	26	20	29	6	17
L2	44	31	38	13	21
M2	53	39	39	14	19
N2	49	34	29	15	21
O2	47	31	40	16	20
P2	46	27	3	19	21
Q2	39	26	43	13	19
R2	48	36	39	12	21
S2	28	22	34	6	19
T2	21	15	22	6	11
U2	31	27	31	4	12
V2	29	23	33	6	20
W2	27	17	26	10	17
X2	19	15	26	4	12
Y2	43	34	32	9	20
Z2	54	43	39	11	19
A3	33	25	33	8	18
B3	30	20	31	10	18
C3	38	30	34	8	21
D3	26	22	34	4	15
E3	34	24	33	10	16
F3	35	27	33	8	15

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A COMPARATIVE STUDY OF CREATIVE AND
MULTIPLE - CHOICE RESPONSE - TYPES IN
A TEST OF VERBAL AND
PERCEPTUAL ABILITY

By

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A Thesis

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RESPONSE-TYPES

ABDULLAH

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A B S T R A C T

Background

This research stems from the findings of studies done by Hulbert, Hurd, Courtney, Vernon and others who have shown the existence of differences between the creative and multiple-choice type of items, as used in tests of verbal ability. These studies have established certain hypotheses regarding the difficulty, reliability and predicting power of each of these response-types. However, there is a need to study the effect of these two response-types on test results in other areas of ability besides the verbal, and in a cultural set-up other than the British, American or Australian.

This study, therefore, aims to compare the creative and multiple-choice response-types as used in a test of verbal and perceptual ability, this test will be given to Lebanese school children at the elementary and secondary level and the results will be examined from the stand-point of difficulty, reliability and validity.

Problem and Hypotheses

The problem is to compare the creative and multiple-choice response-types as used in a test of verbal and perceptual ability, on Lebanese school children between the ages of 10 and 16.

Hypotheses

1. In group results, achievement on a creative type test is inferior to achievement on multiple-choice test covering similar content.
2. Performance on the multiple-choice cannot predict exactly, performance on the creative type of a similar content, on a test of verbal and perceptual ability.
3. Tests of the same factors correlate more highly with themselves than with tests of different factors even when response-type is varied.

Experiment

For this experiment, 130 Lebanese school children between the ages of 10 and 16 were selected from the elementary and secondary grades of 4 schools in Beirut. A test of verbal and perceptual ability was adapted in two forms, the creative and multiple-choice and used on this sample. The scores derived on the two forms were then compared.

Results

A significant "t" of 23.7 was found between the means of the creative and multiple-choice scores. The correlation between the two types was +.72, whereas the rank-order coefficients varied from .55 to .83. The coefficients were significant at the 1 percent level. The reversals in the rank-order, as measured by chi square were found to be significant. Moreover, there was

no difference between the number who deviated from their ranks and those who maintained their ranks on both the tests. Finally, the number of students who deviated towards the multiple-choice type was no different from the number who deviated towards the creative type.

The correlations between tests of verbal ability though varied in response-type, was $.74 \pm .05$ whereas the correlation between the creative types of verbal and perceptual ability was $.46 \pm .11$. Similarly, the correlation between tests of perceptual ability, though varied in response-type, was $.66 \pm .07$, whereas the correlation between the multiple-choice types of verbal and perceptual ability was $.46 \pm .11$.

Discussion

The finding of significant difference between means on the creative and multiple-choice types of tests of verbal as well as perceptual ability leads one to postulate that the same differences might be found when some other abilities are measured - namely, numerical, spatial and reasoning.

The significant reversal in the rank-order, from the creative to the multiple-choice form when test content is kept constant, causes one to doubt whether the two response-types measure the same abilities; it raises the question whether the difference in performance on the two response-types might not be a result of difference in modality of thought.

The finding of high correlations between tests of the same abilities, and low correlations between tests of different abilities, provides confirmatory evidence regarding factors, despite cultural differences.

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CHAPTER I

I N T R O D U C T I O N

Present-day tests of intelligence and achievement are generally objective in nature using guided-response procedures like multiple-choice, true-false and matching. The use of such response-type items requires the student to recognize an answer rather than to solve a problem. It is speculated that such items tend to over estimate the abilities of the subjects below average and under estimate the abilities of those above average. These latter tend to show their superiority in tests which allow for inventiveness and creativity, such as the creative free-response or short-answer type of item. Such items permit freedom and initiative in test responses and help to discriminate students better, which is one of the purposes of a test. The problem of this research is to make a comparative study of the creative and multiple-choice type of response items and their effect on test scores when test content is kept constant.

Variations in test scores are generally attributed to individual differences in the ability measured, however, psychometrists have recognized certain factors within the test, which might be the source of variance. The three main factors categorized by Thorndike (37) and Vernon (46) among others are test content, method, and error. Although test content is generally considered to be the largest contributing factor, this study will delimit

itself to a study of the method component i.e. how the method of testing affects results. It will further be limited to a study of "Response-type", one of several elements in the method category as analysed by Vernon (47).

The lack of valid and reliable tests both for evaluation and the improvement of instruction, is being keenly felt in some of the newly-developing countries, notably, Lebanon and Pakistan. The attempt to construct such tests must be preceded by experimental studies designed to ascertain the effectiveness of available tests, to examine critically their worth, and to profit from research done on these. For adjustment and refinement of tests is as important as innovation. The present research has concerned itself with a small area, namely, the type of response usually employed in mental tests, to investigate whether the substitution of the multiple-choice for the creative type is justified for measuring the higher mental processes.

Definition of Major Response Types

Answers to test questions are made either in the creative type of item, or the guided-response type of item.

Creative Type

The creative type of item is so designed, that the answer has to be provided by the respondent in his own words, without

any external aid to memory. As the name suggests, it permits a certain degree of freedom to the respondent to create or invent a solution to a problem. The degree of freedom decreases in descending order in the three basic types of creative items: the free-response type, the essay, and the short-answer type.

The free-response type provides unlimited freedom by employing oral questions, directions to do something, open-end statements, stimulus words and pictures. The essay type is usually reserved for an extended written response. The short-answer type permits responses in a single word or phrase.

The psychological activity involved in answering these types of items is termed recall, or problem-solving. Since an element of subjectivity is involved in evaluating these varied responses, they are sometimes grouped under the title of subjective tests.

Guided Response Type

In this type of item, the student must select an answer from among several possible ones. He is guided to think in a certain direction and select the expected response. There are no less than 50 varieties of such items out of which emerge three basic categories: the multiple-choice, the true-false, and the matching type.

The multiple-choice type provides the correct answer among a number of alternative answers, somewhat plausible, but incorrect,

to serve as distractors or decoys. The task of the respondent is to recognize it as such. The true-false type requires the student to discriminate between the truth or falsity of a statement. The matching type requires the student to arrange words or objects into a proper array.

The psychological activity involved in this type of response is known as recognition. These responses can be scored almost automatically without any personal bias, hence they are termed objective tests.

Background

Shift From The Creative To The Multiple-Choice Type In Tests Of Intelligence And Achievement

In Intelligence Tests The creative free-response type of item was used in the first test of intelligence to discriminate between the average and feeble-minded. Not only did the content of the test aim at measuring the higher mental processes, namely, common-sense, judgment, initiative, and adaptation; but the response type permitted the exploration of the child's creative and imaginative abilities. However, this individual scale required the services of a trained examiner to test one person at a time. As this was a time-consuming procedure though a quite satisfactory one with regard to thoroughness and rapport between subject and examiner, it had to be replaced by another type of test procedure, namely the group intelligence test.

Group tests received an impetus during World War I, when the need was felt for a rapid, accurate, measuring instrument to select army recruits for officer training. Test materials provided by Otis, were assembled by Terman, Yerkes, and Bingham and thus was born the Army Alpha, the first unified group test of intelligence. Most of the items were of the objective type with the multiple-choice type dominating. It was a highly useful test because of economy of time and objectivity of scoring.

However, Mursell, summing up group tests of intelligence using guided response procedures, comments that

our tests cannot even begin directly to reveal capacity for producing original ideas and constructions - for initiative, for the original solution of problems, for creative endeavour. Indeed, the type of item used systematically discourages originality and places every emphasis on the production of the expected "correct" response. Thus, it has been pointed out that if a child produced a brilliant but novel definition of a word given in a vocabulary test, thus indicating a very high level of mentality, he would nevertheless be scored zero on the item because his reply did not fit in with the standardized scheme of the instrument. (26)

In Achievement Test The creative essay type of item was the main-stay of teacher-made examinations. Over the years, this type has been superceded by the short-answer type, which involves considerably less subjectivity in scoring. However, as the movement for standardization of tests gains momentum, the objective multiple-choice type item is coming to the forefront, for reasons of economy, accuracy, increased range of sampling of pupils' knowledge and objectivity.

This tendency towards economy and objectivity in teacher-made tests is shown by a survey of educational practices of high-school teachers in 35 states. 81% of the 2,303 teachers used the short-answer type of item instead of the essay. Of the various objective type items, 67% of the teachers used the multiple-choice type. (27) Despite the popularity of the short-answer type of item, there is a possibility that it might be replaced by the multiple-choice type, as in standardized tests.

This probability has been the cause of alarm to educationists, viewed from the stand-point of evaluation and instructive; for theoretically, it is assumed that there are significant differences between these two response types. In order to prove certain assumptions, experiments have been carried in the area of both intelligence, and achievement tests. A review of related literature will help to formulate the problem of this research, and clarify some of the issues involved in it.

Research On The Relative Values of The Creative
And Multiple-Choice Type of Response

Research Within The Frame of Reference
of Mental Tests

In 1926, the question whether the creative and multiple choice type of responses could be compared was taken up for study by Cannon (5), in the area of mental tests. A group verbal test

of intelligence made up of four sub-tests namely, analogies completion, similarities and opposites, was administered to children between the ages of 9 and 13.

His finding, as reported by Fernberger (5), was that multiple-choice form was equal if not superior to the creative form for measuring mental capacity. Moreover, the multiple-choice form was to be preferred from the point of view of administration.

Research Within The Frame of Reference Achievement Tests

I. In order to resolve the question of difficulty, reliability and validity of these two response types, A.W. Hurd (20) made a comparative study in the area of achievement testing.

Two tests were administered to 1,423 students in 36 schools after 15 days of instruction on a particular teaching unit. The tests were identical in content, but the response type varied, being creative for one and multiple-choice type for the other. The multiple-choice test was administered a day after the creative test without intervening instruction.

The means as indicated below, showed that the multiple-choice was an easier test.

TABLE I

COMPARISON OF MEANS ON THE CREATIVE
AND MULTIPLE-CHOICE TESTS

RESPONSE TYPE	MEANS	NO.
CREATIVE	52.38	1423
MULTIPLE-CHOICE	57.77	1423

Even when these tests were administered separately to unselected groups, the means were as follows:-

TABLE II

COMPARISON OF MEANS ON CREATIVE AND
MULTIPLE-CHOICE TESTS, WHEN
ADMINISTERED TO SEPARATE GROUPS

RESPONSE TYPE	MEANS	NO. OF CASES
CREATIVE	20.14	950
MULTIPLE-CHOICE	32.57	774

The lower means indicated that the creative type was more difficult, especially when used as a preliminary test, as was done in case of the unselected groups. The variabilities were approximately the same, but the distribution of scores varied.

The scores on the creative test tended to cluster towards the lower end, whereas the multiple-choice scores showed a more nearly normal trend.

In order to investigate the reliability of each response type, reliability coefficients were calculated by the split-half method. They were as follows:-

TABLE III

**RELIABILITY COEFFICIENTS OF THE CREATIVE
AND MULTIPLE-CHOICE RESPONSE TYPE**

RESPONSE TYPE	RELIABILITY COEFF.
CREATIVE	.93 \pm .01
MULTIPLE-CHOICE	.82 \pm .02

The multiple-choice type was found to be less reliable, perhaps because the pupils were less careful in making the responses, due to its apparent ease. This unreliability of the multiple-choice form showed up in the correlation coefficient between the two types, which was $.78 \pm .02$, a further indication that the two tests did not measure exactly the same functions. In other words, both response types are not equally valid in measuring the planned outcomes of the instructional unit.

With regard to validity, it was maintained that if a teaching unit was planned to produce facility in giving correct responses to certain short-answer items, it was not equally well-designed to produce pupil facility in selecting best answers. In this respect, the creative form was superior to the multiple-choice, a fact further substantiated by the comparative gains made on both the forms from preliminary to final test. The gain on the creative form was 32.24, and 25.20 on the multiple-choice form. Apparently, instruction had produced greater effects in the direction of its planned objective. Consequently, it was concluded that the creative test was more valid for this unit.

The general conclusions drawn from this research were, that the creative type was more difficult and reliable than the multiple choice. It was also more valid than the latter, for this particular teaching unit.

II. The issue of predicting ability in one type of item from the results based on another type of response, was taken up for study by Courtney et al.(7) A comparative correlational study was made between:

1- Written recall and multiple-choice recall

2- Oral recall and multiple-choice recall

in the area of reading comprehension. This study started off with the assumption that disparity in scores on reading test and class discussion may be the result of different types of recall.

In the first study, by Courtney (6), a comparison was made between multiple choice recall and written recall of materials read silently by 72 ninth-grade pupils. First, the selection was read and then recalled in written form. Next, the students were asked to answer written multiple-choice questions. The results were as follows:-

TABLE IV

COMPARISON OF MEANS ON WRITTEN RECALL AND
MULTIPLE-CHOICE RECALL IN READING

RESPONSE TYPE	MEAN	S.D.	IDEAS RECALLED	REL. COEFF.	r
CREATIVE	37.1	13.7	46%	.94	
MULTIPLE CHOICE	64.3	9.1	79%	.89	.28 ± .09

From the higher mean of the multiple choice type, and the greater number of ideas recalled through this form of response, it is evident that multiple-choice recall does not insure comparable written recall. A study of individual scores showed many pupils with high recall on multiple-choice items but very low on written reproductions. These findings indicated the desirability of supplementing the usual reading test with measures of written recall in order to get a more accurate picture of the pupil's ability to deal with materials he has read.

This study emphasized the fact that the ability involved in multiple choice recall was not the same as the ability required in written recall. Hence, it would not be accurate to predict the results in one type on the basis of measurement of the other type.

III. The question of difficulty of response-types was further investigated by Bucknam (2) who introduced a third variable, namely, oral recall. Thus, oral, written and multiple-choice response types were compared in reading tests given to 5th grade students.

The manner of administration of written and multiple-choice recall was the same as in the former study. The oral recall test was given individually, with the examiner checking the items recalled orally after the student had read the selection silently. The oral response was followed by the multiple-choice test. The rotated group method was used to equate the difficulty of the test. The order of facility of recall from least to greatest was found to be as follows:-

- 1- Written recall
- 2- Oral recall
- 3- Multiple-choice recall

The following table shows a distribution of means, and the correlation between the three response types:

TABLE V

COMPARISON OF MEANS AND COEFFICIENT OF CORRELATIONS
ON ORAL RECALL, WRITTEN RECALL AND MULTIPLE-
CHOICE RECALL OF READING MATERIAL

RESPONSE TYPE	NO. OF CASES	MEAN	r
ORAL RECALL	122	37.0	.68
WRITTEN RECALL	122	30.6	
MULTIPLE-CHOICE RECALL	122	58.6	.64
ORAL RECALL	122	37.0	.76

An analysis of individual scores showed wide variations in fluency of oral and written recall. Some were more fluent in writing than speaking. Others were low in both types of unaided recall, but superior in multiple-choice recall.

The researcher emphasized the use of both oral and written recall responses in measuring pupils reading ability and concluded that it was not possible to predict success on one type of recall, by measuring another type of recall.

IV. The next study by Hulbert (19) took up the issue of validity and prediction when the recall and recognition, or in other words creative and multiple-choice types of responses were used to measure vocabulary. The study was based on the assumption that there were two types of vocabulary in usage namely, an active or speaking-writing vocabulary, and a latent, or reading vocabulary.

In order to test the 2 hypotheses that

- 1- The two vocabulary forms had only a limited number of factors in common,
- 2- Achievement on either test could not be used to predict achievement on the other with any degree of certainty, the following experiment was carried:-

Two tests, each consisting of identical materials, nouns, verbs, and adjectives, in creative and multiple choice form, were administered to 192, IX grade and 210 XI grade students. The results are indicated in the table below:-

TABLE VI

COMPARISON OF MEAN TOTAL RAW SCORES AND COEFFICIENTS OF CORRELATION BETWEEN RECALL AND RECOGNITION FOR TOTAL POPULATION

RESPONSE TYPE	GRADE	NO.	MEANS	S.D.	DIFF.	C.R.	r
RECALL	IX	192	65.31	26.97	86.5	23.03	.62 _± .04
RECOGNITION	IX	192	151.8	44.50			
RECALL	XI	210	91.78	29.12	94.35	24.25	.60 _± .05
RECOGNITION	XI	210	186.13	48.65			

The means on the multiple choice were significantly higher. The coefficient of correlations though positive, were only moderately high. This disparity has been attributed to the fact

that many low achievers on recall were actually able to make higher scores on the recognition form. On the other hand, those who scored above the mean on recall seldom made an appreciably lower score on the recognition. The low correlations caused him to accept the hypotheses mentioned before.

The population was next divided into the top quarter and the lower quarter on the basis of a standardized test of mental ability. Coefficients of correlations were calculated between recall and recognition forms for the top quarter and the lower quarter of the population. They were as follows:

TABLE VII

COEFFICIENTS OF CORRELATIONS FOR THE TOP QUARTER
AND THE LOWER QUARTER OF THE TOTAL
POPULATION ON RECALL & RECOGNITION

RESPONSE TYPE		GRADE	NO. OF CASES	RECOGNITION
TOP QUARTER	RECALL	IX	60	.61 ± .07
	RECALL	XI	53	.52 ± .10
LOWER QUARTER	RECALL	IX	61	.63 ± .08
	RECALL	XI	63	.52 ± .11

These correlations between achievement on recall and recognition were no higher for the bright students than they were for the total population.

The conclusion drawn from this study was that both these response types had a limited number of factors in common. Since neither of the forms was a better measure of vocabulary both recall and recognition were considered necessary, if a vocabulary test was to be an adequate evaluation of vocabulary ability.

V. The question of the relative validities of these two response types was investigated by Vernon (46).

Assessment of understanding of complex concepts, whether by written, oral or other methods, are affected not only by the type of concepts tested, but also by many factors arising from the method of testing, and the subjects facility in handling it (48).

His conjecture was, that the poor differential predictive capacity of new-type tests might be a result of neglect of the method component by psychometrists. His study undertook to examine all the three components of variance in test scores, namely, content, method and error. This study will now be briefly reported and those results will be quoted which are relevant to the present research.

The experiment was carried out among 108 British, and 75 American college students. Seven tests of vocabulary and reading were specially constructed in parallel forms and applied in two sessions, using among others, the creative and multiple-choice type of response.

One of the hypotheses was that tests responded to creatively would correlate more highly with themselves, also multiple-choice tests among themselves, than own-word with multiple-choice .

A comparison of the multiple-choice and creative response correlation did not bear out the hypothesis. On the basis of the obtained correlations of .55 within response-types, and .56 between response types, as shown in the table 8, the hypothesis was rejected.

TABLE VIII

MEAN CORRELATIONS WITHIN & BETWEEN MULTIPLE CHOICE
AND CREATIVE RESPONSE TESTS

	AMERICAN	BRITISH
6 CORRELATIONS WITHIN MULTIPLE CHOICE	.595	.432
3 CORRELATIONS WITHIN CREATIVE	.484	.488
MEAN	.558	.451
11 CORRELATIONS BETWEEN CREATIVE & MULTIPLE CHOICE	.562	.455

In conclusion, the general trend of his results went against the initial argument by suggesting that content factors (level and bias) had a much stronger influence than method factors. Nevertheless, he observed that tests employing unconventional methods, e.g. those that involved retention, showed superior validity. Hence he suggested the need for further investigation in this direction.

Vernon advocated the use of such evaluative techniques as

would resemble the ways in which these skills and understandings would be eventually expressed. From this point of view, neither the essay nor the objective form resembled the situation in which a student would use his training in professional or in daily life. He pointed out that if the multiple choice test were used, in assessing the effectiveness of an educational film, radio or television programme, it was doubtful if it would be an adequate criterion for judging the total impact of these media on ones thinking and behaviour.

Conclusions Drawn from Previous Research

The conclusions drawn from previous research are varied, since they test different assumptions, and apply to different areas of ability. However, the general trend, as established by experimental evidence, is as follows:-

- 1- The multiple-choice response type is easier than the creative oral or written response.
- 2- The multiple-choice does not measure the same ability, as does the creative type in tests of verbal ability.
- 3- The results obtained in the multiple-choice response type cannot be used to predict results on the creative type in tests of vocabulary and reading comprehension.
- 4- The Multiple-choice response type is less reliable than the creative response type, although one researcher, Cannon, believes that the two types are equally good.

However important the results of previous research may be, they do not, perhaps, apply to other areas of mental testing not covered by the tests undertaken, and to a different cultural background. As already observed, these studies have concentrated on tests of vocabulary and reading comprehension, leaving aside tests of perceptual ability. Besides, these experiments have been carried in a cultural set up different from the Lebanese culture. Finally, these studies have been concerned with establishing the difficulty, reliability, validity and predicting power of these two response types. However, not enough attention has been given to the rank-order technique to assess the amount of reversal in rank, relative to the group, from one test to another.

Statement Of The Problem

The purpose of this research is to study the performance of a group of Lebanese students as a function of response type, to see if the training provided in Lebanese schools affects the findings borne out by previous research in this area. The problem, though not new, will be studied in terms of new variables, namely age, sex and perceptual ability. It will also investigate the reliability of the two response types on the basis of reversals in rank order.

The relative values of the creative and the multiple-choice response type are to be investigated on the basis of performance

of a group of Lebanese school children of both sexes between the ages of 10 and 16. The age range has been extended to include both elementary and secondary school students. The content variable includes the perceptual factor in addition to the verbal factor. Finally, variations in scores are to be studied with respect to the relative difficulty of the two response types. The purpose is to find out to what extent it is possible to depend on one type of test to determine the relative position of individual students to the total group, knowing that the two tests might correlate positively and highly in group results.

Hypothesis I

This study assumes that the mental process involved in the discovery of a solution to a problem, is more complex than the one involved in the recognition of a solution. This complexity will result in difficulty, so that in general, efficiency of performance will perhaps be reduced in a creative type situation as compared with a recognition type situation, as in the multiple-choice test. Hence, this study raises the question whether there is a significant difference in the scores of students on the creative and multiple-choice type tests, when test content is kept constant. This in turn leads to the following hypothesis:-

I- In group results, achievement on a creative type test is inferior to achievement on a multiple-choice type of test covering similar content.

As the study deals with both verbal and perceptual factors,

we can hypothesize that there is a significant difference in performance on creative and multiple-choice tests of verbal and perceptual ability combined.

If it is the type of item that makes for differences in performance, then we would expect to find significant differences not only within tests of verbal ability using different types of items, but also in tests measuring other abilities, namely perceptual ability, in this study. Therefore, further interest lies in examining the difference in performance within the verbal and perceptual factors respectively, when creative and multiple-choice types are again used, hence the two questions:-

1- Does performance differ significantly between the creative and multiple-choice type items in a test of verbal ability ?

2- Does performance differ significantly between the creative and multiple-choice type items in a test of perceptual ability ?

Operationally, the hypothesis is as follows:-

In a test of verbal and perceptual ability, there is a significant difference in performance on the creative and multiple-choice test of verbal and perceptual ability measured separately.

Again, if mental function depends on growth and maturity, one would expect age to be a factor contributing to the variance between performance on the two types of tests. Therefore, this study will further examine the performance of different age groups on the creative and multiple-choice items. This point will be studied in connection with the combined test. Operationally,

this leads to the following questions:-

3- Does performance on a creative type test differ when compared with performance on a multiple-choice type as a function of age ?

Most studies indicate that although boys and girls do not differ significantly on the average in their performance on mental tests, they differ in the pattern of their performance. One would then question whether or not performance on the two types of items involved in this study differ as a function of sex, hence the question:-

4- Does the performance on the creative type differ from performance on the multiple-choice type, on a test of verbal and perceptual ability, as a function of sex ?

Hypothesis II

It was postulated in the first hypothesis that the creative type of item as compared to the multiple-choice, reduces general efficiency as measured by success and failure. The type of item might also affect performance in another way, in that, each type would be measuring a different ability. Therefore, one would expect serious individual variations in the relative position of students from one test situation to another within the group. This, in a way, raises the question of the reliability of the multiple-choice type as compared with the creative type, and opens the following issue:-

1- Can the multiple-choice exactly substitute the creative type, and serve to predict the performance of individual students on it ?

On the basis of the assumption that type of response affects modality of thinking, the hypothesis will be as follows:-

II- Performance on the multiple-choice test, cannot predict exactly, performance on the creative type of a similar content on a test of verbal and perceptual ability.

As different response types require different abilities, operationally one would expect reversals in the rank-order of subjects as a result of difference in individual performance from one test situation to another. This reversal would lead to the following predictions:-

- 1- The correlation between the multiple-choice and creative type tests of verbal and perceptual ability, with same content, is positive and low.
- 2- The rank-order correlation between creative and multiple-choice type is positive and low.
- 3- The number of the students maintaining a constant rank, is equal to the number of students deviating from their ranks from one test to another.

Hypothesis III

Another concern of this research is to study whether:-

III- Tests of the same factors correlate more highly with themselves than with tests of different factors even when response type is varied.

Operationally, then, one would expect:-

- 1- A high correlation between the creative and multiple-choice form of the perceptual test,

2- A low correlation between the perceptual and verbal test in creative form,

3- A high correlation between the creative and multiple-choice form of the verbal test.

4- A low correlation between the perceptual and verbal test in multiple-choice form.

CHAPTER II

EXPERIMENT

This chapter will describe the procedures used, to obtain the sample, control the variables, adapt and administer the test and analyse the data.

Sampling

The purpose of the investigation was to compare the creative and multiple-choice response types in a test of verbal and perceptual ability. The population had to be varied in age and distributed in several grades to promote a wider sampling and consequent generalizations regarding the achievement of elementary and secondary school children on the two response-types.

Population

The population consisted of Arab students, both boys and girls, between the ages of 11 and 16, studying in Lebanese schools, ranging in grades from fourth elementary to third secondary. They were Arabic-speaking students.

In order to obtain a sample of this population, a list of middle-class schools in Beirut and its suburbs, was drawn up. Out of a list of 10, 4 schools were chosen for the experiment. Each of these schools provided a sample selected from one or two grades, eliminating such students whose mother-tongue was not Arabic. Only those students were later selected by the experimenter, who had passed their tenth birthday, but had not passed their seventeenth birthday.

Size of Sample

A sample of 200 students was set up as the initial target to meet the requirements of the sub-categories, namely (1) schools, (2) grades, (3) age, (4) sex. From the total obtained sample of 190 students, some were eliminated because they did not meet the age requirements, a few because they misunderstood the directions, and a large number because they were present only for the first test, whereas they were expected to take both the tests. The final sample was made up of 130 students.

Table 9 shows the distribution of the final sample of 130 students according to schools and sex.

TABLE IX

DISTRIBUTION OF TOTAL SAMPLE ACCORDING TO SCHOOLS AND SEX

SCHOOL	NO.	SEX	LOCALE
AHLIYA SCHOOL	47	GIRLS	BEIRUT
MAKASED SCHOOL	33	GIRLS	SAIDON
NATIONAL PROTESTANT SCHOOL	31	BOYS	RAS BEIRUT
NAZARENE EVANGELICAL SCHOOL	14	BOYS	ASHRAFIYE
	5	GIRLS	

It will be observed that 60 per cent of the students were drawn from Beirut, and that the sample of girls exceeded that of the boys. There being 85 girls to 45 boys. Thirty three

percent of the students were drawn from the elementary grades and approximately 67 percent represented the secondary grades, as shown in table 10. The age range, as observed from table 11, extended from 10 to 16 years, with 92 percent of the students falling between the 12-16 age group. Each of the school grades included subjects differing in age by at least 3 years, the maximum being 6 years. From the foregoing analysis, it can be concluded, that the sample was biased in the direction of secondary school girls, between the ages of 12 and 16.

TABLE X
DISTRIBUTION OF SUBJECTS ACCORDING
TO SCHOOL AND GRADE

SCHOOLS	GRADES							TOTAL
	ELEMENTARY				SECONDARY			
	3	4	5	6	1	2	3	
AHLIYA SCHOOL BEIRUT	-	-	-	32	15	-	-	47
MAKASED SCHOOL SAIDON	-	-	-	-	-	13	20	33
NATIONAL PROTESTANT COLLEGE, RAS BEIRUT	-	-	-	-	-	17	14	31
NAZARENE EVANGELICAL SCHOOL, ASHRAFIYE	1	3	5	2	8	-	-	19
TOTAL	1	3	5	34	23	30	34	130

TABLE XI
DISTRIBUTION OF SUBJECTS
ACCORDING TO AGE

	GRADE	10	11	12	13	14	15	16	TOTAL
S E C O N D A R Y	III					1	5	14	20
	II				10	8	9	1	28
	I		4	5	8	12	8	3	40
E L E M E N T A R Y	VI	1	4	13	11	2	3		34
	V			1	2	2			5
	IV			1	1				2
	III	1							1
TOTAL		2	8	20	32	25	25	18	130

Controls

In order to test the significance of difference in performance, as a function of response-type, certain factors had to be controlled. Since the same students took the creative and the multiple-choice form of the test, they were measured against themselves, rather than against any external criterion. Thus the need for controlling factors like age, sex and socio-economic status, was circumvented. However, the total sample was selected from a middle-class population, and language ability was controlled by selecting only

such students whose mother-tongue was Arabic, and the sample was made representative of both the sexes for purposes of generalization.

It was planned that the time-lapse between the administration of the creative and the multiple-choice test would be kept at a minimum, so that variations might not be attributed to change in motivation, or forgetting. However, it was not possible to keep the same time-interval between tests in all the schools.

Motivation

An attempt was made to motivate all the students to do their best on the tests, by appealing to their sense of worth and responsibility to themselves and to others. They were assured however, that performance on this test would not affect their school grades. Despite this, the motivation in one school on the first test might have been low, because a small group of students had just completed its school examination and did not seem in the right frame of mind for the test - a factor which might be reflected in slight differences in scores.

TEST INSTRUMENT AND PROCEDURE

For the purpose of the present research, a test of verbal and perceptual ability had to be adapted from standardized individual and group tests of intelligence. The items were to be selected to correspond to the age level, and the factors as required by the experimental design. This section will deal with the theoretical and practical aspects of preparing the test, the procedure employed in administering the test, and the statistical methods that will be used in analysing the data made available from these tests.

Rationale for the Selection of the Verbal and the Perceptual Factor

The Verbal Factor

The verbal factor was selected for inclusion in this test on the grounds that the highest achievements of man's intellect are usually reached through symbols and concepts. Moreover, this factor is frequently encountered in daily life and is an essential factor in the educational process. Finally, experimental evidence has shown that verbal tests may be decidedly more saturated with the "g" factor than most non-verbal performance tests.

The Perceptual Factor

Factorial studies of El Koussy, Thurstone, and others have established perceptual ability to be one of the factors of

intelligence. This factor was included in the present study to make a comparative study of the two response-types on the basis of performance on the verbal and perceptual factors; for as already mentioned, past research in this area had concentrated only on the verbal factor.

Components Of The Verbal And Perceptual Factors

The Verbal Factor

According to research evidence, the verbal factor indicates a facility not only with words but with any form of mental operation with symbols, as distinct from things themselves. Some writers regard the verbal factor as comprising essentially verbal reasoning, although the majority seem to agree that it is most easily measured by straightforward vocabulary tests.

Cureton, who studied large groups of school pupils and U.S. army clerical workers claims that there is no factor in paragraph reading, verbal analogies, proverbs, matching mixed sentences, and reasoning tests which is not covered by vocabulary tests.(43)

According to Thurstone (44) there are three distinct verbal factors, namely:

- 1- Understanding of verbal materials, (V)
- 2- Fluency in finding words to fit a restricted area (W) and
- 3- Ideational fluency with words (F)

For the purpose of the present study, (V) and (F) were considered, to the exclusion of (W). This latter, required the

ability to think words rapidly, as in anagrams and rhyming, a form of oral response not adaptable to the multiple-choice type of item.

Through a process of rational analysis, the following mental processes involved in tasks of a verbal nature, were isolated: ability to recall, explain, compare, reason and infer.

The Perceptual Factor

Thurstone's study of several tests indicated that "the perceptual factor might consist in facility to perceive detail even when it is buried among perceptual distractors" (39). According to Guilford and Lacey, "the perceptual factor is most prominent in tests involving the matching of pictures and shapes" (45). The ability to create the whole from a part has been found to be one of the important perceptual abilities requiring the power of imagination and visualization. It is difficult to isolate and measure the abilities of perception reasoning and spatial orientation found in figure analogies as unitary abilities, except by factor analysis.

Construction And Selection Of Test Items

A study of several standardized tests of intelligence revealed certain common items of established validity. These included a varied assortment, out of which only a few could be selected, owing to the following practical considerations:-

- 1- The items had to correspond to the verbal and perceptual factors.
- 2- The items had to be selected which could be such easily transformed from the creative to the multiple-choice form, and vice versa.
- 3- The items had to involve little subjectivity in scoring.

A large number of items was first pooled on the basis of these considerations before work on selection and refinement could be started.

The following types of items were selected to measure the mental processes mentioned before:-

- 1- Antonyms
- 2- Synonyms
- 3- Similarities and differences
- 4- Verbal analogies
- 5- Common-sense questions
- 6- Proverbs
- 7- Paper cutting
- 8- Figure analogies

A few of the "synonyms" and "antonyms" items, and all of the "similarities" and differences", were selected from the Revised Stanford-Binet Test of Intelligence.(35) The "verbal analogies" and the rest of the vocabulary items were selected from both the "Pintner General Ability Test(29) and the Dearborn Group Test of Intelligence(9). The Holzinger Crowder Uni-factor Battery for factors(18) contributed the "figure analogies". The concept of paper-folding and cutting, was borrowed from the Binet test. The "common-sense questions", and the "proverbs" were selected from the Haggerty Intelligence Examination(17) and an unpublished Arabic test, respectively.

Since the test was to be translated in Arabic and used on students whose cultural background differed from that of the Americans, care was taken to avoid words with a strong cultural bias. Next the test was translated in Arabic. Since there is no one to one correspondence in words from English to Arabic, some of the alternative responses had to be changed; at other times, the whole word discarded, being replaced by one which had effective alternate responses in Arabic.

Order of Presentation of Items

For reasons of familiarity and ease in answering verbal questions, the verbal items were presented first in the test. The items were presented in ascending order of difficulty, and the sub-tests arranged in ascending order of complexity of the mental processes involved.

Antonyms were placed first on the list, because they involve automatic recall; while synonyms, which require a slightly higher kind of ability - of explaining the meaning of words, were placed second. Verbal analogies, which involve the process of reasoning comparing, and creating came third in the series. Comparison of objects and abstractions came next, followed by common-sense questions and explanation of proverbs. This completed the verbal test.

The perceptual test was made up of two categories both involving reasoning and perception. The paper-folding-cutting

test which seemed to involve a simpler psychological process - imagination, came first, whereas figure analogies, which required the subject to compare, reason and create, were placed last.

Types of Test

Two test forms identical in content, were prepared, with one significant difference. Form A,* the creative test, had only the questions, with adequate blank spaces, where the answers, could be written in a single word, phrase, sentence or diagram, as the question warranted. Form B,+ the multiple-choice test, had the same number of items, and identical order of presentation except that its form was of the objective multiple-choice.

Try-out Test

In order to ascertain whether the test instructions were clear, and to estimate the time required for each test, a try-out test was given to a group of 5 students of the International College, Beirut.

On the basis of performance on these two tests and on the written opinions of the students, it was concluded that the instructions were quite clear. The time-limit for the creative test was 60 minutes and 30 minutes for the multiple-choice test. It was observed that some of the items were not discriminatory enough and were therefore, omitted. The final draft of the test in Arabic consisted of 50 verbal and 25 perceptual items as shown

* see Appendix III + see Appendix IV

in table below.

TABLE XII

DISTRIBUTION OF ITEMS IN TEST OF VERBAL
AND PERCEPTUAL ABILITY

FACTORS	ITEM TYPES	NO.
VERBAL	ANTONYMS	11
	SYNONYMS	9
	ANALOGIES	13
	SIMILARITIES	7
	COMMON-SENSE QUESTIONS	5
	PROVERBS	5
PERCEPTUAL	FIGURE ANALOGIES	15
	PAPER-FOLDING-CUTTING	10
TOTAL		75

Administration of the Test

The tests were administered as group tests, with the creative, preceding the multiple-choice test. Possibly, this sequence might favour the multiple-choice test; however, the reverse sequence would have provided a more obvious stimulus to memory.

As a preliminary to the actual test, the author instructed the teachers concerned, to give a short introduction to the test. The students were motivated to do their best, and were assured, that the test results would not affect their school grades.

Next, the instructions on the test form were read through as a whole. Additional instructions were given where necessary especially in connection with the analogies and the perceptual test; since these two types were unfamiliar to the students. Finally they were asked to read the instructions again carefully before attempting the answer and leave the room on completing the test, as instructed. All the students started the test at the given time.

Scoring

For scoring the multiple-choice test, a key was prepared by two expert teachers. Those items on which there was disagreement, were omitted. Each correct response was given one point, and the total score obtained by a summation of the correct responses.

A list of possible correct responses was prepared in the same way for the creative test. This list consisted of a replica of the multiple-choice key, together with other variations which could be permitted. In "figure analogies" and "common-sense questions", the idea had to be conveyed without undue emphasis on the form of expression. The scoring was done by an Arabic teacher in consultation with the writer. Then a random sample of 25 test papers was

selected to be scored by another teacher, to test the reliability of scoring. The reliability coefficient as computed by the Pearson r was found to be .94.

Reliability of the Tests

A reliability check, by the split-half method was made to establish the coefficient of internal consistency. A correction was made by using the Spearman-Brown formula; (16) which yielded the following reliabilities:-

- 1 Creative test, $r = .91$
- 2 Multiple-choice test, $r = .85$

Statistical Tests

The data made available from the tests was tabulated and statistically analysed.

Two types of tables were used to organize the large quantity of data to see their overall characteristics.

- (a) Those that contained the complete gross data, on which the study was based, e.g. the distribution of raw scores and ranks, of the total group,
- (b) Those which summarized and interpreted these data to bring out their significant features, e.g. comparisons of means and correlations of the age groups, sex groups etc.

The "t" test for correlated data was used to test the significance of difference between means of scores on the two tests. The formula for this "t" is as follows:-

$$t = \frac{\frac{\sum D}{N}}{\frac{\sqrt{\frac{\sum d^2}{N-1}}}{\sqrt{N}}} \quad (10)$$

N.B. D = mean difference,
N = number of cases.

$$\sqrt{\frac{\sum d^2}{N-1}} = \text{standard deviation of differences}$$

$$\frac{\sqrt{\frac{\sum d^2}{N-1}}}{\sqrt{N}} = \text{standard error of mean difference}$$

The chi square formula was used to test the significance of difference in the scores of boys and girls. It was also used to test the significance of reversals in the rank-order. The formula is as follows:-

$$\chi^2 = \frac{\sum (O - E)^2}{E} \quad (12)$$

Spearman's formula for calculating the Rank-Order Correlation Coefficient also called RHO, was used to test the degree of relationship between ranks on the creative and multiple-choice type of test. The formula is as follows:-

$$\text{Rho} = 1 - \frac{6 \sum D^2}{N(N^2 - 1)} \quad (23)$$

N.B.

N = number of pairs
P = rho, the rank-order correlation coefficient.

The Pearson product-moment correlation coefficient known as the Pearson r , was used to establish the degree of relationship between raw scores on the creative and multiple-choice type item. The machine formula for computing r from raw scores, is as follows:-

$$r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2] [N \sum Y^2 - (\sum Y)^2]}} \quad (11)$$

The Coefficient of Alienation, (30) K , $= \sqrt{1 - r^2}$ was used to determine the extent to which it was possible to predict scores on one variable on the basis of the other.

The data was grouped on the basis of the (a) total sample, (b) age groups, (c) sex, (d) sub-tests.

The tests of significance were considered at the 5 percent level and below.

CHAPTER III

RESULTS

This section examines the differences on two types of test, involving similar content. The response-types used were the creative and the multiple-choice type. The constant content dealt with verbal and perceptual abilities. As this study involves a number of questions, the results will be examined and reported in terms of the hypotheses corresponding to these questions.

Hypothesis I

It is assumed that the process involved in the discovery of a solution to a problem, is more complex and difficult than the recognition of such. Therefore it is operationally hypothesized that:-

There will be a significant difference in the means of scores obtained on the creative and multiple-choice form of a test of verbal and perceptual ability.

Since this study is concerned with both verbal and perceptual abilities, this hypothesis is to be examined in relation to performance on tests including verbal and perceptual tasks. Thus the following three measures were obtained in the creative and multiple-choice form:-

- a) Achievement on the combined verbal and perceptual test.
- b) Achievement on the verbal test.
- c) Achievement on the perceptual test.

In all cases, the measurements are compared on the basis of the "t" test for correlated means, as given in the following formula:-

$$t = \frac{\frac{\sum D}{N}}{\frac{\sqrt{\frac{\sum d^2}{N-1}}}{\sqrt{N}}} \quad (10)$$

A summary of statistical results is given in the following table:

TABLE XIII *

COMPARISON OF MEAN SCORES ON CREATIVE
AND MULTIPLE-CHOICE FORMS OF A
TEST OF VERBAL AND PER-
CEPTUAL ABILITY

TEST FORM	N	MEAN	S:D.	S. ERROR	"t"	P
CREATIVE	130	29.4				
MULTIPLE-CHOICE	130	44.1				
<u>DIFFERENCE SCORES</u>		14.7	7.07	.620	237	.01

As the value of "t" for the total test is significant at less than the 1% level, it is safe to reject the null hypothesis and consider that the difference between the means obtained on the two different forms of the total test is most probably not due to sampling error.

* Individual scores obtained on the total test are given in Appendix I.

In all cases, the measurements are compared on the basis of the "t" test for correlated means, as given in the following formula:-

$$t = \frac{\frac{\sum D}{N}}{\frac{\sqrt{\frac{\sum d^2}{N-1}}}{\sqrt{N}}} \quad (10)$$

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TEST FORM	N	MEAN	S:D.	S. ERROR	"t"	P
CREATIVE	130	29.4				
<u>MULTIPLE-CHOICE</u>	130	44.1				
DIFFERENCE SCORES		14.7	7.07	.620	237	.01

As the value of "t" for the total test is significant at less than the 1% level, it is safe to reject the null hypothesis and consider that the difference between the means obtained on the two different forms of the total test is most probably not due to sampling error.

* Individual scores obtained on the total test are given in Appendix I.

The results obtained on the verbal test are shown in the following table:-

TABLE XIV *

COMPARISON OF MEAN SCORES ON CREATIVE AND MULTIPLE-CHOICE FORMS OF A VERBAL TEST

TEST FORM	N	MEAN	S.D.	S. ERROR	"t"	P
CREATIVE	130	21.1				
MULTIPLE-CHOICE	130	29.5				
DIFFERENCE SCORES		8.4	5.2	.456	18.2	.01

As the value of "t" is highly significant, it is safe to state that the difference between the means obtained on the two forms of the verbal test is most probably a real difference.

The results obtained on the perceptual test are given in the following table:-

TABLE XV

COMPARISON OF MEAN SCORES ON CREATIVE AND MULTIPLE-CHOICE FORMS OF A PERCEPTUAL TEST

TEST FORM	N	MEAN	S.D.	S. ERROR	"t"	P
CREATIVE	130	8.1				
MULTIPLE-CHOICE	130	14.5				
DIFFERENCE SCORES		6.4	4.0	.350	18.2	.01

* Individual scores obtained on the two forms of the verbal test are given in Appendix "I", and those obtained on the perceptual test are given in Appendix I.

As the value of "t" is significant, again we can safely assume that the difference between the means obtained on the two forms of the perceptual test is most probably a real difference.

Response - Type And Age

In order to examine the difference in performance on the creative and multiple-choice type of items as a function of age, the sample was divided into three age groups ranging respectively between 10.5 years and 12.5; 12.5 years and 14.5; 14.5 years and 16.5.

The means and other related statistics of these three age groups were computed and are summarized in the following table:-

TABLE XVI

COMPARISON OF MEANS OF THREE AGE GROUPS ON CREATIVE AND MULTIPLE-CHOICE FORMS OF A TEST OF VERBAL AND PERCEPTUAL ABILITY

AGE GROUP	N	MEAN		MEAN DIFF.	S.D. OF DIFF. SCORES	S. ERROR OF MEAN DIFF.	"t"	P
		CR.	MC.					
10.5 - 12.5	28	28.3	43.6	15.3	7.2	1.3	11.6	.01
12.5 - 14.5	58	29.4	45.1	15.7	8.68	1.1	14.2	.01
14.5 - 16.5	44	29.5	43.0	13.5	7.8	1.1	12.2	.01

As the "t" value is highly significant for each of the three age groups, we can safely assume that the difference between the means obtained on the two response types is most probably a real difference and not a function of age.

Response Type And Sex

This question deals with difference in performance on the creative and multiple-choice types as a function of sex. In order to study it, the group was divided on the basis of achievement and sex. The mean difference of scores obtained on the two response-types was computed and found to be 14.7. The boys and girls who scored above this mean difference, and those who scored below it, were fitted into the cells of a 2 x 2 chi-square table as shown below:-

TABLE XVII

CHI SQUARE OF OBTAINED FREQUENCIES OF BOYS AND GIRLS
ABOVE AND BELOW THE MEAN ON A TEST OF
VERBAL AND PERCEPTUAL ABILITY

	ABOVE MEAN	BELOW MEAN	TOTAL
GIRLS	42	43	85
BOYS	25	20	45
	67	63	130

$$x^2 = 0.34$$

not significant

The obtained chi-square value of 0.34, with one degree of freedom is insignificant. Thus it can be concluded that the apparent differences due to type of item and sex, are most probably due to chance and are not significant.

Hypothesis II

As it is assumed that the creative and multiple-choice items measure different abilities, it follows that performance on these two response-types will vary. Consequently, performance on the multiple-choice cannot be used to predict performance on the creative type and vice-versa. On the basis of this assumption, several predictions are made:-

1. Low correlations between response types.

In order to test this prediction, a product-moment coefficient of correlation between the creative and the multiple-choice type was computed. The Pearson r was found to be + .72, significant at the 1% level. However the coefficient of alienation - a measure of departure from perfect agreement, as measured by the following formula: $K = \sqrt{1 - r^2}$ (30) was established to be 70. The index of forecasting efficiency was computed by the following formula: $E = (1 - K) 100$ (30) E was found to be 31%. In other words, with a validity coefficient of .72 between two variables, it is possible to predict the values in one series from those in the other series only 31% better than chance. That is to say, the size of the error of prediction is decreased by 31%.

2. Reversals in rank order, as shown by low correlation between ranks on the creative and multiple-choice response type.

In order to verify this prediction, scores derived from the

two tests were first grouped together on the basis of age and then converted into ranks. Tables in Appendix show the distribution of raw scores and ranks.

Next the rank-order coefficient of correlations were computed on the basis of Spearman's formula:-

$$\text{Rho} = 1 - \frac{6 \sum D^2}{N(N^2 - 1)} \quad (23).$$
 The coefficients appear in the table below:-

TABLE XVIII*

RANK-ORDER CORRELATIONS BETWEEN SCORES ON CREATIVE AND
MULTIPLE-CHOICE FORMS FOR THREE AGE GROUPS

AGE GROUP	N	Rho Coeff.	P.
10.5 - 12.5	28	+ .57	.1
12.5 - 14.5	58	+ .83	.1
14.5 - 16.5	44	+ .55	.1

The results indicate positive but varied correlations ranging from +.55 to +.83.

It was observed from the table of ranks that there was a reversal in ranks from high on the creative to low on the multiple-choice type and vice-versa. In order to test the significance of these reversals, the chi-square technique was used.

* Distribution of raw scores and ranks on the two tests is shown in Appendix II.

Before that, therefore, it was necessary to locate the number of students who maintained their ranks, and those who deviated from their positions, hence the following procedure was adopted:-

Assuming a normal distribution of scores, 4 cutting points were located at a distance of .5 sigma and 1.5 sigma on either side of the mean for each of the two tests. A 5 x 5 table was prepared, in which the obtained frequencies on each of the tests were located. The frequencies showed a rectilinear regression indicating a positive correlation, with deviants above and below as shown in table 19.

TABLE XIX

FREQUENCIES OF STUDENTS FALLING RESPECTIVELY IN CORRESPONDING RANK-ORDERS ON A 5-CLASS SCALE OF CREATIVE AND MULTIPLE-CHOICE TYPE TEST WITH IDENTICAL CONTENT

		MULTIPLE-CHOICE					
		57.5+	48.5	39.5	29.5		
C R E A T I V E	14-	0	0	1	2	5	8
	24	0	3	4	16	2	25
	34	0	16	28	9	5	58
	44+	4	16	7	2	0	29
		5	5	0	0	0	10
		9	40	40	29	12	130

3. No significant difference between the number of deviants and constants.

In order to verify the prediction that the number of students who deviated from their ranks, (deviants) was equal to the number of students who maintained their ranks, approximately, (constants), a chi-square test was applied. The "deviants" and the "constants" were fitted into the cells of a 2 x 5 chi-square table as shown in table 20.

TABLE XX

CHI SQUARE OF OBTAINED FREQUENCIES OF "DEVIANTS"
AND "CONSTANTS" ON CREATIVE AND MULTIPLE
CHOICE FORMS OF A TEST OF VERBAL
AND PERCEPTUAL ABILITY

		CONSTANTS	DEVIANTS	
C L A S S I F I C A T I O N S	1	5	5	10
	2	16	13	29
	3	28	30	58
	4	16	9	25
	5	5	3	8
		70	60	130

$\chi^2 = 0.34$
insignificant

The obtained chi-square value of .50, was insignificant.

The conclusion drawn from this result is, that there is no difference between the constant and deviant frequencies.

4. No significant difference between upward and downward deviants.

In order to verify this prediction, the total number of deviants on the creative and multiple-choice type, were divided into two categories:

- (1) Those who shifted from high creative ranks to low multiple-choice ranks, termed "downward deviants", and
- (2) Those who shifted from low creative ranks to high multiple-choice ranks, termed "upward deviants".

As seen from the previous 5 x 5 table, the number of upward deviants, is equal to the number of downward deviants, = 30. A clear indication that there is no difference.

Thus it is concluded that the number of students shifting from high ranks on the creative, to low ranks on the multiple-choice, is equal to the number of students shifting from low ranks on the creative to high on the multiple-choice type.

Hypothesis III

Since the test in this study measures two factors, namely, verbal and perceptual, it is hypothesized that:

Tests of the same factors correlate more highly within themselves, even when test response is varied; than with tests of different factors when response-type is the same.

In operational terms it is hypothesized that:

1. A high positive correlation will be found between the creative and multiple-choice form of the perceptual test.
2. A low positive correlation will be found between the creative forms of the verbal and perceptual test.

3. A high positive correlation will be found between the creative and multiple-choice form of the verbal test.
4. A low positive correlation will be found between the multiple-choice forms of the verbal and perceptual test.

In order to verify these hypotheses, 4 correlations were computed between:-

- (1) The creative and multiple choice form of the perceptual test.
- (2) The creative forms of the perceptual and verbal tests.
- (3) The creative and multiple-choice form of the verbal test.
- (4) The multiple-choice forms of the verbal and perceptual tests.

The results were as follows:-

- i) Correlation within the perceptual tests = $.66 \pm .07$
- ii) Correlation between verbal and perceptual tests = $.46 \pm .11$
- iii) Correlation within the verbal tests = $.74 \pm .05$
- iv) Correlation between verbal and perceptual tests = $.46 \pm .11$

From these results it is clear that the correlations within the perceptual (.66) and the verbal factors (.74) separately, are higher than the correlations between verbal and perceptual factors combined. In other words, the correlations within the same factors are higher, (irrespective of response type) than the correlations between different factors, despite the same response-type. Thus, the hypothesis of high correlations within the same factors is accepted.

DISCUSSION

The purpose of the present research is to examine whether the multiple-choice response-type bears a close resemblance to the creative response-type. In other words, it is intended to study the relationship between these two response-types and their effect on test scores when test content is kept constant.

In the first instance, the relative difficulty of these two response-types, as measured by test scores, was examined. The results thus obtained indicated that the mean of scores on the creative type was significantly different from the mean of scores on the multiple-choice type, for the combined test of verbal and perceptual ability. Similar discrepancies in the means were observed on the verbal and perceptual test separately. In all three cases, the creative means were lower than the means on the multiple-choice test.

In order to verify the assumption of increase in performance with increase in age, the three age groups were compared separately on the two response types. The creative means were found to be low for each age group, proving that performance on the creative and multiple-choice response type was not a function of age. The creative means were also found to be low when the achievement of boys and girls on the two response-types was compared separately. On the basis of available evidence, it is concluded that the creative response-type is more difficult than the multiple-choice response-type.

This finding gains significance when seen in the light of previous research findings. Studies by Hurd(20) Courtney(6) Bucknam(2) & Hulbert(19) found a significant difference in the means of these two response-types, in the area of verbal ability. The present study, therefore, confirms the results of previous research, and extends it to tests of perceptual ability. It is possible to postulate then, that these differences between response-types are likely to be found when more abilities are measured, namely, numerical, spatial reasoning, and others.

It is clear from the foregoing results, that the multiple-choice response type is easier than the creative response-type. Vernon recognizes this as an additional factor namely "facility". He maintains that tests using this response-type, measure the 'g' and 'v' factors just as well as individual or group tests using the creative type of item. Thus, in his opinion, "facility" is an irrelevant component in the measurement of abilities.

Granting that the two response-types in this study measure 'g', 'v' and 'p' as incorporated in the test, yet, it seems from the scores, that the creative and multiple-choice types do not measure exactly the same factors. Perhaps the creative type measures something above and beyond these factors. In order to verify this hunch, and to test whether "facility" causes the multiple-choice scores to move upwards, the Pearson r and Spearman's rho were computed between the two response-types.

The Pearson r was found to be .72. This is to be expected in view of the common test content. However, if these two response types measured the same factors, the correlation should have been higher. This degree of correlation reveals a distinction between these two response types. It therefore, does not seem high enough to warrant the substitution of one type of item for another as is being done in present-day tests of intelligence and achievement. Furthermore, the predictive value of this coefficient is only 31% better than chance.

In order to test whether "facility" causes a shift only towards high scores on the multiple-choice type, the rank order coefficients were computed for the three age-groups, and the chi square test of significance was made.

The rho coefficients were moderately high and significant at the 1% level. Nevertheless, the order of ranking showed significant reversals as measured by the chi square.

The number of students maintaining constant ranks on both the response-type tests, was found to be no greater than the number of students deviating from their ranks. Besides, those who deviated upwards, towards the multiple-choice were as more than those who deviated downwards towards the creative type. Thus the rank-order changed in both the directions on these two response types. Had this reversal been in one direction, i.e. towards the multiple-choice, it could have been explained on the

basis of facility. But the reversals in ranks indicate that not only does the multiple-choice favour those who score low on the creative type, but also it tends to disfavour other who score high on the creative type.

Since test content is kept constant, and sampling errors statistically eliminated, it follows then, that these reversals are caused by response-type. Seen in the light of these results, the obtained rho coefficients, ranging from .55 - .83, can be attributed to common content, rather than because these response-types measure the same abilities.

Correlational studies by Hurd(2) and Vernon(46) show that despite common content the correlations are only moderately high. Vernon proves that these correlations are a result of content rather than item-form. This study shows that there are reversals in ranks, which tend to lower the correlations. This is an indication of a probable difference in the creative and multiple-choice response-type. Further research of the type undertaken by Vernon is needed, to discover the component factor that might enter into the response-type category. It needs to be investigated to whether this difference between response types goes deeper to a difference due to modality of thought.

It can be argued, that when multiple-choice items are used, some students answer on the basis of understanding - going through the complete act of thought, while others answer on the basis of facile reproduction and guessing. However, it is this doubt about

the type of mental process being used in response to such items, that makes it a less reliable type when discriminating between abilities measured. On the other hand, the creative type discriminates better between the mental processes. It is closer to real life situations, where one is not required to select a solution from given alternatives, but to initiate solutions to problems. Since there is no "facility" component involved, the results are more dependable.

The finding of high correlations between tests of the same ability rather than between tests of different abilities (verbal and perceptual) though not new, gains significance, even as confirmatory evidences when seen in relation to the different cultural background in which the experiment was carried.

It was found in this study that there is no appreciable difference between the sexes in achievement on the combined tests of verbal and perceptual ability; although research has established that boys and girls vary with regard to special abilities. If it is presumed, on the basis of the present study that the creative and multiple-choice response-types measure different mental processes, then on the basis of obtained results, it can be said that generally, boys and girls seem equally adept at thinking creatively and selectively.

IMPLICATIONS

The present study bears out a number of implications, both for research and education.

1. In constructing the usual tests of intelligence and achievement to measure the higher mental process, it seems necessary to include both the creative and the multiple-choice types of response. This implication stems from the findings of Hulbert, who suggested the use of both these types for measuring active and latent vocabulary. In measuring intelligence then, the need would be more so, because of the complexity of the mind which requires to be expressed through a variety of response types, rather than through the limited multiple-choice type of item. In order to implement this suggestion, however, more research would be needed to overcome the usual objections of speed, subjectivity and difficulty of administration.
2. The significant reversal in the rank-order indicates that despite constant test content performance on the tests varies as a function of response type. This discrepancy in the ranks of students raises two issues, in education and research. Educationally, one of the major problems is how to discover and develop creative talent. If present-day educationists make decisions about students on the results of multiple-choice intelligence and achievement tests, it is obvious from the findings of this study that the judgments will not be completely reliable, and creative talent may remain unrecognized. This issue raises another problem for research, that

being, to make the multiple-choice type more reliable, and to investigate the precise nature of the difference between the creative and multiple-choice type of response.

3. As mentioned before, the purpose of educational measurement is evaluation as well as improvement of instruction. Teaching is so much geared to the type of tests used, that little is done in any other direction. The fact that present day tests particularly of intelligence, do not measure creativity or inventiveness reflects not only on the response-type commonly used, i.e. the multiple-choice type, but also on the type of problems presented. Rarely do these problems demand anything beyond "convergent" thinking, with the result that of the creative or short-answer type of item is used, as in the present study, the number of inventive answers is almost negligible. Thus if there is to be a change in education from convergent to divergent thinking, more research, on the lines of Getzels and Jackson (15) is needed to tap creativity by means of appropriate test content and type of response. For in the last analysis, these two are inseparable.

APPENDIX I

APPENDIX I

DISTRIBUTION OF RAW SCORES ON CREATIVE AND MULTIPLE-CHOICE FORMS
OF A VERBAL TEST AND PERCEPTUAL TEST

	VERBAL AND PERCEPTUAL TEST		VERBAL		PERCEPTUAL	
	← CREATIVE	M. CHOICE	CREATIVE	M. CHOICE	CREATIVE	M. C.
A	12	28	4	16	8	12
B	39	51	26	31	13	20
C	14	29	2	10	12	19
D	13	25	8	17	5	8
E	38	48	27	27	11	21
F	25	54	20	37	5	17
G	35	45	23	32	12	13
H	40	58	32	48	8	10
I	25	36	18	24	7	12
J	19	50	8	34	11	16
K	45	50	31	30	14	20
L	27	42	21	31	6	11
M	33	47	16	21	15	21
N	28	43	18	26	10	17
O	25	41	19	22	6	19
P	33	41	26	30	7	11
Q	10	40	2	24	8	16
R	25	50	17	32	8	18
S	33	45	25	30	8	15
T	51	56	32	34	19	22
U	34	45	21	46	13	19
V	31	45	25	33	6	12
W	22	52	16	36	6	16
X	25	39	19	29	6	10
Y	39	52	21	30	18	22
Z	32	48	21	32	11	16
A'	31	39	21	26	10	13
B'	11	23	5	16	6	7
C'	22	26	15	18	7	8
D'	17	36	14	29	3	7
E'	20	34	16	27	4	7
F'	24	26	10	11	14	15
G'	11	34	9	21	2	13
H'	16	33	2	11	14	22
I'	18	35	15	20	3	15
J'	24	37	20	31	4	6
K'	26	51	22	36	4	15
L'	33	49	21	31	12	18

VERBAL AND PERCEPTUAL TEST

VERBAL

PERCEPTUAL

CREATIVE		M. CHOICE	CREATIVE		M. CHOICE	CREATIVE		M. CHOICE
M'	26	42	22	30	4	12		
N'	16	39	14	28	2	11		
O'	15	36	14	27	1	9		
P'	26	40	21	32	5	8		
Q'	25	25	20	24	5	1		
R'	35	52	18	31	17	21		
S'	38	53	25	31	13	22		
T'	15	36	13	28	2	8		
U'	40	54	29	33	11	21		
V'	17	45	13	33	4	12		
W'	38	50	22	30	16	20		
X'	17	38	16	28	1	10		
Y'	26	31	26	27	0	4		
Z'	20	42	14	29	6	13		
A2	37	49	22	27	15	22		
B2	38	62	26	40	12	22		
C2	27	46	18	32	9	14		
D2	34	43	27	30	7	13		
E2	24	48	17	31	7	17		
F2	26	48	22	33	4	15		
G2	23	34	18	25	5	9		
H2	34	54	23	36	11	18		
I2	27	40	16	27	11	13		
J2	17	39	15	27	2	12		
K2	26	46	20	29	6	17		
L2	44	59	31	38	13	21		
M2	53	58	39	39	14	19		
N2	49	50	34	29	15	21		
O2	47	60	31	40	16	20		
P2	46	54	27	3	19	21		
Q2	39	62	26	43	13	19		
R2	48	60	36	39	12	21		
S2	28	53	22	34	6	19		
T2	21	33	15	22	6	11		
U2	31	43	27	31	4	12		
V2	29	53	23	33	6	20		
W2	27	43	17	26	10	17		
X2	19	38	15	26	4	12		
Y2	43	52	34	32	9	20		
Z2	54	58	43	39	11	19		
A3	33	51	25	33	8	18		
B3	30	49	20	31	10	18		
C3	38	55	30	34	8	21		
D3	26	49	22	34	4	15		
E3	34	49	24	33	10	16		
F3	35	48	27	33	8	15		

VERBAL AND PERCEPTUAL TEST			VERBAL		PERCEPTUAL	
CREATIVE	M. CHOICE		CREATIVE	M. CHOICE	CREATIVE	M. CHOICE
G3	31	52	23	32	8	20
H3	26	39	23	31	3	8
I3	5	15	3	6	2	9
J3	26	45	21	28	5	17
K3	35	45	24	29	11	16
L3	29	35	18	20	11	15
M3	28	39	20	28	8	11
N3	21	37	16	32	5	5
O3	22	38	21	34	1	4
P3	41	57	25	40	16	17
Q3	35	54	23	36	12	18
R3	21	42	15	25	6	17
S3	27	30	23	30	4	0
T3	51	60	38	43	13	17
U3	12	37	10	26	2	11
V3	14	21	14	21	0	0
W3	21	35	17	29	4	6
X3	42	36	31	19	11	17
Y3	26	41	18	31	8	10
Z3	23	43	19	27	4	16
A4	49	56	29	33	20	23
B4	19	49	13	29	6	20
C4	32	50	26	34	6	16
D4	40	50	31	31	9	19
E4	28	42	23	37	5	5
F4	35	37	26	26	9	11
G4	41	47	28	34	13	13
H4	32	52	25	42	7	10
I4	26	47	20	33	6	14
J4	40	55	28	36	12	19
K4	43	43	32	35	11	8
L4	35	40	28	35	7	5
M4	39	50	30	37	9	13
N4	26	30	23	26	3	4
O4	30	52	22	33	8	19
P4	27	37	22	27	5	10
Q4	34	48	24	30	10	18
R4	31	47	24	35	7	12
S4	30	30	21	23	9	7
T4	18	40	14	31	4	9
U4	26	48	23	33	3	15
V4	24	50	16	31	8	19
W4	33	47	26	33	7	14
X4	24	46	20	33	4	13
Y4	19	39	14	23	5	16
Z4	40	53	28	34	12	19

APPENDIX II

APPENDIX II

DISTRIBUTION OF RAW SCORES AND RANKS ON CREATIVE AND MULTIPLE-CHOICE
FORMS OF A TEST OF VERBAL AND PERCEPTUAL ABILITY
FOR AN AGE GROUP FROM 10.5 TO 12.5 YEARS

RAW SCORES		RANKS	
CREATIVE	MULTIPLE CHOICE	CREATIVE	MULTIPLE CHOICE
A	12	26	26
B	39	4.5	6
C	14	24	25
D	13	25	27
E	38	6	10.5
F	25	19	3
G	35	7	14.5
H	40	3	1
I	25	19	24
J	19	23	28
K	45	2	8
L	27	16	18
M	33	10	12
N	28	15	17
O	25	19	19.5
P	33	10	19.5
Q	10	28	21
R	25	19	8
S	33	10	14.5
T	51	1	2
U	34	8	14.5
V	31	13.5	14.5
W	22	22	4.5
X	25	19	22.5
Y	39	4.5	4.5
Z	32	12	10.5
A1	31	13.5	22.5
B1	11	27	28

A

DISTRIBUTION OF RAW SCORES AND RANKS ON CREATIVE AND
MULTIPLE-CHOICE FORMS OF A TEST OF VERBAL AND
PERCEPTUAL ABILITY. FOR AN AGE GROUP
FROM 12.5 TO 14.5 YEARS.

RAW SCORES		RANKS	
CREATIVE	MULTIPLE-CHOICE	CREATIVE	MULTIPLE-CHOICE
C1	22	44	56.5
D1	17	51.5	47
E1	20	46.5	51
F1	24	41	56.5
G1	11	58	51
H1	16	54.5	53.5
I1	18	49	49
J1	24	41	45
K1	26	34.5	18.5
L1	33	21.5	24
M1	26	34.5	36.5
N1	16	54.5	41
O1	15	56.5	47
P1	26	34.5	38.5
Q1	45	39	58
R1	35	16.5	16
S1	38	12.5	13
T1	15	56.5	47
U1	40	9	10
V1	17	51.5	32
W1	38	12.5	20.5
X1	17	51.5	43.5
Y1	26	34.5	55
Z1	20	46.5	36.5
A2	37	15	24
B2	38	12.5	1.5
C2	27	29	30.5
D2	34	19	34
E2	24	41	28
F2	26	34.5	28
G2	23	43	51
H2	34	19	10
I2	27	29	38.5
J2	17	51.5	41
K2	26	34.5	30.5
L2	44	7	5
M2	53	2	6.5
N2	49	3	20.5
O2	47	5	3.5
P2	46	6	10
Q2	39	10	1.5
R2	48	4	3.5
S2	28	27	13

RAW SCORES		RANKS		
CREATIVE	MULTIPLE-CHOICE	CREATIVE	MULTIPLE-CHOICE	
T2	21	33	45	53.5
U2	31	43	23.5	34
V2	29	53	41	13
W2	27	43	29	34
X2	19	38	48	43.5
Y2	45	52	8	16
Z2	54	58	1	6.5
A3	33	51	21.5	18.5
B3	30	49	25	24
C3	38	55	12.5	8
D3	26	49	34.5	24
E3	34	49	19	24
F3	35	48	16.5	28
G3	31	52	23.5	16
H3	26	39	34.5	41

DISTRIBUTION OF RAW SCORES AND RANKS ON CREATIVE AND MULTIPLE-CHOICE
FORMS OF A TEST OF VERBAL AND PERCEPTUAL ABILITY
FOR AN AGE GROUP OF 14.5 TO 16.5 YEARS

RAW SCORES		RANKS	
CREATIVE	MULTIPLE-CHOICE	CREATIVE	MULTIPLE-CHOICE
I3	5	44	44
J3	26	29	21.5
K3	35	12.5	21.5
L3	29	22	38.5
M3	28	23.5	30.5
N3	21	37	34.5
O3	22	35	32
P3	41	5.5	2
Q3	35	12.5	5
R3	21	37	25.5
S3	27	25.5	41
T3	51	1	1
U3	12	43	34.5
V3	14	42	43
W3	21	37	38.5
X3	42	4	37
Y3	26	29	27
Z3	23	34	23.5
A4	49	2	3
B4	19	39.5	13
C4	32	17.5	10.5
D4	40	8	10.5
E4	28	23.5	25.5
F4	35	12.5	34.5
G4	41	5.5	17.5
H4	32	17.5	7.5
I4	26	29	17.5
J4	40	8	4
K4	43	3	23.5
L4	35	12.5	28.5
M4	39	10	10.5
N4	26	29	41
O4	30	20.5	7.5
P4	27	25.5	34.5
Q4	34	15	14.5
R4	31	19	17.5
S4	30	20.5	41
T4	18	41	28.5
U4	26	29	14.5
V4	24	32.5	10.5
W4	33	16	17.5
X4	24	32	20
Y4	19	39.5	30.5
Z4	40	8	6

APPENDIX III

امتحان

الرجاء ان تكتب اسمك وعمرك وصفك واسم المدرسة والبلدة باللغة الانكليزية وفيما عدا ذلك
فلاجابة باللغة العربية .

الاسم الكامل

الصف

العمر : بالسنة والشهر واليوم

المدرسة

البلد

مجموع العلامات

الدرجة

المسدة : ساعة فقط

ان غاية هذا الفحص هي معرفة قدرتك على التفكير ، وهو لا يحتاج الى تحضير او استعداد
سابق . لذلك ، عليك ان تسعى الى تحقيق نتيجة جيدة . اقرأ التعليمات بدقة وتمهل ، واجب
باللغة العربية بوضوح وترتيب . ونرجو لك التوفيق .

١ - امامك لائحة من الكلمات . ضع مقابل كل واحدة منها كلمة تحني عكسها .

مثلا : ابيض اسود

- ١ . جديد
- ٢ . عميق
- ٣ . جاهل
- ٤ . قاسي
- ٥ . مخرج
- ٦ . ضروري
- ٧ . هاوي
- ٨ . شجاع
- ٩ . يقرض
- ١٠ . كريم
- ١١ . بريء

٢ - فسر بكلمة او اكثر معنى الكلمة المحيطة .

٠١ . يسمع

٠٢ . مستمر

٠٣ . يقارن

٠٤ . مستقل

٠٥ . صدق

٠٦ . يدافع

٠٧ . يخدع

٠٨ . اثار

٠٩ . واهن

- ٣ - تأمل الكلمات في العمود الاول وتفهم علاقة كل واحدة منها بالكلمة المقابلة في العمود الثاني .
ثم تأمل الكلمة الواردة على الخط نفسه في العمود الثالث وضع كلمة لها علاقة بها كعلاقة كلمة العمود الاول بكلمة العمود الثاني .

يمشي الحرارة	رجل ميزان الحرارة	يسبح وقت	مثلا سمك ساعة
	حليب	مزهية	١ • زهور
	طاولة	طوب	٢ • حائط
	قبل	متأخر	٣ • خلف
	ولد	جناح	٤ • طير
	مجذاف	يطلق	٥ • بندقية
	نسيم	مصباح	٦ • ضوء
	غاز	شريط	٧ • كهرباء
	بذر	طير	٨ • بيضة
	حرب	سعادة	٩ • سلام
	يخترع	ينمخ	١٠ • يقلد
	دراجة هوائية	ضوء شحنة	١١ • كهرباء
	عزة النغمس	التقليد	١٢ • الصدق
	كهرباء	نحل	١٣ • عمل

٤ - فمّسر بجملّة واحدة التشابه الاساسي الذي يربط هذه الكلمات .

مثلاً : قبعة ربطة كبوت كلها البسة رجالية

- | | | |
|------------|-------|-------|
| ١ . عصفور | ثعبان | بقرة |
| ٢ . وردة | بطاطة | شجرة |
| ٣ . صوف | قطن | جلد |
| ٤ . كتاب | معلمة | جريدة |
| ٥ . خارج | داخمل | |
| ٦ . الشتاء | الصيف | |
| ٧ . كثير | قلييل | |

٥ - اكتب افضل الاسئلة التالية بجملة قصيرة .

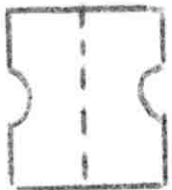





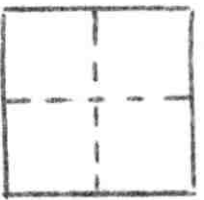




- ١ . لماذا يسكن الناس في البيوت بدلا من الخيام ؟
- ٢ . لماذا يحبس المجرمون ؟
- ٣ . لماذا يحكم على الشخص باعماله وليس باقواله ؟
- ٤ . اذا سئلت عن رأيك في شخص لا تعرفه ، فماذا يكون جوابك ؟
- ٥ . لماذا لا نرى النجوم في الظهر ؟




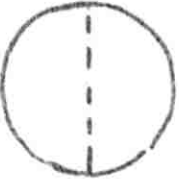

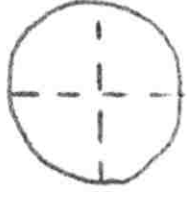

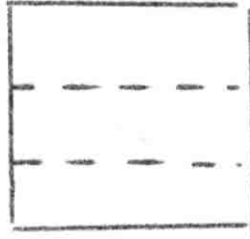

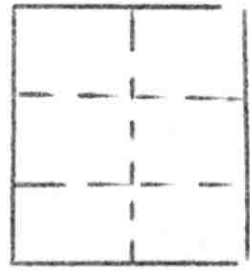


٦ - هذه الاقوال مشهورة وتسمع باستمرار : المطلوب منك ان تفسر الفكرة المقصودة بالقول بجملة قصيرة .

- ١ . "العلم في الصفر كالنقش في الحجر " هذا القول يعني
- ٢ . "بيضة اليوم خير من دجاجة الغد " هذا القول يعني
- ٣ . "ما كل بيضاء شحمه ولا كل سوداء شرة " هذا القول يعني
- ٤ . "ما حك جلدك مثل ظفرك " هذا القول يعني
- ٥ . "من لم يركب الاهوال لم ينل الآمال " هذا القول يعني

ان الشكل الاول يرينا قطعة من الورق مطوية وقطعت في الشكل الثاني . ارسم شكلا
يوضح كيف تبدو الورقة في الشكل الثاني عندما تكون غير مطوية ووضع طيات الورق بخطوط
متقطعة .

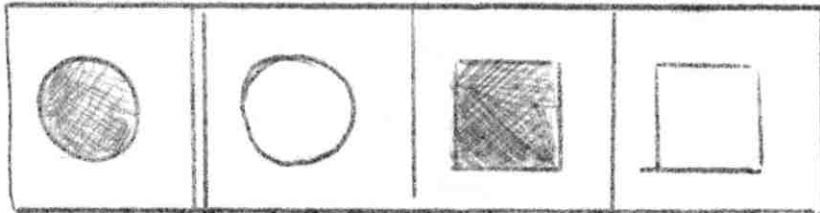
وهذا هو المثل :

	٣	١	س
			
			
			
			
			
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			7
			6
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			4
			3














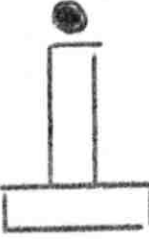

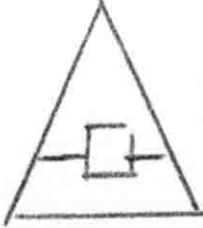
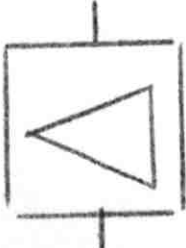

انظر الى الصورة (١) والصورة (٢) ولاحظ الفرق بينهما ثم انظر الى الصورة (٣)
 وارسم شكلا جديدا يكون الفرق بينه وبين الصورة (٣) مثل الفرق بين الصورة (١) والصورة (٢) .



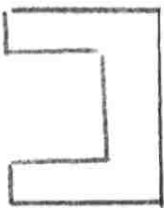




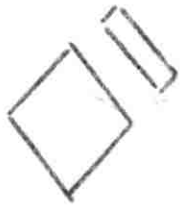


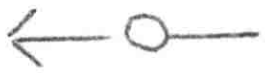





وهذا هو المثل :



في المثال التالي شكل العامود الاول مربع ابيض اما بشكل العامود الثاني فهو مربع اسود لذلك
 تستطيع تغيير الشكل الاول الى الشكل الثاني وذلك بتغيير اللون فقط . الان انظر الى
 شكل العامود الثالث انها دائرة بيضاء لذلك عليك برسم دائرة سوداء .

٤	٣	٢	١

				7
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				7
				7
				7

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APPENDIX IV

الرجاء ان تكتب اسمك وعمرك وصفك واسم المدرسة والبلدة باللغة الانكليزية وفيما عدا ذلك فالاجابة باللغة العربية .

الاسم الكامل
الصف
العمر : بالسنة والشهر واليوم
المدرسة
البلد

مجموع العلامات
الدرجة

المدة : نصف ساعة فقط

ان الهدف من هذا الفحص هو كشف مدى تفكيرك وهو لا يحتاج لتحضير او استعداد سابق ولذا فمن المتوقع ان تكون نتيجة معظم الطلاب مرضية . اقرأ التعليمات بدقة وروية وتمعن ، واجب باللغة العربية بوضوح وترتيب . نتمنى لك كل نجاح .

امامك كلمة مرقمة يقابلها عمود من اربع كلمات . ضع دائرة حول الحرف الذي يشير الى احدى
كلمات العمود التي تعني عكس الكلمة المرقمة .

		مثلا :	جديد	قديم
٠١	عميق	٠١	سطح	٠٢
			ب . مجوف	٠١
			ت . ضيق	ب . زكي
			ج . اسفل	ت . برى
				ج . حكيم
٠٢	قاسي	٠١	ثقل	٠٤
		ب . شاطر	٠٤	مخرج
		ت . لطيف	ب . ذهب	٠١
		ج . مرح	ت . مدخل	ج . باب
٠٥	بعيد	٠١	منتظر	٠٦
		ب . مسافة	ب . جاهل	٠٦
		ت . قريب	ت . عرض	٠١
		ج . بعيد	ج . مهني	٠١
٠٧	شجاع	٠١	مرتبك	٠٨
		ب . مرتب	ب . جبان	٠٨
		ت . رشيق	ت . هاوي	٠١
		ج . سريع	ج . قوي	٠١
٠٩	يقترض	٠١	يهب	٠١٠
		ب . يعطي	ب . ظاهر	٠١٠
		ت . يستلف	ب . غيور	٠١
		ج . يأخذ	ت . بخيل	٠١
			ج . متحد	٠١

ا . مذنب

ب . عصی

ت . اهل

ج . مجرم

٢ - ضع دائرة حول الحرف الذي يشير الى احدى كلمات العمود التي توضح معنى الكلمة المرقمة .

- | | | | |
|-------------------------------------|-------------------------------------|--------------------|--------------------|
| ١ . يتسامح | ١ . يحارض | ٢ . ثابت | ١ . قاسي |
| ب . يرضي | ب . يرضي | ب . لا يتغير | ب . لا يتغير |
| ت . يؤخر | ت . يؤخر | ت . يراجع | ت . يراجع |
| ج . بلاء | ج . بلاء | ج . يتابع | ج . يتابع |
| ٢ . يقارن | ١ . يقرب | ٤ . معتمد على نفسه | ١ . مكان الحرية |
| ب . يجد المتشابهات والمتناقضات | ب . يجد المتشابهات والمتناقضات | ب . مستقل | ب . مستقل |
| ت . كلمتان تعنيان نفس الشيء | ت . كلمتان تعنيان نفس الشيء | ت . احتفال | ت . احتفال |
| ج . تأخذ شيئان متشابهان ويضعهما معا | ج . تأخذ شيئان متشابهان ويضعهما معا | ج . يعتمد على غيره | ج . يعتمد على غيره |
| ٥ . صدقة | ١ . بلا اناية | ٦ . يدافع | ١ . يحتج |
| ب . لطف | ب . لطف | ب . يحمي | ب . يحمي |
| ت . احسان | ت . احسان | ت . يهرب | ت . يهرب |
| ج . يأمل | ج . يأمل | ج . يقبض على | ج . يقبض على |
| ٧ . يخدع | ١ . يزل | ٨ . اثار | ١ . زجر |
| ب . يسلم | ب . يسلم | ب . اشرف | ب . اشرف |
| ت . يخش | ت . يخش | ت . ايقظ | ت . ايقظ |
| ج . ارجع | ج . ارجع | ج . صرف | ج . صرف |
| ٩ . واهن | ١ . سعيد | | |
| ب . هادي | ب . هادي | | |
| ت . فخور | ت . فخور | | |
| ج . ضعيف | ج . ضعيف | | |

٣ - تأمل بامعان في الكلمتين الاوليتين اللتين تتعلقان ببعضهما البعض... ثم اختر كلمة من الاجوبة الاربعة تكون لها علاقة مشابهة بالكلمة الثالثة ، وارسم دائرة حول الحرف الذي يشير الى تلك الكلمة .

- | | | | |
|------------|--------|-------|----------------|
| ١ . زهور | مزهرية | حليب | ١ . بقرة |
| | | | ب . ابريق |
| | | | ت . ابيض |
| | | | ج . كريما |
| ٢ . حافظ | طوب | طاولة | ١ . كرسي |
| | | | ب . خشب |
| | | | ت . مطبخ |
| | | | ج . يأكل |
| ٣ . خلف | متأخر | قبل | ١ . باكر |
| | | | ب . بعد |
| | | | ت . حالا |
| | | | ج . منفردا |
| ٤ . طير | جناح | ولد | ١ . ذراعان |
| | | | ب . ملابس |
| | | | ت . اجنحة |
| | | | ج . يلعب |
| ٥ . بندقية | يطلق | مجذاف | ١ . يسبح |
| | | | ب . ينفو |
| | | | ت . يجذف |
| | | | ج . يبخر |
| ٦ . ضوء | مصباح | نسيم | ١ . بحر |
| | | | ب . جيد |
| | | | ت . نافذة |
| | | | ج . مركب شرابي |

ا . فرن	غاز	شريط	كهرباء . ٧
ب . انبوب			
ت . لهيب			
ج . شرارة			
ا . نبات	بذر	طير	بينسة . ٨
ب . صدف			
ت . ورقة شجر			
ج . جذر			
ا . دمضوع	حرب	سعادة	سلام . ٩
ب . حزن			
ت . متاعب			
ج . مصيبة			
ا . درس	يخترع	ينسخ	يقلد . ١٠
ب . اختراع			
ت . جديد			
ج . مبتكر			
ا . دراجة	دراجة هوائية	ضوء شمعة	كهربائي . ١١
ب . سيارة			
ت . عجلات			
ج . سرعة			
ا . خوف	عزة النفس	الكذب	الصدق . ١٢
ب . ضمة			
ت . عار			
ج . شرف			
ا . أداة	كهرباء	نحل	عمل . ١٣
ب . دينمو			
ت . ضوء			
ج . برق			

٤ - اختر افضل اجابة تبين التشابه بين هذه الكلمات وارسم دائرة حول الحرف الذي يشير الى تلك الاجابة .

- ١ . عصفور ثعبان بقرة ا . بقدرتهم اذ اذك
ب . بقدرتهم جميعا المشي
ت . كلهم يبيضوا
ج . كلهم حيوانات
- ٢ . وردة بطاطة شجرة ا . جميعهم نباتات
ب . جميعهم يحطون عصير
ت . جميعهم تصبح متوحشة
ج . جميعها تعدأ
- ٣ . صوف قطن جلد ا . جميعها لين
ب . جميعها تستخرج من الحيوانات
ت . جميعها تنمو على الشجر
ج . جميعها تستعمل للبس
- ٤ . كتاب معلمة جريدة ا . كلها تزود بالاخبار
ب . جميعها تحلم
ت . كلها تابعة للمدرسة
ج . كلهم يقرأون
- ٥ . بالخارج بالداخل ا . كلاهما يد لان على المكان
ب . كلاهما يدلان على البنائيات
ت . كلاهما جوانب
ج . كلاهما مكان للسير
- ٦ . الشتاء الصيف ا . كلاهما فصلان
ب . كلاهما اشهر
ت . كلاهما اما الفصل الحار او البارد من السنة
ج . هناك عطلة بين الفصلين

٧ . كغير

قليل

- ١ . كلاهما يقيس وزنا (حجم)
- ب . احد هما قليل الكمية والاخر كثيرها
- ت . كلاهما بضائع
- ج . كلاهما اشياء

٥ - اختر افضل جواب لكل من الاسئلة الاتية وضع حول الحرف الذي يشير الى الجواب دائرة .

١ . لماذا يسكن الناس في البيوت بدلا من الخيام ؟

- ا . لانها تكلف اكثر
- ب . لانها مريحة اكثر
- ت . لانها مصنوعة من خشب

٢ . لماذا يسجنون المجرمون ؟

- ا . لحماية المجتمع
- ب . لتحسين العلاقات معهم
- ت . لتشغيلهم

٣ . لماذا يحكم على الشخص باعماله وليس باقواله ؟

- ا . لان اعمال الشخص تدل على حقيقته
- ب . من الخطأ ان تكذب
- ت . الاطرش لا يمكنه سماع ما يقال

٤ . اذا سئلت عن رأيك في شخص لا تعرفه ، فماذا يكون جوابك ؟

- ا . سأتعرف عليه
- ب . اظن انه لا بأس به
- ت . لا اعرفه ولذلك لا يمكن الحكم عليه

٥ . لماذا لا نرى النجوم في الظهر ؟

- ا . لانها تكون انتقلت الى الجانب الاخر من الارض
- ب . خبثها الشمس
- ت . لان ضوءها اضعف من نور الشمس

هذا قول يليه اربع جمل مرقمة . المطلوب منك ان تختار من بينهما افضل جملة تفسر الفكرة المقصودة من ذلك القول ومتى وجدتتها اكتب رقمها على ورقة الاجوبة في المكان المناسب . وفيما يلي مثال على ذلك .

"من زرع حصد " هذا القول يعني

١ . ازرع لا تقطع ٢ . يجب ان نزرع ٣ . يجب ان نحصد ٤ . من جد وجد

في هذا المثال نجد ان الفكرة المقصودة من قولنا من "زرع حصد " لا تفسرها الا جملة واحدة من بين الجمل الاربعة المذكورة وهي جملة "من جد وجد" لذلك وضعنا دائرة حول الرقم لانها الجواب الصحيح .

١ . " العلم في الصخر كالنقش على الحجر " هذا القول يعني

١ . يجب ان يكون العلم كالحفر في الصخور

ب . ارسخ العلم ما كان في الحداثة

ت . العلم من الصدور لا في السطور

ج . علينا في الثبات في تعليم الصغار

٢ . " بيضة اليوم خير من دجاجة الغد " هذا القول يعني

١ . بيضة الديك خير من بيضة الدجاجة

ب . اتبع الفرس لجامها

ت . البيض احسن من الدجاج

ج . عصفور في اليد ولا عشرة على الشجرة

٣ . " ما كل بيضاء شحمة ولا كل سوداء ثمرة " هذا القول يعني

١ . قد يكون الظاهر غير الحقيقة

ب . ليس كل الشحم ابيض ولا كل الثمر اسود

ت . ان لم يكن شحم فصوف

ج . ليس للفرس

٤ . " ما حك جلدك مثل ظفرك " هذا القول يعني

١ . يجب ان تحك جلدك بشي كالظفر

ب . الحرقاءد الحرمان

ت . لا يقضي حاجتك مثل نفسك

ج . ما نصحك مثل عقلك

ه . " من لم يركب الاهوال لم ينل الامال " هذا القول يحني

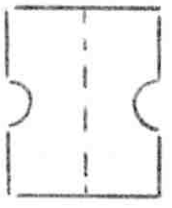

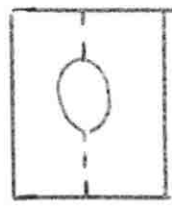

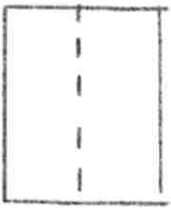
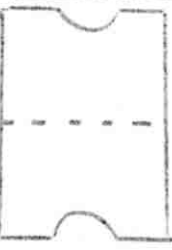
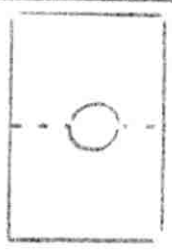
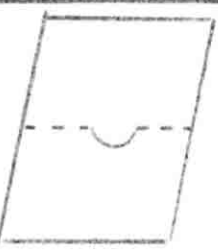


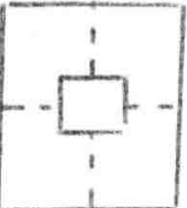
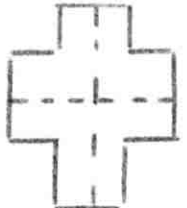
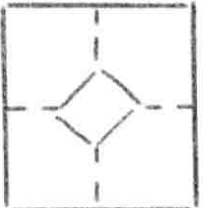



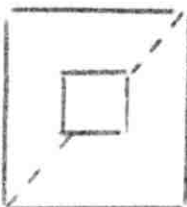



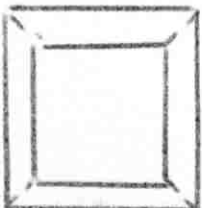

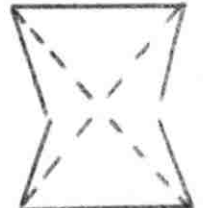


ا . ما كل ما يتمنى المرء يدركه

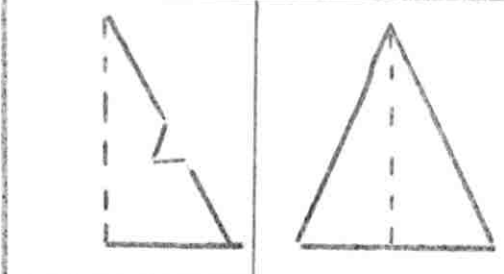
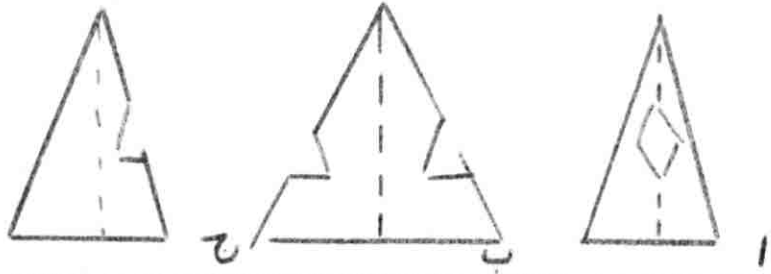
ب . لا بد دون الشهد من ابر النحل

ت . من علت همته زال همه

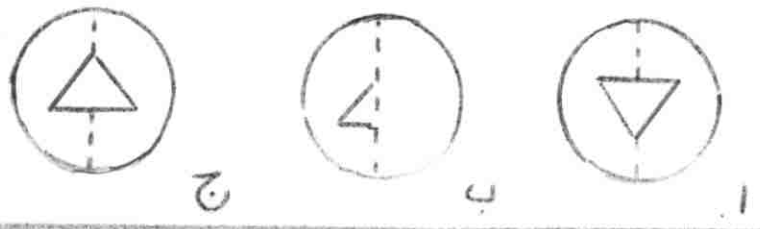
ج . ليس المخاطر محمودا ولو سلم

١
 (١) ان الشكل الاول يرينا قطعة من الورق مطوية ، وقطعت في الشكل التالي اختراحدى الرسوم
 من العمود في اليسار الذي يرينا كيف تظهر الورقة وهي غير مطوية . ضع علامة دائرية حول الجواب
 الصحيح من للاحرف (١) و (ب) و (ج) - لاحظ ان الخطوط المقطعة تدل على مكان طي الورقة .

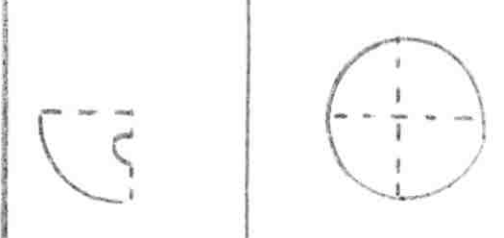
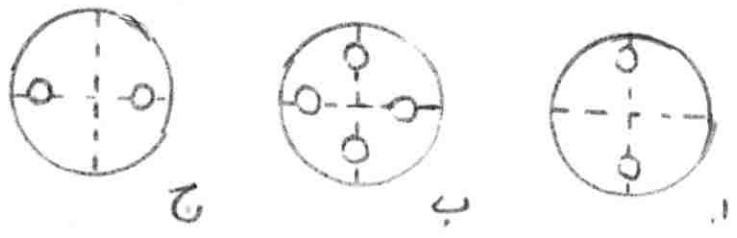
٢	ب	١	٢	١	س
					
					١
					٢
					٣
					٤



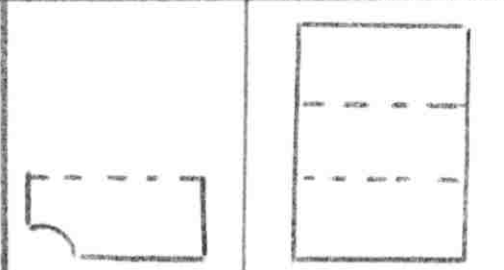
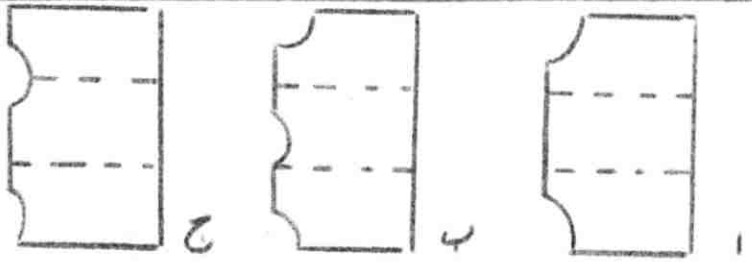
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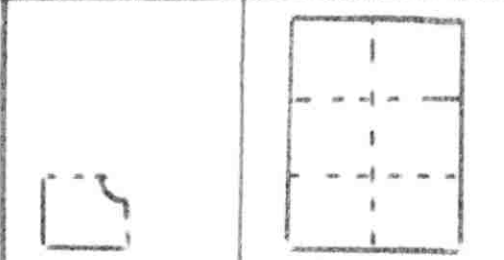
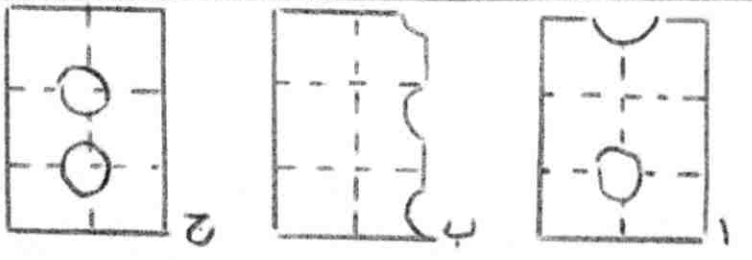
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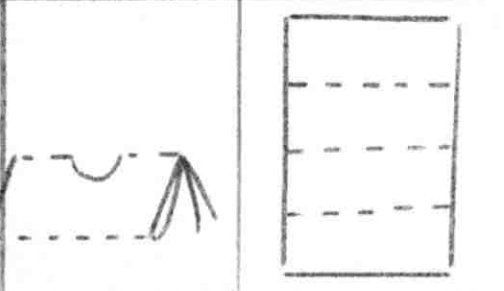
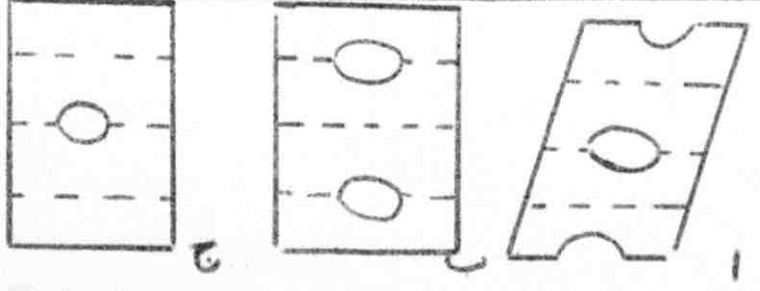
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7






6












1

انظر الى الصورة (١) والصورة (٢) ولاحظ الفرق بينهما وثم انظر الى الصورة (٣)
 وفتش بين الصور الثلاث المجاورة عن صورة يكون الفرق بينها وبين الصورة (٣) مثل الفرق بين
 الصورة (١) والصورة (٢) وهذا هو المثل :

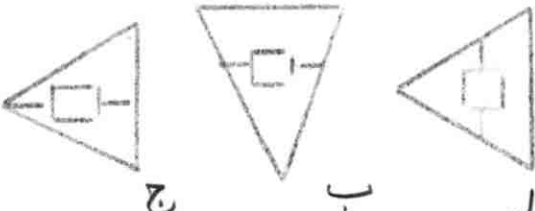
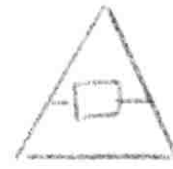
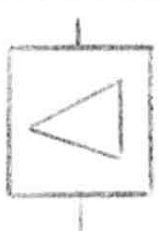
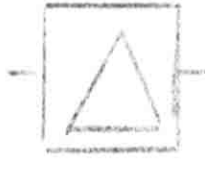




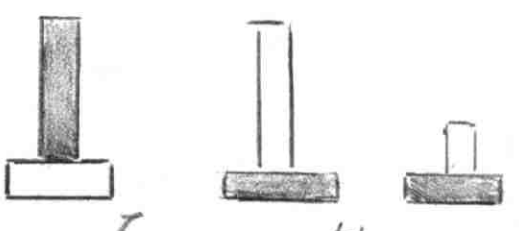
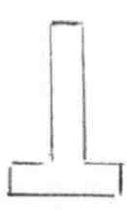






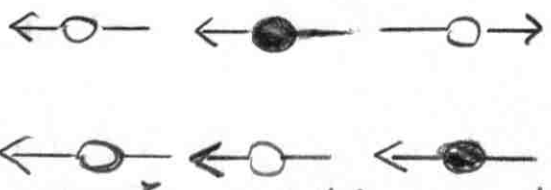





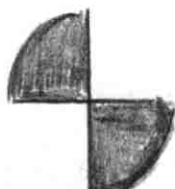
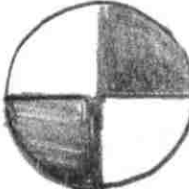
١	٢	٣
		
١	ب	ج

في المثال التالي شكل العمود الاول مربع ابيض، اما شكل العمود الثاني فهو مربع اسود لذلك
 نستطيع تضيير الشكل الاول الى الشكل الثاني وذلك بتضيير اللون فقط . الان انظر الى شكلي
 العمود الثالث ، انها دائرة بيضاء اي من الاشكال الثلاثة ا ، ب ، ج ، ستعاطة الدائرة
 اعلاه اذا ما غير لونها .

ستصبح كشكل "ب" فاي الدائرة السوداء اذن اختر شكلي "ب" كجواب وهذا هو المثل :

١	٢	٣
		
١	ب	ج
		
١	ب	ج
		
١	ب	ج

				2
				2
				2
				2
				2
				2

 <p>1. 2. 3.</p>			 <p>1.</p>
 <p>1. 2. 3.</p>			 <p>11</p>
 <p>1. 2. 3.</p>			 <p>15</p>
 <p>1. 2. 3.</p>			 <p>16</p>
 <p>1. 2. 3.</p>			 <p>18</p>
 <p>1. 2. 3.</p>			 <p>19</p>

Translation of the Multiple-Choice
Test from Arabic to English

I. Select a word from the 4 alternatives which means the opposite of the word in the left hand column: Circle the letter which you think is the best answer.

- | | | | |
|--------------|-------------|--------------|-----------------|
| 1. Deep | a) hollow | 2. Ignorant | a) uneducated |
| | b) shallow | | b) shrewd |
| | c) narrow | | c) innocent |
| | d) below | | d) wise |
| 3. Cruel | a) heavy | 4. Exit | a) light |
| | b) clever | | b) go |
| | c) kind | | c) enter |
| | d) gay | | d) door |
| 5. Far | a) expected | 6. Amateur | a) unskilled |
| | b) distance | | b) ignorant |
| | c) near | | c) performance |
| | d) view | | d) professional |
| 7. Clear | a) confused | 8. Brave | a) weak |
| | b) tidy | | b) coward |
| | c) elegant | | c) quiet |
| | d) fast | | d) strong |
| 9. Lend | a) donate | 10. Generous | a) support |
| | b) give | | b) jealous |
| | c) borrow | | c) miser |
| | d) take | | d) united |
| 11. Innocent | a) guilty | | |
| | b) nervous | | |
| | c) criminal | | |
| | d) foolish | | |

II. Select a word from the given alternatives which means the same as the word in the left hand column:

- | | | | |
|-------------|--|-------------|-----------------|
| 1. Tolerate | a) object | 2. Constant | a) hard |
| | b) accept | | b) unchangeable |
| | c) delay | | c) turns back |
| | d) disaster | | d) follows |
| 3. Compare | a) put together | | |
| | b) point out similarities and differences | | |
| | c) two words meaning the same | | |
| | d) take two things that are alike, and put them together | | |

- | | | | |
|----------------|---|------------|--|
| 4. Independent | a) place of liberty
b) free
c) festival
d) dependent | 5. Charity | a) unselfishness
b) gentleness
c) kindness
d) hopefulness |
| 6. Defend | a) protest
b) protect
c) escape
d) capture | 7. Cheat | a) err
b) submit
c) deceive
d) remit |
| 8. Aroused | a) scolded
b) tempted
c) awakened
d) dismissed | 9. Feeble | a) happy
b) quiet
c) proud
d) weak |

III. Look carefully at the first two words which show some relationship. Select one word from the 4 answers, which has a similar relationship with the third word. Circle the letter in front of the correct answer.

- | | 1 | 2 | 3 | |
|----|---------|---------|-----------|---|
| 1. | Flowers | Vase | Milk | a) cow
b) jug
c) white
d) cream |
| 2. | Wall | Brick | Table | a) chair
b) wood
c) kitchen
d) eat |
| 3. | Behind | Late | Before | a) early
b) after
c) soon
d) alone |
| 4. | Bird | Wing | Boy | a) arms
b) clothes
c) play
d) feathers |
| 5. | Gun | Shoot | Oar | a) swim
b) float
c) row
d) sail |
| 6. | King | Kingdom | President | a) queen
b) vice-president
c) senate
d) republic |

7. Electricity Wire Gas a) stove
b) pipe
c) flame
d) spark
8. Egg Bird Seed a) plant
b) shell
c) leaf
d) root
9. Peace Happiness War a) tears
b) sorrow
c) trouble
d) disaster
10. Imitate Copy Invent a) study
b) invention
c) new
d) originate
11. Electric Light Candle Motorcycle a) bicycle
b) wheels
c) automobile
d) speed
12. Truth Falsehood Pride a) fear
b) humility
c) shame
d) honor
13. Honey Bee Electricity a) dynamo
b) tool
c) light
d) lightning

IV. Select the best answer that explains the similarities between these words:

1. Sparrow Snake Cow a) They can hurt you
b) They can all walk
c) They are all mammals
d) They are all animals
2. Rose Potato Tree a) They are all plants
b) They all give sap
c) They all grow wild
d) They can all rust
3. Wool Cotton Leather a) They are all soft
b) They all come from animals
c) They all grow on trees
d) They are all used for clothing

4. Book Teacher Newspaper
- They all give news
 - They all teach
 - They belong to the school
 - They all read
5. Outside Inside
- They are both buildings
 - They are both sides
 - They are both roads
 - They are both places.
6. Winter Summer
- They are seasons
 - They are months
 - They are cold and hot parts of the year
 - There are vacations
7. Much Little
- Both measure weight
 - Both are commodities
 - Both measure quantity
 - One is large, the other is small

V. Select the best answers to each of the following questions:

- Why do people generally live in houses instead of tents? Because
 - They cost more
 - They are made of wood
 - They are more comfortable
- Why are criminals locked up?
 - To protect society
 - To get even with them
 - To make them work
- Why judge a man by what he does than by what he says? Because
 - It is wrong to tell a lie
 - A deaf man cannot hear
 - His actions show what he really is.
- If you were asked what you thought of a person you did not know, what would you say?
 - I will go and get acquainted
 - I think he is alright
 - I don't know him and can't say.

5. Why do we see no stars at noon? Because

- a) They have moved around to the other side of the earth
- b) They are hidden by the sun
- c) They are much fainter than the sun

VI. Select the best answer for each of the following proverbs:-

1. Teaching the young is like carving in stone

- a) Teaching should be like carving in stone
- b) Lasting knowledge is that thought in childhood
- c) Knowledge is in the heart not in books
- d) We have to be constant in teaching the young

2. An egg to-day is better than ~~ten~~ ten to-morrow

- a) The egg of the cock is better than the egg of the hen
- b) Follow the horses' rein
- c) Eggs are better than hens
- d) One sparrow in the hand is better than ten in the tree

3. Not all white is fat and not all black is fruit

- a) It is possible that truth differs from its appearance
- b) Not all fat is white and all fruit black
- c) If it is not fat then wool
- d) It is not for planting

4. Nothing scratches you like your nail

- a) You must scratch with something like your nail
- b) Heat is the greatest depriver
- c) No one can fulfil your needs better than yourself
- d) No one can advise you better than your own brains

5. No pains no gains

- a) Not all that a person hopes for is attainable
- b) If you don't sow the seeds, you can't reap the harvest
- c) He who has moral courage need fear nothing
- d) He who takes risks is not to be praised even if he escapes.

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