"CONSTRUCTION AND STANDARDIZATION OF A NON-VERBAL GROUP INTELLIGENCE TEST FOR THE AGE GROUP OF 13+ TO 17+ IN NAGALAND"

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C E R T I F I C A T E

This is to certify that Mr. Imtisungba Ao has completed his thesis entitled " CONSTRUCTION AND STANDARDIZATION OF NON-VERBAL GROUP INTELLIGENCE TEST FOR THE AGE OF 13 + TO 17 + IN NAGALAND " under my supervision. To the best of my knowledge the data collected and facts reported in this research had been original. ~~work carried out and collected~~. The thesis is ready and fit for submission.

Place : Kohima
Dated : 5th Dec.1993.

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Dated
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CHAPTER - I

1.1. IMPORTANCE OF THE STUDY

The word intelligence is a popularly used term in our daily life. People have defined its meaning, nature and process in different ways. People had been curious to know about it. It has been generally accepted that intelligence is an innate capacity in the individual. But at the same time it has been found that intelligence of an individual fluctuates with varying environment and with testing tools of intelligence.

People in ancient times were authorative and commanding in nature and could use their own decisive power for the selection of manpower for various jobs. But in the modern democratice set up, it was found difficult to be authorative and take unilateral decisions. Hence itwas felt to devise some objective criteria for such selections for proper guidance and counselling to individuals. Thus intelligence tests play an important role to meet much requirementsof human beings in democracy.

Intelligence tests also helps in making a judicisous decision about the selection of proper courses of study to the aspirant individuals for various types of technical and commercial courses

of study in higher education. If proper educational and vocational guidance isnot provided to students at an appropriate time, there is a possibility of misfits either in education or in vocations at later stage.

In Nagaland, it has been observed that most of the students choose a particular stream of course of study of their parents or attractive nature of the jobs, irrespective of their ability or capacity to do well in that area of study of job. The result is that there are more dropouts in their studies and more dissatisfied person in their jobs. In order to overcome such problems, the investigator felt the need of providing proper educational and vocational guidance in the light of their abilities and capacities to opt for proper courses of study and choose right type of jobs in their lines. For this the researcher was interested to make the people aware of intelligence and its use in their life and decided to construct a non-verbal intelligence test for Naga students population.

It was a commom acceptance that both verbal group test and non-verbal group test have equal power to measure mental ability of the people. However in a diversified society with a number of sub-tribes with distinct dialects, sub-cultures of more or less similar value can be measured better by a non-verbal test than a verbal test. There are about 16 different tribes in Nagaland with distinct

dialects and therefore the researcher decided to construct a non-verbal test which could be used by all irrespective of their languages.

1.2. NEED AND JUSTIFICATION

Intelligence has very important role to play with various activities. Parents, school administrators, teachers, school counsellors and students require to know the role and importance of intelligence in managing education for the classification and categorisation of individuals for the selection of people for appropriate lines of life activities, intelligence test will give significant informations.

The people of Nagaland are not familiar with the concept of intelligence test. Intelligence test is a new terminology for the school teachers and students in this region. There is neither any centre for testing not test instruments of this kind in the state.

In our country there are some test scale of intelligence which constructed and standardized in foreign countries with the norms of those people. Some Indian authors have developed some instruments on the basis of their local norms. As no particular test is reliable and valid for all the environments, the test constructed on other population may not be suitable or relevant for the Naga people.

In this state education is progressing rapidly with an increasing quantitative students enrolment at various levels; but these students and teachers are studying unaware of their mental levels and ability to do. It is not only a wastage but a source of socio-psychological and unemployment problems. As the people are still ignorant in darkness, those bright and excellence may lose a number of rights and opportunities.

Schools and many other agents may require the informations about the intelligence levels of the school children for their clear decision making and justification for selective processes as well as to categorize them for improvement programmes. It is sad that sometimes, biased judgements and discriminations are possible on the part of the concerned persons. Very often this may be due to lack of the factual knowledge about the individuals with whom they are dealing.

Therefore seeing the necessity, the investigator decided to construct and standardized and instrument on the basis of local environment with local norms. The investigator prepared a non-verbal group test instrument as it is expecting to be a more appropriate and suitable for the people of Nagaland where a lot of geographical, linguistic and socio-cultural problems and diversifications are prevailing.

The present test construction and standardization was undertaken on the following grounds:

(a) No test of this type has so far been developed in Nagaland.

(b) A very few researchers had constructed test instruments of this type in north-eastern part of the country.

(c) Only a limited number of intelligence test instruments have been designed in the form of non-verbal omnibus group tests in India as a whole.

(d) Local people of this state are not familiar with the intelligence test scales.

(e) The investigator felt the need of designing a test of intelligence and standardized on the local population with local norms.

1.3. STATEMENT OF THE RESEARCH TOPIC

"Construction and standardization of a group intelligence test for high school students of class VII to X with-in the age group of 13+ to 17+ years in Nagaland".

1.4. DEFINITIONS OF THE TERMS

(i) Intelligence

"Intelligence is the ability and capacity of a person to learn and carry on abstrct thinking to response appropriately to a new situation". (

(ii) Intelligence test

"Intelligence test is a standardized test instrument which uses for measuring the mental ability and capacity of the individual person or persons to learn adequately and carry on abstract thinking to adopt and response appropriately to a new situation." (

(iii) Non-verbal group intelligent test

"Non-verbal group intelligence test is a standardized instrument which uses to administer in group for measuring the individuals mental ability and capacity levels to learn adequately and carry on abstract thinking to adopt and response appropriately to a new situation. "

1.5. OBJECTIVES OF THE TEST

The construction of a test is not an end in itself. It has a long process of integral objectives. Test results can be utilised by the decision makers

as the indicators to finalise various methods for behaviour modifications. The investigator had taken up this topic with a definite purpose and objectives. There were no intention to profound a theory of its own, so the investigator carefully followed a series of methods and procedures for completion of the test scale as by other test constructors. The investigator wanted to extend a unique contribution to the society by providing an instrument for fulfilment of since long felt need of the people in the field of education.

The following have been the objectives under the present research work :-

(i) The main objective was to construct and standardize an omnibus type of non-verbal group intelligence test for the students of class VII to X in the age group of 13+ to 17+ years in Nagaland.

(ii) To establish different types of reliability and validity for the test.

(iii) To establish group test norms for the total population in the form of derived score scales.

(iv) To study the emerging pattern of group intelligence of the Naga high school students through the non-verbal test.

(v) To develop a workable test manual for use of the test.

(vi) To measure the intelligence of students under different age-groups and grades.

1.6. ASSUMPTION UNDERLYING THE RESEARCH PROBLEM

The present study was based on the following assumptions :-

(i) That the intelligence of the Nagas will be similar with students at other places in their equivalent age groups and grade levels.

(ii) That the test constructed will showhigh reliability and validity coefficient.

(iii) That the non-verbal group test will give the significant measures of persons' intelligence at par with other types of verbal and non-verbal tests.

(iv) That the IQ of the individuals tested will be normally distributed.

(v) That the intelligence levels vary with different factors such as age, sex and grade levels.

1.7. DELIMITATIONS OF THE TEST SCALE

The meaning of intelligence is so vast that it includes a vast activities to measure. There are different types of intelligence testing at different levels with different groups of people by various researchers. Therefore the present test instrument was delimited to the following :-

(i) The test instrument was limited to an omnibus type of non-verbal group test with non-verbal test items.

(ii) It was limited only to the high school students of Nagaland who were studying in different classes of VII, VIII, IX and X.

(iii) The age group of the population approximately covered 13+ to 17+ years. (According to the actual study the age group were identified from 12+ to 19+ years).

(iv) The sample of the population was restricted to regular students of boys and girls of Nagaland state.

(v) The language used for oral instructions and directions was English.

C H A P T E R - II

REVIEW OF RELATED LITERATURE

The word intelligence conveys different meaning to different situations or environments. Many psychologists have given the proper meaning of the word intelligence. Tewari (1987)* has clearly written the conceptual meaning that intelligence is closely related to intellect which includes observing, thinking, understanding, remembering, and all ways of knowing. William A. and Lehmann (1984),** have mentioned that the terms 'Aptitude', 'Ability', 'Intelligence' and achievements are used interchangeably by some, while others suggest that subtle shades of meaning distinguesh them. The first three terms are usually considered to have the most meaning in common. According to Frances Galton, (Lewis 1974),*** Latin term 'Intelligence' is to refer to individual differences in mental ability.

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* Dr.(Mrs.) Rama Tewari. General Mental Ability Test (GMAT). Agra University Agra 1987, p.2 .

** William A. Mehrens Irvin J. Lehmann. Measurement and Evaluation in Educational Psychology. 3rd. edition, 1984, p. 327

*** Lewis, R. Aiken. Psychological and Educational Testing. Jr. Guilford College. 4th. Printing. December 1974. p. 111

No project or research can be started without a definite definition of the work.While discussing the issues and problems of psychological testing,Sansanwal (Dr.M.C.Jain et al,NCERT),* emphasised that the test constructors are required to give operational definition of the variable for which the test is constructed.But this aspect is neglected by majority of researchers. This makes the interpretation of the scores difficult. Along with the definition,the aspects tested should also be given.

Thus knowing the importance of the definitions, many people had given number of definitions on the intelligence and intelligence test.They had given different definitions of their own but with a common focus. In our every day life we commonly and informally talk about intelligence of the people.But no one can simply categorise through informal judgement without a test scale.Although the judgement of the common people are acceptable to many,but the psychologist do not agree to those suggestions.Many writers have given a lot of definition on intelligence and intelligence test.

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* Dr.M.C.JAIN and Dr.C.H.K.MISRA. National Seminar on the Issues and Problems of Psychological Testing,Department of Educational Psychology Counselling & Guidance NCERT.(March 1992), p.227.

Norman E.Gronlund (1981),* advocated that the tests designed to measure learning ability have traditionally been called intelligence tests.This terminology is still used for many individually administered tests and for some group tests,but its use is declining.But in place of intelligence tests have come some such terms as mental ability tests,school ability tests, cognitive tests and scholastic aptitude tests.

As he was trying to define intelligence tests, Lewis R.Aiken (1971),** reminded to remember that so called intelligence tests arr actually tests of achievments.The items on intelligence tests represent attempts to assess individual differences in the effects of experiences that are common to nearly in the culture.

Any type of test requires a clear-cut purpose. But to visualise the purpose of a new test is not an easy task indeed.The purpose may be used as an indicator of educational and vocational effectiveness in future.On the other hand can be developed for the purpose of career planning,guidance,classification and decision-making.

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* Norman E.Gronlund. Measurement and Evaluation in Testing, Fourth Edition 1981,pp.334-5.

** Lewis,op.cit.,p.113.

Some of the authors also had identify the purpose of psychological testing and assessment in their own language pattern. As proposed by S. Venkatasen (Dr. M.C. Jain et al 1992),* the purpose of psychological assessment varies from screening, identification, classification, placement, programming to certification.

In his test manual, Mehrotra (1972),** explained that India has adopted the practice of diverting pupils to various types of courses after classes VIII and X. The orientation of the pattern of education by making it multipurpose at the higher secondary stage and the diversification of courses including occupational courses at that stage has doubless offered bright oppourtunities to young pupils in schools but it has also created a number of problems. Psychologists have no ready-made solutions to those problems but they always felt the need of some tools and techniques to enable them to study, predict and modify human behaviour.

As suggested by A. Anastasi (1976),*** intelligence tests should not be used to label an individual but to help in understanding him. And he further poin

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* Dr. M.C. Jain, et al., op.cit., p.84.

** P.N. Mehrotra. Mixed Type Group Test of Intelligence for children from 11 to 17 years. Agra University, Agra, 1972. p.

*** Anne Anastasi. Psychological Testing. Fourth Edition 1976, p.349.

pointed out that the information provided by tests is being used increasingly to assess individuals in their educational and vocational planning and in making decisions about their own lives.

History of psychological testing and test scale development shows that the psychological branch used group scales for classification of soldiers mental ability shortly after the U.S.entered the World War I. Since then a number of non-verbal group scales had been systematically designed.It was written in his test manual by Jalota (1976),* considering from different angles,it can be accepted that the group test scales are better than individual performance scales.

It has been mentioned in their book by William and Lehmann (1984),** that group aptitude tests are far more extensively administered intelligence tests. They are much less expensive and generally give results comparable to those of the more time-consuming individual tests.

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* S.Jalota's Group Test of General Mental Ability. Manual of Revision,Published in 1972.

** William and Lehmann.,Op.cit.,p.380.

According to Hermon Nelson (Lewis 1971),* the items are arranged in spiral omnibus forms; that is several different types of items are distributed the scale instead of being grouped by sub-test.

While explaining about the omnibus type Lewis (1971),** wrote that in the spiral omnibus formal, the several types of items comprising the test are mixed together and arranged in order of increasing difficulty. Examples of this scale are listed:

The Army General Classification (Alpha).

The Otis-Lennon Mental Ability Tests,

The Hermon-Nelson Test of Mental Ability.

Non-verbal test items are consisting of pictoral, diagrametic and geometric figures. These items measures the perceptual and conceptual ability level of the testees without any prior training to descriminate amongst them. As a support, Anne Anastasi (1976),*** Non-verbal battery sub-tests use no words or numbers, but only geometric or figural elements; the items bears reliability little relation to formal school instruction.

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* Lewis, Op.cit., p.130.

** Ibid., p.130.

*** Anne Anastasi, Op.cit., p.310.

According to Freeman (1965),* Authors of non-verbal tests of mental ability seek to measure the same mental process tested by means of verbal scales. They hold that the problems presented in diagrams, pictures,charts and geometric forms closely parallel to those presented by means of language and number. Language and numbers are symbolic systems that represent something else for example objects,qualities, events and actions.With use of language and number he is able to analyse,synthesixe,classify and organize his perception.Therefore they prefer to test intelligence by means of verbal and numerical materials. However,they would use non-verbal tests when these are made necessary by developmental immaturity or or language or cultural handicap,to gain the insight that these tests provide if they are adequately scaled in difficulty.

Non-verbal items with instructions can be used when there is linguistic handicappness,but has a common

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* Frank.S.Freeman, Theory and Practice of Psychological Testing.Third Edition,1965,pp. 377-78.

link language and the respondents are literate.Some of the non-verbal tests have been constructed with different sub-tests forming a particular battery.

Lyman (1978),* so called non-verbal tests contain certain no verbal items;however,words almost always used in the directions.Some authors prefer to use non-language to describe tests that have no verbal items but for which the directions are given either orally or in writing.

In the opinion of Anastasi (1976),** a non-verbal battery may have the sub-tests of figure classification,figure analogies,figure synthesis . Ibid (1976),** in the same book,Figure 46,Item Illustrative of the Otis-Lennon Mental Ability Test, every item has given instruction as

(a) Classification: Mark the picture that shows a flame.dose not belong with the others.
(b) Verbal classification: Mark the picture that shows a flame.
(c) Quantitative reasoning: Mark the picture that shows the same number of dots as there are parts in the circle.

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* Howard B.Lyman, Test Scores and what they mean. University of Cincinnate.Third Edition, 1978,p.26.

** Anne Anastasi,Op.cit.,p.310.

*** Ibid,,p.309.

Again Anastasi (1976)**, Figure 41, Sample Items of Culture Fair Intelligence Test Scale 2 by R.B.Cattel,

Test I. Series: Mark the items that completes the series.

Test 2. Classification: Mark one item in each row that does not belong with others.

Test 3. Matrices: Mark the items that correctly completes the given matrix.

Non-verbal items require a lot of thinking. Unless the items are constructed adequately, no result can be expected as which the test was meant. Some tests may be culture-free, some other may be culture specific.

In this context Anne Anastasi (1976),** clearly pointed that no single test can be univesally applicable or equally 'fair' to all cultures. There are as varieties of culture-fair as there are parameters in which cultures differ. Non reading test may be culture -fair in one situation, a non-language test in another a performance test in athird.

Lewis (1971),*** suggested that it is probably impossible to construct an intelligence test that is independent of experiences varying from culture to culture.

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* Ibid., p.290.

** Ibid., pp.345-6.

*** Lewis, Op.cit., p.142.

Bhide (Dr.M.C.Jain et.al.),* according to me nothing in the world is 100% 'culture-free.' The concept of culture free can be perhaps applied 100% to robots but human beings are not robots.Therefore every utterance,every thought of human being is so coloured by his/her experiential background and the society in which he/she has grown.So the psychological tools should be as much as possible composite.

To develop a good and valid test,foremost requirement is to choose a truely representative standardization sample.The standardixation sample may be made truely representative only when the sufficient number of units are selected from all strata and levels of the population.

In the words of Gupta (1987),** Random sampling dose not mean haphazard selection or selection of sample units as they occur to the investigetor.But any random sample size 'n' drawn from any population must have the same probability of being selected. Secondly when a population is heterogenous or different segments or strata in the population,then it is stratified.So we stratified

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* M.C.Jain et.al. Op.cit.p.

the population by dividing it into strata so that each stratum is more or less homogenous, and make a random , selection of sample from each stratum.

According to Goode and Hall (Hans Raj,1979), while stratified sampling is placed here in distinction to random sampling, this does not mean that it does not employ randomness. Young (Hans Raj,1979), the main objective in stratification is to secure a more reliable sample. Sometimes the gains in stratification may be very high and at other times very trivid.

Scoring of respondents marks is one of the major part of test construction and standardization. Scoreing number of responses without a proper plan is so difficult, time consuming and liable to error through wrong transfering of the data.

An expert in the field Lewis (1971),** also suggested that a strip key or stencil for hand-scoring of test booklets or answer sheets can be prepared quite easily. A strip of cardbord containing the correct answers at positions corresponding to the spaces in the test booklet where answers are to be written makes an

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* Hans Raj, Theory and Practice in Social Research. First Edition, New Delhi, 1979, p231.

** Lewis, Op.cit., p.43.

adequate strip key. A scoring stencil for use with a special answer sheet can be prepared from a blank sheet of paper or cardboard by punching out the spaces where the correct answers should appear.

Item analysis is the most important function in the test construction.It is the process of examining the responses to each test item so as to judge its own quality.According to William and Lehmann (1984),* there are more than 50 different item-analysis procedures.They suggested to follow two methods of calculation for item analysis.For each item,compute the percentage of students who get the item correct.This is called the item difficulty index (p),which can range from .00 to 1.00. Formula for item difficulty is: Difficulty = $\frac{R}{T}$ X 100 .Compute the item discrimination index for each item by substracting the number of students in the lower group,who answered the item correctly from the number in the upper group who got the item right,and by then dividing by the number of students in either group,by the given formula

$$\text{Discrimination} = \frac{Ru - Rl}{(1/2)\ T}$$

As stating they warned that if one did divide the total group into two halves but put the top 27 percent upper

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* William and Lehmann, Op.cit.,pp.190-93.

and the bottom 27 percent in the lower group,one could obtain an estimate of item difficulty by dividing the number of persons in the two groups who answered the items correctly by the total number of people in those two groups.(Be careful! Not the total number of students tested!).

Norman E.Gronlund (1981),* suggested the formuli for computation of difficulty index and the discrimination index.The procedures recommended for computations were as following:-

(1) Score all the answers,
(2) Arrange the test papers from highest to the lowest scores.
(3) Make two groups 27 % upper with the total scores and bottom 27 % with the lowest total scores.
(4) Then remining middle papers to be placed aside and not to be used in the analysis.
(5) Compute difficulty value and discrimination power by the formuli,

$$\text{Difficulty} = \frac{R}{T} \times 100$$

$$\text{Discrimination} = \frac{Ru - Rl}{1/2\ T}$$

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* Norman E.Gronlund, Op.cit., pp.256-60.

According to Lindeman (1967),* three kinds of information can be obtained by analysing the responses to an individual test item (1) the general difficulty level of the item (2) its discriminatory power and (3) the response pattern of the item. In a test some easy items should be included in order to encouraged the students of low ability and some difficult items should be included to challenge the abler students. And for statistical reasons, the high group should consists of the upper 27 percent of the total group and the lower group of 27 percent.

In page (92) the same person has given the item response pattern as follows-

Response	A	B	C	D	Difficulty	Discrimination
Upper 27%						
Lower 27%						

Freeman (1965),** indicated that the most marked and significant discrimination between the two extreme groups is obtained when item analysis is obtained based upon the highest 27 % and the lowest 27 % of the group.

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* Richard H. Lindeman, Educational Measurement. Teachers College, Columbia University. First Indian Reprint 1971, p.89.

** Freeman, Op.cit., p.115.

Item screening is the rejection of some poor items and retaining some good items on the basis of the two indices of item difficulty and item discrimination.But different investigators have their own choices of screening points.

Jalota (1972),* followed 20 % difficulty index and .20 discrimination index for screening items for constructing Group test of general mental ability.

Lokesh Koul (1984),** suggested that the items with the validity indices of 0.20 or more and difficulty indices of 0.40 to 0.60 to be regarded as satisfactory and items having zero or negative validity must be discarded.

Freeman (1965),*** stated that the difficulty levels can be given in terms of standard deviation of the normal curve.Thus if 84 percent of the testees pass an item,it has a rank of - 1 s.d. (one s.d. below the mean) if an item passed by 16 % its rank is + 1 s. d. If passed by 69 % or 31 %, the ranks would be -0.5 s.d. or + 0.5 s.d. respectively.

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* Jalota, Op.cit.

** Lokesh Koul, Methodology of Educational Research. Vika House Ghaxiabad (U.P.),1984,p.128.

*** Freeman,Op.cit.,p.112.

Lindeman (1971),* has suggested to keep the difficulty value of .40 to .60 for screening items. In his book Lewis (1971),** also mentioned that a test maker should keep the item difficulty value between .20 to .80 and the discrimination power at .30 or greater.

As recommended by William and Lehmann (1984) *** the power of discrimination should be .20 and above. B.Shah also used to keep the discrimination indices ranged between 0.34 and 0.83 while screening the test items of omnibus test of intelligence.

Anastasi (1976),**** has given a unique suggestion that every easy item (even passed by 100 % of the cases) which are discarded as non- discriminative in the usual standardized test, are very items that should be included in a mastery test. Similarly, a pretest, administered prior to a learning unit to determine whether any of the students have already acquired the skills to be taught, will yield very low percentages of passing for each item. In this case,

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* Lindeman, Op.cit., p.91.

*** William and Lehmann, Op.cit., p.192.

** Lewis, Op.cit.,

**** Anastasi, Op.cit., p.206.

items with very low or even zero 'p' value should not be discarded,since the reveal that remains to be learned.It is apparent from these examples that the appropriate difficulty level of items depends upon the purpose of the test.

According to Lewis (1971),* the concept of the reliability of a test refers to its relative freedom from unsystematic errors of measurement, or the consistency of measurement under different conditions that might introduce error into scores.Test reliability (r_{11}) is defined as the ratio of true variance to observed variance,or the proportion of the observed variance.The reliability of a test is expressed as a positive decimal number varying from .00 to 1.00 where r_{11} = 1.00 indicates perfect reliability or r_{11} = .00 the absence of reliability.

As it is found in William and Lehmanns (1984),** theoritically,reliability (r_{xx}) is defined as the ratio of the true score and observed score variances.Reliability tells us to what extend the the observed variance is due to true score variance. The symbol r_{xx} is used for reliability,because so many of the reliability estimates are computed by the Person's product-moment correlation coefficient (r).

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* Lewis, Op.cit.,p.62.

** William and Lehmanns,Op.cit.,p.269.

William and Lehmanns (1984),* identified that the methods used to estimate reliability differ. Many different approaches can be used to estimate reliability,but the most common ones reported are listed as : Measures of stability
Measures of equivalence
Measures of equivalent and stability
Measures of internal consistency
(a)Split-half,(b)Kuder-Richardson estimates.

Ibid.(1984),** A measure of reliability of stability,often called a test-retest estimate of reliability,obtained by administering a test to a group of persons,readministering the same to the same same group at a later date,and correlating the two sets of scores.The split-half method is ordinarily considered as a measure of internal consistency because the two equivalent forms are contained in a single test.In most cases the Person Product-moment correlation coefficient (r 1/2 1/2) is an estimate of the reliability to a test only half as long as the origional.

According to Richard Lindeman (1971),*** to estimate what the reliability of the whole test would be,a correlation factor needs to be

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** William and Lehmanns,Op.cit.,pp.272-275.
* William and Lehmanns,Op.cit.,pp.271-272.
*** Lindeman,Op.cit.,p.45.

applied.The appropriate formula is the Spearman-Brown formula $r_{xx} = \frac{2\ r\ 1/2\ 1/2}{1 + r\ 1/2\ 1/2}$.

Where r 1/2 1/2 =reliability of the half-test.

Norman E.Gronlund (1981),* The reliability of test can be estimated from as single administration to a single form of test.To split the test into halves that are most equivalent,the usual procedure is to score the even-numbered items and the odd-numbered items separately.This provides two scores for each pupils, which,when,correlated,provides a measure of internal consistency.Besides this,but another method is to compute Kuder-Richardson Formula 21.This formula can be applied to the results of any test that has been scored on the basis of the number of correct answers.Formula:

Reliability estimate (KR 21) $= \frac{K}{K-1}\left(1 - \frac{M\ (K-M)}{K\ s^2}\right)$

Where K = the number of items in the test
M = the mean of the test
s^2= the standard deviation of the test scores

Anastasi (1976),** proposed that the reliability coefficient is sometimes called a coefficient of internal consistency.Oncex the two half-scores have been obtained for each person,they may be correlated

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* Norman E.Gronlund, Op.cit., pp.98-100.

** Anastasi, Op.cit., p.115.

by the usual method.However,this correlation actually gives the reliability of only a half-test.So coefficient can be estimated by means of Spearman-Brown formula.

William and Lehmanns (1984),* If items are scored dichotomously (right or wrong),one way to avoid the problems of how to split the test to use one of the Kuder-Richardson formula.The formula may be considered as representative of the average correlation obtained from all possible split-half reliability estimates. K-R 20 and K-R 21 are two formulas used extensively.

Lindeman (1971),** After an appropriate intervening period of time,the same test is re-administered to the same group,and the correlation coefficient between the first and second administrations is computed. This coefficient the serves as the reliability estimate. It is often called a coefficient of stability.

Albert (1980),*** Thus if you compute K-R (21) and get a low reliability coefficient, you can ordinarily expect a higher one,if you compute K-R (20) and ofcourse, a positively still higher 'r'.

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* William and Lehmanns,Op.cit.,p.276.

** Lindeman, Op.cit., p.45.

*** Albert K.Kurtz Samuel T.Mayo, Statistical Methods in Education and Psychology.Narosa Publishing House New Delhi,1980,p.269.

According to William and Lehmann (1984),* Validity can be defined as the extent to which certain inferences can be made from test scores or other measurement.Some writers make a distinction between two kinds of criterion-related validity: Concurrent validity and predictive validity.When they collected at approximately the same time as the test data,we speak of concurrent validity,when they are gathered at a later date, we have a measure of positive validity.

As categorically mentioned by Lewis (1971),** concurrent validation procedures are employed whenever a test is administered to people falling in various categories.If the average score varies substantially from category,then the test might be used as another, perhaps more efficient,means of classifying people into these categories.

In the opinion of Cornbach (1970),*** Logically,predictive and concurrent validation are the same, and most writers apply the term predictive to both.Where one intends to emphasize that no time elapsed between measures,the study is spoken of as a concurrent validation.The designer of a new test will

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* William and Lehmann, Op.cit.,pp.289-292.
** Lewis, Op.cit., p.69.
*** Lee J.Cornbach,Essentials of Psychological Testing.3rd.Edition,Stanford University, 1970,p.122.

suggest its validity by comparing it concurrently with an established test.

Lewis (1971),* stated if the correlation coefficient between tests X and Y is close to + 1.00 then it can be predicted with confidence that an examinee who makes a high score on the test X will also score low on test Y.On the other hand,if the correlation between tests X and Y is close to -1.00, then it can be predicted that an examinee who score high on X will score low on the test Y, and an examinee who scores low on the test X will score high on test Y. (1) The closer the value of the correlation coefficient is to + 1.00 or - 1.00,the more accurate will the prediction be;(2) the closer the coefficient is to .00,the lesser accurate will the predictions be.

Norms are important that they tell us how others have performed on the test.The persons' scores can be compared with the scores of others. Norms provide us the standard to compare test performance.These norms serve as a frame of reference for interpreting raw scores indicating an examinee's standing on the test relative to scores obtained by the same age,grade,etc.

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* Lewis, Op.cit.,p.20.

Freeman (1965),* Hence,to facelitate interpretation,sound psychological tests,will provide tables of age norms or grade norms or percentile ranks or decile ranks or standard scores,depending upon the instruments purpose.Other kinds of norms suitable to the test should be provided.

Ibid.(1965),the percentile method is a technique whereby scores on two or more tests,given in units that are different,may be transformed into uniform and comparable. values.

Norman E.Gronlund (1981),** A desirable feature of percentile norms is that we can interprate a pupil's performance in terms of any group in which he is a member or desire to become a member.

Lyman (1978),*** very often a single norms table is constructed to show results from several different groups.Besides the obvious economy in printing,this practice permits the comparison of a person's raw score with as many as these groups as we wish. Ibid.(1978),we find the percentile rank of an examinee or of a given raw-score value.We find a specified percentile value by finding its equivalent raw-score value.

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* Freeman,Op.cit.,p.121 & Ibid. p.125.
** Norman E.Gronlund, Op.cit.,p.379.
*** Lyman, Op.cit.,p.72. & Ibid. p.97.

According to Thorndike (1977),* For each raw-score the manual reports,instead of a specific percentile corresponding to that score,a range of a percentile values within which the true ability of the examinee may be persumed to lie.

William and Lehmann (1984),** Stanines are derived score with a mean of 5 and a standard deviation of 2. Only the integers 1 and 9 occur.In a normal distribution,stanines are related to other scores.The percentage of scores at each stanine are 4,7,12,17,20,17, 12,7, and 4 respectively.

Lyman (1978),*** chart 6.6 suggested, How to compute stanines: The purpose is to assign the stanines according to the designated percentages;.... The ideal percentage is shown for each stanine on the top line below.

4 %	7 %	12 %	17 %	20 %	17 %	12 %	7 %	4 %
4 %	11 %	23 %	40 %	60 %	77 %	89 %	96 %	100 %

Cumulative Percentages.

Steps in Computing Stanines:

(1). Draw up a frequency distribution,

(2). Find the cumulative frequency up through each score value.

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* R.L.Thorndike and E.P.Hagen,Measurement and Evaluation in Psychology and Education. 4th. Edition,1977,p.127.

** William and Lehmann,Op.cit.,p.320.

*** Lyman, Op.cit.,p.105.

(3). Change these cumulative frequencies to percentages by multiplying every cf. value by $\frac{100}{N}$,

(4). Assign stanine values by approximating the ideal cumulative percentages on the bottom line above, as close as possible.

(5). Remember: each person with same raw score must recieve the same stanine score- regardless of how well each value fits the ideal percentages.

Crow Crow (1979),* On the High School and college levels, an individual's intelligence status sometimes is expressed in terms of percentile scores, which indicates the place of an individual in a grade or age group on the basis of percentages of the group that score lower than he does.

William and Lehmann (1984),** DIQs are computed separately for each age group within the norm sample.These are not literal intelligence quotients.They are transformations much like the z or T values.Typically,these deviation IQs have a mean of 100 and a standard deviation of 15 or 16.

Ibid.(1984,p.376),Intelligence scores using the 1972 norms are computed as deviation IQ

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* Crow Crow, Educational Psychology. Eurasia Publishing House, New Delhi, 1979.p.164.

** William and Lehmann, Op.cit., pp.324-and376.

scores with a mean of 100 and a standard deviation of 16.In other words,they are derived scores (Dev.IQ = 16z + 100).

Until the 1960 revesion,Stanford-Binet (S-B) IQs were ratio IQs.The authors of the 1960 revesion decided to adopt the deviation IQ so that the standard deviation would be constant from age tc age.In the case of the S-B, we have a linear standard score with a mean of 100 and a standard deviation of 16.Separately for each chronological age group,the authors have used the formula IQ = 16z + 100.

Norman E.Gronlund (1981),* stated that expressing IQs in terms of standard scores gives them the advantage over ratio IQs,of equal units and a common meaning at all age levels.They can also be readily converted to percentile ranks and other types of standard scores.

Doubtfully expressed by Freeman (1965),** that the deviation IQ furthermore,is especially useful at age levels above 16 or 18 years.For these and older persons, the use of mental age and for the ratio IQ of (MA/CA) have been regarded as inappropriate and questionable by many psychologists.

* Norman E.Gronlund, Op.cit.,p.386.
** Freeman, Op.cit., p.134.

Following are the Scales given in different books for interpretation and classification of scores:

(I).

Lee J. Cornbach, 1970, p.219.*		Dr.G.C.Ahuja Test Manual, p.16**
IQ	DIQ	Classification
140 & above	140 & above	Very Superior
130-139	120-139	Superior
120-129		
110-119	110-119	High Average
100-109	90 -109	Average/Normal
90- 99		
80- 89	80-89	Low Average
70- 79	70-79	Borderline Defective
Below 70	Below 70	Mentally Defective

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* Cornbach, Op.cit., p.219.

** Dr.G.C.Ahuja ,Test Manual p.16.

(II).

RLL Thorndike E.P.Hagen (1977,p.133).		Howard B. Lyman (1978,p.143.	Howard B. Lyman
Stanine	Percentile Ranks	Percentile Ranks	Descriptive Terms
I	1- 4	5 or below	Very low; Very weak.
II	5-11	5-15	Low;Weak.
III	12-23	15-25	Below Average; Slightly weak.
IV	24-40	25-75	Average; Satisfactory.
V	41-59		
VI	60-76		
VII	77-88	75-85	Above Average;Good.
VII	89-95	85-95	High;Excellent.
IX	96-99	95 or above	Very high; Superior.

CHAPTER - III

TEST CONSTRUCTION

For preparation of the items of a Non-Verbal Test of an intelligence, the investigator took a lot of pains in imagining, thinking, consulting existing tests and test booklets and collecting the Non-verbal items for the test.

Preparation of the new test items were started for ten (10) different sub-tests. The tentative idea of the items were submitted to the Guide for his consent and approval. After necessary correction ,suggestion made by him to modify and include some more items, the test was improved.

Finally altogether 294 test items in ten (10) sub-tests were constructed. These original items were submitted to the supervisor for his further suggestions and for necessary modifications.

The same copies of the test items were distributed to the experts and university teachers inviting their valuable ideas and suggestions for the improvement of the items.

On the basis of the Guide's approval, and suggestions of the experts and pre-preliminary try-out of the test items, following things have been finalised and prepared.

1. 294 test items were prepared for the try-outs.

2. Instructions and directions for the try-out were worded.
3. Stencil key for scording items was developed.
4. Ten practice examples of the items, one for each sub-test were prepared.
5. 445 separate answer sheets for the try-out were prepared.

3.1. NATURE OF ITEMS IN DIFFERENT SUB-TESTS

In this non-verbal test the investigator have prepared ten (10) categories of sub-tests with 294 items for try-outs at various levels. Different sub-tests with the number of items were as shown below :

	Sub-Tests	No.of items
1.	Arithmetic reasoning	32
2.	Number series	32
3.	Matrices	28
4.	Classification	28
5.	Picture completion	30
6.	Figure analogy	28
7.	Similarities	30
8.	Quantitative reasoning	30
9.	Synonyms	28
10.	Opposites	28
	Total	294

In all the sub-tests except the sub-test No.2 i.e. Number series, the items consisted of the pictures of animals, birds, human beings, articles and objects, designs, geometric figures etc.

In the whole test, the test designer tried to include the items of various nature drawing from different angles. Constructing these types of tests, the investigator included most of the items to represent the local culture, the system of Government, world of work, beauty of nature, modern technological advancements and civilization etc.

For each item, in all the categories of the tests there were four alternative answers or responses to be chosen by the respondant. A separate answer sheet with appropriate series of numbers against each item was also provided for making the selected responses by the respondant.

3.2. A BRIEF EXPLANATION ABOUT THE CATEGORY OF SUB-TESTS AND ITEMS IN THE TEST SCALES

1. Arithmetic reasoning

This category of the test is the Arithmetic reasoning test. The items were developed for solving certain arithmetical problems by the testees with their original mental ability and capacity without much arithmetical skills specially meant for it. This category of the test items designed intends to measure the individual's mental alertness, concept formation and abstract thinking.

Arithmetic problems presented required to

solve the original mental ability and capacity of the testee. Each item has provided four alternative answers. The respondant is to select only one appropriate answer out of those four alternatives. The pattern of the items consists of addition, substraction, division, multiplication and simplifications.

2. Number series

This category of the test items are designed in the form of clocks. These clocks have no written numbers but three hands are given in each. The respondent is expected to identify and find out the place of the numbers by seeing the directions indicated by the hands. This sub-test intends to measure the testee's ability of mental alertness for reasoning to recognise the numbers and their places. Therefore the nature of the items are devised with forward, backward and alternative indications by the three clock hands.

3. Matrices

This sub-test designs to measure the individuals ability and capacity to apprehend the relationships between figures and the designs to percieve the structure in order to select the most appropriate part for the completion of each pattern. It is intended to measure the ability to discern and utilise a logical relationship in the materials presented. The testees have to visualise the relationship of the whole and the parts of the structure and complete the pattern with an appropriate pit. The test is also to identify the individual's conceptual thinking capacity. Thus the problems presented may help to measure

the power of imagery and organisation as well as perceptual analyses of the testees.

In this category all the items are consists of geometric figures and designs to be completed the missing part of the pattern with an appropriate pit provided. Thus in order to complete the pattern, the testee have to look into the following points - (a) direction (b) size (c) shape (d) likeness (e) colour (f) number etc. of the whole as well as the parts.

4. Classification

This type of items intends to measure the respondant's ability to classify or categories the things or objects. This is an activity to conceptualise the relationships and functions of different components. Thus the items of this category will measure the ability to percieve and differentiate the picture of objects, animals, human beings, etc. by identifying the similarities and dissimilarities on the basis of their nature of living, organisations etc.

5. Picture completion

In this category of sub-test, we may measure the testee's basic perceptual and conceptual abilities which involves to identify and differentiate the essential parts with those of non-essential parts. In this test, the items are consists of imcomplete pictures of animals, human beings or objects. For each incomplete picture four alternative parts are provided. The pupils has to select one which is the most appropriate ones to complete the incomplete picture of the item.

To relate the two incomplete whole and the part, a testee have to identify their relationships through the components of size, shape, directions,positions, colour etc.

6. Figure analogy

This figure analogy test tries to measure the ability of the testees to identify the resemblance of animals or human beings or things, This test intends to measure and evaluate the logical process of reasoning of the testees.

In this test the testees has to identify the most parallel nature of lives, or things without which one is useless or the one is essential for the other or the two different things help each other for a particular purpose, and the two different things or lives go together. The items consists of animals, birds, articles and human pictures.

7. Similarities

This category of the test is to measure the ability of the subjects to analyse the relationships of objects or lives and their similarities. In this test the items are presented in our different pairs. The testees require to identify one pair which objects or animals etc. are quite alike and has similar nature,characteristics or their origionations. Though they are different in appearance or size but serving the same purposes. The picture of the items are consists of animals,traditional things and modern technological equipments and machines.

8. Quantitative reasoning

This type and cateogy of items is trying to measure the quantitative reasoning ability which involves to test the ability to reason through understanding and clear conceptualizing the relationships of the two situations.

In this category of the items the testees have to visualise the quantitative relationships of the two pictures as so instructed. They are suppose to give visual reasoning through sharp sight of a moment. The way a person visualises the quantitive identifications in two different pictures and their relationships will depends on the degree of ability of the testee to differentiate or recognise them.

9. Synonyms

This test element is a measure of analytic ability of the testees. This type of test items will try to measure ability of the subjects to identify and conceptualise the familarities of the objects or animals etc. The respondents have to recognise and analyse the two identical things in sense or usages with one another, denoting the same things as another but suitable to different context. By presenting this type of test items, the respondants may identify the similarities of the things or lives.

There are 28 items in the sub-test. Each item carries four different pictures. The testees has to select the best synonymous picture having a similar meaning, characteristic to serve the similar purpose with the given one.

10. Opposites

This category of the test items is trying to measure the ability of the testees to identify and percieve the differences of the meanings, nature and characteristics of the things, animals and human beings. The respondents are to percieve and conceptualise to differentiate the dissimilarities of the given pictures.

There are 28 items in this sub-test. Each item has four alternative pictures to be selected the right one and compare with the other opposite object or animal or human being.

3.3. TRY OUT OF THE ITEMS FOR THE TEST

This stage of item try-out is an integral part of the items construction and item analysis of a test. But as there is no as such set procedure for the items try-out, and it depends on the nature of the test items, the test constructor had followed the steps given below:

(i) Preliminary draft

In this stage the test maker had consulted as many as existing tests and text-books and constructed some original items. A rough idea of the difficulty of the items could be obtained by try-out of a few items on a small group of subjects from the population. The final manuscript of the preliminary draft was completed. Then the instructions for preliminary try-out was carefully worded. These pre-preliminary draft was then submitted to the guide, experts and colleagues for their opinions, criticism and suggestions.

(ii) Preliminary try-out (Pre-test)

In the light of the opinions and suggestions given by the Guide, experts the pre-preliminary draft of the test items were carefully modified. In this pre-test, only a very small sample of 20 pupils were given the test. The objective of this preliminary try-out was to finalise the required original items for try-out. Now the preliminary draft of the items are modified and constructed five times of the items required. Then the test booklet with 294 items in ten sub-tests along with a separate answer sheet were ready for try-out.

(iii) Try-out of the items (First try-out)

In this try-out stage the test was administered to a large sample of population. For try-out a sample of 400 pupils were randomly selected from five high schools studying in different grades. Out of these 37 answer sheets have been selected for item analyses. The objective of this try-out are as following:-

(a) To get indices of difficulty and discrimination for selection of good items for the final draft.

(b) To arrange the items in ascending order of an omnibus form.

(c) To fix up the time limit for the test.

(d) To prepare test booklets, separate answer sheets and stencil key for the final try-out of the test.

3.4. ITEM ANALYSIS

Though there are more than fifty different procedure of the item analyses, mainly there are two general indices such as - (a) assessment of difficulty index and (b) finding the power of item discrimination. As the item analysis depends on the nature of test and also the decision of the test constructor, The test maker wanted to divide the whole test into three groups, and used upper 27% and lower 27% for item analysis. Therefore the test constructor followed the below given steps and procedures for item analysis.

1. First of all the test papers were scored with the help of stencil key.
2. All the test papers were ranked and arranged in descending order from highest to lowest total scores.
3. From the ordered set of papers, two extreme scores of highest 27% group and lowest 27% bottom group were taken for item analysis.
4. Middle 46% of the total score papers were kept separately. These papers were not used in item analysis.
5. For each item, the number of pupils in the upper and lower groups who selected each alternatives were tabulated.
6. In order to find out the proportion of the success and failure, the difficulty value of each item finding the percentage of pupils who got the item correct were computed. This

difficulty index or mean proportion was computed from the pupils who marked right in upper and lower groups.

7. Then the discriminating power of each item was computed by finding the difference between the number of pupils in the upper and lower extreme groups, who marked the item right.

8. Finally followed the process of items screening by eleminating or discarding some very hard and very easty items and retaining some good items.

3.5. ASSESSMENT OF DIFFICULTY INDEX

From the sample of 37 pupils, bottom 27% and top 27% were taken and utilised from item analysis. The assessment of the difficulty index was computed by finding the proportion of the two extreme groups passing a given item. This was computed by dividing the number of pupils passing the item by the total number of pupils in the combined upper and lower groups.

Difficulty value of the items were computed in two ways (a) for finding the mean proportion in percentages and (b) for finding in decimal points.

Following given formula was used for difficulty value assessment:-

$$P = \frac{R}{T} \times 100$$

Where P = Percentage
R = Total number of pupils who got

T = right in two groups / Total number of pupils in two groups

3.6. DISCRIMINATION INDEX

Another important index of the item analysis procedure is the item discrimination. This refers to the degree by which it discriminates between the pupils with the high and low performance in the two extreme groups. it is found that an item discriminates in a positive direction when more pupils got the item right in the upper group than the lower group. In order to compute the discriminating power of each ite, we obtained by substracting the number of pupils in the lower group who got the item right (Rl) from the number of the pupils in the upper group who got the item right (Ru) and dividing by half of the total number of the combine two groups. Following formula was used for computing discrimination index :

$$D = \frac{Ru - Rl}{1/2T}$$

Where D = Discrimination
Ru = Total number of item got right in upper group
Rl = Total number of the item got rights in the lower group

3.7. ITEM SCREENING

Item screening refers to the elemination or rejection of some items and acceptance of some items to retain in the test. So some very hard and very easy items were discarded and the consistent item were retained. For the selection and screening of the test items

we accepted to following criteria for both the indices of item difficulty and discrimination in all the different sub-tests and the total test as well.

The screening of the items in the test were made at three different stages as following :

1. Before any judicious consideration all negative and zero scores of the items were discarded and eliminated.
2. Secondly some items having the discriminative value of .20 and below were discarded and eliminated on the basis of the item discrimination index.
3. Thirdly all the items having difficulty index ranging from 31% to 70% (or .31 to .70) were selected and retained for the total test.

It was sad that the items in Number Series were too hard for the sample. Most of the items were rejected by the first difficulty index and the remaining have been eliminated by the discrimination index.

Finally 78 items were retained on the basis of the criteria set by computing the two indices. After re-arranging the sub-tests, the selected items in different sub-test are as given below :

Sub-Tests	No.of selected items
1. Arithmetic reasoning	10
2. Matrices	10
3. Classification	10
4. Figure analogy	10
5. Quantitative reasoning	9
6. Synonyms	9
7. Opposites	7
8. Similarities	7
9. Picture completion	6
Total	78

Computation and determination of difficulty index and discrimination index for the selected items in all the nine sub-tests are shown in the preceeding pages.

1. ARITHMETIC REASONING.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Popil	1	2	3	4	Right Total	Difficulty Index.	Discri-minaton Index.
9.	Upper	4	73	7	13	96	48%	'56
	Lower	7	20	3	11			
11.	Upper	11	4	83	4	135	67.5%	'31
	Lower	4	4	52	4			
12.	Upper	10	13	17	53	74	40%	'38
	Lower	17	5	24	21			
13.	Upper	5	75	7	6	119	59.5%	'41
	Lower	4	44	7	9			
15.	Upper	85	0	5	2	128	64%	'40
	Lower	43	8	8	4			
16.	Upper	42	37	15	6	66	33%	'38
	Lower	24	5	16	7			
21.	Upper	88	2	0	2	136	68%	'40
	Lower	48	11	3	6			
24.	Upper	1	91	3	5	139	69.5%	'46
	Lower	5	48	7	6			
26.	Upper	2	40	4	87	127	63.5%	'47
	Lower	5	6	14	40			
32.	Upper	83	9	6	4	114	57%	'52
	Lower	31	13	5	19			

2. MATRICES.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total.	Difficulty Index.	Discrimination Index
1.	Upper	22	70	4	0	81	40.5%	'59
	Lower	3	11	2	3			
6.	Upper	12	28	52	6	66	33%	'38
	Lower	2	6	14	1			
10.	Upper	9	9	70	2	98	49%	'42
	Lower	12	8	28	9			
11.	Upper	60	1	21	8	82	41.5%	'38
	Lower	22	10	24	9			
16.	Upper	66	10	12	7	90	45%	'42
	Lower	24	12	17	14			
17.	Upper	8	7	71	8	110	55%	'32
	Lower	10	13	39	8			
18.	Upper	9	79	6	3	111	55.5%	'47
	Lower	9	32	16	10			
19.	Upper	61	21	2	8	86	43%	'36
	Lower	25	19	10	14			
21.	Upper	10	59	20	6	88	44%	'30
	Lower	13	29	28	8			
28.	Upper	10	57	12	17	71	35.5%	'43
	Lower	9	14	20	18			

3.CLASSIFICATION.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrimination Index.
1.	Upper	3	15	78	1	95	47.5%	'61
	Lower	5	1	17	0			
2.	Upper	2	3	3	86	102	51%	'70
	Lower	1	4	2	16			
4.	Upper	10	24	54	9	63	31.5%	'45
	Lower	5	5	9	4			
7.	Upper	13	5	70	8	82	41%	'58
	Lower	2	0	12	8			
9.	Upper	58	8	9	10	64	32%	'52
	Lower	6	9	3	10			
23.	Upper	83	8	2	7	86	43%	'40
	Lower	43	6	10	10			
25.	Upper	69	10	10	4	103	51.5%	'35
	Lower	34	11	9	15			
26.	Upper	1	13	73	2	113	61.5%	'45
	Lower	12	12	39	6			
27.	Upper	0	17	73	7	107	62.5%	'39
	Lower	7	17	34	7			
28.	Upper	3	5	19	63	93	46.5%	'33
	Lower	10	10	15	30			

4. FIGURE ANALOGY.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrimination Index.
4	Upper	54	31	9	3	62	31%	'46
	Lower	8	31	5	4			
5.	Upper	62	6	9	15	72	36%	'52
	Lower	10	32	4	7			
9.	Upper	59	18	8	5	74	37%	'44
	Lower	15	4	7	10			
10.	Upper	8	75	9	4	117	58.5%	'23
	Lower	11	52	7	8			
12.	Upper	4	75	10	8	119	54.5%	'41
	Lower	7	34	11	18			
13.	Upper	8	58	12	7	84	42%	'32
	Lower	6	26	18	13			
15.	Upper	18	65	7	4	102	51%	'28
	Lower	18	37	15	5			
24.	Upper	23	60	7	8	85	42.5%	'35
	Lower	15	25	15	16			
26.	Upper	57	7	2	69	97	48.5%	'41
	Lower	14	22	10	28			
28.	Upper	79	4	12	3	117	53.5%	'51
	Lower	28	15	9	13			

5. QUANTITATIVE REASONING.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrimination Index.
6.	Upper	79	7	0	8	119	59.5%	'39
	Lower	40	7	1	1			
10.	Upper	69	6	5	13	95	47.5%	'43
	Lower	26	11	11	17			
12.	Upper	5	7	8	82	93	46.5%	'71
	Lower	7	11	35	11			
15.	Upper	0	5	86	2	128	63%	'44
	Lower	4	15	42	7			
18.	Upper	86	3	1	0	118	59%	'54
	Lower	32	11	8	11			
19.	Upper	82	4	10	0	120	60%	'44
	Lower	38	16	11	7			
25.	Upper	0	3	90	7	132	66%	'48
	Lower	7	7	42	7			
28.	Upper	4	60	26	2	81	40.5%	'39
	Lower	11	21	25	12			
30.	Upper	63	23	1	2	80	40%	'46
	Lower	17	19	17	8			

6.SYNONYMS (Similar).

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrim-inatio Index.
2.	Upper	8	5	4	71	87	43.5%	'55
	Lower	2	8	2	16			
3.	Upper	21	58	12	19	65	32.5%	'51
	Lower	6	7	7	9			
5.	Upper	64	21	10	3	77	39.5%	'49
	Lower	15	1	2	5			
8.	Upper	21	10	5	61	76	38%	'46
	Lower	1	6	2	15			
12.	Upper	v6	18	17	60	86	43%	'34
	Lower	7	12	15	26			
16.	Upper	56	8	25	14	72	36%	'40
	Lower	16	16	21	8			
17.	Upper	18	7	9	61	88	44%	'34
	Lower	17	11	7	27			
21.	Upper	62	15	13	9	80	40%	'44
	Lower	18	16	12	22			
23.	Upper	58	7	9	25	84	42%	'31
	Lower	26	8	9	25			

7. OPPOSITES.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrimination Index.
2.	Upper	57	8	11	17	65	32.5%	'49
	Lower	8	6	2	6			
6.	Upper	19	13	5	53	61	30.5%	'45
	Lower	6	5	6	8			
8.	Upper	8	32	5	50	63	31.5%	'37
	Lower	1	2	8	13			
12.	Upper	24	9	50	13	68	34%	'32
	Lower	13	13	18	14			
13.	Upper	11	8	8	60	72	36%	'48
	Lower	5	10	17	12			
21.	Upper	20	12	12	51	75	37.5%	'39
	Lower	12	11	13	24			
28.	Upper	18	11	6	71	99	49.5%	'43
	Lower	8	16	7	28			

8. SIMILARITIES.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrimination Index.
1.	Upper	20	61	14	7	69	34.5%	'53
	Lower	2	8	8	5			
4.	Upper	62	6	4	6	72	36%	'52
	Lower	10	5	4	6			
8.	Upper	48	33	15b	6	56	28%	'40
	Lower	8	12	1	2			
13.	Upper	6	15	68	9	99	49.5%	'37
	Lower	16	13	31	9			
14.	Upper	29	30	22	20	53	26.5%	'25
	Lower	26	14	18	5			
19.	Upper	22	58	5	10	85	42.5%	'31
	Lower	20	27	8	11			
25.	Upper	48	6	34	5	75	37.5%	'21
	Lower	27	6	24	8			

9. PICTURE COMPLETION.

ITEM DIFFICULTY AND DISCRIMINATION INDEXES.

Item	Pupil	1	2	3	4	Right Total	Difficulty Index.	Discrimination Index.
10.	Upper	2	5	2	64	104	52%	'24
	Lower	22	13	31	40			
18.	Upper	80	5	2	6	139	69.5%	'21
	Lower	59	38	5	4			
23.	Upper	95	3	1	0	140	70%	'50
	Lower	45	3	13	2			
24.	Upper	19	65	13	1	90	45%	'40
	Lower	17	25	9	6			
25.	Upper	39	82	3	2	106	53%	'36
	Lower	12	34	4	3			
28.	Upper	44	4	18	26	62	31%	'26
	Lower	18	9	25	12			

After analysing each and every item judiciously in all the sub-tests it was found that the try-out test items were hard for the sample of population as indicated by the score ranges of percentages and discrimination indices, the performance distributions of the subjects inclined towards the lower side. Therefore most of the items were eleminated with lower than higher score. Whatever the direction or weight could be, but a sufficient number of items for the test were selected as writting above. Following are the distribution of the difficulty value (p) and the internal consistency discrimination indices of the items.

(1) Distribution of the difficulty value (p) in percentage

Class-Interval	Frequencies in sub-tests									
	1	2	3	4	5	6	7	8	9	10
0 - 29	3	14	6	8	7	6	15	7	9	10
20 - 39	5	18	14	7	11	10	13	7	13	17
40 - 59	11	-	8	12	8	11	2	13	6	1
60 - 79	10	-	-	-	4	1	-	3	-	-
80 - 99	3	-	-	-	-	-	-	-	-	-
Total Number	32	32	28	28	30	28	30	30	28	28

(2) Following is the range of discrimination indices

Class-Interval	Frequencies in sub-tests									
	1	2	3	4	5	6	7	8	9	10
'0 below & Negative	4	13	4	7	7	5	2	1	3	1
. 0 - .10	5	10	5	9	10	4	10	6	5	7
.11 - .20	11	3	8	2	5	6				
.21 - .30	2	6	0	4	4	4	10	13	8	10
.31 - .40	5	-	6	2	2	3	3	0	1	2
.41 - .50	3	-	4	2	2	4	3	2	6	4
.51 - .60	2	-	1	8	-	2	0	6	3	4
.61 - .70	-	-	-	-	-	-	-	1	2	-
.71 - .80	-	-	-	-	-	-	-	1	-	-
Total Number	32	32	28	28	30	28	30	30	28	28

(3) Distribution of the difficulty values and discrimination indices of the selected items are given below:

Difficulty value in %	Frequency	Discrimination Index	Frequency
30 - 40	27	.21 - .30	8
41 - 50	24	.31 - .40	28
51 - 60	17	.41 - .50	28
61 - 70	10	.51 - .60	11
		.61 - .70	2
		.71 - .80	1
	N = 78		N = 78

3.8. CALCULATION OF MEAN & STANDARD DEVIATION

In this stage of item analysis, the investigator had calculated the mean and standard division in two ways with different nature of scores. First one was calculated with the total test scores, scored by 371 pupils. Here the score range was lying between the lowest score of 61 and highest score of 166 and the mean and standard division 5.92 respectively as given below:

This is the score distribution of the total test:

Class-Interval	Frequency
60 - 69	6
70 - 79	17
80 - 89	16
90 - 99	25
100 -109	74
110 -119	105
120 -129	66
130 -139	38
140 -149	12
150 -159	6
160 -169	6
N =	371

Mean = ==0, S.D. = 5.92

Secondly, mean and standard deviation were calculated for both sub-tests and the total test with item wise scores as shown in the table below.

TABLE - 1

This table shows the scores distribution scored by items (item wise) in each sub-test and total test marked by 371 pupils :

Class Interval	Frequencies										
	1(A)	2(N)	3(M)	4(C)	5(C)	6(F)	7(S)	8(Q)	9(S)	10(O)	Total
40 - 59	2	4	2	5	3	3	5	2	4	3	33
60 - 79	0	14	6	2	4	3	8	3	4	8	52
80 - 99	1	11	4	0	4	1	5	1	2	7	36
100 - 119	4	2	5	5	3	2	5	5	2	3	36
120 - 139	2	0	2	0	5	5	3	3	8	3	31
140 - 159	0	0	6	1	2	4	4	2	4	2	28
160 - 179	0	0	0	4	0	4	-	2	3	2	15
180 - 199	3	1	3	7	3	2	-	6	1	-	26
200 - 219	3	-	-	3	2	1	-	2	-	-	11
220 - 239	2	-	-	1	2	2	-	2	-	-	9
240 - 259	7	-	-	-	0	0	-	2	-	-	9
260 - 279	1	-	-	-	1	1	-	-	-	-	3
280 - 299	2	-	-	-	1	-	-	-	-	-	3
300 - 319	1	-	-	-	-	-	-	-	-	-	1
320 - 339	1	-	-	-	-	-	-	-	-	-	1
	N=32	N=32	N=28	N=28	N=30	N=28	N=30	N=30	N=28	N=28	N=294

TABLE - 2

Following are the mean and standard deviation of item wise scored in different sub-tests and combined total test:

Tests	Mean	Standard deviation
1.(A)	188.38	76.6
2.(N)	92.75	25
3.(M)	36.86	47.79
4.(C)	109	30.27
5.(C)	117.67	33.09
6.(F)	114.71	43.13
7.(S)	85.67	27.32
8.(Q)	149	58.41
9.(S)	144	66.12
10.(O)	82.57	7.8
Total	132.61	7.28

The following formuli were applied for computing mean and standard deviation:

(1) For mean calculation: $\text{Mean} = AM + \frac{fx}{N} \times i$

(2) For calculation of standard devision-

$$S.D = i \times \sqrt{\frac{fx^2}{N} - \frac{(fx)^2}{N}}$$

3.9. DIRECTIONS FOR ADMINISTRATION OF THE TEST

For the administration of the test, general instructions are given in the following pages and the directions and examples are written in the test booklet. It is essential that those who wanted to conduct a test the investigator should first of all introduce himself or herself and explains the objectives of the activity to be given. Then as soon as the testing arrangements are adequately done and rapports are created amongst the pupils, the general instructions memorised in advance may be verbally told by the tester. As the pupils are clearly given proper instructions how to do, the test booklet along with the answer sheets may be distributed and ask them to complete all the entries on the answer sheet. After that the tester may read out the directions loudly while the subjects read silently with him and also practice the examples one by one. When the doubts are clarified the test may start with a signal and after 30 minutes of test all the re-useable test booklets and answer sheets should be collected when all the pupils are either sitting or standing quietly.

3.10. SCORING PROCEDURE

Scoring procedure for this test is very simple. For scoring one correct response is regarded as one point, or one mark, and no half mark or consideration for any wrong answer. Scoring have to be done with the help of a stencil key provided for it. Fix the scoring

Stencil key on the answer sheet accurately adjusting the numbers. Then those marked answers visible through the holes should be counted as correct responses. Count and write the sub-test total in each column provided on the right hand side and grand total at the bottom of the answer sheet respectively.

3.11. TIME LIMIT

The time limit for the test was calculated on the basis of the average time taken by the pupils in the try-out of the test. The average time taken for each item was 23.30 seconds. Therefore the average time limit for the whole will be 30 minutes testing time (23.30 x 78 = 30 minutes) and approximately 10 minutes for instructions as well as practise of examples. So one school periods will be quite sufficient to complete this test.

3.12. Follwoing are the right answers for each item

Items answers	Items answers	Item answers
1 = 3	27 = 4	53 = 1
2 = 2	28 = 1	54 = 2
3 = 4	29 = 4	55 = 4
4 = 3	30 = 1	56 = 4
5 = 1	31 = 2	57 = 2
6 = 1	32 = 1	58 = 3
7 = 3	33 = 3	59 = 1
8 = 1	34 = 3	60 = 3
9 = 1	35 = 2	61 = 1
10 = 4	36 = 3	62 = 4
11 = 3	37 = 1	63 = 1
12 = 1	38 = 4	64 = 1
13 = 2	39 = 3	65 = 2
14 = 3	40 = 1	66 = 3
15 = 4	41 = 2	67 = 1
16 = 4	42 = 3	68 = 1
17 = 2	43 = 3	69 = 2
18 = 4	44 = 4	70 = 1
19 = 1	45 = 1	71 = 2
20 = 1	46 = 1	72 = 1
21 = 3	47 = 4	73 = 2
22 = 2	48 = 2	74 = 2
23 = 1	49 = 1	75 = 4
24 = 4	50 = 2	76 = 1
25 = 4	51 = 1	77 = 4
26 = 2	52 = 1	78 = 4

3.13 MATERIALS PREPARED FOR THE TEST SCALE

Following materials are prepared for the test-scale:-

(1) Test Manual

(2) Test Booklets

(3) Separate Answer Sheets

(4) Stencil Scoring Key

TEST BOOKLET

A NON-VERBAL GROUP INTELLIGENCE TEST

(For the age group of 13+ to 17+).

CONSTRUCTED AND DEVELOPED BY
Mr. IMTISUNGBA AO, LECTURER
NEHU. DEPARTMENT OF EDUCATION
NAGALAND KOHIMA.

DO NOT OPEN THIS BOOKLET UNTILL YOU ARE TOLD TO DO SO.
HANDLE IT WITH CARE AND DO NOT MARK IT IN ANY MANNER.

DIRECTIONS AND EXAMPLES.

(Read the Directions and Examples silently while I read aloud)

1. There are 78 Items in order easist to the hardest.
   After each question there are four alternative answers.

2. There is only one right answer.
   When you find out the right answer, just put a Gross mark (X) on the Answer Sheet against the appropriate number provided.

3. Now practice the solved examples given as how to solve and mark your responses.(Practice 1 to 9 one by one).

4. You may clarefy your thoughts, if there is any.
   (Clarefied).

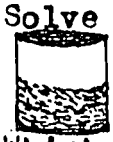
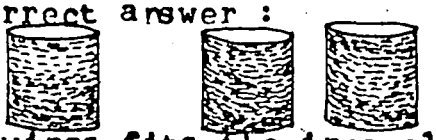
5. Open your Booklet at page one.(Opened).
   Try every problem one by one starting from first to the end.

   READY.START.

(Page PE)

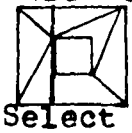
PRACTICE EXAMPLES: Practice these solved examples how to solve and put your responses in your Answer sheet.

1. Solve and find the correct answer :

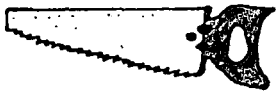

= 50 liter :

= ___ liter?

1.300
2.350
3.400
4.250

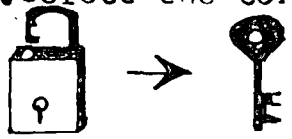
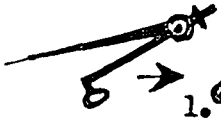
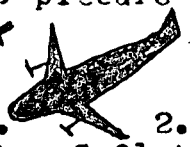
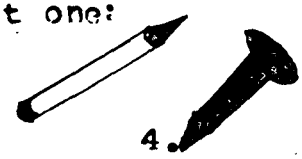
2. Which of the four drawings fits the incomplete pattern ?


:
1. 
2. 
3. 
4. 

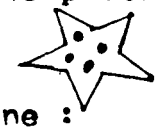
3. Select one which does not belong with the others:

1. 
2. 
3. 
4. 

4. Select the correct analogous picture as the first one:


:
1. 
2. 
3. 
4. 

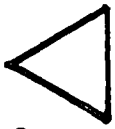
5. Which Star has number of dots equal to the parts in the circle ?


:
1. 
2. 
3. 
4. 

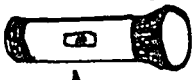
6. Select the best synonym with the first one :

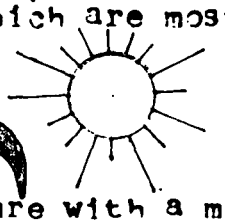

1. 
2. 
3. 
4. 

7. Select the right one which is opposite to the first one :

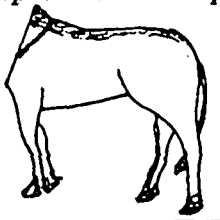
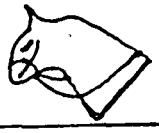

1. 
2. 
3. 
4. 

8. Select one pair which are most similar in nature :

1. 
2. 
3. 
4. 




9. Complete the picture with a most appropriate part :


:
1. 
2. 
3. 
4. 

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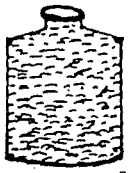
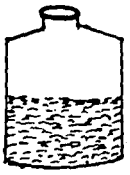
1. Solve and find the correct answer:



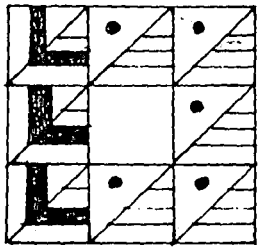
= 90 liter :



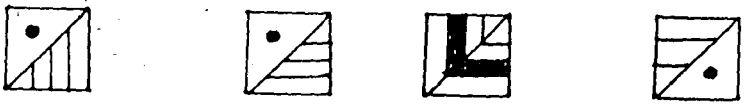
= _____liter ?

1.35
2.40
3.45
4.50

2. Which of the four drawings correctly fits the incomplete pattern ?

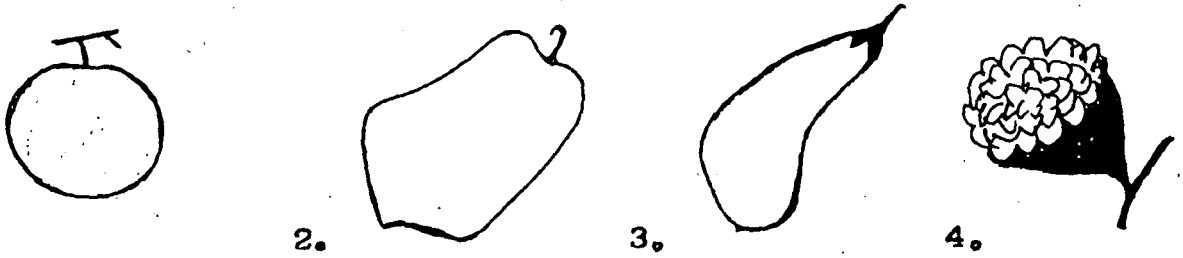


:



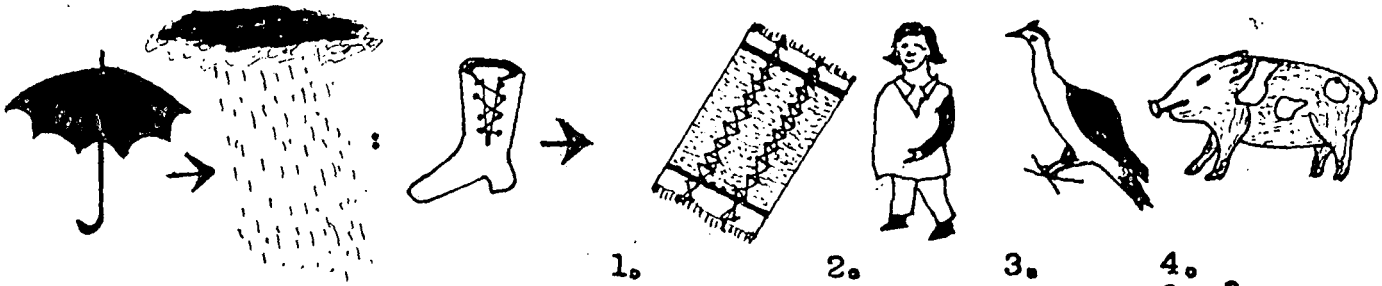
1. 2. 3. 4.

3. Select one which does not belong with the others:



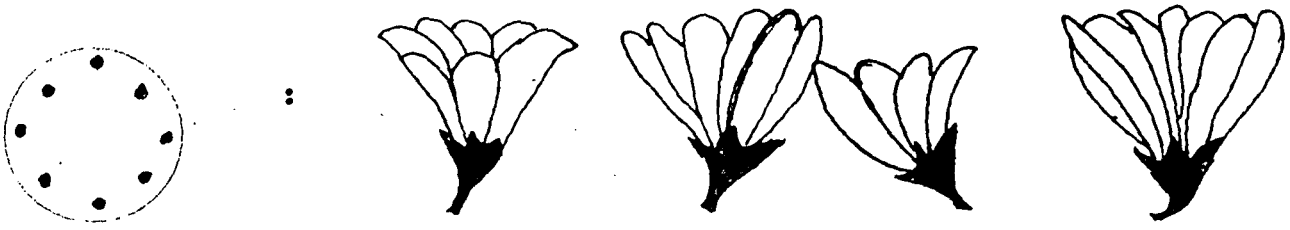
1. 2. 3. 4.

4. Select the correct analogous picture as the first one:



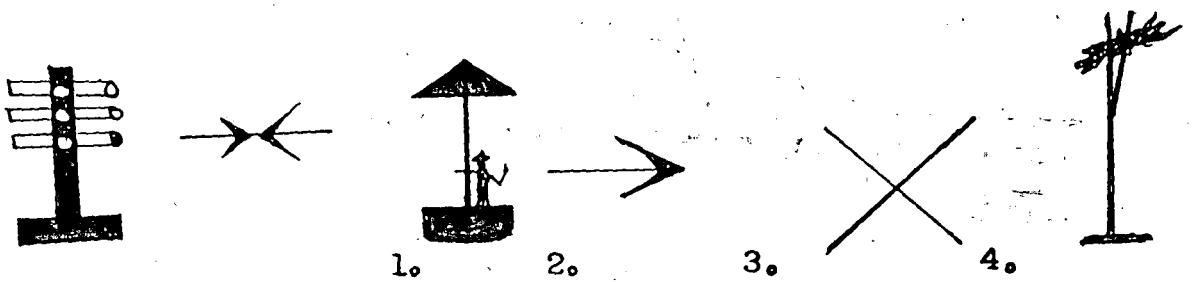
1. 2. 3. 4.

5. Which flower has corolla equal to the points in the circle ?



1. 2. 3. 4.

6. Select the best synonym with the first one:



1. 2. 3. 4.

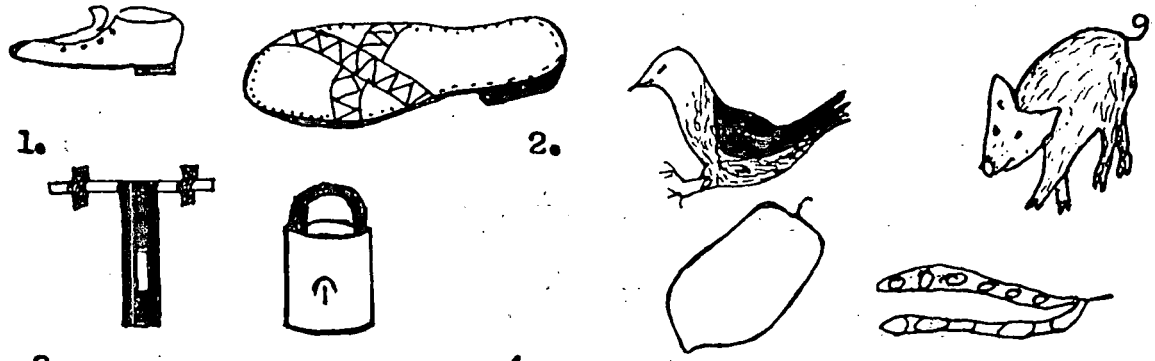
Turn the page

Page 2

7. Select the right one which is opposite to the first one:

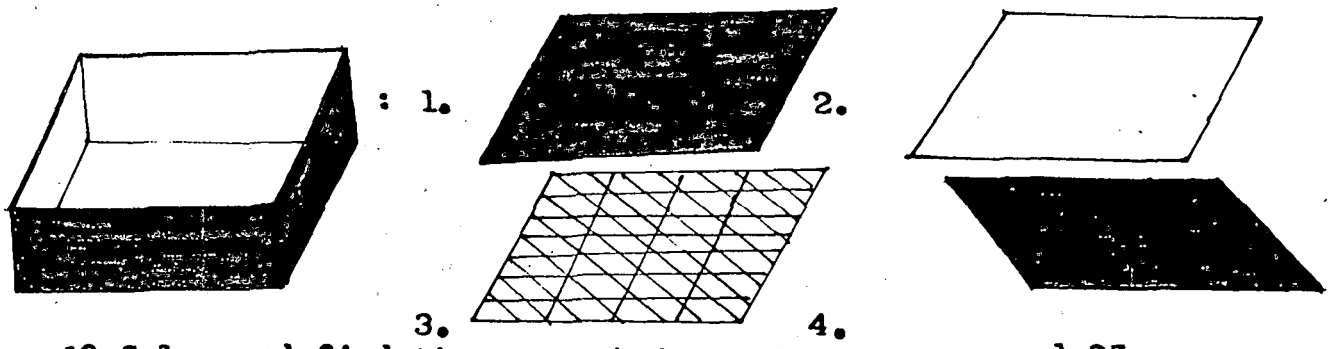
1. 2. 3. 4.

8. Select one pair which are most similar in nature:



1. 2. 3. 4.

9. Complete and the picture with a most appropriate part:



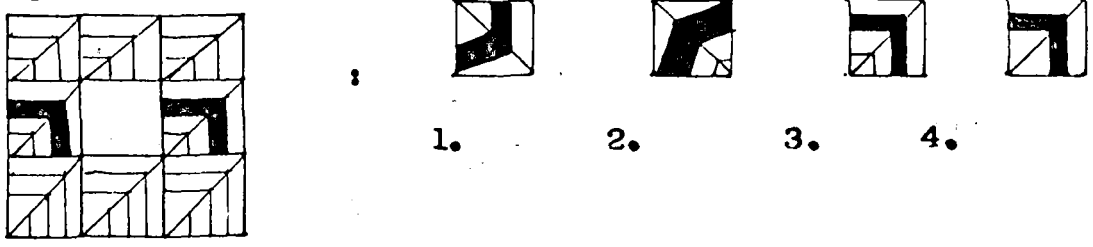
1. 2. 3. 4.

10. Solve and find the correct answer:

Y = 15
F = 20 : H = Y + G. H = _____?
G = 10

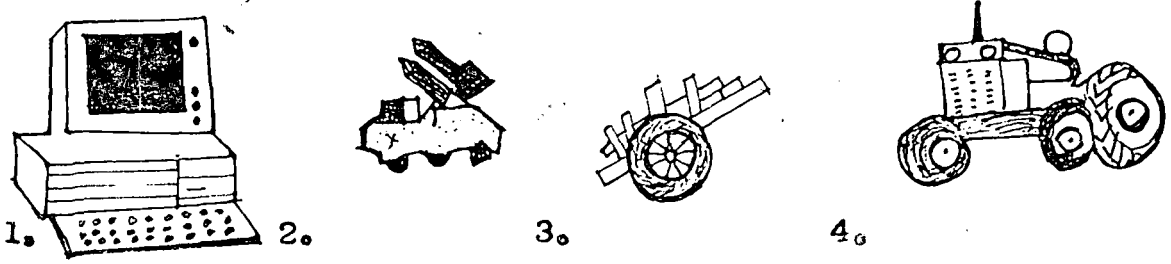
1. 35
2. 20
3. 30
4. 25

11. Which of the four drawings correctly fits the incomplete pattern ?



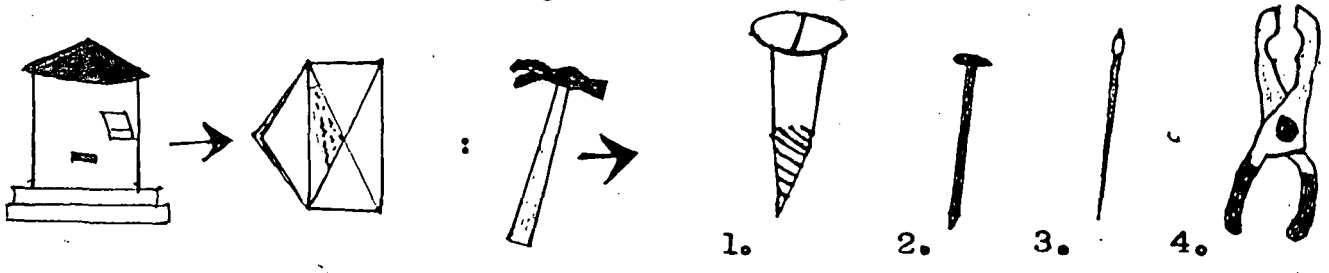
1. 2. 3. 4.

12. Select one which does not belong with the others:



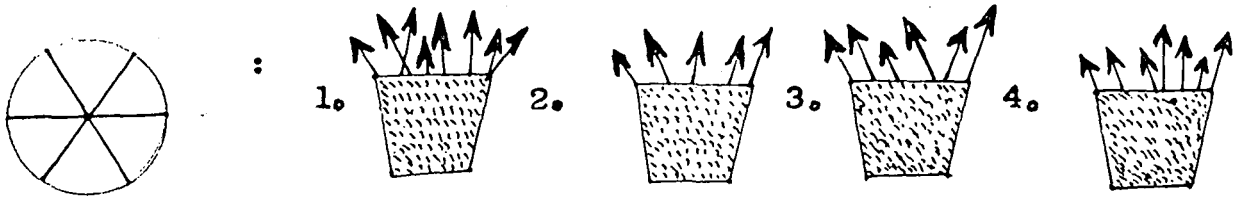
1. 2. 3. 4.

13. Select the correct analogous (parallel) picture as the first one:



1. 2. 3. 4.

14. Which basket has number of arrows less than the parts in the circle:

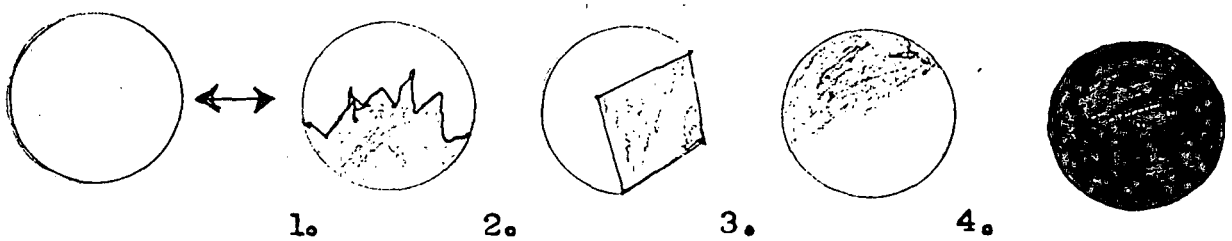


1. 2. 3. 4.

15. Select the best synonyms with the first one:

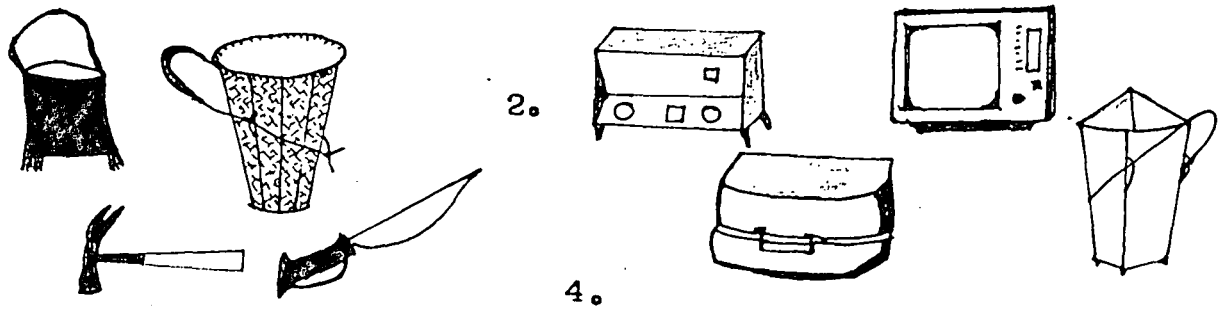
1. 2. 3. 4.

16. Select the one which is opposite to the first one:



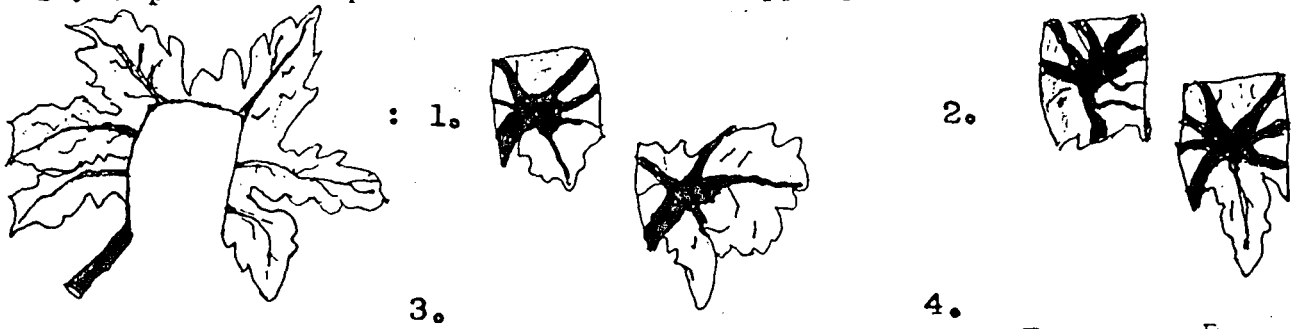
1. 2. 3. 4.

17. Select one pair which are most similar in nature:



1. 2. 3. 4.

18. Complete the picture with a most appropriate part:

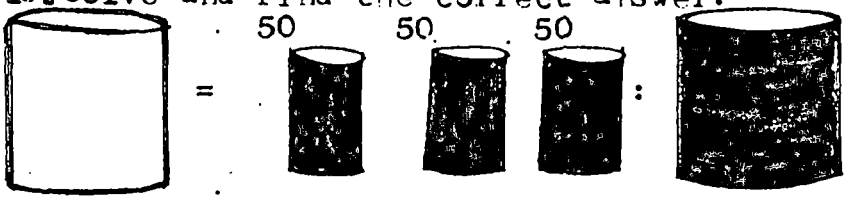


1. 2. 3. 4.

Turn the Page

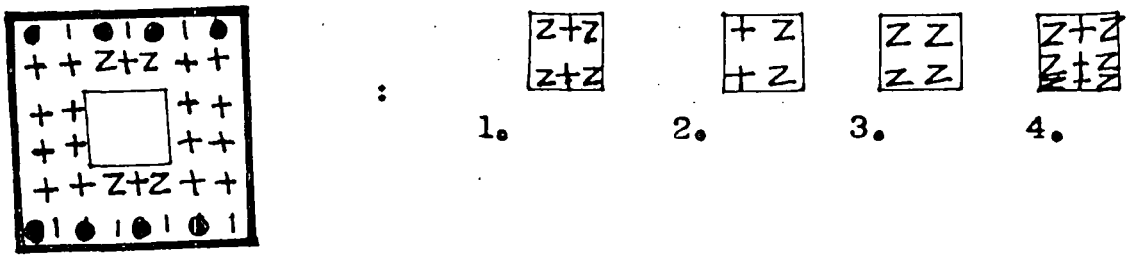
rage 4

19. Solve and find the correct answer:



1. 150
2. 140
3. 160
4. 155

20. Which of the four drawings correctly fits the incomplete pattern?

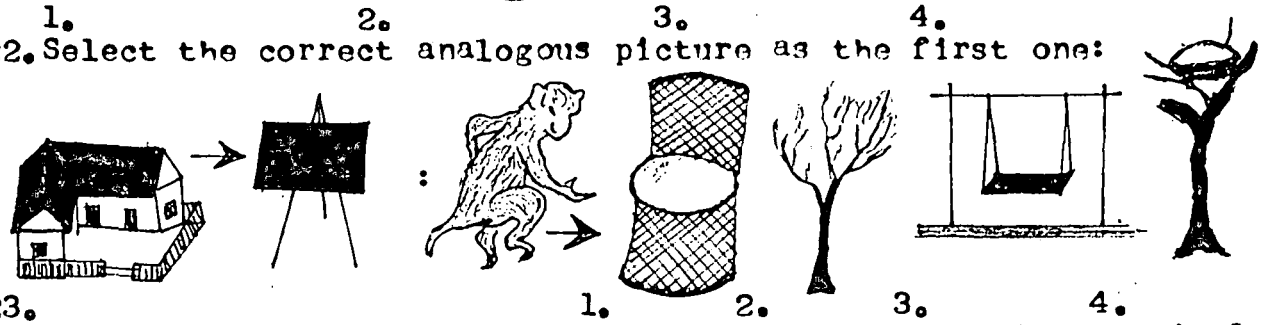


1. 2. 3. 4.

21. Select one which does not belong with the others:

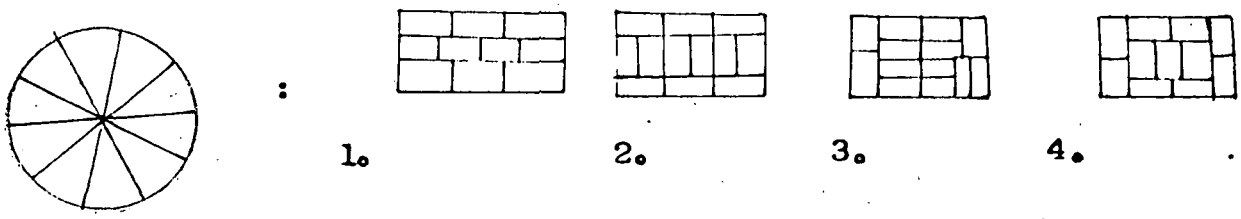
1. 2. 3. 4.

22. Select the correct analogous picture as the first one:



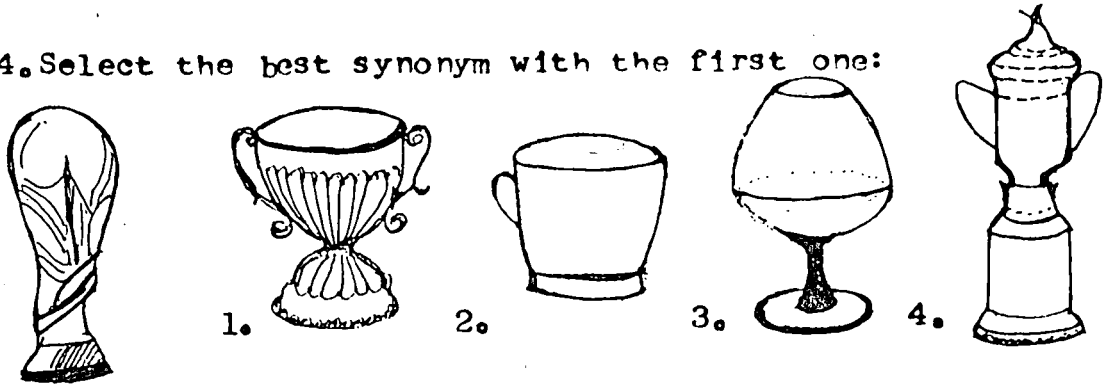
23. 1. 2. 3. 4.

23. Which wall has number ofparts equal to the parts in the circle ?



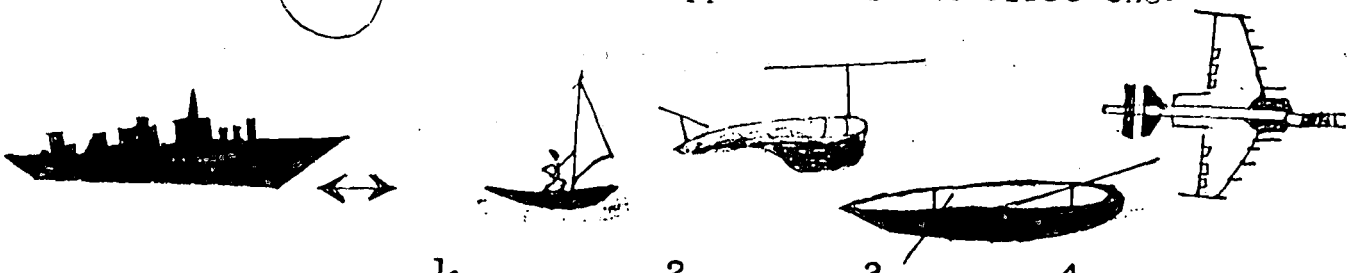
1. 2. 3. 4.

24. Select the best synonym with the first one:



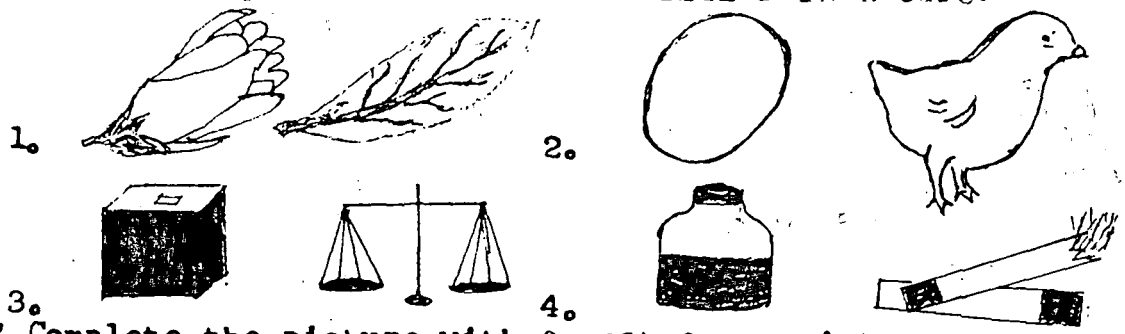
1. 2. 3. 4.

25. Select the right one which is opposite to the first one:



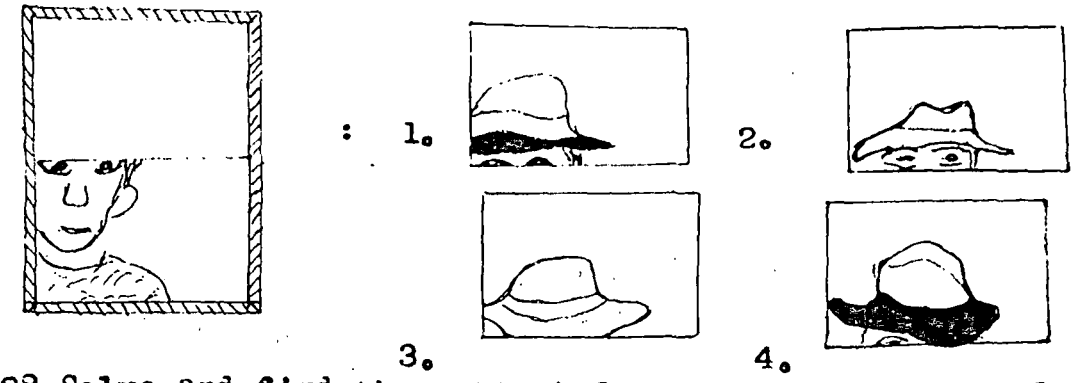
1. 2. 3. 4.

26. Select one pair which are most similar in nature:



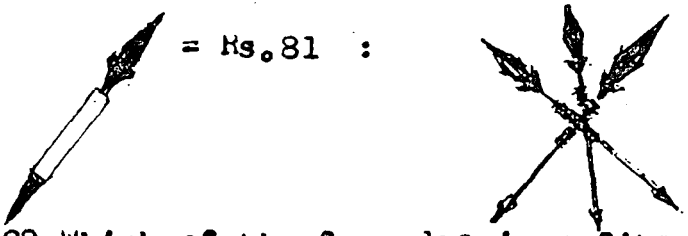
1. 2. 3. 4.

27. Complete the picture with a most appropriate part:



: 1. 2. 3. 4.

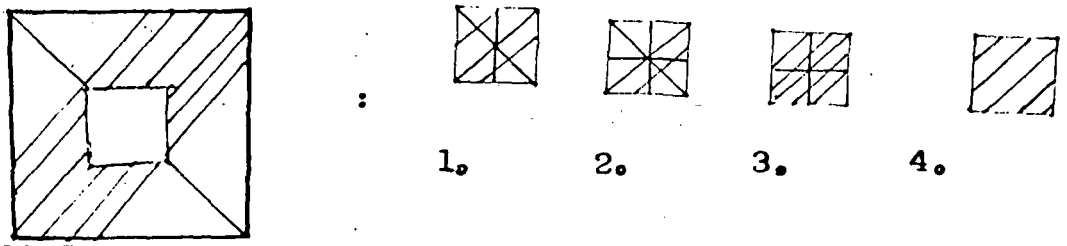
28. Solve and find the correct answer:



= Rs. 81 : = _____ ?

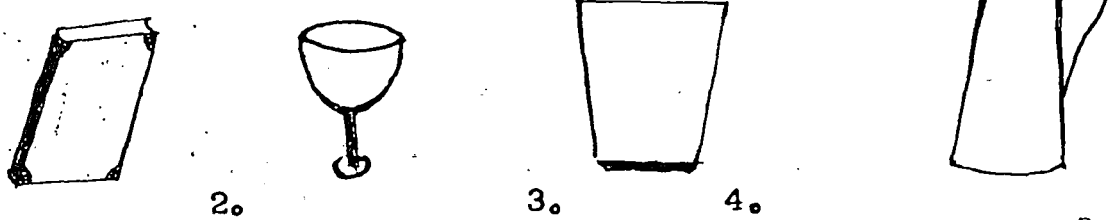
1. 243
2. 240
3. 241
4. 242

29. Which of the four drawings fits the incomplete pattern?



: 1. 2. 3. 4.

30. Select one which does not belong with the others :



1. 2. 3. 4.

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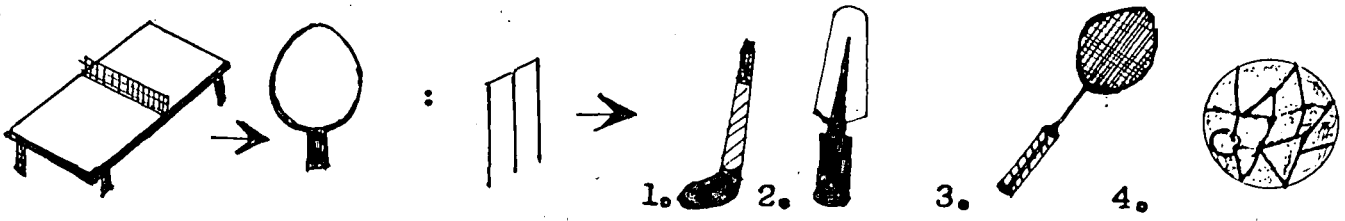
31. Select the correct analogous picture as the first one:



1. 2. 3. 4.

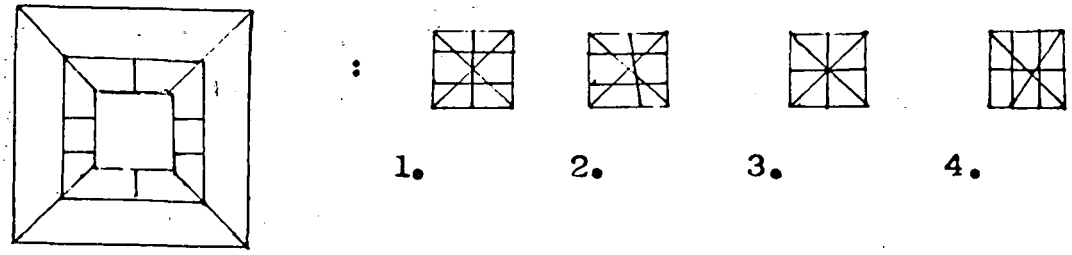
32. Solve and find the correct answer:

= Rs. 1200 : 

= Rs. ?

1. 400
2. 450
3. 410
4. 350

33. Which of the four drawings fits the incomplete pattern correctly?

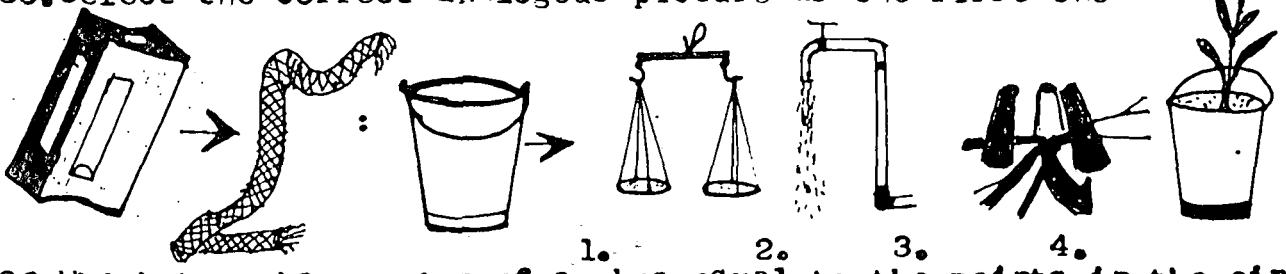


1. 2. 3. 4.

34. Select one which does not belong with the others:

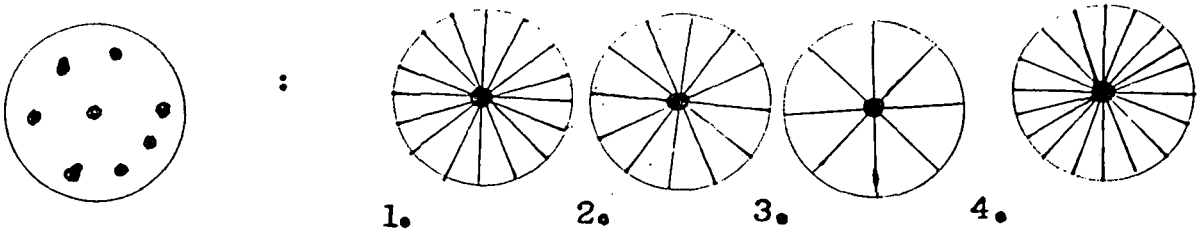
1. 2. 3. 4.

35. Select the correct analogous picture as the first one:



1. 2. 3. 4.

36. Which tyre has number of spokes equal to the points in the circle?



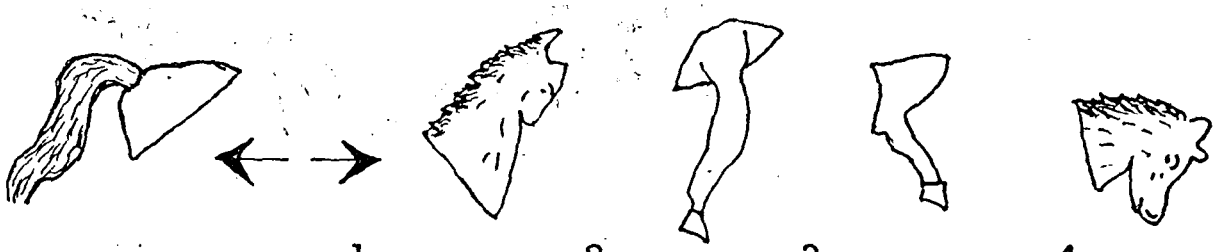
1. 2. 3. 4.

Page 7

37. Select the best synonym with the first one:

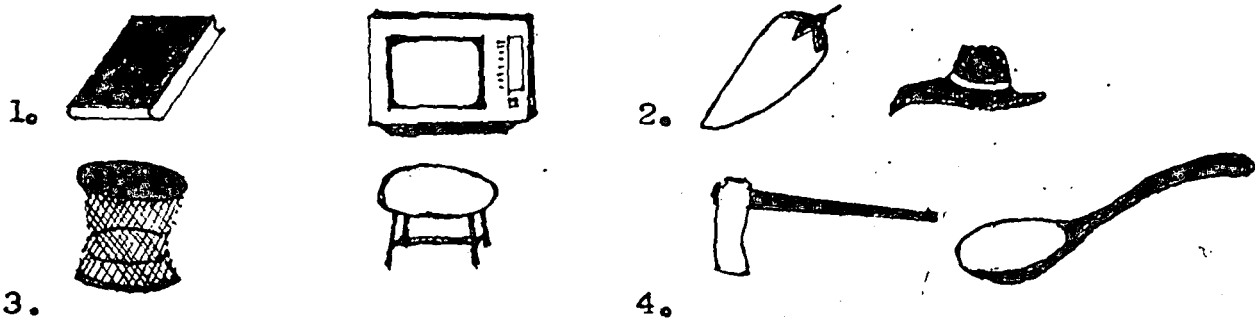
1. 2. 3. 4.

38. Select the right one which is opposite to the first one:



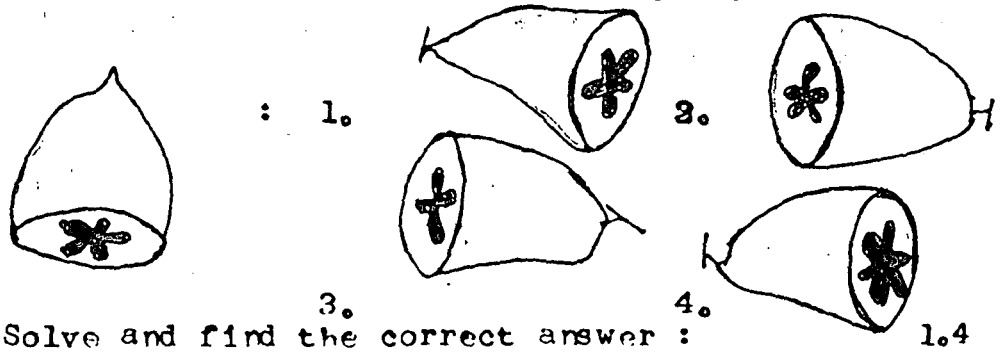
1. 2. 3. 4.

39. Select one pair which are most similar in nature :



1. 2. 3. 4.

40. Complete the picture with a most appropriate part :



: 1. 2. 3. 4.

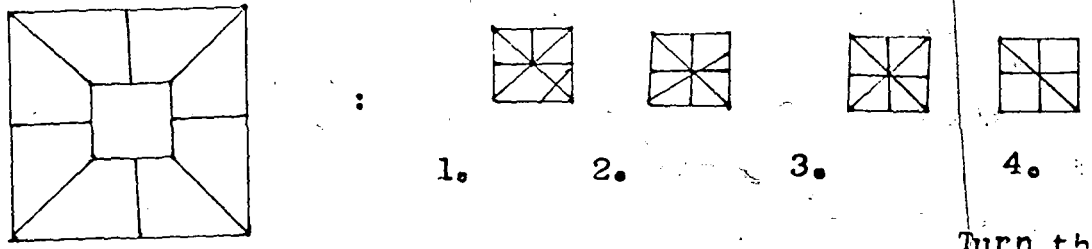
41. Solve and find the correct answer :

P = 12
M = P - N
N = 10

: M = _____ ?

1. 4
2. 2
3. 3
4. 6

42. Which of the four drawings correctly fits the incomplete pattern ?



: 1. 2. 3. 4.

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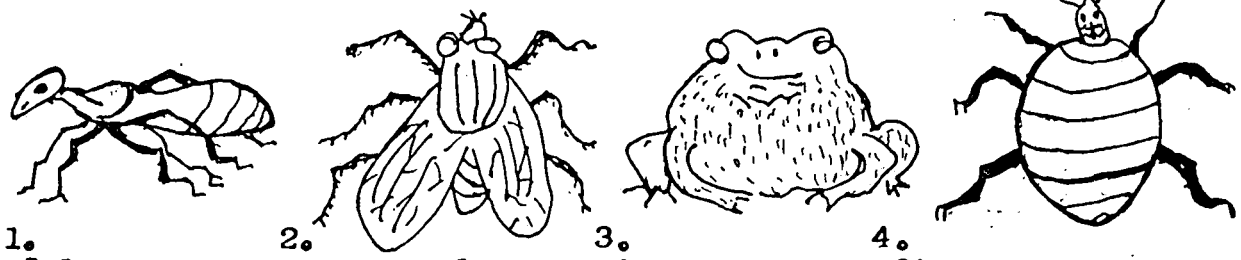
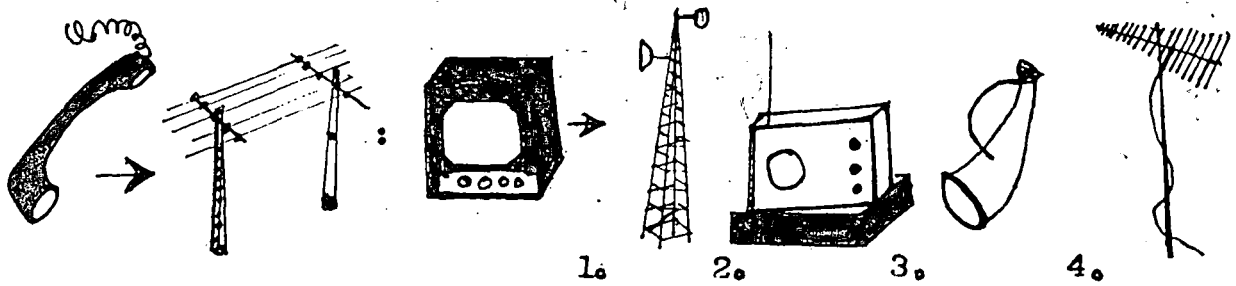
43. Select one which does not belong with the others :



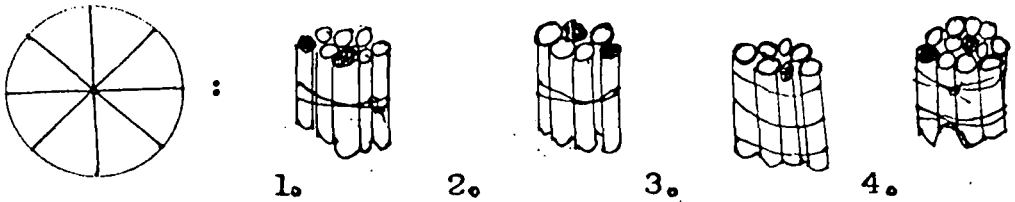
1. 2. 3. 4.

44. Select the correct analogous picture as the first one:



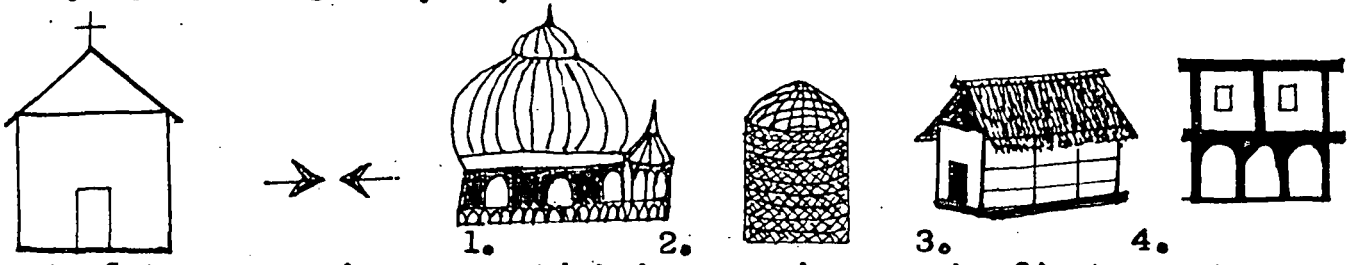
1. 2. 3. 4.

45. Which bundle has number of sticks equal to the parts in the circle?



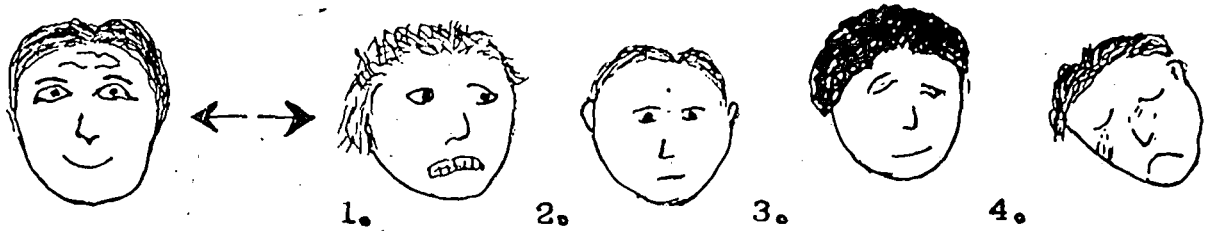
1. 2. 3. 4.

46. Select the best synonym with the first one:



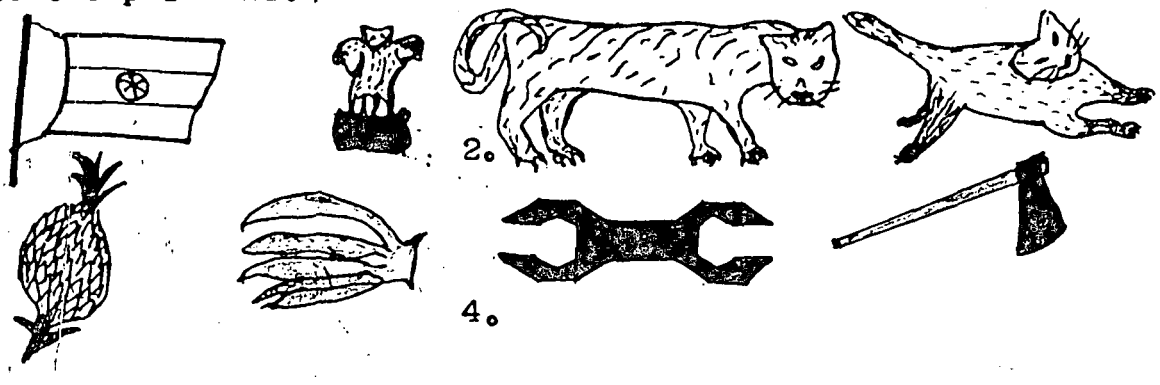
1. 2. 3. 4.

47. Select the right one which is opposite to the first one :



1. 2. 3. 4.

48. Select one pair which are most similar in nature :



1. 2.

3. 4.

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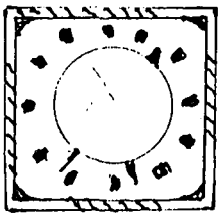
49. Complete the picture with a most appropriate part



:

1. 

2. 

3. 

4. 

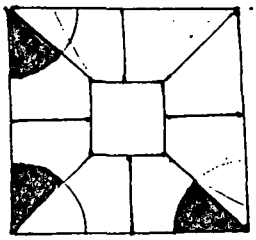
50. Solve and find the correct answer :

A	B
C	D

= 240 B = 60 : A, C, D = ____ ?

1. 170
2. 180
3. 190
4. 160

51. Which of the four drawings correctly fits the incomplete pattern ?



:

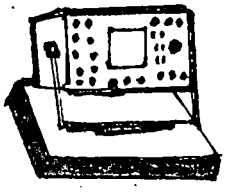
1. 

2. 

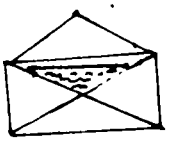
3. 

4. 

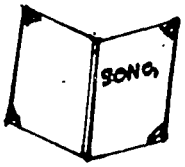
52. Select one which does not belong with the others :



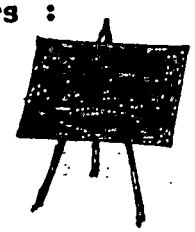
1.



2.

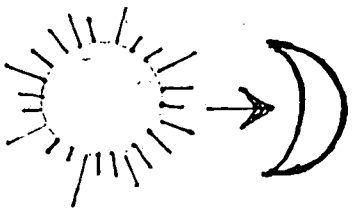


3.



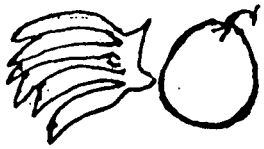
4.

53. Select the correct analogous picture as the first one :



:

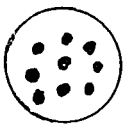
1. 

2. 

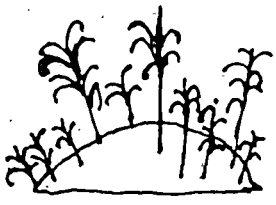
3. 

4. 

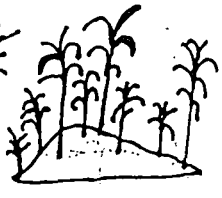
54. Which land has number of trees more than the dots in the circle ?

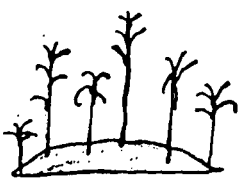


:

1. 

2. 

3. 

4. 

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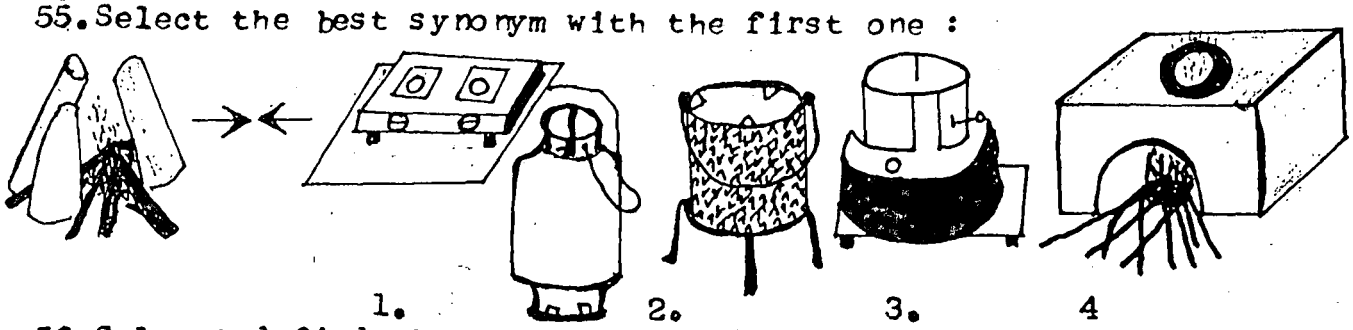
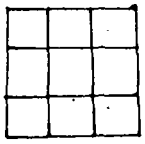
55. Select the best synonym with the first one :



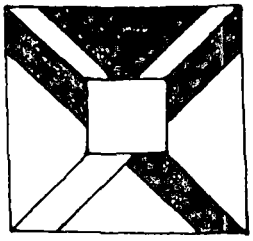
1. 2. 3. 4

56. Solve and find the correct answer :

□ = 25 kgs. :  = _____kgs.?

1. 235
2. 230
3. 255
4. 225

57. Which of the four drawings correctly fits the incomplete pattern ?



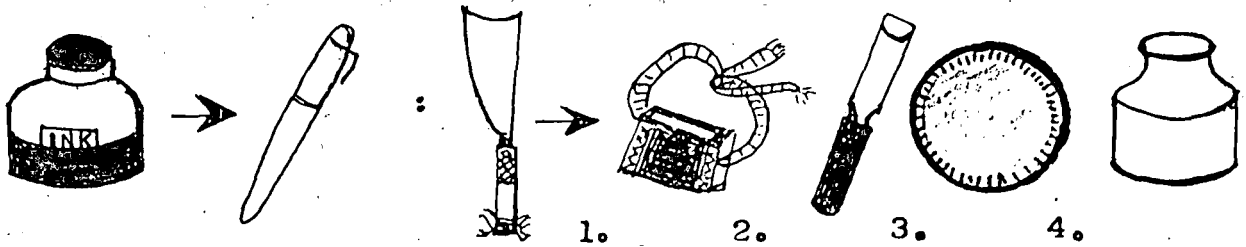
:

1. 2. 3. 4.

58. Select one which does not belong with the others :

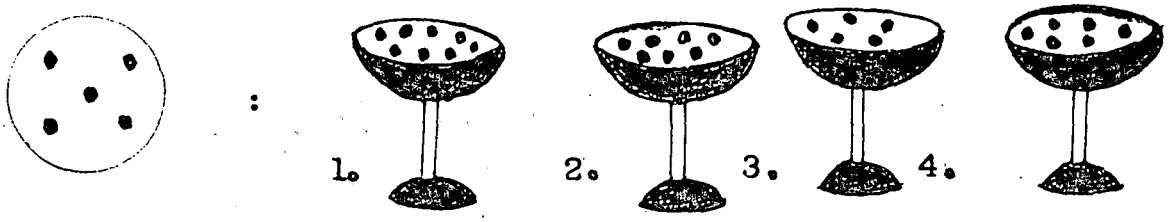
1. 2. 3. 4.

59. Select the correct analogous picture as the first one :



1. 2. 3. 4.

60. Which plate has number of sweets equal to the dots in the circle



:

1. 2. 3. 4.

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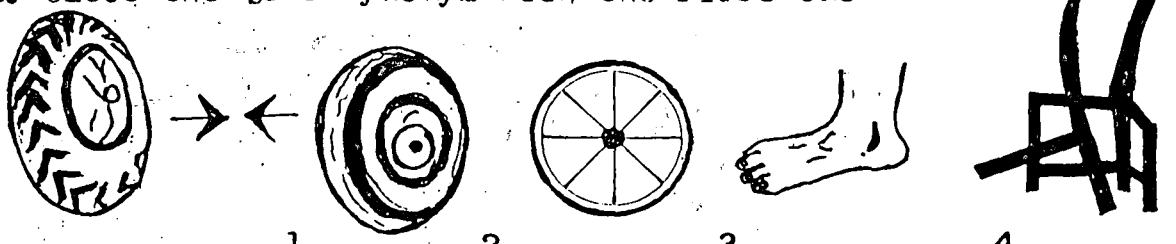
61. Select the best synonym with the first one :

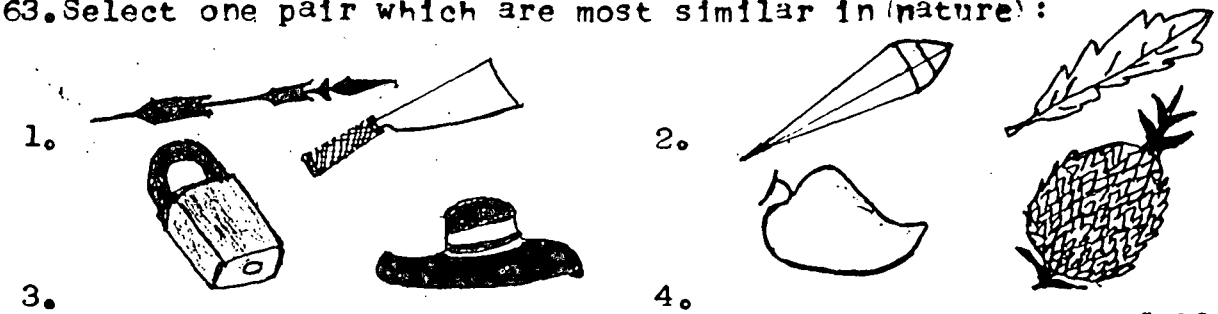


1. 2. 3. 4.

62. Select the right one which is opposite to the first one :

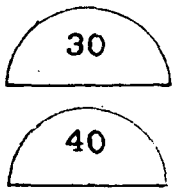
1. 2. 3. 4.

63. Select one pair which are most similar in nature :



1. 2. 3. 4.

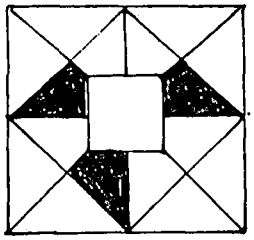
64. Solve and find the correct answer :



: : W X L = _____ ?

1. 1200
2. 1240
3. 1300
4. 1050

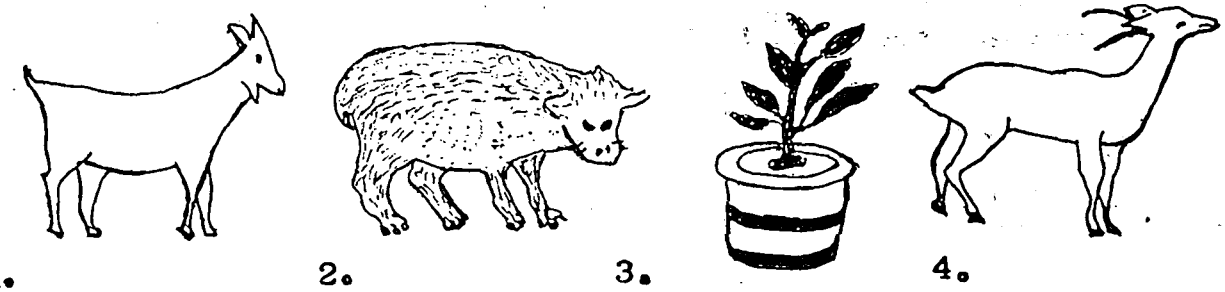
65. Which of the four drawings fits the incomplete pattern correctly ?



:

1. 2. 3. 4.

66. Select one which does not belong with the others :

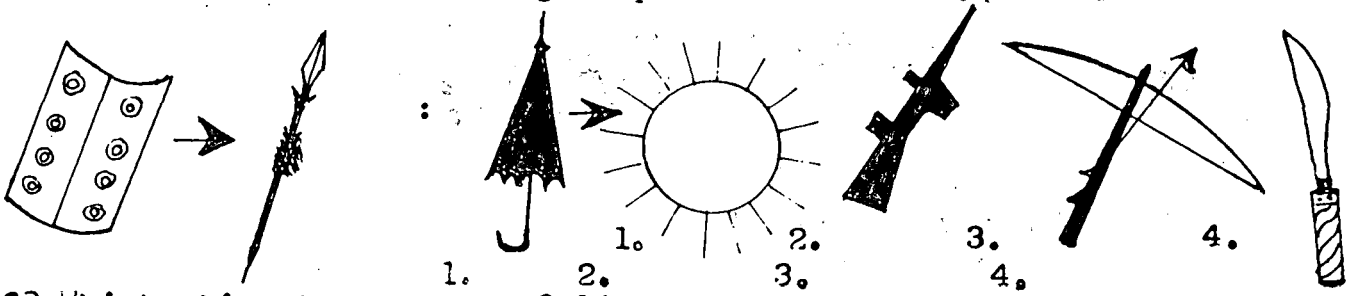


1. 2. 3. 4.

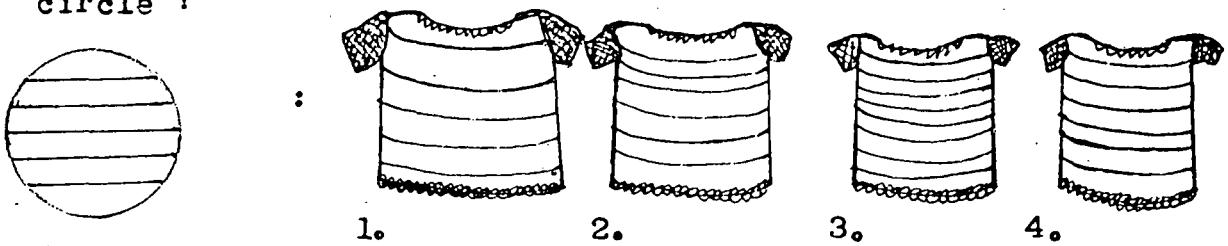
Turn the Page

Page 12

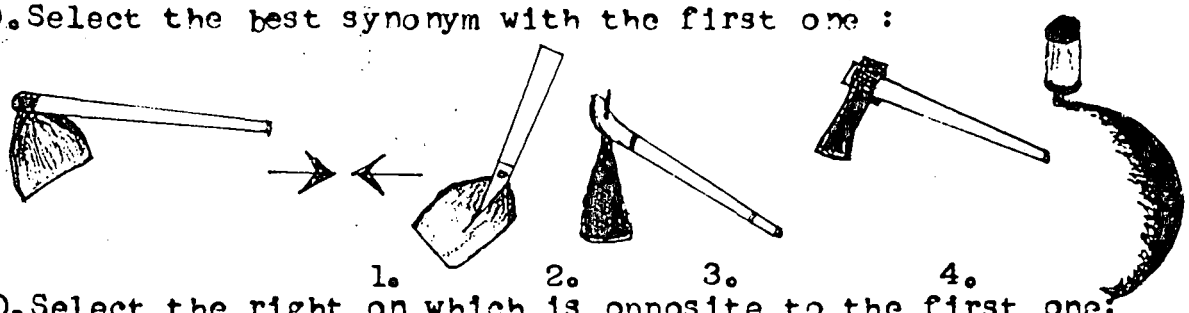
67. Select the correct analogous picture as the first one :



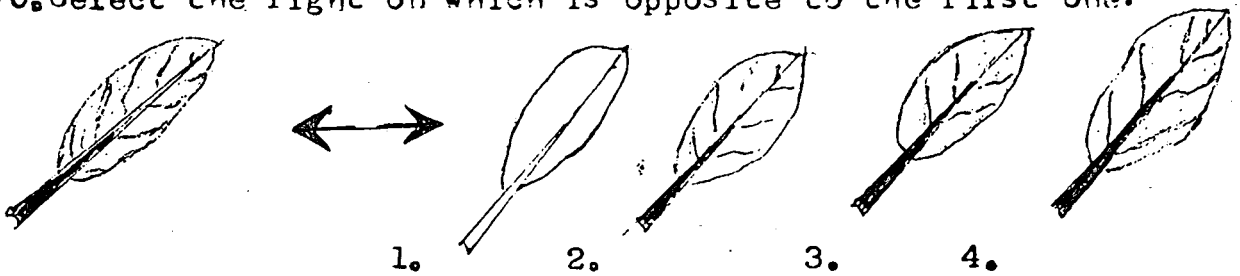
68. Which shirt has number of lines equal to the lines in the circle ?



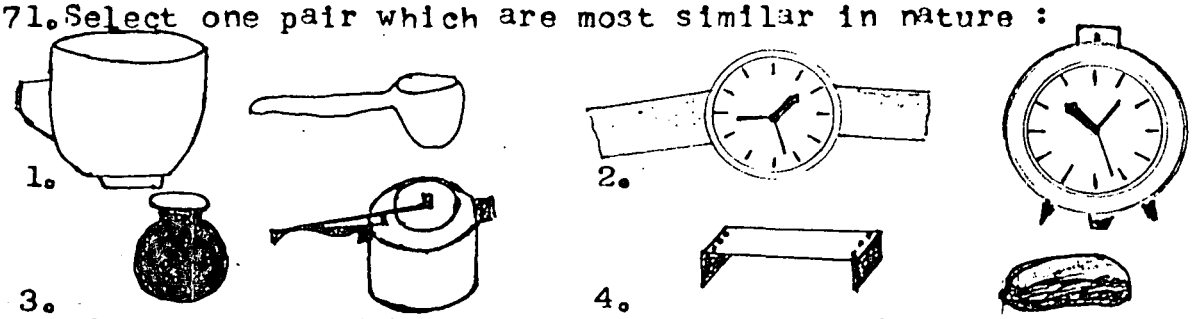
69. Select the best synonym with the first one :



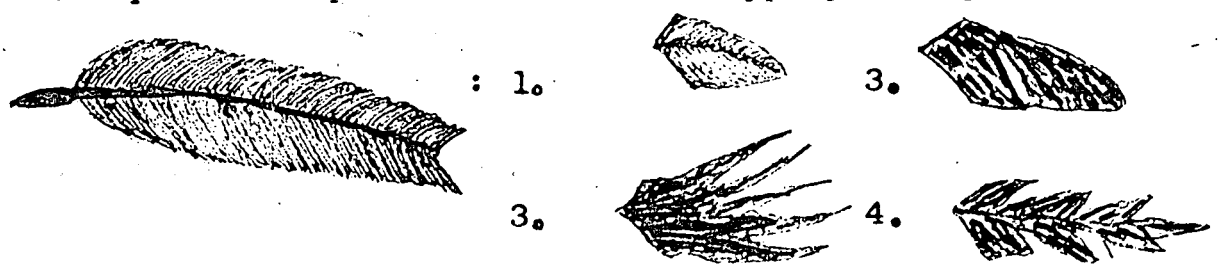
70. Select the right on which is opposite to the first one:



71. Select one pair which are most similar in nature :



72. Complete the picture with a most appropriate part :



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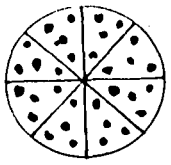
73. Solve and find the correct answer:

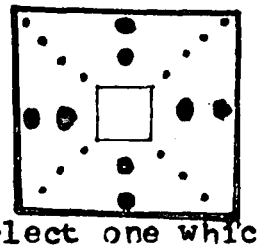
= 4 dots :



= _____?

1.30
2.32
3.34
4.36

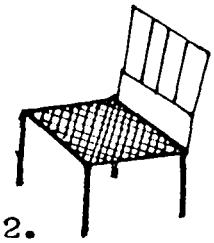
74. Which of the four drawings correctly fits the incomplete pattern ?

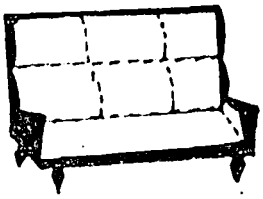


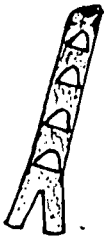
:

1. 2. 3. 4.

75. Select one which does not belong with the others:

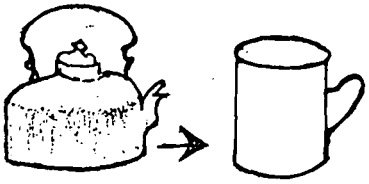




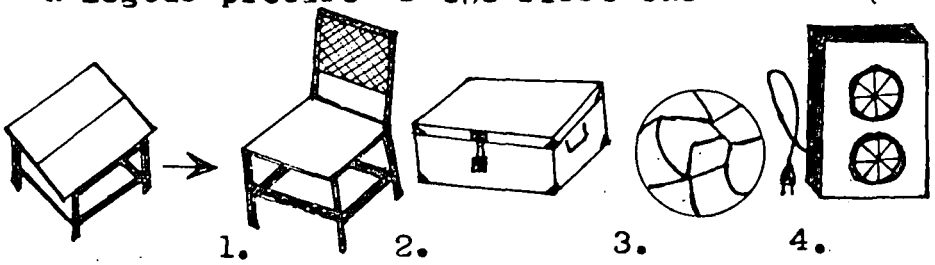


1. 2. 3. 4.

76. Select the correct analogous picture as the first one:

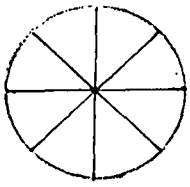


:

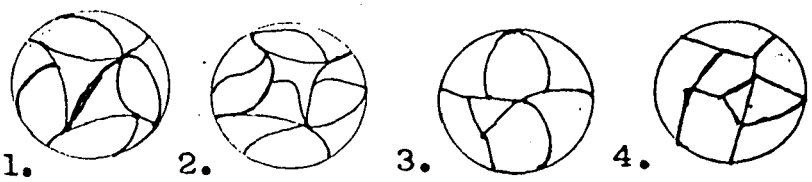


1. 2. 3. 4.

77. Which Ball has number of parts equal to the parts in the circle ?



:



1. 2. 3. 4.

78. Select the best synonym with the first one:

1. 2. 3. 4.

THE END.

NON-VERBAL GROUP INTELLIGENCE TEST
ANSWER SHEET:

Name_____Age/Date of birth_____Tribe_____

School_____Class_____Sex_____ Date _____

Practice Examples:	1.✱	2.1	3.1	4.1	5.1	6.1	7.1	8.1	9.1
	2	2	✱	2	2	2	2	2	✱
	3	3	3	✱	3	✱	✱	✱	3
	4	✱	4	4	✱	4	4	4	4

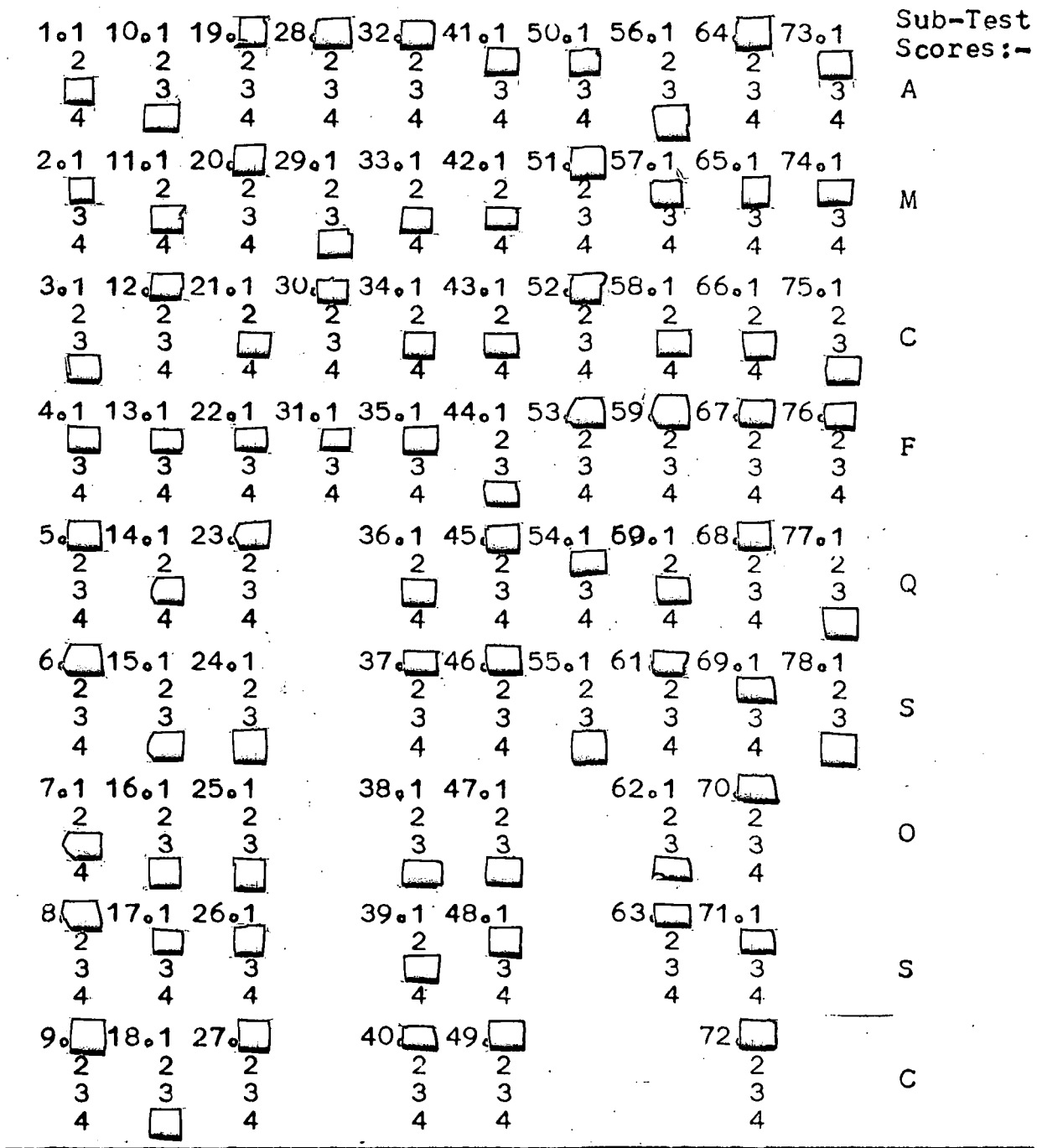
INSTRUCTION: Put a cross mark (X) against the number below as same as you have in the Test Booklet. You must choose only one alternative answer.

1.1	10.1	19.1	28.1	32.1	41.1	50.1	56.1	64.1	73.1	Sub-Test Scores:-
2	2	2	2	2	2	2	2	2	2	
3	3	3	33	3	3	3	3	3	3	
4	4	4	4	4	4	4	4	4	4	A
2.1	11.1	20.1	29.1	33.1	42.1	51.1	57.1	65.1	74.1	
2	2	2	2	2	2	2	2	2	2	
3	3	3	3	3	3	3	3	3	3	M
4	4	4	4	4	4	4	4	4	4	
3.1	12.1	21.1	30.1	34.1	43.1	52.1	58.1	66.1	75.1	
2	2	2	2	2	2	2	2	2	2	
3	3	3	3	3	3	3	3	3	3	C
4	4	4	4	4	4	4	4	4	4	
4.1	13.1	22.1	31.1	35.1	44.1	53.1	59.1	67.1	76.1	
2	2	2	2	2	2	2	2	2	2	
3	3	3	3	3	3	3	3	3	3	F
4	4	4	4	4	4	4	4	4	4	
5.1	14.1	23.1		36.1	45.1	54.1	60.1	68.1	77.1	
2	2	2		2	2	2	2	2	2	
3	3	3		3	3	3	3	3	3	Q
4	4	4		4	4	4	4	4	4	
6.1	15.1	24.1		37.1	46.1	55.1	61.1	69.1	78.1	
2	2	2		2	2	2	2	2	2	
3	3	3		3	3	3	3	3	3	S
4	4	4		4	4	4	4	4	4	
7.1	16.1	25.1		38.1	47.1		62.1	70.1		
2	2	2		2	2		2	2		
3	3	3		3	3		3	3		O
4	4	4		4	4		4	4		
8.1	17.1	26.1		39.1	48.1		63.1	71.1		
2	2	2		2	2		2	2		
3	3	3		3	3		3	3		S
4	4	4		4	4		4	4		
9.1	18.1	27.1		40.1	49.1			72.1		
2	2	2		2	2			2		
3	3	3		3	3			3		C
4	4	4		4	4			4		

Grand Total:

NON-VERBAL GROUP INTELLIGENCE TEST

SCORING KEY



Grand Total:

TEST MANUAL

A NON-VERBAL GROUP INTELLIGENCE TEST

(For the age group of 13+ to 17+).

CONSTRUCTED AND DEVELOPED BY
Mr. IMTISUNGBA AO, LECTURER
NEHU. DEPARTMENT OF EDUCATION
NAGALAND KOHIMA.

DO NOT OPEN THE TEST BOOKLET UNTILL YOU ARE TOLD TO DO SO. HANDLE IT WITH CARE, DO NOT MARK IN ANY MANNER.

I. TEST CONSTRUCTION

1.1. PURPOSE

Intelligence has important role to play in varying aspect of day to day life activity. The knowledge of the power of this process of intelligence is essential to every one for appropriate course of life planning to educate and enjoy in their later stage of life. People have defined its meaning, nature and process in different ways. People had been curious to know about it. It has been generally accepted that intelligence is an innate capacity in the individual. But at the same time, it has been found that intelligence of an individual fluctuates with varying environments and with the testing tools of intelligence. Very often person concerned in educating agencies, irrespective of individuals abilities take unilateral decisions and biased in presumption, which may bring a lot of irrevereable leses and leads to misfits and dissatisfactions in future.

The investigatorc felt that in a divergent region like ours, a non-verbal test would be more relevant for measuring group intelligence. Thus it was decided to prepare a workable test instrument to be used for judicious decisions and proper directions.

1.2. ITEM PREPARATION

For construction of a non-verbal test, preparation of test items were started for ten (10) different sub-tests.The rough idea of the items were submitted to the guide for his consent.After necessary correction,suggestion to modify and include some more items,the test was improved.

Finally altogether 294 test items in ten sub-tests were constructed.These origional items were submitted to the supervisor and experts for further suggestions and necessary modifications.

On the basis of the guide's approval and suggestions of experts along with the pre-preliminary try-out of the test items,following things have been finalised and prepared:

(1). 294 test items prepared for levels of try-outs,
(2). Instructions and directions for the try-out were worded,
(3). Stencil key for scoring items was ready,
(4). Ten practice examples of the items,one fo for each sub-test were prepared,and
(5). Enough separate answer sheets for the try-out were prepared.

1.3. NATURE OF THE ITEMS IN DIFFERENT SUB-TESTS

In this non-verbal omnibus type of test the investigator have prepared ten categories of sub-tests with 294 items for try-outs at various levels.Different sub-tests with the number of items were as shown below:-

(3)

Sub-tests.	No.of Items.
1.Arithmetic Reasoning	32
2.Number Series	32
3.Matrices	28
4.Classification	28
5.Picture Completion	30
6.Figure Analogy	28
7.Similarities	30
8.Quantitative Reasoning	30
9.Synonyms	28
10.Opposites	28
Total =	294

In all the sub-tests except the sub-test No.2 i.e. Number Series,the items were consists of the pictures of animals,birds,human beings,articles and objects,designs,geometric figures etc.

In the total test,the investigator tried to include the items of various nature drawing from different angles.Constructing this type of test,the investigator inclucded most of the items to represent the local cultures,the system of Govennment,the world of works,beauty of natures,modern technological advancements and civilization etc.

For each item,in all the categories of the tests there were four alternative answers or responses.A separate answer sheet with appropriate series of numbers against each item is also provided for marking the selected responses by the respontent.

1.4. TRY-OUT OF THE ITEMS

In the try-out stage the test was administered to a large sample of population.For try-out a sample of 400 pupils were randomly selected from five high schools who were studying in different grades.Out of these,371 answer sheets had been selected for item-analysis.The objectives of this try-out were as following:-

(1). To get indices of difficulty and discrimination for selection of items for the final try-out.

(2). To arrange the items in ascending order for an omnibus form.

(3). To fix up the time limit of the test.

(4). To prepare test booklets,separate answer sheets and stencil key for the final try-out of the test.

1.5. ITEM ANALYSIS

Though there are more than fifty different procedure of the item analysis,there are mainly two general indices such as (a) assessment of difficulty index and (b) finding the power of item discrimination.As the item analysis is depending on the nature of test and also decision of the test constructor, the investigator wanted to divide the whole test into (3) three groups,and used upper 27 % and lower 27 % for item analysis.Therefore the test constructor followed the below given steps and procedures for item-analysis:

(5)

Steps and Procedures:-

(1). First of all the test papers were scored with the help of stencil key,

(2). All the test papers were ranked and arranged in descending order from highest to the lowest total scores,

(3). From the ordered set of papers, two extreme scores of highest 27 % group and lowest 27 % bottom group were taken for item analysis,

(4). Middle 46 % of the total score papers were kept separately. These papers were not used in item analysis,

(5). For each item, the number of pupils in the upper and lower groups who selected each alternatives were tabulated,

(6). In order to find out the proportion of the success and failure, the difficulty value of each item finding the percentage of pupils who got the item correct were computed. This difficulty index or mean proportion was computed from the pupils who marked right in upper and lower groups.

(7). Then the discrimination index for each item was computed by finding the differences between the number of pupils in the upper and lower extreme groups, who marked the item right.

(8). Finally followed the process of items screening by eliminating or discarding some very hard and very easy items and retaining some workable and good items.

1.6. ASSESSMENT OF DIFFICULTY INDEX

From the sample of 371 pupils, bottom 27 % and top 27 % were taken and utilised for item analysis. The assessment of the difficulty index was computed by finding the proportion of the two extreme groups passing a given item. This was computed by dividing the number of pupils passing the item by the total number of pupils in the combined upper and lower groups.

Difficulty value of the items were computed (a) for finding the mean proportion in percentages
(b) for finding in decimal points.

Given formuli were used:

(1). Difficulty = $\frac{Ru + Rl}{T}$

(2). P = $\frac{R}{T}$ X 100

Where P = Percentage

R = Total number of pupils who got right in two groups,

T = Total number of pupils in two groups.

1.7. DISCRIMINATION INDEX

Another important index of the items analysis procedure is the item discrimination. This refers to the degree of which it discriminates between the pupils with the high and low performance in the two extreme groups. It is found that an item discriminates in a positive direction when more pupils got the

item right in the upper than the lower group. In order to compute the discriminating power of each item, we obtained by substracting the number of pupils in the lower group who got the item right (Rl) from the number of the pupils in the upper group who got the item right (Ru) and dividing by half of the total number of the combined two groups. Following formula was used for computing discrimination index:-

$$D = \frac{Ru - Rl}{1/2\ T}$$.

Where D = Discrimination,
Ru= Total number of item got right in upper group,
Rl= Total number of item got rights in the lower group.

1.8. ITEM SCREENING

Item screening refers to the elimination or rejection of some items and acceptance of some items to retain in the test. Some very hard and very easy items were discarded and some consistent items retained. For the selection and sereening of the test items it was accepted to follow the criteria of both indices of item difficulty and discrimination in all the different sub-tests and the total test as well.

The screening of the items in the test were made at three different stages as follows:

(1). Before any judicious consideration, all negative and zero scored items were discarded and eliminated,

(2). Secondly some items having the discriminative value of .20 and below were discarded and eliminated on the basis of the item discrimination index.

(3). Thirdly all the items having difficulty index ranging from 31 % to 70 % or (.31 to .70) were selected and retained for the total test.

Finally 78 items were retained on basis of the criteria set by computing the two indices. After re-arrenging the sub-tests, the selected items in different sub-tests were as given below:-

Sub-Tests	No. of Items
1. Arithmetic Reasoning	10
2. Matrices	10
3. Classification	10
4. Figure Analogy	10
5. Quantitative Reasoning	9
6. Synonyms	9
7. Opposites	7
8. Similarities	7
9. Picture Completion	6
	Total= 78

After analysing each and every item judiciously in all the sub-tests, it was concluded that the preliminary test items were very hard for the sample of population. As indicated by the score ranges of percentages and discrimination indices, the performance distributions of the subjects were more inclined

towards the lower side.And most of the items were eliminated with lower than higher scores.Whatever the direction or weight could be,a sufficient number of items for the test have been selected as given above.

Table 1.

Distribution of the difficulty value and discrimination index of the selected items were as given below:-

Difficulty in %	f.	Discrimination in %	f.
30-40	27	' 21-'30	8
41-50	24	' 31-'40	28
51-60	17	' 41-'50	28
61-70	10	' 51-'60	11
		' 61-'70	2
		' 71-'80	1
N = 78		N = 78	

1.9. CALCULATION OF MEAN AND STANDARD DEVIATION

In this stage of item analysis,the investigator had calculated mean and standard deviation in two ways with different nature of scores.First one was calculated with tne total test scores, scored by 371 pupils.Here the score rangewas lying between the lowest score of 61 and the highest score of 166 and the mean and s.d. were 110 and 5.92 respectively.

Following were the score distributions of the total test:-

Class-Interval	Frequency
60- 69	6
70- 79	17
80- 89	16
90- 99	25
100-109	74
110-119	105
120-129	66
130-139	38
140-149	12
150-159	6
160-169	6

Mean= 110.,S.D.= 5.92., N= 371

Table 2.

Following were the Mean and S.D. of item-wise scores in different sub-tests and combined total test:-

Sub-tests	Mean	S.D.
Arithmetic Reasoning	188.38	76.6
Number Series	92.75	25
Matrices	96.86	47.79
Classification	109	30.27
Picture Completion	117.67	33.09
Figure Analogy	114.71	43.13
Similarities	85.69	27.32
Quantitative Reasoning	149	58.41
Synonyms	144	66.12
Opposites	82.57	7.8
TOTAL =	132.61	7.28

1.10. DIRECTIONS FOR ADMINISTRATION OF THE TEST

For the administration of the test, general instructions are given in the following page and the directions as well as examples are written in the test booklet.It is essential that those who wanted to conduct a test should be made familiar with all these.In order to administer a test,tester should first of all introduce himself or herself and state the objective of the activity to be given.Then as soon as the testing arrangements are adequately done and rapports are created amongst the pupils,the general instructions already memorised in advance may be verbally told by the tester.As the pupils are clearly given proper instructions how to do,the test booklet along with the answer sheet may be distributed and ask them to complete all the entries on the answer sheet.After that the tester may read out the directions loudly while the subjects read silently with him and also practice the examples one by one . When the doubts are clarified the test may start with a signal.After 30 minutes of the test all the re-useable test booklets along with the answer sheets should be collected when all the pupils are either sitting or standing quietly.

1.11. SCORING PROCEDURE

Scoring procedure for this test is very simple.For scoring one correct response is regarded as one point, or one mark,and no half mark or consideration for any wrong answer.Scoring have to be done with

the help of a stencil key provided for it. Fix the scoring stencil key on the answer sheet accurately adjusting the numbers.Then those marked answers are visible through the holes should be counted as correct responses.Count and write down the sub-tests total in each column provided on the right hand side and grand total at the bottom of the answer sheet respectively.

1.12. TIME LIMIT FOR THE TEST

The time limit for the test was calculated on the basis of the average time taken by the pupils in the try-out of the test.The average time taken for each item was 23.30 seconds.Therefore the average time limit for the test will be 30 minutes testing time (23.30 X 78 = 30 minutest) and approximately 10 minutes for instructions as well as for practise of the examples.So one school period will be quite sufficient to complete this test.

1.13. FOLLOWING ARE THE RIGHT ANSWER FOR EACH ITEM

Items	Answers	Items	Answers	Items	Answers	Items	Ans.
1	= 3	15	= 4	29	= 4	43	= 3
2	= 2	16	= 4	30	= 1	44	= 4
3	= 4	17	= 2	31	= 2	45	= 1
4	= 3	18	= 4	32	= 1	46	= 1
5	= 1	19	= 1	33	= 3	47	= 4
6	= 1	20	= 1	34	= 3	48	= 2
7	= 3	21	= 3	35	= 2	49	= 1
8	= 1	22	= 2	36	= 3	50	= 2
9	= 1	23	= 1	37	= 1	51	= 1
10	= 4	24	= 4	38	= 4	52	= 1
11	= 3	25	= 4	39	= 3	53	= 1
12	= 1	26	= 2	40	= 1	54	= 2
13	= 2	27	= 1	41	= 2	55	= 4
14	= 3	28	= 1	42	= 3	56	= 4

(13)

continuation

Items	Answers	Items	Answers	Items	Answers
57	= 2	65	= 2	72	= 1
58	= 3	66	= 3	73	= 2
59	= 1	67	= 1	74	= 2
60	= 3	68	= 1	75	= 4
61	= 1	69	= 2	76	= 1
62	= 4	70	= 1	77	= 4
63	= 1	71	= 2	78	= 4
64	= 1				

1.14. FORMULA USED FOR CALCULATION OF STASTICS

(1). Mean = $A M + \left(\frac{fx}{N}\right) X i$

(2). S.D. = $i X \sqrt{\frac{fx^2}{N} - \left(\frac{fx}{N}\right)^2}$

(3). $s = \sqrt{\frac{N\left[\Sigma fx^2 - (\Sigma fx)^2\right]}{N(N-1)}} X i$

(4). Person's Product-Moment formula:

(a). $r = \frac{N \Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{N\Sigma X^2 - (\Sigma X)^2 \; N\Sigma Y^2 - (\Sigma Y)^2}}$

(b). $r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 X \Sigma y^2}}$

(5). Spearman-Brown formula:

$$r = \frac{2 X r 1/2}{1 + r1/2}$$

(6). Kuder-Richardson formula 21 (K-R 21):

$$r = \frac{K}{K-1}\left(1 - \frac{M(K-M)}{K s^2}\right)$$

1.15. MATERIALS PREPARED FOR THE TEST-SCALE

Following materials were prepared for the test-scale:-

(i). Test Manual

(ii). Test Booklets

(iii). Separate Answer Sheets

(iv). Stencil Scoring Key.

(15)

NON-VERBAL GROUP TEST OF INTELLIGENCE.

GENERAL INSTRUCTIONS:

1. This is a Non-Verbal Group Test of Intelligence in the form of a Booklet.The test is an Omnibus type,consisting of nine kinds of Items in nine Sub-tests.
2. There is a separate Answer Sheet for writing your responses. Remember all the writing goes on the Answer Sheet.
3. Do not mark on the Booklet in any manner.
   Do not open the Booklet untill you are asked.
4. Read the Directions and do the Examples carefully.Carefully read the direction given for each item how to do,and give responses as you are directed.
5. Put a Cross (X) on the Answer Sheet against the right number you have chosen.
6. If you want to change an answer,put a circle (Ø) and then mark the new one.
7. Time Limit for the test is 30 minutes.
8. Clarefy your thoughts.No question will be entertained when the test begins.
9. (A). Now I will distribute the Booklets along with the Answer Sheets.But do nat open it untill you are told to do so.(Distributed).

   (B). Take the Answer Sheet and fill in the spaces provided. (Filled up).

   (C). Open the Booklet for reading Directions and Examples. (Opened).

DO NOT OPEN THE BOOKLET UNTILL YOU ARE TOLD.
DO NOT MARK ON THE BOOKLET IN ANY MANNER.

II TEST STANDARDIZATION

This chapter deals with the sample, establishment of reliability,validity and norms fot the test.The investigator standardized thee constructed test on a large sample at the final test instead of at the tried-out stage.

2.1. SAMPLE OF THE TEST

For a representative sample of the population,stratified random sampling method was used.A total sample of 2396 high school students consisting of 599 from each class of seven to ten were drawn from 22 high schools of Nagaland. There were 1145 girls and 1251 boys within the age groups of 12 to 19 (as identified).Detailed about the sample is given in table 3.

2.3. DATA COLLECTION AND ANALYSIS

Data collection and scoring were the major activities for standardizing the test. Data collected from the representative sample were scored and classified into class-wise and age-wise groups. Mean and s.d. were calculated for different groups. Again the detailed are shown in the following tables (table 4 and 5.1;5.2;5.3;5.4.).

(17)

Table 3

TABLE SHOWS THE TOTAL NUMBER OF STUDENTS IN THE TEST.

GRADE-WISE		AGE-WISE	TOTAL SEX
1251 1145 2396		1251 1145 2396	2502 = Male 2290 = Female = Total
Class	Male	Female	Total
VII	331	268	599
VIII	293	206	599
IX	289	310	599
X	238	261	599
Age	Male	Female	Total
12	39	47	86
13	135	94	229
14	142	204	346
15	261	255	516
16	260	220	430
17	237	194	431
18	17	97	214
19	60	34	94

(18)

Table 4.

FOLLOWING ARE THE DISTRIBUTION OF THE TEST SCORES.

SCORE RANGE	MALE	FEMALE	TOTAL	SCORE RANGE	MALE	FEMALE	TOTAL
	1	1	2	37	38	23	61
6	2	1	3	38	36	23	59
7	1	2	3	39	48	22	70
8	4	3	7	40	39	32	71
9	1	7	8	41	36	24	60
10	4	1	5	42	30	21	51
11	5	8	13	43	31	21	55
12	11	9	20	44	21	19	40
13	11	12	23	45	17	15	32
14	20	12	32	46	24	11	35
15	19	16	35	47	19	16	35
16	11	24	35	48	19	14	33
17	31	34	65	49	18	13	31
18	21	27	48	50	14	11	25
19	25	23	48	51	8	10	18
20	31	30	61	52	13	9	22
21	32	32	64	53	14	10	24
22	35	36	71	54	5	11	16
23	36	33	69	55	7	5	12
24	28	42	70	56	7	5	12
25	35	51	86	57	14	8	22
26	44	39	83	58	5	3	8
27	35	41	76	59	6	3	9
28	36	48	84	60	3	4	7
29	40	38	78	61	0	2	2
30	38	32	70	62	2	0	2
31	27	37	64	63	3	1	4
32	33	35	68	64	1	1	2
33	47	35	82	65	1	0	1
34	34	29	63	66	1	0	1
35	40	36	76	67	1	0	1
36	32	31	63	Total=	1251.	1145.	2396

Table 5.i.

TEST SCORES DISTRIBUTION TOTALS OF (BOTH BOYS & GIRLS) WITH MEAN AND STANDARD DEVIATION.

Class-Interval	Class Groups			Age Groups	
	Male	Female	Total	Male	Female
5- 9	9	14	23	9	14
10-14	51	42	93	51	42
15-19	107	124	231	107	124
20-24	162	173	335	162	173
25-29	190	217	407	190	217
30-34	179	168	347	179	168
35-39	194	135	329	194	135
40-44	157	120	277	157	120
45-49	97	69	166	97	69
50-54	54	51	105	54	51
55-59	39	24	63	39	24
60-64	9	8	17	9	8
65-69	3	0	3	3	0
Total = 1251		1145	2396	1251	1145
Mean = 32.80		31.05	31.96	32.80	31.05
S.D. = 11.65		11.35	11.57	11.65	11.35

(20)

Table 5.ii.

CLASS-WISE FREQUENCY DISTRIBUTION WITH MEAN AND S.D.
(Boys & Girls)

Class-Interval	Class Groups				
	X	IX	VIII	VII	TOTAL
5- 9	4	6	10	3	23
10-14	12	23	27	31	93
15-19	42	61	66	62	231
20-24	64	97	77	97	335
25-29	78	126	91	112	407
30-34	82	100	66	99	347
35-39	83	76	100	70	329
40-44	91	52	62	72	277
45-49	43	25	62	36	166
50-54	42	22	29	12	105
55-59	40	9	9	5	63
60-64	16	1	0	0	17
65-69	2	1	0	0	3
Total:	599	599	599	599	2396
Mean =	35.28	30.14	31.75	30.03	31.96
S.D. =	12.	10.45	11.65	10.25	11.57

(21)

Table 5.iii.

AGE-WISE FREQUENCY DISTRIBUTION OF THE TEST SCORES OF (Boys and Girls) with MEAN AND S.D.

Class-Interval	Age Groups 12	13	14	15	16	17	18	19	Total
5- 9	0	0	5	5	4	7	2	0	23
10-14	3	9	9	19	23	11	17	2	93
15-19	11	14	33	40	48	41	26	18	231
20-24	13	21	44	79	57	65	38	18	335
25-29	15	39	62	84	64	94	37	12	407
30-34	19	41	49	66	62	69	29	12	347
35-39	10	28	44	80	76	54	25	12	329
40-44	10	32	54	54	66	39	14	8	277
45-49	3	23	26	45	34	16	13	6	166
50-54	1	16	13	26	19	18	8	4	105
55-59	1	6	7	13	18	12	4	2	63
60-64	0	0	0	5	8	4	0	0	17
65-69	0	0	0	0	1	1	1	0	3
Total =	86	229	346	516	480	431	214	94	2396
Mean =	29	34	32	32	33	31	29	29	31
	.21	.09	.10	.57	.01	.04	.24	.77	.94
S.D. =	9	11	11	11	12	10	11	11	11
	.45	.05		.66	.45	.92	.64	.05	.94

Mean and S.D. continuation after points are written just in the second lines.

(22)

Table 5.iv.

SEPARATE AGE-WISE TEST SCORES DISTRIBUTION OF THE BOYS AND GIRLS WITH MEAN AND S.D.

CLASS-INTERVAL	AGE GROUPS																			
	12		13		14		15		16		17		18		19					
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G				
5- 9	0	0	0	0	1	4	3	2	2	2	3	4	0	2	0	0				
10-14	3	0	6	3	1	8	12	7	10	13	8	3	10	7	1	1				
15-19	3	8	7	7	16	17	18	22	21	27	18	23	13	13	11	7				
20-24	4	9	12	9	7	37	48	31	28	29	31	34	19	19	13	5				
25-29	5	10	22	17	29	33	33	51	34	30	42	52	18	19	7	5				
30-34	9	10	23	18	15	34	35	31	34	28	43	26	15	14	5	7				
35-39	6	4	19	9	23	21	36	44	51	25	35	19	17	8	7	5				
40-44	5	5	17	15	28	26	24	30	43	23	25	14	9	5	6	2				
45-49	3	0	15	8	11	15	26	19	17	17	11	15	8	5	6	0				
50-54	0	1	10	6	5	8	12	14	9	10	9	9	6	2	3	1				
55-59	1	0	4	2	6	1	9	4	8	10	9	3	1	3	1	1				
60-64	0	0	0	0	0	0	5	0	2	6	2	2	0	0	0	0				
65-69	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0				
Total =	39	47	135	94	142	204	261	255	260	220	237	194	117	97	60	34				
Mean =	31	28	34	33	43	30	32	32	33	32	32	29	30	27	30	28				
	.48	.38	.48	.01	.18	.65	.74	.39	.53	.52	.27	.52	.29	.97	.66	.76				
S.D. =	10	8	11	10	10	10	12	10	11	13	11	10	11	11	11	10				
	.68	.51	.24	.96	.7	.85	.44	.83	.45	.26	.52	.40	.85	.31	.78	.43				

2.4. COMPUTATION OF RELIABILITY

Reliability were established by computing coefficient of correlation.Reliability for internal consistency were estimated by the following methods: Split-half method
Test-retest method and
Kuder-Richardson Formula 21 (K-R 21).

(i) Calculation of reliability by split-half method:-

For computing coefficient of correlation by split-half method,odd-numbered and even-numbered items were scored separately for the total test.Then coefficient of correlation for each class consisted of 599 pupils were calculated with the help of the product-moment formula for method) and corrected by the Spearman-Brown formula for the total test.The values of the test reliability were as shown in the table below.

Table 6.

Class	X	IX	VIII	VII
N	599	599	599	599
$r_{\frac{1}{2}\frac{1}{2}}$	0.88	0.87	0.86	0.89
r_{tt}	0.94	0.93	0.92	0.94

(ii) Calculation of reliability by test-retest method:-

In order to estimate the reliability of the test,test-retest method was followed.For calculating coefficient of correlation retest was given

to a sample of 390 students after a period of six months.The scores of these two different occasions were correlated by the deviation score of product-moment formula and found as + 0.94. This indicated that the total test is consistent and stable for measuring intelligence at any time.

(iii). Calculation of reliability by Kuder-Richardson formula 21 (K-R 21):

Reliability of the test was also estimated by the Kuder-Richardson formula 21.Coeff-icient of correlation were estimated for all the classes and total test length and found as given in the table below:-

Table 7.

Groups	Class X	Class IX	Class VIII	Class VII	Total
N	599	599	599	599	2396
r	0.87	0.84	0.87	0.83	0.87

2.5. VALIDITY COMPUTATION

Another important aspect of the test standardization is the validation of the new test with an established criterion test.For the present test,the "Group Test of General Mental Ability" by S.Jalota was selected as a criterion test,and administered to a representative sample of 500 students. Then its concurrent validity was established by correlating the scores of the two tests.Coefficient of correlation was computed by the direct method

of product-moment formula and found a high positive value of + 0.88.Therefore it was concluded that the developed test has no distinction from a verbal test and has same power of measuring intelligence.

Besides this, all the nine subtests have been correlated each other for inter-subtests validity.From every subtest a total sample of 500 students were uniformly taken which were approximately 5 % from each single range of scores.The results of these inter-subtests correlations were found all positive. So the inter-subtests of the test were positively validated as the correlation matrix shown below.

2.6. ESTABLISHING NORMS

Norms are essential that they tell us the relative position of individuals in the test. Norms provide the standard to compare test performance of testees and locate their relative ranks corresponding to the raw scores.The objective of this section was to standardize norms for the test and to provide norm tables for the stratified representative sample of th the students.Therefore,both general and specified group norms were established in the forms of percentile ranks,stanine scores and deviation IQs for different age-groups and grade-levels.

2.6.(I). PERCENTILE NORMS

Percentiles are the derived scores expressed in terms of percentages of persons.

(25)

Percentile ranks indicate the person's relative positions in ag group.It is any one of the 99 points dividing a frequency distribution into 100 groups of equal size.

For the present test,the investigator established a general norm with the scores of the total sample and specified group norms for every group of different age,grade separately.All these derived scores have been arranged and presented in the multiple group norm tables 9.i,9.ii,9.iii. for easy reference to locate the individual's position in comparison with the performance of others.

2.6.(ii). STANINE NORMS

Stanine is a well known transformation scale.Stanines are derived scores in which the raw-scores divided into nine standard groups.It provides a single-digit system of scores.So the advantage of stanine is to compute the scores of single-digit numbers and assign equal stanine to all persons with same raw-scores.

In this test both general and specified norms were established for different age-groups and grade levels.For determining stanine norms an accepted scale in terms of percentages and ideal percentages had been followed as given below-

Table 10.

Scale for determination of stanines.

(26)

Scale for determination of stanines.

Stanine Level	I	II	III	IV	V	VI	VII	VII	IX
Percentages	4	7	12	17	20	17	12	7	4
Ideal Percentages	4	11	23	40	60	77	89	96	100

In the present test standardization, ideal percentages had been calculated and norm scales were decided on the basis of these ideal percentages for every group. Finally various groups of raw-scores under stanine scale were assessed and presented in multiple-norm tables 11.i and 11.ii, for age -wise and class-wise scores respectively.

2.6.(iii). DETERMINATION OF DEVIATION IQs

Deviation IQ is a derived scores scale for measuring individuals mental abilities. In the present test, Stanford-Binet scale with a mean of 100 and standard deviation of 16 was adopted. Separate age norms and grade norms were computed by using the formula DIQ = 16z + 100. Then number of persons, percentage of scores and range of raw scores under different IQ levels had been carefully worked out for both boys and girls separately as shown in the tables 12 and 13.

2.7. INTER-CHANDEABILITY OF PERCENTILE RANKS, STANINES AND DIQs

It was necessary to finalise for inter-changeability of the same scores of different norms. One test score of a person may be interpreted differently under different norm scales.

In the present test, percentile norms and stanine norms had been prepared with a view to give similar meaning to the same test scores. It was tried to prepare a type of inter-changeable and inter-useable norms of the two. Thus a percentile band of nine score ranges equivalent to nine stanines were estimated. So equal groups of scores had been classified and described under percentile and stanine norms for equivalent uses and detailed reports are shown in the 14 and 15.

But the raw-scores ranges of the test were not uniformly distributed for comparable and inter-changeable uses under DIQ scale. Therefore it shall be duobtful for similar interpretations and descriptions. These three scales comparisons of raw-scores are as given in the tables.

(28)

Table 8.

TABLE SHOWS THE CORRELATIONS OF ALL THE SUB-TESTS.

Sub-Tests	1	2	3	4	5	6	7	8	9
1		0.60	0.57	0.11	0.53	0.61	0.49	0.45	0.48
2	0.60		0.62	0.21	0.40	0.43	0.41	0.37	0.34
3	0.57	0.62		0.18	0.45	0.34	0.48	0.29	0.25
4	0.11	0.21	0.18		0.29	0.31	0.04	0.12	0.09
5	0.55	0.40	0.45	0.29		0.01	0.33	0.33	0.12
6	0.61	0.43	0.54	0.31	0.01		0.41	0.92	0.43
7	0.45	0.41	0.48	0.04	0.33	0.41		0.22	0.13
8	0.45	0.37	0.29	0.12	0.33	0.92	0.22		0.34
9	0.48	0.34	0.25	0.09	0.12	0.43	0.13	0.34	

CORRELATION MATRIX

Table 9.i.

MULTIPLE-GROUP NORMS TABLE.

Table shows the Percentile Norms for different Grades:

Range of Raw Scores.	...Classes...					Range of Raw Scores.	... Classes...				
	VII	VIII	IX	X	Total		VII	VIII	IX	X	Total
67				99+	99+	35	68	59	71	49	62
66			99+	99+	99+	34	66	55	68	46	59
65			99+	99+	99+	33	62	52	65	43	56
64			99+	99+	99+	32	59	51	61	40	52
63			99+	99+	99+	31	56	49	57	38	50
62			99+	99+	99+	30	53	46	54	35	47
61			99+	98	99	29	49	44	50	32	44
60			99+	98	99	28	44	41	50	30	40
59		99+	99+	97	99	27	40	38	43	27	38
58	99+	99+	99	96	99	26	37	35	39	25	34
57	99+	99+	99	94	98	25	33	32	34	22	30
56	99+	99	99	92	97	24	31	29	29	20	27
55	99	98	98	91	97	23	28	26	26	17	24
54	99	98	98	90	96	22	24	23	23	15	21
53	99	97	97	89	95	21	20	21	20	13	18
52	98	96	96	87	94	20	17	19	16	11	16
51	98	95	95	86	94	19	15	16	14	9	13
50	97	94	95	84	93	18	13	14	11	8	11
49	97	93	94	83	92	17	11	11	9	6	9
48	95	91	93	82	90	16	8	8	7	4	7
47	94	88	92	81	89	15	7	7	6	3	6
46	93	86	91	79	87	14	5	6	4	2	4
45	92	84	91	77	86	13	3	5	3	2	3
44	90	83	90	75	84	12	2	3	2	1	2
43	86	81	89	74	82	11	1	2	2	1	1
42	84	79	87	71	80	10	1	2	1	1	1
41	83	77	85	67	78	9	1	2	1	1	1
40	80	75	83	63	75	8	1	1	1	1	1
39	78	71	80	60	72	7	1	1	1		1
38	76	68	78	58	70	6		1			1
37	73	65	76	54	67	5		1			1
36	70	63	74	51	64						

Table 9.ii.

MULTIPLE-GROUP NORMS TABLE.

Table shows the Percentile Norms for different Age-Groups:

Range of raw Scores	Age-Groups 12	13	14	15	16	17	18	19	Total.
67						99+			99+
66						99+	99+		99+
65					99+	99+	99+		99+
64				99+	99+	99+	99+		99+
63				99+	99+	99	99+		99+
62				99	99	99	99+		99+
61				99	99	99	99+		99
60				99	99	99	99		99
59			99+	99	99	99	99		99
58		99+	99	99	98	98	99+	99	99
57		99	99	98	96	98	99	99	98
56	99	98	99	97	95	97	98	99	97
55	99	98	98	97	95	97	98	98	97
54	99	97	98	96	94	96	97	98	96
53	99	96	96	95	93	95	97	98	95
52	98	94	96	94	92	94	96	98	94
51	98	93	95	93	92	94	95	96	94
50	98	91	95	92	91	93	94	94	93
49	97	89	94	91	90	91	94	94	92
48	97	86	92	89	89	91	93	93	90
47	97	84	92	87	88	90	91	89	89
46	96	83	90	85	86	89	89	87	87
45	95	81	88	84	84	88	89	87	86
44	93	78	85	83	83	88	87	87	84
43	91	77	81	80	80	87	86	87	82
42	90	74	78	78	78	85	86	86	80
41	90	71	76	75	75	82	84	84	78
40	86	68	73	73	72	80	82	80	75
39	82	66	69	70	68	78	81	76	72
38	80	65	67	67	65	76	79	71	70

Cont.in the next page-

Continuation,

Range of raw Scores	12	13	14	15	16	17	18	19	Total
37	76	62	65	64	62	74	75	69	67
36	74	59	62	62	59	72	72	69	64
35	73	56	60	61	55	69	70	67	62
34	69	53	57	56	52	66	68	64	59
33	61	48	55	53	49	63	64	61	56
32	56	44	52	50	46	60	61	58	52
31	55	41	49	48	44	57	59	55	50
30	51	38	46	45	42	53	57	54	47
29	48	33	43	43	39	48	56	51	44
28	45	28	39	40	37	44	54	48	40
27	41	25	36	36	35	40	50	45	37
26	37	23	32	32	33	36	47	43	34
25	33	21	27	29	29	31	42	41	30
24	30	19	25	26	26	28	38	38	27
23	27	18	22	22	23	25	35	32	24
22	23	15	20	19	21	21	32	29	21
21	19	12	18	16	19	17	29	26	18
20	17	11	15	14	15	15	24	22	16
19	15	10	13	12	14	13	20	18	13
18	12	9	12	10	12	10	17	12	11
17	9	7	9	9	10	8	14	7	9
16	6	5	6	7	8	6	12	5	7
15	5	4	5	5	7	5	10	3	6
14	2	3	3	4	5	4	8	2	4
13	2	2	3	3	3	3	7	2	3
12	1	1	2	2	2	2	5	1	2
11	1	1	2	11	1	2	3		1
10			2	1	1	2	1		1
9			1	1	1	1	1		1
8			1	1	1	1			1
7			1	1	1	1			1
6			1	1		1			1
5			1			1			1

Table 9.iii.

THIS TABLE SHOWS THE RANGE OF RAW SCORES WITHIN THE GROUP OF PERCENTILE RANK SCALE FOR DESCRIPTION/CLASSIFICATION.

Percentile Ranks	Age Groups								Grade Groups				Description
	12	13	14	15	16	17	18	19 TOTAL	VII	VIII	IX	X	
1-4	5-14	5-15	5-14	5-14	5-13	5-14	5-11	5-15	5-14	5-13	5-12	5-14	5-16	VERY WEAK
5-11	15-17	16-20	15-17	15-18	14-17	15-18	12-15	16-17	15-18	14-17	13-17	15-18	17-20	WEAK
12-23	18-22	21-26	18-23	19-23	18-23	19-22	16-20	18-20	19-22	18-21	18-22	19-22	21-25	SLIGHTLY WEAK
24-40	23-26	27-30	24-28	24-28	24-29	23-27	21-24	21-24	23-28	22-27	23-27	23-26	26-32	AVERAGE
41-59	27-32	31-36	29-34	29-34	30-36	28-31	25-31	25-32	29-34	28-32	28-32	27-31	33-38	AVERAGE
60-76	33-37	37-42	35-41	35-41	37-41	32-38	32-37	33-39	35-40	33-38	33-40	32-37	39-44	AVERAGE
77-88	38-40	43-48	42-45	42-47	42-47	39-45	38-44	40-46	41-46	39-43	41-47	38-42	45-52	GOOD
89-95	41-45	49-52	46-51	48-53	48-56	46-53	45-51	47-50	47-53	44-48	48-51	43-51	53-57	HIGH/ EXCELLENT
96-99	46-56	53-59	52-69	54-68	57-65	54-67	52-66	51-58	54-67	49-58	52-59	52-66	58-67	VERY HIGH

TABLE SHOWS THE RANGE OF RAW-SCORES IN STANINES AND THEIR INTERPRETATION FOR DIFFERENT AGE-LEVELS!

Table 11.i.

STANINES	AGE-LEVEL								Classification/ Interpretation
	12	13	14	15	16	17	18	19	
I	0-14	0-15	0-13	0-13	0-13	0-13	0-11	0-14	VERY WEAK
II	15-17	16-19	14-16	14-18	14-16	14-17	12-15	15-17	WEAK
III	18-21	20-25	17-22	19-22	17-22	18-21	16-19	18-20	SLIGHTLY WEAK
IV	22-26	26-30	23-27	23-27	23-28	22-26	20-24	21-24	AVERAGE/ NORMAL
V	27-32	31-36	28-34	28-34	29-35	27-29	25-30	25-32	AVERAGE/ NORMAL
VI	33-36	37-42	35-40	35-41	36-41	30-38	31-37	33-38	AVERAGE/ NORMAL
VII	37-41	43-48	41-45	42-47	42-48	39-45	38-44	39-46	GOOD
VIII	42-48	49-52	46-52	48-53	49-56	46-54	45-51	47-50	HIGH/ EXCELLENT
IX	49 & Above	53 & Above	53 & Above	54 & Above	57 & Above	55 & Above	52 & Above	51 & Above	VERY HIGH

Table 12.

TABLE SHOWS THE RANGE OF RAW SCORES WITHIN DIQ CLASSIFICATION RANGES.

DIQ	AGE-GROUPS							GRADES						Classifications
	12	13	14	15	16	17	18	19	TOTAL	VII	VIII	IX	X	
140 & above	53-56			59-64	65	58-67	66	58	61-67	56-58		56-66	65-67	VERY SUPERIOR
130-139	48-52	55-53	53-59	52-58	56-63	52-57	51-57	51-57	54-60	49-55	54-59	50-55	58-64	SUPERIOR
120-129	42-47	48-54	46-52	45-51	49-55	45-50	44-30	44-50	47-53	43-48	46-53	43-49	50-57	SUPERIOR
110-119	35-40	41-47	39-45	39-44	41-48	38-44	37-43	37-43	39-46	37-42	39-45	37-42	43-49	HIGH AVERAGE
100-109	29-34	34-40	32-38	32-38	33-40	31-37	29-36	30-36	32-38	30-36	32-38	30-36	35-42	AVERAGE/ NORMAL
90-99	24-28	27-33	25-31	25-31	25-32	24-30	22-28	23-29	25-31	24-29	25-31	24-29	28-34	AVERAGE/ NORMAL
80-89	18-23	20-26	19-24	18-24	18-24	18-23	15-21	16-22	18-24	17-23	17-24	17-28	20-27	LOW AVERAGE
70-79	13-17	14-19	12-18	11-17	10-17	10-17	9-14	12-15	10-17	11-16	10-16	11-16	13-19	BORDERLINE DEFECTIVE
Below 70	11	10-13	5-11	6-10	7-9	5-9		5-9	7-10	7-10	5-9	7-10	8-12	MENTALLY DEFECTIVE

Scale is based on the Classification of Revised Stanford-Binet IQs, F.S. Freeman (1965, p.223); Lee, J. Cornbach (1970, p.219); Dr. G.C. Ahuja Test Manual (p.16).

(36)

Table 13.

TABLE SHOWS THE NUMBER OF PERSONS AND PERCENTAGES WITHIN THE DEVIATION IQ SCALE.

DIQ	RAW-SCORES	TOTAL NUMBER & PERCENTAGE	BOYS PERCENTAGES	GIRLS PERCENTAGES
140 & Above	61-67	N = 13 0.54	N = 9 0.71	N = 4 0.34
120-139	47-60	N = 274 11.43	N = 132 12.15	N = 122 10.65
110-119	39-46	N = 414 17.27	N = 246 19.66	N= 168 14.67
90-109	25-38	N =1013 42.27	N = 515 41.16	N = 498 19.49
80-89	18-24	N = 431 17.98	N = 208 16.62	N = 223 19.47
70-79	10-17	N = 228 9.51	N = 112 8.95	N = 116 10.13
Below 70	3-9	N = 23 0.95	N = 9 0.71	N = 14 1.22
		N =2396	N =1251	N =1145

Table 14.

TABLE SHOWS THE RANGE OF RAW SCORES AND TWO SCALES FOR EQUIVALENT DESCRIPTIONS AND CLASSIFICATIONS.

PR. Scale	Stanine Scale	Raw-Score Range	Total Sample	Boys %	Girls %	Descriptions and Classifications
96-99	9	54-67	N= 99 4.13%	N= 56 4.47%	N= 43 3.75%	Very High
89-95	8	47-53	N= 188 7.84%	N= 105 8.39%	N= 83 7.24%	High
77-88	7	41-46	N= 273 11.39%	N= 159 12.70%	N= 114 9.95%	Good/ Above Average
60-76	6	35-40	N= 400 16.69%	N= 233 18.62%	N= 167 14.58%	Average/ Normal
41-59	5	29-34	N= 425 17.73%	N= 219 17.50%	N= 206 17.99%	Average/ Normal
24-40	4	23-28	N= 468 19.53%	N= 214 17.10%	N= 254 22.18%	Average/ Normal
			N=1293 53.96%	N=666 53.23%	N=627 54.75%	
12-23	3	19-22	N= 244 10.18%	N= 123 9.83%	N= 121 8.88%	Slightly Weak
5-11	2	15-18	N= 183 7.63%	N= 82 6.55%	N= 101 8.83%	Weak
1-4	1	5-14	N= 116 4.84%	N= 50 4.79%	N= 56 4.89%	Very Weak

Table 15.

COMPARISON OF RAW-SCORES IN THREE DIFFERENT DERIVED SCORE SCALES.

IQ	Description	Raw-Scores	Raw-Scores	Description	PR.	Stanine
140 & Above	Very Superior	61-67	54-67	Very High	96-99	IX
130-139	Superior	54-60	47-53	High	89-95	VIII
120-129	Superior	47-53	41-46	Good	77-88	VII
110-119	High Average	39-46	35-40	Average	60-76	VI
100-109	Average	32-38	29-34	Average	41-59	V
90-99	Average	25-31	23-28	Average	24-40	IV
80-89	Low Average	18-24	19-22	Slightly Weak	12-23	III
70-79	Borderline Defective	10-17	15-18	Weak	5-11	II
Below 70	Mentally Defective	5-9	5-14	Very Weak	1-4	I

CHAPTER - IV

TEST STANDARDIZATION

This chapter has detailed explanation about the universe, sample selected for the test various methods of computation for establishing test reliability, validity and norms. As people have different opinions and decision about the process of standardization, some people standardized their tests at try-out stage. But the investigator standardized the constructed test on a large sample at the final test.

4.1. UNIVERSE

The population of the testees for the present test was confined to regular high school students of classes VII, VIII, IX and X studying in government and private schools of Nagaland state. These included both boys and girls who studied regularly in their respective schools. According to the Indian education norms, the tentative age-groups were ranging from 13+ to 17+

years. But the investigator could identify the exact age-groups ranging from 13+ to 19+ years.

4.2. SAMPLE

For a representative sample of the population, the investigator used the stratified random sampling method. The representative sample of the population were drawn from the rural and urban high school students of Nagaland state, covering all the districts approximately five percent of fourty-eight thousand pupils after dropping non-locals and drop-out students.

So the total sample of the test consisted of 2396 students and 599 drawn from classes of VII, VIII, IX and X by stratified sampling method. The detailed break up of grade groups, age-groups and sex-wise are given in the table 4.1.

TABLE 4.1.

TABLE SHOWS THE TOTAL NUMBER OF STUDENTS IN THE TEST.

GRADE-WISE		AGE-WISE	TOTAL SEX
1251 1145 2396		1251 1145 2396	2502 = Male 2290 = Female = Total
Class	Male	Female	Total
VII	331	268	599
VIII	293	206	599
IX	289	310	599
X	238	261	599
Age	Male	Female	Total
12	39	47	86
13	135	94	229
14	142	204	346
15	261	255	516
16	260	220	430
17	237	194	431
18	17	97	214
19	60	34	94

A total of twenty two high school had been randomly selected for the test administration for data collection. This was approximately 20 percent of the total government high schools and total recognised private high schools. These schools were selected from all the seven districts of Nagaland representing the population of different tribes and urban, rural areas. These randomly selected schools consisted of the top ranking schools to very poor schools. Schools run by the State Govt. both in the towns and villages; schools run by the churches; private managements and individual owners. To conclude the stratified sampling could fairly cover all the districts, all tribes and both urban and rural population of students in the state. Names of the schools choosen for the final test were as shown in the table below :

TABLE 4.2

List of the High Schools for data collection

Sl No	Name of the school	District
1.	Govt.High School,Kohima	Kohima
2.	Mt.Carmal School,Kohima	Kohima
3.	Bayovo English School, Kohima	Kohima
4.	Chanmari English School, Kohima	Kohima
5.	Pine Wood English School, Kohima	Kohima

Sl No	Name of the school	District
6.	Government High School, Tsemonyu	Kohima
7.	Govt. High School, Pfutsero	Phek (Pfutsero)
8.	Govt.High School, Chumukidima	Kohima (Dimapur)
9.	Unity Christian School,Dimapur	Kohima(Dimapur)
10.	Govt.High School,Dephupor	Kohima(Dimapur)
11.	Govt.High School,Wokha	Wokha
12.	Mt.Sinai English School,Wokha	Wokha
13.	Govt.High School,Mokokchung	Mokokchung
14.	Model English School,Mokokchung	Mokokchung
15.	Queen Mary School,Mokokchung	Mokokchung
16.	Govt.High School, Chari	Tuensang
17.	Govt.High School,Longkhim	Tuensang
18.	Govt.High School, Zunhiboto	Zunhiboto
19.	Christian English School,Dimapur	Kohima(Dimapur)
20.	Govt.High School, Mon	Mon
21.	Holy Cross, Dimapur	Kohima(Dimapur)
22.	Govt.High School,Ungma	Mokokchung

4.3. TEST ADMINISTRATION

(i) Material required

In order to collect data from the selected sample, the investigator required some ready materials. To serve this purpose following materials kept ready in advance.

(1) Test booklets constructed by investigator

(2) Answer sheets developed by the investiga -tor

(3) Stencil key developed by the investigator

(4) Criterion test for establishing validity- Galota's group test of mental ability

(ii) Procedure for data collection

Investigator contacted different school for permission and visited personally along with the developed tools. It is essential to make a mention that there was a healthy positive attitude on the part of the school authorities, teachers and students. The school authorities encouraged a lot with full cooperation.

In order to obtain accurate response from the students, it was necessary to establish a rapport

of strategies by motivating the students, creating and stimulating their interests. The test were administered in the normal class-rooms. The investigator after entering the class-room introduced himself and told the purpose of his visit. He also e examined the physical class-room arrangement and helped for comfortable sitting in a testing elimate, so that no respondent would make any complain during testing period.

As soon as the investigator was satisfied with the personal interaction and arrangement, he explained the general instructions orally followed by distribution of the test copies along with the answer sheets. Students were requested to read the specific directions given on the separate answer sheet for necessary entries in the blanks as well as for marking the responses. Then the investigator explained and requested the pupils to do all the examples provided in the beginning of the test and seeked queries and clarifications. Finally after noting the time, students were requested to start responding the test and complete within the stipulated 30 minutes time, students were requested to stop responding followed by collecting the test copies.

(iii) Collection of data

(a) After following the procedure as mentioned above, test had been administered to the selected group of testees

in their classrooms for the data collection. The main objectives of the data collection were to establish reliability, validity and preparing norms for the test standardization.

(b) Along with the constructed test, an another test "Group test of General Mental Ability" by Dr.S.Galota as an external criterion was also administered to a sample of 500 students for establishing validity of the constructed test. These two tests were administered simultanously,one after another for different classes.

(c) Besides these two simultanous administration, the developed test was re-administered to a sample of 390 pupils after a gap of six months. The purpose of this was to determine the reliability correlation for the test by test -retest method.

4.4. DISTRIBUTION OF THE TEST SCORES & ANALYSIS

The collection and scoring of the data were the major activities for standardizing a test. Distribution of the scores of different groups of testees, analysing and defining their relative

positions in a test would give a gernal glimpse of the test at first instance. In the present test, the investigator had collected data from a large sample of 2396 students consisting of 1251 boys and 1145 girls. They were classified into class-wise and age-wise groups as given in the table.

TABLE .4.3

Table showing the representative sample size for the test at its different stages.

Nature	Total	Objectives
Preliminary try-out	50	For items modifications
First try-out	371	For items analysis and sereening of the items for the test
Final test	Class VII=599 ClassVIII=599 Class IX=599 Class X=599 2396	For establishing validity, reliability and norms
Other test	500	For estimating validity
Test re-test	390	For computing reliability

For the application of statistical methods, all the raw-scores were arranged in an ascending order from lowest scores of 5 to the highest score of 67 and tallied for every single score range for different groups such as grades, age and sex. Then all these scores were grouped into thirteen (13) class-intervals with a score range of five. The original data for the total test and all the nine sub.tests were given in the appendices VI. Besides this, calculation of statistics were given in the appendices I. But the single scored range of scores were given in the following tables:

TABLE 4.4.(i).

FOLLOWING ARE THE DISTRIBUTION OF THE TEST SCORES.

SCORE RANGE	MALE	FEMALE	TOTAL	SCORE RANGE	MALE	FEMALE	TOTAL
5	1	1	2	37	38	23	61
6	2	1	3	38	36	23	59
7	1	2	3	39	48	22	70
8	4	3	7	40	39	32	71
9	1	7	8	41	36	24	60
10	4	1	5	42	30	21	51
11	5	8	13	43	31	21	55
12	11	9	20	44	21	19	40
13	11	12	23	45	17	15	32
14	20	12	32	46	24	11	35
15	19	16	35	47	19	16	35
16	11	24	35	48	19	14	33
17	31	34	65	49	18	13	31
18	21	27	48	50	14	11	25
19	25	23	48	51	8	10	18
20	31	30	61	52	13	9	22
21	32	32	64	53	14	10	24
22	35	36	71	54	5	11	16
23	36	33	69	55	7	5	12
24	28	42	70	56	7	5	12
25	35	51	86	57	14	8	22
26	44	39	83	58	5	3	8
27	35	41	76	59	6	3	9
28	36	48	84	60	3	4	7
29	40	38	78	61	0	2	2
30	38	32	70	62	2	0	2
31	27	37	64	63	3	1	4
32	33	35	68	64	1	1	2
33	47	35	82	65	1	0	1
34	34	29	63	66	1	0	1
35	40	36	76	67	1	0	1
36	32	31	63	Total=	1251.	1145.	2396

TABLE 4.4.(ii).

CLASS-WISE TEST SCORES DISTRIBUTIONS
(Boys & Girls)

SCORE RANGE	VII	VIII	IX	X	Total	SCORE RANGE	VII	VIII	IX	X	Total
5	0	2	0	0	2	37	21	14	12	14	61
6	0	3	0	0	3	38	13	19	11	16	59
7	1	0	2	0	3	39	15	20	16	19	70
8	1	3	2	1	7	40	15	17	15	24	71
9	1	2	2	3	8	41	11	14	12	23	60
10	1	1	2	1	5	42	8	12	10	21	51
11	5	5	2	1	13	43	20	12	10	13	55
12	5	6	5	4	20	44	18	7	5	10	40
13	6	10	5	2	23	45	5	10	4	13	32
14	14	5	8	5	32	46	10	13	4	8	35
15	12	8	9	6	35	47	2	15	7	11	35
16	8	10	8	9	35	48	13	11	5	4	33
17	18	22	14	11	65	49	6	13	5	7	31
18	13	15	13	7	48	50	4	7	4	10	25
19	11	11	17	9	48	51	2	6	4	6	18
20	15	17	17	12	61	52	2	7	3	10	22
21	20	12	20	12	64	53	2	5	6	11	24
22	26	17	18	10	71	54	2	4	5	5	16
23	19	13	18	19	69	55	2	0	2	8	12
24	17	18	24	11	70	56	1	6	1	4	12
25	15	22	31	18	86	57	1	2	3	16	22
26	24	18	26	15	83	58	1	0	2	5	8
27	19	19	22	16	76	59	0	1	1	7	9
28	28	16	25	15	84	60	0	0	1	6	7
29	26	16	22	14	78	61	0	0	0	2	2
30	25	15	16	14	70	62	0	0	0	2	2
31	15	13	19	17	64	63	0	0	0	4	4
32	13	9	31	15	68	64	0	0	0	2	2
33	29	12	19	22	82	65	0	0	0	1	1
34	17	17	15	14	63	66	0	0	1	0	1
35	12	28	20	16	76	67	0	0	0	1	1
36	9	19	17	18	63						
						N =	599	599	599	599	2396

TABLE 4.4.(iii).

DISTRIBUTION OF CLASS-WISE TEST SCORES (Boys).

SCORE RANGE	VII	VIII	IX	X	TOTAL	SCORE RANGE	VII	VIII	IX	X	TOTAL
5		1			1	37	15	8	8	7	38
6		2			2	38	9	14	5	8	36
7			1		1	39	10	14	14	10	48
8	1	3			4	40	9	6	10	14	39
9	1				1	41	5	6	8	17	36
10	1		2	1	4	42	3	7	6	14	30
11	2	1	2		5	43	10	6	5	10	31
12	3	4	2	2	11	44	10	2	2	7	21
13	3	4	2	2	11	45	2	5	2	8	17
14	9	3	4	4	20	46	5	10	4	5	24
15	7	4	4	4	19	47	1	8	3	7	19
16	5	2	3	1	11	48	6	9	2	2	19
17	8	11	6	6	31	49	5	8	1	4	18
18	6	6	5	4	21	50	3	4	0	7	14
19	7	4	9	5	25	51	1	2	1	4	8
20	8	10	7	6	31	52	2	3	1	7	13
21	9	5	12	6	32	53	1	4	5	4	14
22	13	9	8	5	35	54	0	2	2	1	5
23	14	4	7	11	36	55	2	0	1	4	7
24	7	7	9	5	28	56	1	2	1	3	7
25	8	7	11	9	35	57	1	1	2	10	14
26	14	9	13	8	44	58	1		1	3	5
27	8	7	10	10	35	59			1	5	6
28	16	7	4	9	36	60			1	2	3
29	14	7	12	7	40	61					
30	14	5	10	9	38	62				2	2
31	5	9	7	6	27	63				3	3
32	6	6	13	8	33	64				1	1
33	18	4	13	12	47	65				1	1
34	10	10	6	8	34	66			1		1
35	7	15	10	8	40	67				1	1
36	5	6	10	11	32						
						Total:	331	293	289	338	1251

TABLE 4.4.(iv).

DISTRIBUTION OF CLASS-WISE TEST SCORES (Girls).

SCORE RANGE	VII	VIII	IX	X	Total	SCORE RANGE	VII	VIII	IX	X	Total
5	0	1	0	0	1	35	5	13	10	8	36
6	0	1	0	0	1	36	4	13	7	7	31
7	1	0	1	0	2	37	6	6	4	7	23
8	0	0	2	1	3	38	4	5	6	8	23
9	0	2	2	3	7	39	5	6	2	9	22
10	0	1	0	0	1	40	6	11	5	10	32
11	3	4	0	1	8	41	6	8	4	6	24
12	2	2	3	2	9	42	5	5	4	7	21
13	3	6	3	0	12	43	10	6	5	3	24
14	5	2	5	0	12	44	8	5	3	3	19
15	5	4	5	2	16	45	3	5	2	5	15
16	3	8	5	8	24	46	5	3	0	3	11
17	10	11	8	5	34	47	1	7	4	4	16
18	7	9	8	3	27	48	7	2	3	2	14
19	4	7	8	4	23	49	1	5	4	3	13
20	7	7	10	6	30	50	1	3	4	3	11
21	11	7	8	6	32	51	1	4	3	2	10
22	13	8	10	5	36	52	0	4	2	3	9
23	5	9	11	8	33	53	1	1	1	7	10
24	10	11	15	6	42	54	2	2	3	4	11
25	7	15	20	9	51	55	0	0	1	4	5
26	10	9	13	7	39	56	0	4	0	1	5
27	11	12	12	6	41	57	0	1	1	6	8
28	12	9	21	6	48	58	0	0	1	2	3
29	12	9	10	7	38	59	0	1	0	2	3
30	11	10	6	5	32	60	0	0	0	4	4
31	10	4	12	11	37	61	0	0	0	2	2
32	7	3	18	7	35	62	0	0	0	0	0
33	11	8	6	10	35	63	0	0	0	1	1
34	7	7	9	6	29	64	0	0	0	1	1
						Total	=268	306	310	261	1145

TABLE 4.4.(v).

AGE-WISE MALE AND FEMALE TEST SCORES DISTRIBUTION.

SCORE RANGE	MALE	FEMALE	TOTAL	SCORE RANGE	MALE	FEMALE	TOTAL
5	1	1	2	37	38	23	61
6	2	1	3	38	36	23	59
7	1	2	3	39	48	22	70
8	4	3	7	40	39	32	71
9	1	7	8	41	36	24	60
10	4	1	5	42	30	21	51
11	5	8	13	43	31	24	55
12	11	9	20	44	21	19	40
13	11	12	23	45	17	15	32
14	20	12	32	46	24	11	35
15	19	16	35	47	19	16	35
16	11	24	35	48	19	14	33
17	31	34	65	49	18	13	31
18	21	27	48	50	14	11	25
19	25	23	48	51	8	10	18
20	31	30	61	52	13	9	22
21	32	32	64	53	14	10	24
22	35	36	71	54	5	11	16
23	36	33	69	55	7	5	12
24	28	42	70	56	7	5	12
25	35	51	86	57	14	8	22
26	44	39	83	58	5	3	8
27	35	41	76	59	6	3	9
28	36	48	84	60	3	4	7
29	40	38	78	61	0	2	2
30	38	32	70	62	2	0	2
31	27	37	64	63	3	1	4
32	33	35	68	64	1	1	2
33	47	35	82	65	1	0	1
34	34	29	63	66	1	0	1
35	40	36	76	67	1	0	1
36	32	31	63	Total=	1251.	1145.	2396.

TABLE 4.4.(vi).

RAW-SCORES DISTRIBUTION IN DIFFERENT AGE GROUPS.
(Age 12 to 19 both Male and Female)

Score	12	13	14	15	16	17	18	19	Total	Score	12	13	14	15	16	17	18	19	Total
5	0	0	1	0	0	1	0	0	2	37	3	10	7	9	17	8	7	0	61
6	0	0	0	3	0	0	0	0	3	38	3	2	6	17	14	7	7	3	59
7	0	0	0	2	1	0	0	0	3	39	1	3	12	20	14	12	2	6	70
8	0	0	1	0	3	3	0	0	7	40	6	8	12	10	20	10	3	2	71
9	0	0	3	0	0	3	2	0	8	41	0	7	9	13	12	9	5	5	60
10	0	1	0	1	1	0	2	0	5	42	1	4	7	13	13	11	2	0	51
11	1	2	2	2	2	0	4	0	13	43	1	9	15	8	13	6	2	1	55
12	0	0	1	5	6	1	6	1	20	44	2	4	11	10	8	3	2	0	40
13	1	2	2	4	5	6	2	1	23	45	1	2	7	10	6	3	3	0	32
14	1	4	4	7	9	4	3	0	32	46	1	7	6	6	11	4	0	0	35
15	2	0	6	8	9	3	5	2	35	47	0	1	3	15	6	0	6	4	35
16	1	3	3	9	5	10	3	1	35	48	0	7	8	8	4	3	3	2	33
17	3	7	16	8	15	9	4	3	65	49	1	6	2	8	7	6	1	0	31
18	3	3	3	7	7	10	9	6	48	50	0	4	2	5	5	7	1	1	25
19	2	1	5	8	12	9	5	6	48	51	0	3	2	5	3	0	2	3	18
20	1	4	10	12	11	7	14	2	61	52	1	4	1	6	3	5	2	0	22
21	3	2	8	14	10	17	5	5	64	53	0	3	5	5	7	2	2	0	24
22	4	11	8	11	9	19	9	0	71	54	0	2	3	5	1	4	1	0	16
23	3	3	8	21	11	12	5	6	69	55	0	1	2	2	2	4	0	1	12
24	2	1	10	21	16	10	5	5	70	56	1	2	0	4	1	1	3	0	12
25	3	8	8	14	18	20	13	2	86	57	0	2	2	4	9	4	1	0	22
26	3	2	20	18	12	19	8	1	83	58	0	1	2	1	2	1	0	1	8
27	5	5	8	20	11	16	8	3	76	59	0	0	1	2	4	2	0	0	9
28	2	9	18	20	9	18	6	2	84	60	0	0	0	1	4	2	0	0	7
29	2	15	8	12	14	21	2	4	78	61	0	0	0	0	2	0	0	0	2
30	4	8	12	12	11	17	5	1	70	62	0	0	0	1	1	0	0	0	2
31	2	5	12	13	7	20	4	1	64	63	0	0	0	2	1	1	0	0	4
32	0	9	8	16	15	11	4	5	68	64	0	0	0	1	0	1	0	0	2
33	9	12	10	12	12	16	10	1	82	65	0	0	0	1	1	0	0	0	1
34	4	7	7	13	17	5	6	4	63	66	0	0	0	0	0	0	1	0	1
35	3	7	9	20	16	17	2	2	76	67	0	0	0	0	0	1	0	0	1
36	0	6	10	14	15	10	7	1	63										
										N=	86	346		480		214			2396
												229		516		431		94	

TABLE 4.4.(vii).

RAW-SCORES DISTRIBUTION IN DIFFERENT AGE GROUPS
(Male Age 12 to 19)

SCORE RANGE	12	13	14	15	16	17	18	19	SCORE RANGE	12	13	14	15	16	17	18	19
5	0	0	0	0	0	1	0	0	37	3	8	2	0	14	5	6	0
6	0	0	0	2	0	0	0	0	38	1	2	3	11	8	6	3	2
7	0	0	0	1	0	0	0	0	39	0	1	9	13	11	9	1	4
8	0	0	1	0	2	1	0	0	40	3	4	7	4	13	5	2	1
9	0	0	0	0	0	1	0	0	41	0	3	3	8	8	6	4	4
10	0	1	0	0	1	0	2	0	42	1	2	3	5	10	8	1	0
11	1	1	1	1	0	0	1	0	43	0	5	10	2	8	3	2	1
12	0	0	0	4	3	1	3	0	44	1	3	5	5	4	3	0	0
13	1	1	0	3	1	3	1	1	45	1	1	2	7	1	2	3	0
14	1	3	0	4	5	4	3	0	46	1	4	2	4	9	4	0	0
15	1	0	1	6	4	1	5	1	47	0	1	0	8	2	0	4	4
16	1	3	0	0	3	3	1	0	48	0	5	5	4	2	1	0	2
17	0	3	10	3	7	4	1	3	49	1	4	2	3	3	4	1	0
18	1	1	1	4	2	4	5	3	50	0	2	2	2	2	5	1	0
19	0	0	4	5	5	6	1	4	51	0	1	1	2	0	0	1	3
20	0	2	2	8	6	3	8	2	52	0	3	0	2	3	3	2	0
21	1	1	0	12	5	8	1	4	53	0	2	2	5	3	0	2	0
22	1	6	2	4	5	10	7	0	54	0	2	0	1	1	1	0	0
23	2	3	0	14	4	6	2	5	55	0	0	2	1	1	3	0	0
24	0	0	3	10	8	4	1	2	56	1	2	0	2	0	1	1	0
25	1	3	3	6	9	8	5	0	57	0	1	2	4	4	3	0	0
26	1	0	14	8	5	11	4	1	58	0	1	2	2	0	0	0	1
27	1	3	3	8	8	5	5	2	59	0	0	0	1	3	2	0	0
28	1	5	7	6	5	7	4	1	60	0	0	0	1	1	1	0	0
29	1	11	2	5	7	11	0	3	61	0	0	0	0	0	0	0	0
30	1	6	4	6	7	11	3	0	62	0	0	0	1	1	0	0	0
31	0	1	2	7	4	12	1	0	63	0	0	0	2	0	1	0	0
32	0	4	0	8	8	6	4	3	64	0	0	0	1	0	0	0	0
33	5	6	7	7	7	11	4	0	65	0	0	0	0	1	0	0	0
34	3	6	2	7	8	3	3	2	66	0	0	0	0	0	0	0	1
35	2	5	3	7	11	10	1	1	67	0	0	0	0	0	0	1	0
36	0	3	6	5	7	5	6	0	N =	39	135	142	261	260	237	117	60

TABLE 4.4.(viii).

RAW-SCORES FREQUENCY DISTRIBUTION IN DIFFERENT AGE GROUPS (Age 12 to 19, Female/Girls)

SCORE RANGE	12	13	14	15	16	17	18	19	SCORE RANGE	12	13	14	15	16	17	18	19
5	0	0	1	0	0	0	0	0	35	1	2	6	13	5	7	1	1
6	0	0	0	1	0	0	0	0	36	0	3	4	9	8	5	1	1
7	0	0	0	1	1	0	0	0	37	0	2	5	9	3	3	1	
8	0	0	0	0	1	2	0	0	38	2		3	6	6	1	4	1
9	0	0	3	0	0	2	2	0	39	1	2	3	7	3	3	1	2
10	0	0	0	1	0	0	0	0	40	3	4	5	6	7	5	1	1
11	0	1	1	1	2	0	3	0	41	0	4	6	5	4	3	1	1
12	0	0	1	1	3	0	3	1	42	0	2	4	8	3	3	1	0
13	0	1	2	1	4	3	1	0	43	1	4	5	6	5	3	0	0
14	0	1	4	3	4	0	0	0	44	1	1	6	5	4	0	2	0
15	1	0	5	2	5	2	0	1	45	0	1	5	3	5	1	0	0
16	0	0	3	9	2	7	2	1	46	0	3	4	2	2	0	0	0
17	3	4	6	5	8	5	3	0	47	0	0	3	7	4	0	2	0
18	2	2	2	3	5	6	4	3	48	0	2	3	2	2	2	3	0
19	2	1	1	3	7	3	4	2	49	0	2	0	5	4	2	0	0
20	1	2	8	4	5	4	6	0	50	0	2	0	3	3	2	0	1
21	2	1	8	2	5	9	4	1	51	0	2	1	3	3	0	1	0
22	3	5	6	7	4	9	2	0	52	1	1	1	4	0	2	0	0
23	1	0	8	7	7	6	3	1	53	0	1	3	0	4	2	0	0
24	2	1	7	11	8	6	4	3	54	0	0	3	4	0	3	1	0
25	2	5	5	8	9	12	8	2	55	0	1	0	1	1	1	0	1
26	2	2	6	10	7	8	4	0	56	0	0	0	2	1	0	2	0
27	4	2	5	12	3	11	3	1	57	0	1	0	1	5	1	1	0
28	1	4	11	14	4	11	2	1	58	0	0	0	0	2	1	0	0
29	1	4	6	7	7	10	1	2	59	0	0	1	1	1	0	0	0
30	3	2	8	6	4	6	2	1	60	0	0	0	0	3	1	0	0
31	2	4	10	6	3	8	3	1	61	0	0	0	0	2	0	0	0
32	0	5	8	8	7	5	0	2	62	0	0	0	0	0	0	0	0
33	4	6	3	5	5	5	6	1	63	0	0	0	0	1	0	0	0
34	1	1	5	6	9	2	3	2	64	0	0	0	0	0	1	0	0
									Total:	47	94	204	255	220	194	97	34

= 1145

Further, in order to strengthen and give fair graphic justification to the assumptions, histogram and frequency polygon were drawn for different score groups as shown in figure 4.1, 4.2, 4.3, 4.4. After analysing and examining the test scores distribution it was found that the test scores were normally distributed.

However, as per as the raw-scores are concerned, majority of the students could score between the score-range of 25 to 29. The magnatude of the scores in all the different categories were found some what towards lower side of the range. It was found that no single student could score neither below 5 nor about 67. It shows that the test is neither too difficult nor too easy for the testees.

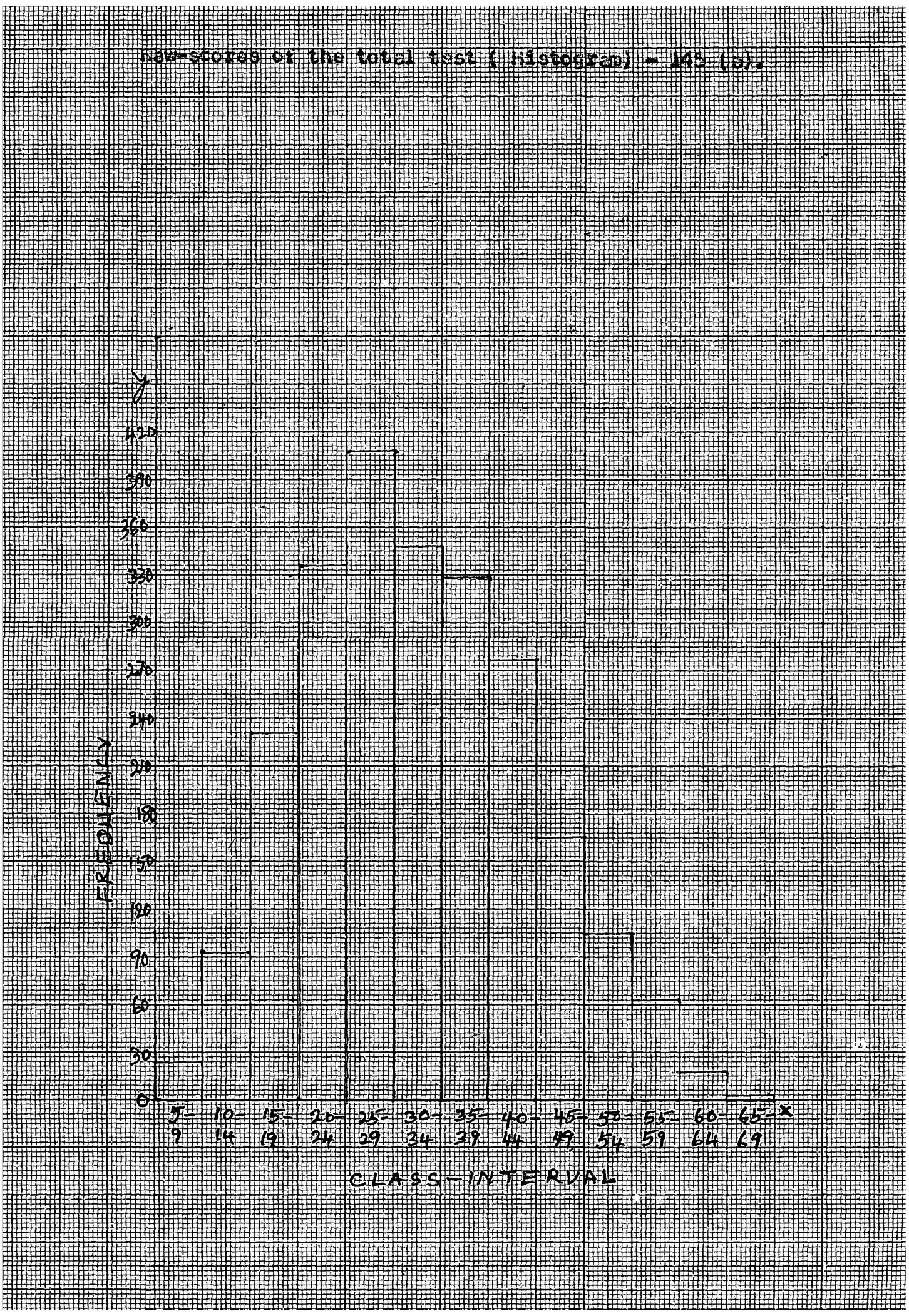
The mean and standard deviation were calculated by the following formuli :

$$\text{(a) Mean} = A.M + \frac{fx}{N} \times i$$

$$\text{(b) S.D.} = \sqrt{\frac{N\left[\Sigma fx^2 - \left(\Sigma fx^2\right)\right]}{N\,(N-1)}} \times i$$

The values of mean and standard deviation for the total test were 31.96 and 11.57; for male students total were 3.05 and 11.35; and for the female students total were 32.80 and 11.65 respectively. Moreover mean and standard deviation had been computed for all the grades and age-groups are shown in the tables as given below:

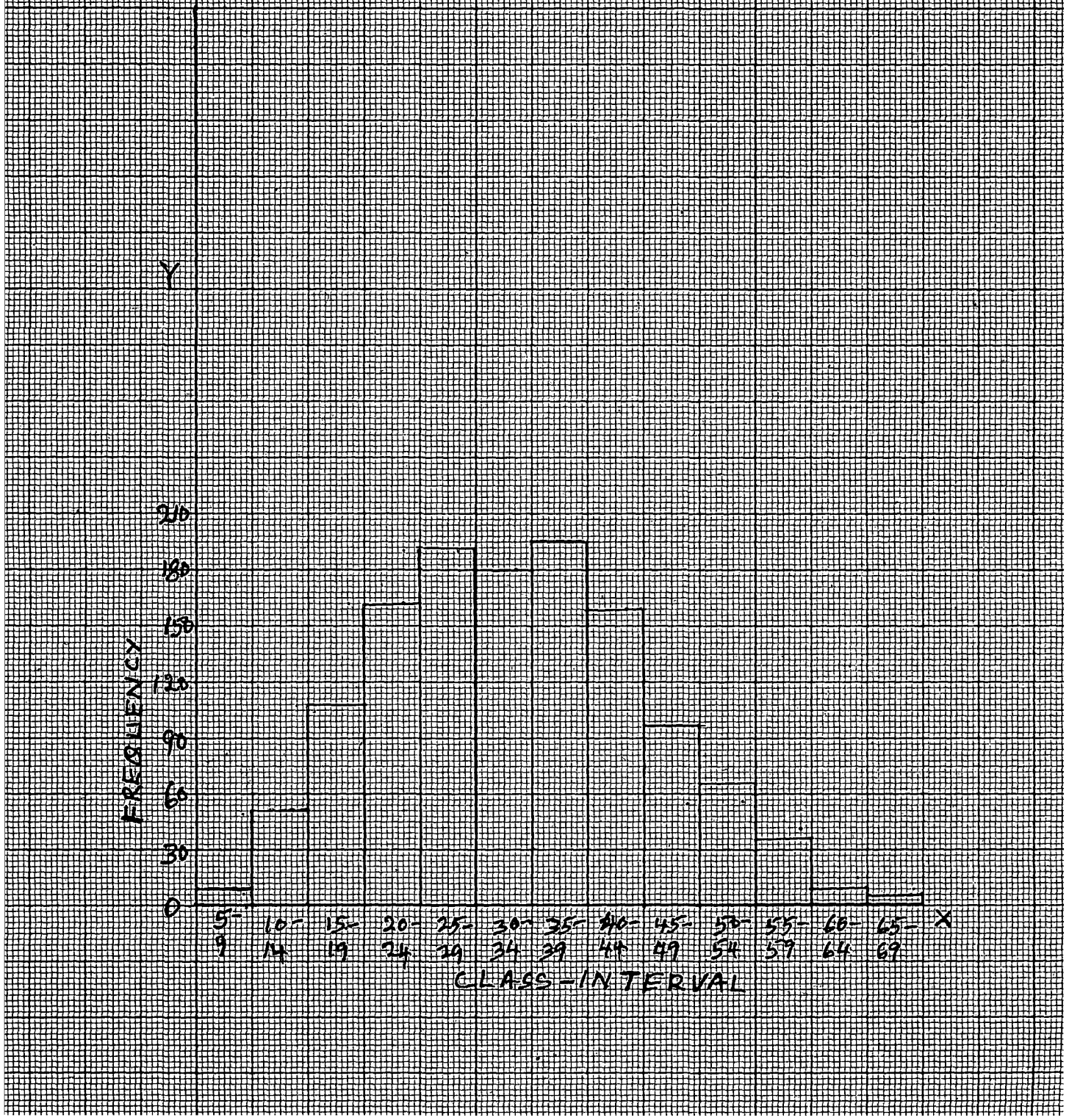
Raw-scores of the total test (histogram) = M5 (a).



Test scores of boys in the total test

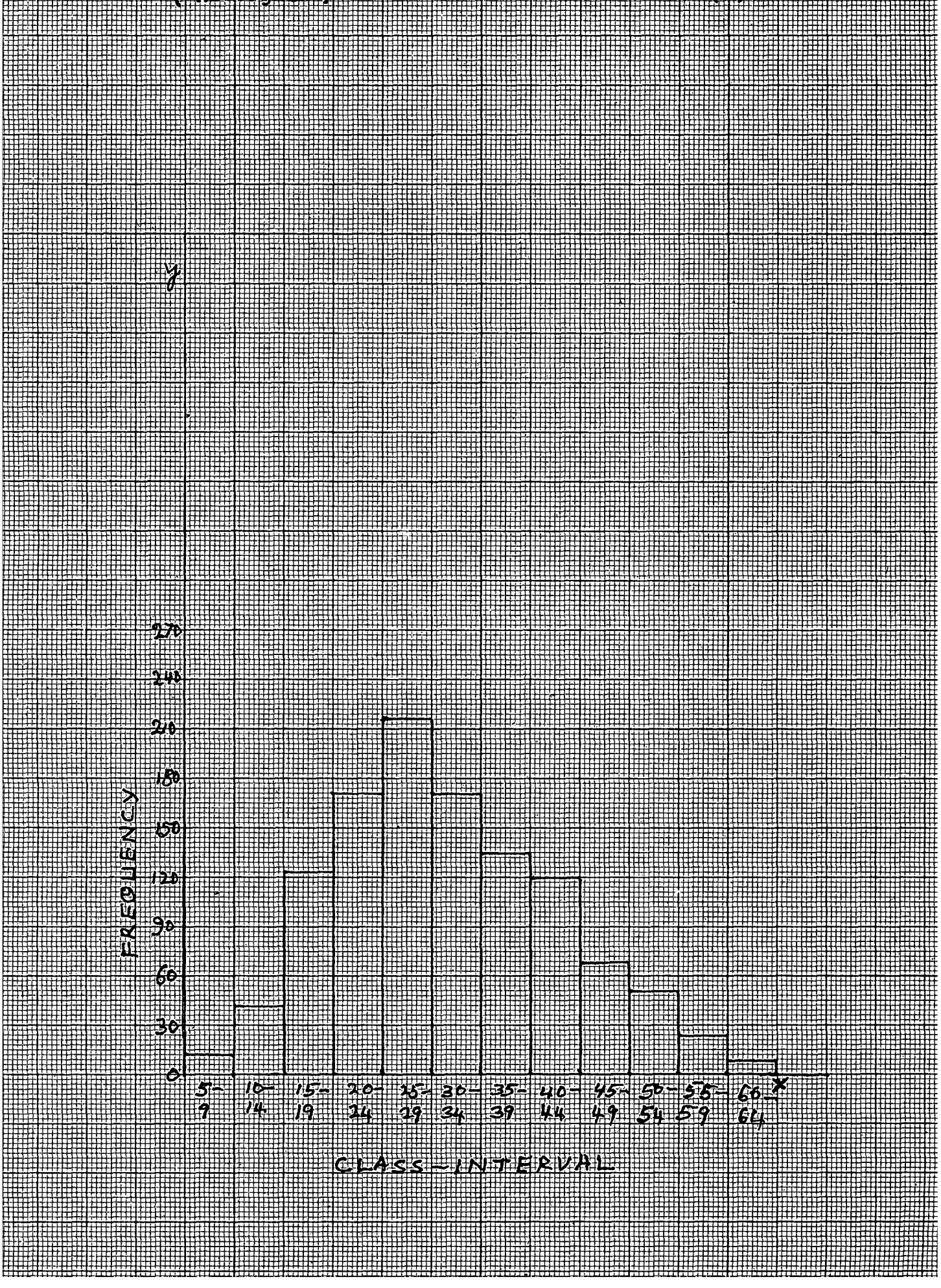
(Histogram) 145 (b).

1 sq = 3 points



Test scores of girls in the total test

(Histogram) 145 (c).



Boys and girls scores compared
(Frequency Polygon)

145 (d).

1 sq. = 3 pairs
Red represents girls
Black represents boys

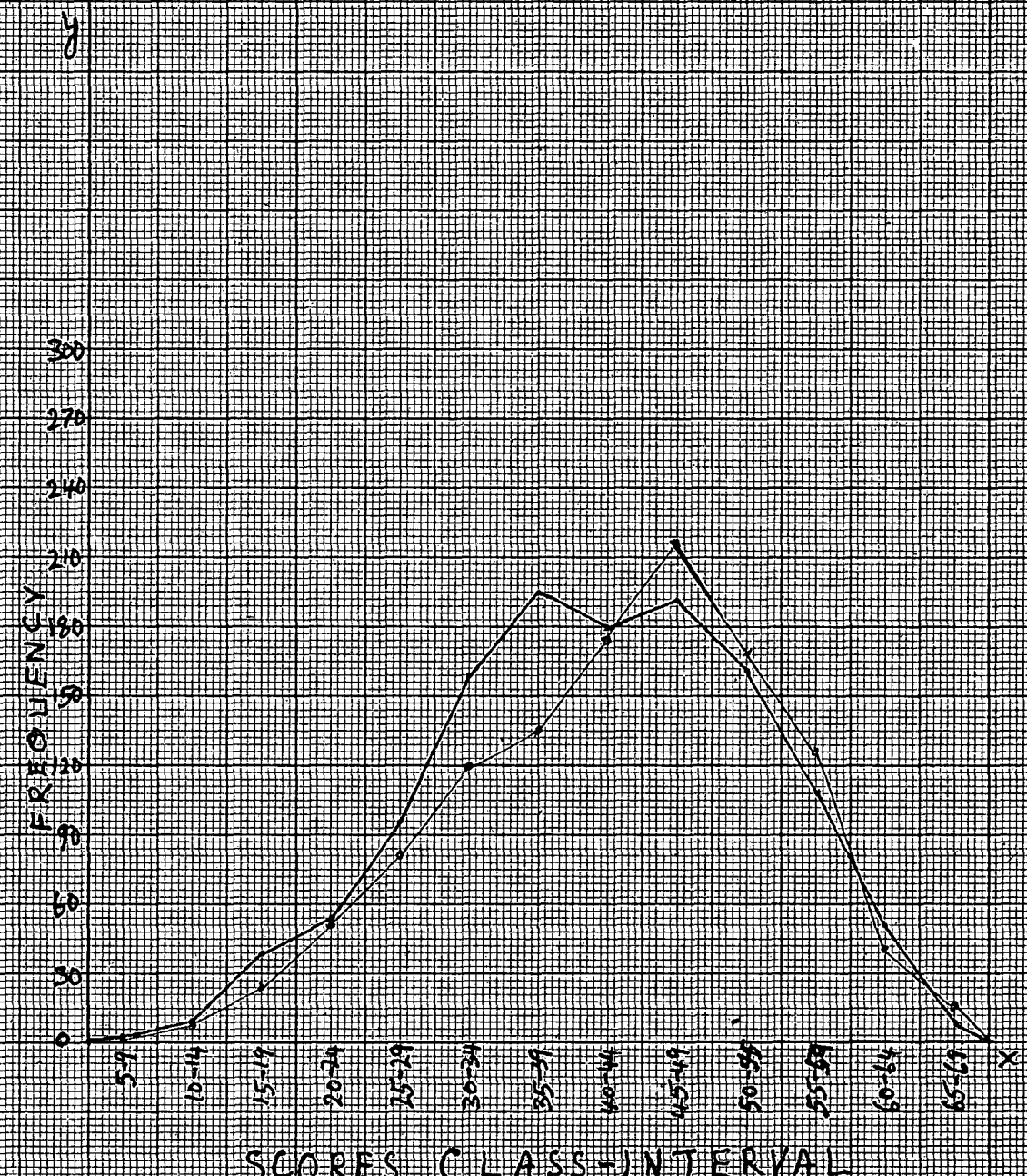


TABLE 4.5.(i).

TEST SCORES DISTRIBUTION TOTALS OF (BOTH BOYS & GIRLS) WITH MEAN AND STANDARD DEVIATION.

Class-Interval	Class Groups			Age Groups	
	Male	Female	Total	Male	Female
5- 9	9	14	23	9	14
10-14	51	42	93	51	42
15-19	107	124	231	107	124
20-24	162	173	335	162	173
25-29	190	217	407	190	217
30-34	179	168	347	179	168
35-39	194	135	329	194	135
40-44	157	120	277	157	120
45-49	97	69	166	97	69
50-54	54	51	105	54	51
55-59	39	24	63	39	24
60-64	9	8	17	9	8
65-69	3	0	3	3	0
Total = 1251		1145	2396	1251	1145
Mean = 32.80		31.05	31.96	32.80	31.05
S.D. = 11.65		11.35	11.57	11.65	11.35

TABLE 4.5.(ii).

CLASS-WISE FREQUENCY DISTRIBUTION WITH MEAN AND S.D.
(Boys & Girls)

Class-Interval	Class Groups				
	X	IX	VIII	VII	TOTAL
5- 9	4	6	10	3	23
10-14	12	23	27	31	93
15-19	42	61	66	62	231
20-24	64	97	77	97	335
25-29	78	126	91	112	407
30-34	82	100	66	99	347
35-39	83	76	100	70	329
40-44	91	52	62	72	277
45-49	43	25	62	36	166
50-54	42	22	29	12	105
55-59	40	9	9	5	63
60-64	16	1	0	0	17
65-69	2	1	0	0	3
Total:	599	599	599	599	2396
Mean =	35.28	30.14	31.75	30.03	31.96
S.D. =	12.	10.45	11.65	10.25	11.57

TABLE 4.5.(iii).

CLASS-WISE FREQUENCY DISTRIBUTION OF THE TEST SCORES OF THE BOYS WITH MEAN AND S.D.

Class-Interval	Class Group				
	X	IX	VIII	VII	Total
5- 9	0	1	6	2	9
10-14	9	12	12	18	51
15-19	20	27	27	33	107
20-24	33	43	35	51	162
25-29	43	50	37	60	190
30-34	43	49	34	54	179
35-39	44	47	57	46	194
40-44	62	31	27	37	157
45-49	26	12	40	19	97
50-54	23	9	15	7	54
55-59	25	6	3	5	39
60-64	8	1	0	0	9
65-69	2	1	0	0	3
Total =	338	289	293	331	1251
Mean =	36.74	4.6	32.59	30.95	32.80
S.D. =	12.45	10.75	11.75	10.59	11.65

TABLE 4.5.(iv).

CLASS-WISE FREQUENCY DISTRIBUTION OF THE TEST SCORES OF GIRLS WITH MEAN AND S.D.

Class-Interval	Class Groups X	IX	VIII	VII	Total
5- 9	4	5	4	1	14
10-14	3	11	15	13	42
15-19	22	34	39	29	124
20-24	31	54	42	46	173
25-29	35	76	54	52	217
30-34	39	51	32	36	168
35-39	39	29	43	24	135
40-44	29	21	35	35	120
45-49	17	13	22	17	69
50-54	19	13	14	5	51
55-59	15	3	6	0	24
60-64	8	0	0	0	8
65-69	0	0	0	0	0
Total =	261	310	308	268	1145
Mean =	36.59	29.14	30.85	29.31	31.05
S.D. =	12.25	10.25	11.6	10.21	11.35

TABLE 4.5.(v).
AGE-WISE FREQUENCY DISTRIBUTION OF THE TEST SCORES OF (Boys and Girls) with MEAN AND S.D.

Class-Interval	Age Groups 12	13	14	15	16	17	18	19	Total
5- 9	0	0	5	5	4	7	2	0	23
10-14	3	9	9	19	23	11	17	2	93
15-19	11	14	33	40	48	41	26	18	231
20-24	13	21	44	79	57	65	38	18	335
25-29	15	39	62	84	64	94	37	12	407
30-34	19	41	49	66	62	69	29	12	347
35-39	10	28	44	80	76	54	25	12	329
40-44	10	32	54	54	66	39	14	8	277
45-49	3	23	26	45	34	16	13	6	166
50-54	1	16	13	26	19	18	8	4	105
55-59	1	6	7	13	18	12	4	2	63
60-64	0	0	0	5	8	4	0	0	17
65-69	0	0	0	0	1	1	1	0	3
Total =	86	229	346	516	480	431	214	94	2396
Mean =	29 .21	34 .09	32 .10	32 .57	33 .01	31 .04	29 .24	29 .77	31 .94
S.D. =	9 .45	11 .05	11	11 .66	12 .45	10 .92	11 .64	11 .05	11 .94

Mean and S.D. continuation after points are written just in the second lines.

TABLE 4.5.(vi).

CLASS-INTERVAL	AGE GROUPS															
	12		13		14		15		16		17		18		19	
	B	G	B	G	B	G	B	G	B	G	B	G	B	G	B	G
5- 9	0	0	0	0	1	4	3	2	2	2	3	4	0	2	0	0
10-14	3	0	6	3	1	8	12	7	10	13	8	3	10	7	1	1
15-19	3	8	7	7	16	17	18	22	21	27	18	23	13	13	11	7
20-24	4	9	12	9	7	37	48	31	28	29	31	34	19	19	13	5
25-29	5	10	22	17	29	33	33	51	34	30	42	52	18	19	7	5
30-34	9	10	23	18	15	34	35	31	34	28	43	26	15	14	5	7
35-39	6	4	19	9	23	21	36	44	51	25	35	19	17	8	7	5
40-44	5	5	17	15	28	26	24	30	43	23	25	14	9	5	6	2
45-49	3	0	15	8	11	15	26	19	17	17	11	15	8	5	6	0
50-54	0	1	10	6	5	8	12	14	9	10	9	9	6	2	3	1
55-59	1	0	4	2	6	1	9	4	8	10	9	3	1	3	1	1
60-64	0	0	0	0	0	0	5	0	2	6	2	2	0	0	0	0
65-69	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0
Total =	39	47	135	94	142	204	261	255	260	220	237	194	117	97	60	34
Mean =	31	28	34	33	43	30	32	32	33	32	32	29	30	27	30	28
	.48	.38	.48	.01	.18	.65	.74	.39	.53	.52	.27	.52	.29	.97	.66	.76
S.D. =	10	8	11	10	10	10	12	10	11	13	11	10	11	11	11	10
	.68	.51	.24	.96	.7	.85	.44	.83	.45	.26	.52	.40	.85	.31	.78	.43

TABLE 4.5.(vi).

SEPARATE AGE-WISE TEST SCORES DISTRIBUTION OF THE BOYS AND GIRLS WITH MEAN AND S.D.

4.5. RELIABILITY COMPUTATION

The test reliability refers to the internal consistency of scores in a test. Test reliability (r_{11}) is expressed as positive decimal number ranging from .00 to 1.00 for the present test standardization, the investigator estimated reliability by computing the coefficient of correlation. The internal consistency and stability have been estimated by three method such as -

(i) Split-half method
(ii) Test Retest method and
(iii) Kuder-Richardson formula 21 (K-R 21)

(i) Calculation of reliability by split-half method

In order to compute coefficient of correlation by split-half method, the investigator tried to score the odd-numbered and even-numbered items separately for the total sample of 2396 students. The scores were separated class-wise for all classes of X, IX, VIII and VII. Then coefficient of correlation for each class was calculated with the odd even item scores with the help of the product moment correlation formula using the raw-scores directly. The sample for each class were consisted of .599 students. The coefficient of correlation estimated by this method were +0.88; +0.87; +0.86 and +0.89 for different

classes of ten, nine, eight and seven respectively. Then these were corrected by the Spearman-Brown formula for the total test which came out to be +0.94; +0.93; +0.92 and +0.94 respectively. The values of the test reliability for different classes are shown in the table below:-

Class	X	IX	VIII	VII
N	599	599	599	599
$r^1/2^1/2$	0.88	0.87	0.86	0.89
r_{tt}	0.95	0.93	0.92	0.94

(ii) Calculation of reliability by test-re-test method

In order to estimate the reliability of the developed test, the investigator followed the test re-test method. For calculating test retest coefficient of correlation, the new developed test had been administered to a sample of 390 students and then re-administe-red after a period of six months. The scores of these pupils attwo different occasions were correlated by the deviation score method of product-moment and coefficient of correlation was found +0.94. This indicated that the total test is consistent and stable for measuring intelligence at any time.

The formula use for calculation of coefficient of correlation :

$$r = \frac{Exy}{\sqrt{\Sigma Ex^2 \times \Sigma Ey^2}}$$

(iii) Reliability computation by Kuder-Richardson formula 21 (K-R 21)

Besides the calculation of reliability by earlier mentioned methods, the investigator also estimated reliability of the test by the Kuder-Richardson Formula 21 (K-R 21). Applying this, coefficient of correlation were calculated for the total test length as well as for all the classes from seven to ten. The sample of the pupils used and the coefficients of correlation for respective groups were as follows:

TABLE 4.7

Table showing the reliability of the test for different classes and total test.

Groups	Class X	Class IX	Class VIII	Class VII	Total Test
N	599	599	599	599	599
r	0.87	0.84	0.87	0.83	0.87

Formula used: $$r = \frac{K}{K-1}\left(1-\frac{M(K-M)}{Ks^2}\right)$$

Where as K = the number of items in the test
M = the mean of the test
s^2 = the standard deviation of the test scores

Substitution into formula and solution follows in the following pages.

RELIABILITY'
CORRELATION COEFFECIENT CALCULATION BY SPLIT-HALF (ODD-EVEN) METHOD.

Formula Used:-

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

Class X.

Values:- $\Sigma X = 10455$

$\Sigma Y = 10989$

$\Sigma X^2 = 236139$

$\Sigma Y^2 = 230151$

$\Sigma XY = 226325$

$N = 599$

$$r = \frac{599 \times 226325 - (10455)(10989)}{\sqrt{[599 \times 236139 - (10455)^2][599 \times 230151 - (10989)^2]}}$$

$$= \frac{135568675 - 114889995}{\sqrt{[141447261 - 109307025][137860449 - 120758121]}}$$

$$= \frac{20678680}{\sqrt{3210236 \times 17102328}}$$

$$= \frac{20678680}{\sqrt{5496728580694 08}}$$

$$= \frac{20678680}{23445103.07}$$

$$= 0.88$$

Spearman Formula.

$$r = \frac{2 \times r1/2}{1 + r1/2}$$

$$= \frac{2 \times 0.88}{1 + 0.88}$$

$$= \frac{1.76}{1.88}$$

$$= 0.94$$

Continuation.

Class IX. Values:- $\Sigma X = 8844$ $\Sigma Y^2 = 161976$
$\Sigma Y = 9183$ $\Sigma XY = 150762$
$\Sigma X^2 = 145026$ $N = 599$

$$r = \frac{599 \times 150762 - (8844)(9183)}{\sqrt{[599 \times 145026 - (8844)^2][599 \times 161976 - (9183)^2]}}$$

$$= \frac{90306438 - 81214452}{\sqrt{[86870574 - 78216336][97023624 - 8427489]}}$$

$$= \frac{9091986}{\sqrt{8654238 \times 12696135}}$$

$$= \frac{9091986}{\sqrt{109875373970130}}$$

$$= \frac{9091986}{10482145.49}$$

$$= 0.87$$

By Spearman Brown Formula:-

$$r = \frac{2 \times .87}{1 + .87}$$

$$= \frac{1.74}{1.87}$$

$$= 0.93$$

Class VIII. Values:- $N = 599$ $\Sigma Y^2 = 181154$
$\Sigma X = 9354$ $\Sigma XY = 169468$
$\Sigma Y = 9718$
$\Sigma X^2 = 164024$

$$r = \frac{599 \times 169468 - (9354)(9718)}{\sqrt{[599 \times 164024 - (9354)^2][599 \times 181154 - (9718)^2]}}$$

$$= \frac{101511332 - 90902172}{\sqrt{[98250376 - 87497316][108511246 - 94439524]}}$$

$$= \frac{10609160}{\sqrt{10753060 \times 14071722}}$$

$$= \frac{10609160}{\sqrt{151314070969320}}$$

$$= \frac{10609160}{12300978.96}$$

$$= 0.86$$

Spearman Brown. Formula:-

$$r = \frac{2 \times .86}{1 + .86}$$

$$= \frac{1.72}{1.86}$$

$$= 0.92$$

Continuation

Class VII. Values:- $\Sigma X = 8845$

$\Sigma Y = 9171$

$\Sigma X^2 = 147871$

$\Sigma Y^2 = 160465$

$\Sigma XY = 152124$

$N = 599$

$$r = \frac{599 \times 152124 - (8845)(9171)}{\sqrt{[599 \times 147871 - (8845)^2][599 \times 160465 - (9171)^2]}}$$

$$= \frac{91122276 - 8111495}{\sqrt{[88574729 - 78234025][96118535 - 84107241]}}$$

$$= \frac{10004781}{\sqrt{10340704 \times 12011294}}$$

$$= \frac{10004781}{\sqrt{124205235910976}}$$

$$= \frac{10004781}{11144740.28}$$

$$= 0.89$$

By Spearman Brown Formula:-

$$r = \frac{2 \times r\ 1/2}{1 + r\ 1/2}$$

$$= \frac{2 \times .89}{1 + .89}$$

$$= \frac{1.78}{1.89}$$

$$= 0.94$$

RELIABILITY.

COEFFICIENT OF CORRELATION BY TEST-RETEST METHOD:

Total Values:-

	Test	Re-test.
N =	390	390
Total=	15210	13650
Mean =	39	35
ξx^2 =	39506	
ξy^2 =		40106
ξxy =	37398	

Formula:- $$r = \frac{\xi xy}{\sqrt{x^2 \times y^2}}$$

Substitution:- $$r = \frac{37398}{\sqrt{39506 \times 40106}}$$

$$= \frac{37398}{\sqrt{1584427636}}$$

$$= \frac{37398}{39804.86}$$

$$= 0.93$$

RELIABILITY CALCULATION BY KUDER-RICHARDSON FORMULA 21 (K-R 21)

Formula Used:- $\frac{K}{K-1}\left(1-\frac{M\,(K-M)}{Ks^2}\right)$

Total Test:-

$$r = \frac{78}{78-1}\left(1-\frac{31.94\ (78-31.94)}{78\ (11.55)^2}\right)$$

$$= \frac{78}{77}\left(1-\frac{31.94 \times 46.06}{78 \times 142.5636}\right)$$

$$= 1.01 \quad 1-\frac{1471.1564}{11119.9608}$$

$$= 1.01 \quad 1- 0.132298703$$

$$= 1.01 \times 0.86$$

$$= .87$$

Class X.

$$r = \frac{78}{78-1}\left(1-\frac{35.28\ (78-35.28)}{78\ (12)^2}\right)$$

$$= \frac{78}{77}\left(1-\frac{35.28 \times 42.72}{78 \times 144}\right)$$

$$= 1.01 \quad 1-\frac{1507.1616}{11232}$$

$$= 1.01 \quad 1- 0.134184615$$

$$= 1.01 \times 0.86$$

$$= 0.87$$

Continuation

Class IX.

$$r = \frac{78}{78-1}\left(1-\frac{30.14\ (78-30.14)}{78\ (\ 10.45\ )^2}\right)$$

$$= \frac{78}{77}\left(1-\frac{30.14 \times 47.86}{78 \times 109.2025}\right)$$

$$= 1.01 \quad 1-\frac{1442.5004}{8517.795}$$

$$= 1.01 \quad 1- 0.169351387$$

$$= 1.01 \times 0.83$$

$$= 0.84$$

Class VIII.

$$r = \frac{78}{78-1}\left(1-\frac{31.75\ (78-31.75)}{78\ (\ 11.65\ )^2}\right)$$

$$= \frac{78}{77}\left(1-\frac{31.75 \times 46.25}{78 \times 135.7225}\right)$$

$$= \frac{78}{77} \quad 1-\frac{1468.4375}{10586.355}$$

$$= 1.01 \quad 1- 0.138710396$$

$$= 1.01 \times 0.86$$

$$= 0.87$$

Class VII.

$$r = \frac{78}{78-1}\left(1-\frac{30.03\ (78-30.03)}{78\ (10.25)^2}\right)$$

$$= \frac{78}{77}\left(1-\frac{30.03 \times 47.97}{78 \times 105.0625}\right)$$

$$= \frac{78}{77} \quad 1-\frac{1440.5391}{8194.875}$$

$$= 1.01 \quad 1- 0.175785365$$

$$= 1.01 \times 0.82$$

$$= 0.83$$

4.6 VALIDITY COMPUTATION

The abjective of validity computation for the test was to establish the extent the test be valid for this the investigator compared the scores of the new test with the scores of another criterion test having sufficient validity and measuring intelligence., for validation of the present test, the researcher selected the "Group of General Mental Ability" by Dr.S.Galota as a criterion test and calculated its concurrent validity by correlating the scores of the two tests. For this purpose researcher administered the two tests to a sample of 500 high school students of classes seven to ten in their respective regular classes. Both the developed test and the criterion test were administered continuously within the same period in an alternative process for each class. For instance the new test was administered first in class X and followed by the Jalotas test.Whereas in class VIII Jalota's test was administered first and followed by the new test. Such alternative method of testing could help to get uniform responses from the testees in both the tests.

In order to compute the coefficient of correlation, the direct method of Karl Person's product-moment formula was applied. Then the coefficient correlation between the two tests was found +0.88.

VALIDITY.

CORRELATION OF COEFFECIENT WITH THE SCORES OF Dr.S.JALOTA'S TEST.

Formula Used:-

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \times \Sigma y^2}}$$

Values:- N = 500 Mean (X) = 30

$\Sigma X = 15000$ Mean (Y) = 28

$\Sigma Y = 14000$

$\Sigma x^2 = 65120$

$\Sigma y^2 = 50384$

$\Sigma xy = 50384$

Solution:-

$$r = \frac{50384}{\sqrt{65120 \times 50381}}$$

$$= \frac{50384}{\sqrt{3280810720}}$$

$$= \frac{50384}{57278.3617}$$

$$= 0.88$$

This result could be interpreted that the present test has a positive high value with the criterion test. This could also be concluded that those who could do better in one test would also do the same in the other test too, but the condition would reverse for the poor achievers. On the other hand the two tests are of different nature, one is a verbal test and the other is a non-verbal test. So it was concluded that there is no distinction between the verbal and non-verbal group tests for the sample group. Those who could do well in the verbal test, they could do the same even in the case of non-verbal test.

In order to get inter-sub-tests validity, all the nine sub-tests had been correlated each other. The following steps had been taken for the purpose of computation:-

(a) approximately 5% from every single score range of each sub-test had been uniformly taken for a total of 500 pupils,

(b) all the scores in the sub-tests were arranged in order,

(c) correlation of all sub-tests were computed and a correlation matrix had been prepared as given in the table 4.8 (i) and (ii)

(d) computation of correlations for inter-sub-tests validity had been attached in the appendices V.

TABLE 4.8.(1).

TABLE SHOWS THE CORRELATIONS OF ALL THE SUB-TESTS.

Sub-Tests	1	2	3	4	5	6	7	8	9
1		0.60	0.57	0.11	0.53	0.61	0.45	0.45	0.48
2	0.60		0.62	0.21	0.40	0.43	0.41	0.37	0.34
3	0.57	0.62		0.18	0.45	0.54	0.48	0.29	0.25
4	0.11	0.21	0.18		0.29	0.31	0.04	0.12	0.09
5	0.55	0.40	0.45	0.29		0.01	0.33	0.33	0.12
6	0.61	0.43	0.54	0.31	0.01		0.41	0.92	0.43
7	0.45	0.41	0.48	0.04	0.33	0.41		0.22	0.13
8	0.45	0.37	0.29	0.12	0.33	0.92	0.22		0.34
9	0.48	0.34	0.25	0.09	0.12	0.43	0.13	0.34	

CORRELATION MATRIX

FOLLOWING ARE THE SCORES OF ALL THE SUB-TESTS (X or Y); (X^2or Y^2) AND XY FOR CALCULATION OF SUB-TESTS VALIDITY CORRELATIONS OF THE TEST.

TABLE 4.8.(ii).

Test 1	Test 2	Test 3	Test 4	Test 5	Test 6	Test 7	Test 8	Test 9	Test Value
X = 2496	X = 2028	X = 2407	X = 2139	X = 1851	X = 1671	X = 1453	X = 1148	X = 983	X/Y
X^2 = 14340	X^2 = 10549	X^2 = 14679	X^2 = 10669	X^2 = 8885	X^2 = 7547	X^2 = 5603	X^2 = 3734	X^2 = 2835	X^2/Y^2
Test 1X 1	Test 1X 2 11529	Test 1X 3 13567	Test 1X 4 11099	Test 1X5 10397	Test 1X 6 9676	Test 1X 7 8009	Test 1X 8 6459	Test 1X 9 5611	XY
		Test 2X 3 11422	Test 2X 4 9216	Test 2X 5 8379	Test 2X 6 7704	Test 2X 7 6599	Test 2X 8 5243	Test 2X 9 4480	XY
			Test 3X 4 10873	Test 3X 5 10051	Test 3X 6 9383	Test 3X 7 7928	Test 3X 8 6052	Test 3X 9 5147	XY
				Test 4X 5 8529	Test 4X 6 7770	Test 4X 7 6327	Test 4X 8 5141	Test 4X 9 4392	XY
					Test 5X 6 6209	Test 5X 7 5389	Test 5X 8 4737	Test 5XX9 4136	XY
						Test 6X 7 5499	Test 6X 8 5203	Test 6X 9 3868	XY
							Test 7X 8 3575	Test 7X 9 2969	XY
								Test 8X 9 2591	XY

1.= Arithmetic Reasoning
2.= Matrices
3.= Classification
4.= Figure Analogy
5.= Quantitative Reasoning
6.= Synonyms
7.= Opposites
8.= Similarities
9.= Picture Completion.

4.7. ESTABLISHING NORMS

The main purpose of the test standardization process is to determine the distribution of raw scores in the standardization norm groups. These raw scores are converted to some form of derived scores and set the norms. These norms serve as a frame of reference for interpreting raw-scores and indicating the individuals standing on the test relative to the distribution of scores obtained by the other individuals of the same age, grade, sex etc. Norms are important that they tell us the relative position in comparison to other performance on the test. The term norm is synonym for average, mean and median score for some specific group of people known as norm group. Norms provide us the standard to compare test performance of all the examinees and locate their relative ranks corresponding to the raw scores.

A group test is administered to a representative sample. No single norm scale would be enough to use for measuring individual positions. In other word when there is a stratified representative sample for a particular test, it is essential to have a multiple scales or norms. In the present test standardization, the sample of the test were stratified representing from the age-groups 12 to 19 years and class-groups of VII to X. Therefore it was decided to prepare stratified norm scales for separate chronological age-groups and grade levels.

The objective and importance of this sub-section was to standardize norms for the test and provide norm tables. Therefore the investigator established percentile norms, stanine norms and deviation IQs norms for general as well as pecific groups.

General test norms were prepared with the raw scores of the total length test of all the pupils. Secondly since the range of mental abilities varies from age to age and grade to grade, specified group norms had been computed for each age-group and for each grade level. But all these norms had been computed and established only in the form of percentile ranks, stanine scores and deviation IQs.

4.8. PERCENTILE NORMS

Percentile is one of the best type of norms in educational testing and measurement. A percentile rank indicates a pupils relative position in a group of population in terms of percentages of pupil's scoring below him or her. On the other word, it is the persons relative position within a specified group which describes the test performance. Percentile is any one of the 99 points dividing a frequency distribution into 100 groups of equal size. Percentiles are the derived scores expressed in terms of percentages of persons.

It was desirable to make comparision of the scores from highest to the lowest. In order to

establish percentile norms for the present test scores, the investigator collected a huge data from a large sample of population consisting of different classes, age-levels and sex.

For establishing percentile norms it was essential to compute a general group norm with the total test scores and specified group percentile norms for each grade and age-group separately with their own group scores.

For computing the percentile norms, the investigator adopted the following steps as given by Lewis (1971) and Lyman (1978).

1. Raw scores were arranged in descending order from highest to the lowest.
2. Tallied out in single score interval.
3. Frequency were found for every single score interval.
4. Computed the cumulative frequency by adding up through the score group.
5. Found the cf to midpoint (cfmp) of each score by additing 1/2 of the frequency to the cf just below it ($fx^1/2$ + cf just below)

Lewis, Op.cit, PP. 57-58, Lyman, Op.cit, pp. 97-98

6. Results of No.5 converted to cumulative percentage to mid-point (cfmp) by multiplying cfmp by 100 and dividing by the total number $(\frac{100 \times cfmp}{N})$

7. Then assigned the percentile ranks by rounding up each cfmp value to the nearest whole number except 1 for below one and 99 for above 99.

8. Finally assessed percentile bands on the basis of percentile scales.

After carefully computing percentile norms for every different norm group, the derived percentile scores had been arranged and presented in the multiple group norm tables for easy reference to locate the individual's position in comparison with the performance of others. Multiple group norms table-4.9 (i) and (ii) indicate detailed scores. Moreover, raw-scores have been systematically presented in the multiple scores table 4.10. This type of tables shows the percentile ranks scale in relation to different equivalent raw-scores.

The investigator computed and finalised percentile ranks from lowest 1 to the highest 99+ for every chronological age-group and school class-group. These percentiles again converted into percentile bands and classified into nine groups. The nine ranged percentile ranks scale for interpreting derived scores

TABLE 4.9.(i).

MULTIPLE-GROUP NORMS TABLE.

Table shows the Percentile Norms for different Grades:

Range of Raw Scores.	Classes					Range of Raw Scores.	Classes				
	VII	VIII	IX	X	Total		VII	VIII	IX	X	Total
67				99+	99+	35	68	59	71	49	62
66			99+	99+	99+	34	66	55	68	46	59
65			99+	99+	99+	33	62	52	65	43	56
64			99+	99+	99+	32	59	51	61	40	52
63			99+	99+	99+	31	56	49	57	38	50
62			99+	99+	99+	30	53	46	54	35	47
61			99+	98	99	29	49	44	50	32	44
60			99+	98	99	28	44	41	50	30	40
59		99+	99+	97	99	27	40	38	43	27	38
58	99+	99+	99	96	99	26	37	35	39	25	34
57	99+	99+	99	94	98	25	33	32	34	22	30
56	99+	99	99	92	97	24	31	29	29	20	27
55	99	98	98	91	97	23	28	26	26	17	24
54	99	98	98	90	96	22	24	23	23	15	21
53	99	97	97	89	95	21	20	21	20	13	18
52	98	96	96	87	94	20	17	19	16	11	16
51	98	95	95	86	94	19	15	16	14	9	13
50	97	94	95	84	93	18	13	14	11	8	11
49	97	93	94	83	92	17	11	11	9	6	9
48	95	91	93	82	90	16	8	8	7	4	7
47	94	88	92	81	89	15	7	7	6	3	6
46	93	86	91	79	87	14	5	6	4	2	4
45	92	84	91	77	86	13	3	5	3	2	3
44	90	83	90	75	84	12	2	3	2	1	2
43	86	81	89	74	82	11	1	2	2	1	1
42	84	79	87	71	80	10	1	2	1	1	1
41	83	77	85	67	78	9	1	2	1	1	1
40	80	75	83	63	75	8	1	1	1	1	1
39	78	71	80	60	72	7	1	1	1		1
38	76	68	78	58	70	6		1			1
37	73	65	76	54	67	5		1			1
36	70	63	74	51	64						

TABLE 4.9.(ii).

MULTIPLE-GROUP NORMS TABLE.

Table shows the Percentile Norms for different Age-Groups:

Range of raw Scores	Age-Groups 12	13	14	15	16	17	18	19	Total.
67						99+			99+
66						99+	99+		99+
65					99+	99+	99+		99+
64				99+	99+	99+	99+		99+
63				99+	99+	99	99+		99+
62				99	99	99	99+		99+
61				99	99	99	99+		99
60				99	99	99	99		99
59			99+	99	99	99	99		99
58		99+	99	99	98	98	99+	99	99
57		99	99	98	96	98	99	99	98
56	99	98	99	97	95	97	98	99	97
55	99	98	98	97	95	97	98	98	97
54	99	97	98	96	94	96	97	98	96
53	99	96	96	95	93	95	97	98	95
52	98	94	96	94	92	94	96	98	94
51	98	93	95	93	92	94	95	96	94
50	98	91	95	92	91	93	94	94	93
49	97	89	94	91	90	91	94	94	92
48	97	86	92	89	89	91	93	93	90
47	97	84	92	87	88	90	91	89	89
46	96	83	90	85	86	89	89	87	87
45	95	81	88	84	84	88	89	87	86
44	93	78	85	83	83	88	87	87	84
43	91	77	81	80	80	87	86	87	82
42	90	74	78	78	78	85	86	86	80
41	90	71	76	75	75	82	84	84	78
40	86	68	73	73	72	80	82	80	75
39	82	66	69	70	68	78	81	76	72
38	80	65	67	67	65	76	79	71	70

Cont. in the next page-

Continuation,

Range of raw Scores	12	13	14	15	16	17	18	19	Total
37	76	62	65	64	62	74	75	69	67
36	74	59	62	62	59	72	72	69	64
35	73	56	60	61	55	69	70	67	62
34	69	53	57	56	52	66	68	64	59
33	61	48	55	53	49	63	64	61	56
32	56	44	52	50	46	60	61	58	52
31	55	41	49	48	44	57	59	55	50
30	51	38	46	45	42	53	57	54	47
29	48	33	43	43	39	48	56	51	44
28	45	28	39	40	37	44	54	48	40
27	41	25	36	36	35	40	50	45	37
26	37	23	32	32	33	36	47	43	34
25	33	21	27	29	29	31	42	41	30
24	30	19	25	26	26	28	38	38	27
23	27	18	22	22	23	25	35	32	24
22	23	15	20	19	21	21	32	29	21
21	19	12	18	16	19	17	29	26	18
20	17	11	15	14	15	15	24	22	16
19	15	10	13	12	14	13	20	18	13
18	12	9	12	10	12	10	17	12	11
17	9	7	9	9	10	8	14	7	9
16	6	5	6	7	8	6	12	5	7
15	5	4	5	5	7	5	10	3	6
14	2	3	3	4	5	4	8	2	4
13	2	2	3	3	3	3	7	2	3
12	1	1	2	2	2	2	5	1	2
11	1	1	2	1	1	2	3		1
10			2	1	1	2	1		1
9			1	1	1	1	1		1
8			1	1	1	1			1
7			1	1	1	1			1
6			1	1		1			1
5			1			1			1

THIS TABLE SHOWS THE RANGE OF RAW SCORES WITHIN THE GROUP OF PERCENTILE RANK SCALE FOR DESCRIPTION/CLASSIFICATION.

Percentile Ranks	Age Groups								Grade Groups				Description
	12	13	14	15	16	17	18	19 TOTAL	VII	VIII	IX	X	
1-4	5-14	5-15	5-14	5-14	5-13	5-14	5-11	5-15	5-14	5-13	5-12	5-14	5-16	VERY WEAK
5-11	15-17	16-20	15-17	15-18	14-17	15-18	12-15	16-17	15-18	14-17	13-17	15-18	17-20	WEAK
12-23	18-22	21-26	18-23	19-23	18-23	19-22	16-20	18-20	19-22	18-21	18-22	19-22	21-25	SLIGHTLY WEAK
24-40	23-26	27-30	24-28	24-28	24-29	23-27	21-24	21-24	23-28	22-27	23-27	23-26	26-32	AVERAGE
41-59	27-32	31-36	29-34	29-34	30-36	28-31	25-31	25-32	29-34	28-32	28-32	27-31	33-38	AVERAGE
60-76	33-37	37-42	35-41	35-41	37-41	32-38	32-37	33-39	35-40	33-38	33-40	32-37	39-44	AVERAGE
77-88	38-40	43-48	42-45	42-47	42-47	39-45	38-44	40-46	41-46	39-43	41-47	38-42	45-52	GOOD
89-95	41-45	49-52	46-51	48-53	48-56	46-53	45-51	47-50	47-53	44-48	48-51	43-51	53-57	HIGH/ EXCELLENT
96-99	46-56	53-59	52-60	54-68	57-65	54-67	52-66	51-58	54-67	49-58	52-59	52-66	58-67	VERY HIGH

TABLE 4.10.

and classifying mental abilities are 1-4, 5-11, 12-23, 24-40, 41-59, 60-76, 77-88, 89-95 and 96-99. This scale is used as a derived score scale for measuing the equivalent raw-scores and also for the description of individuals intelligence levels in a particular group. These are shown in the following tables but all the processes of computations are attached in the appendices II.

4.9. STANINE NORMS

A well known transformation scale is Stanine. Stanines are derived scores in which the raw scores divided into nine standard groups. Stanine scale provides a single-digit system of scores. So it has the advantage to compute scores of single digit numbers in each score level and assign same stanine to all persons with same raw scores. Appreciating the simplicity in computation and advantages of the scale, the investigator established stanine norms for the present test standardization. While computing stanines, both general norm and specified class-norms and age-norms corresponding to different group scores have been prepared.

In order to determine stanine norms systematically, an accepted scale in terms of percentages and ideal percentages had been followed as in the table below :

TABLE 4.11

Table shows the scale for stanine determination

Stanine level	I	II	III	IV	V	VI	VII	VIII	IX
Percentages	4	7	12	17	20	17	12	7	4
Ideal Percentages	4	11	23	40	60	77	89	96	100

The investigator followed certain systematic steps for computing stanines a- given below :

1. All the papers were arranged in descending order from highest score to tne lowest score.
2. Frequency of scores for each single-digit scores have been drawn up.
3. Cumulative frequency was found out up through each score value.
4. This cumulative frequency again converted to percentages by multiplying cf. value by 100 and divided by total number $\left(\frac{cf \times 100}{N}\right)$

Lyman Op.Cit, P.105, Chart No. 6.6.

5. Finally stanine values have been assigned by approximating the ideal cumulative percentages. This was estimated by multiplying the number of cases by the percentage and dividing by $100\left(\frac{\% \times N}{100}\right)$

In the present test standardization, ideal percentage had been calculated in its separate column for every group. Then the standard nine for every group of scores were decided as stanine scale. So keeping in view as stated above, stanine norms have been computed for different age-groups of 12 to 19 and various classes of VII to X. All these processes of computations are presented in the Appendices III.

It is also essential to know the simple range of raw scores under each stanine level. Raw-scores are also necessary to interprate to locate the individuals' position in the test. Therefore various group of raw-scores have been assessed under different staine scale and presented in multiple-tables for age-wise scores and class.wise scores respectively as given in the table 4.12 (i) + (ii).

TABLE 4.12.(1).

TABLE SHOWS THE RANGE OF RAW-SCORES IN STANINES AND THEIR INTERPRETATION FOR DIFFERENT AGE-LEVELS.

STANINES	AGE-LEVEL 12	13	14	15	16	17	18	19	Classification/ Interpretation
I	0-14	0-15	0-13	0-13	0-13	0-13	0-11	0-14	VERY WEAK
II	15-17	16-19	14-16	14-18	14-16	14-17	12-15	15-17	WEAK
III	18-21	20-25	17-22	19-22	17-22	18-21	16-19	18-20	SLIGHTLY WEAK
IV	22-26	26-30	23-27	23-27	23-28	22-26	20-24	21-24	AVERAGE/ NORMAL
V	27-32	31-36	28-34	28-34	29-35	27-29	25-30	25-32	AVERAGE/ NORMAL
VI	33-36	37-42	35-40	35-41	36-41	30-38	31-37	33-38	AVERAGE/ NORMAL
VII	37-41	43-48	41-45	42-47	42-48	39-45	38-44	39-46	GOOD
VIII	42-48	49-52	46-52	48-53	49-56	46-54	45-51	47-50	HIGH/ EXCELLENT
IX	49 & Above	53 & Above	53 & Above	54 & Above	57 & Above	55 & Above	52 & Above	51 & Above	VERY HIGH

TABLE 4.12.(ii).

TABLE SHOWS THE RANGE OF RAW-SCORES IN STANINES AND THEIR INTERPRETATIONS FOR DIFFERENT GRADES.

STANINE	X	IX	VIII	VII	TOTAL	CLASSIFICATION INTERPRETATION
I	0-15	0-13	0-12	0-13	0-13	VERY WEAK/ LOW
II	16-19	14-17	13-16	13-16	13-17	WEAK
III	20-24	18-21	17-21	17-21	18-22	SLIGHTLY WEAK
IV	25-31	22-25	22-27	22-26	23-27	NORMAL/ AVERAGE
V	32-38	26-31	28-34	27-32	28-34	NORMAL/ AVERAGE
VI	39-44	32-36	35-40	33-38	35-40	NORMAL/ AVERAGE
VII	45-52	37-42	41-46	39-43	41-46	GOOD
VIII	53-58	43-51	47-51	44-47	47-53	HIGH/ EXCELLENT
IX	59 & Above	52 & Above	52 & Above	48 & Above	54 & Above	VERY HIGH/ SUPERIOR

4.10. DETERMINATION OF DEVIATION IQ

Deviation IQ is a derived scores scale for measuring the individuals' mental abilities. Stanford-Binet scale is a linear method to compute with a mean of 100 and standard deviation of 16. Separate chronological age norms and class norms could be computed by using the formula DIQ = 16z + 100. This method was a part of the Stanford-Binet scale third revision in 1960, and a new set of norms published for the third edition in 1972. In the present test, the investigator followed this formula which was also suggested by William A. Mehrens Iewin J.Lehmann (1984)*, "Intelligence scores using the 1972 norms are computed as deviation IQ scores with a mean of 100 and a standard deviation of 16. In other words, they are derived scores (DRV.IQ = 16z + 100)".

As many authors suggested the inadequacies of ratio IQ, it was decided to compute DIQ for the present test too. One of the examples, illustrated here for our satisfaction that Freeman (1965)* writes * the deviation IQ furthermore, is especially useful at age levels about 16 or 18. For these and older persons, the use of mental age and for the ration IQ (MA/CA) have been regarded as inappropriate and questionable by many psychologists." Thus appreciating

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* William and Lehmann, Op.cit, P. 376.

* Freeman, Op.cit., p. 134.

and accepting the DIQ as a better computation method, it was calculated for every age-group and every grade level along with the total test group.

Raw-scores have been arranged in descending order for every specific group. Then z score was calculated for every raw-score range in one column with the formula $z = \frac{X-X}{S}$. In this formula the mean of particular total scores minus from every raw-score and devided by the standard deviation of the same score group. In the next column every z score was multiplied by a constant 16 standard deviation and added the mean of 100. The calculation portions have been separately given in the Appendices IV.

Now on the basis of the Stanford-Binet classification revised scale reported in Freeman(1965), and Cornbach (1970), the raw-scores equivalent for IQ ranges have been judiciously assessed. These are presented in multiple-tables for different age-groups and class-groups as reported in the table 3.13.

Further, number of persons, percentage of scores and range of raw-scores under all IQ levels have been carefully worked out for the boys and girls separately. It has been observed that the percentage of persons and their IQ scores were fairly distributed. Table 4.14 shows a detailed distributions under IQ scale and their descriptions.

TABLE 4.13.

TABLE SHOWS THE RANGE OF RAW SCORES WITHIN DIQ CLASSIFICATION RANGES.

DIQ	AGE-GROUPS									GRADES				
	12	13	14	15	16	17	18	19	TOTAL	VII	VIII	IX	X	Classifications
140 & above	53-56			59-64	65	58-67	66	58	61-67	56-58		56-66	65-67	VERY SUPERIOR
130-139	48-52	55-58	53-59	52-58	56-63	52-57	51-57	51-57	54-60	49-55	54-59	50-55	58-64	SUPERIOR
120-129	42-47	48-54	46-52	45-51	49-55	45-50	44-50	44-50	47-53	43-48	46-53	43-49	50-57	SUPERIOR
110-119	35-40	41-47	39-45	39-44	41-48	38-44	37-43	37-43	39-46	37-42	39-45	37-42	43-49	HIGH AVERAGE
100-109	29-34	34-40	32-38	32-38	33-40	31-37	29-36	30-36	32-38	30-36	32-38	30-36	35-42	AVERAGE/ NORMAL
90-99	24-28	27-33	25-31	25-31	25-32	24-30	22-28	23-29	25-31	24-29	25-31	24-29	28-34	AVERAGE/ NORMAL
80-89	18-23	20-26	19-24	18-24	18-24	18-23	15-21	16-22	18-24	17-23	17-24	17-28	20-27	LOW AVERAGE
70-79	13-17	14-19	12-18	11-17	10-17	10-17	9-14	12-15	10-17	11-16	10-16	11-16	13-19	BORDERLINE DEFECTIVE
Below 70	11	10-13	5-11	6-10	7-9	5-9			5-9	7-10	5-9	7-10	8-12	MENTALLY DEFECTIVE

Scale is based on the Classification of Revised Stanford-Binet IQs, F.S.Freeman (1965, p.223); Lee, J.Cornbach (1970, p.219); Dr.G.C.Ahuja Test Manual (p.16).

TABLE 4.14.

TABLE SHOWS THE NUMBER OF PERSONS AND PERCENTAGES WITHIN THE DEVIATION IQ SCALE.

DIQ	RAW-SCORES	TOTAL NUMBER & PERCENTAGE	BOYS PERCENTAGES	GIRLS PERCENTAGES
140 & Above	61-67	N = 13 0.54	N = 9 0.71	N = 4 0.34
120-139	47-60	N = 274 11.43	N = 152 12.15	N = 122 10.65
110-119	39-46	N = 414 17.27	N = 246 19.66	N= 168 14.67
90-109	25-38	N =1013 42.27	N = 515 41.16	N = 498 19.49
80-89	18-24	N = 431 17.98	N = 208 16.62	N = 223 19.47
70-79	10-17	N = 228 9.51	N = 112 8.95	N = 116 10.13
Below 70	5-9	N = 23 0.95	N = 9 0.71	N = 14 1.22
		N =2396	N =1251	N =1145

4.11. INTER-CHANGEABILITY OF PR., STANINES AND DEVIATION IQs

It was important and necessary to finalise for inter-changeability of the same scores of different scale norms. One test score of person may show different interpretation and the same person may be put under different categories. But by some computational methods a person can be interpreted the same result for every different norm.

In the present test also percentile norms and stanine norms have been prepared with a view that the two norms could be given similar meaning to the same test scores. The investigator tried to prepare a type of inter-changeable and inter-useable norms of percentile scores and stanine scores. For this purpose a percentile band of nine score ranges equivalent to nine stanines have been estimated.

An equivalent norm scale for measuring were presented by Thorndike and Hagen (1977)*, which had been followed for the same. These equivalent scale ranges are as follows:

Percentile scores	1 to 4	= stanine score I
Percentile scores	5 to11	= stanine score II
Percentile scores	12 to23	= statine score III

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* Thorndike and E.P.Hagen, Op. cit. p. 133

TABLE - 4.15

Table shows equivalent scale for percentile ranks, stanine and their descriptions :-

R.L.Thorndike E.P.Hagen Scale		Howard B.Lyman scale	
Stanine	PR	PR	Descriptive terms
I	1 - 4	5 or above	Very weak/Very low
II	5 - 11	5 - 15	Weak, Low
III	12 - 23	15 - 25	Good
IV	24 - 40	25 - 75	Average/Satisfactory/ Normal
V	41 - 59		
VI	60 - 76		
VI I	77 - 88	75 - 85	Slightly weak
VIII	89 - 95	85 - 95	High,Excellent
IX	96 - 99	95 or above	Very high,Superior

Thus following those descriptive scales, equal groups of scores have been classified and described under percentile and stanine norms for equivalent uses. Table 4.16 has given a detailed report of the

number of persons and the percentage of scores falling under different scale ranges. Now analysing the distribution of the sample percentages over ranges of scales, it was found that there were no difference and the sample scores were also distributed uniformly.

Crow Crow (1979)* , "on the high school and college levels, an individuals' intelligence status some times is expressed in terms of percentile scores, which indicates the place of an individual in a grade or age group on the basis of percentage of the group that score lower than he does".

In the present test, three methods of percentiles,stanines and deviation IQ have been computed.All these derived scores were converted into descriptive scales of their own. These scores have been compared for inter-changeable use to express intelligence.

But it was foundthat the raw-score ranges under DIQ scale were not equivalent to those of raw-score ranges under percentile and stanine scales. So it shall be doubtful for inter-changeable use of IDQ scores for similar interpretation and description. It is only desirable to use different derived score norms for inter-personal comparision. Comparison of raw-scores in three different derived score scaleswere given in the tables 4.16 (i) & (ii)

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* Crow Crow,Educational Psychology,Eurasia Publishing House(P) Ltd, New Delhi, 1979, p.164.

TABLE 4.16.

TABLE SHOWS THE RANGE OF RAW SCORES AND TWO SCALES FOR EQUIVALENT DESCRIPTIONS AND CLASSIFICATIONS.

PR. Scale	Stanine Scale	Raw-Score Range	Total Sample	Boys %	Girls %	Descriptions and Classifications
96-99	9	54-67	N= 99 4.13%	N= 56 4.47%	N= 43 3.75%	Very High
89-95	8	47-53	N= 188 7.84%	N= 105 8.39%	N= 83 7.24%	High
77-88	7	41-46	N= 273 11.39%	N= 159 12.70%	N= 114 9.95%	Good/ Above Average
60-76	6	35-40	N= 400 16.69%	N= 233 18.62%	N= 167 14.58%	Average/ Normal
41-59	5	29-34	N= 425 17.73%	N= 219 17.50%	N= 206 17.99%	Average/ Normal
24-40	4	23-28	N= 468 19.53%	N= 214 17.10%	N= 254 22.18%	Average/ Normal
			N=1293 53.96%	N=666 53.23%	N=627 54.75%	
12-23	3	19-22	N= 244 10.18%	N= 123 9.83%	N= 121 8.88%	Slightly Weak
5-11	2	15-18	N= 183 7.63%	N= 82 6.55%	N= 101 8.83%	Weak
1-4	1	5-14	N= 116 4.84%	N= 50 4.79%	N= 56 4.89%	Very Weak

TABLE 4.17.

COMPARISON OF RAW-SCORES IN THREE DIFFERENT DERIVED SCORE SCALES.

IQ	Description	Raw-Scores	Raw-Scores	Description	PR.	Stanine
140 & Above	Very Superior	61-67	54-67	Very High	96-99	IX
130-139	Superior	54-60	47-53	High	89-95	VIII
120-129	Superior	47-53	41-46	Good	77-88	VII
110-119	High Average	39-46	35-40	Average	60-76	VI
100-109	Average	32-38	29-34	Average	41-59	V
90-99	Average	25-31	23-28	Average	24-40	IV
80-89	Low Average	18-24	19-22	Slightly Weak	12-23	III
70-79	Borderline Defective	10-17	15-18	Weak	5-11	II
Below 70	Mentally Defective	5-9	5-14	Very Weak	1-4	I

4.12 DISCUSSION AND INTERPRETATION

This section of the chapter is to interprate the various calculations and scores of different people in their respective groups. It may be a general assumption that two persons scores can be regarded as equal in their level of description. Thus the objective was to distinguish and differentiate mental ability levels of the individuals through different scores norms interpreation.

It was very interesting to review various scores of different age-groups, and grade-groups of the sample. According to the percentile scores, it was shown that the age-groups of 15,16,17,18 and class-groups of IX and X could reach raw-scores of 60 and above. Even among them some class X student in the age-group of 17 could score the highest 67 points. On the other hand those class VII students in the age group of 12 couldscore the highest score of 56 only. So there was a difference of 11 raw-score points between the two highest score groups. But these raw-scores variations has nothing to do with the specified norms like in the case of general group norm.

While examining the individuals standing according to the total group percentile norm, highest 67 score persons could receive the percentile ranks of 99+, whereas the others with 56 raw-scores could receive 97 percentile rank only.

Another instance was that the different persons with same level of raw-scores could be regarded as unequal according to their specified norms either relating to age or grade. Because specified norms are independent of each other. For example, eight persons with different age-levels could score 53 raw-score each. According to their total test norm, all of them got percentile ranks of 95 uniformly. But in their specified norms one student who was 12 years of age received 99 PR, other two 13 and 14 years of age got 96 PRs, another two 15 and 17 years oldwere placed with 95 PRx, one 16 years old got PR.93 when 18 and 19 years old students could receive 97 and 98 PRs respectively.

As far as the age and grade groups were concerned, age groups of 12,13 and 19 were more closer towards normal scoring and extreme scoring roups have been in the age-groups of 17 and 14. As we looked from an another angle, the scoring magnatudes of classes VIII and VII were towards lower side, while other classes IX and X were towards higher side of the scores. These could indicate that at least there is inter-relationships between age-levels or grade-levels and intelligence.

Another example of the test analysis, four persons could scores equal 43 points, they were from different classes. So on the basis of their specified norms those four pupils have been placed and described

under different range of percentile scales as given below -

Sl No.	Name	Class	Raw-Scores	Description
1.	Apini	VII	43	Below average
2.	Aleu	VIII	43	Below average
3.	Niholi	IX	43	Low/Weak
4.	Ayangla	X	43	Average

But all those four could receive equal percentile ranks and described as equally intelligent group in their general group norm.

A humble suggestion to the users is that the total group norms may not be so appropriate for inter-personal comparisions. But as the sample had been stratified and represented by multiple age-groups or class-groups of people. One should use these specified norms as better scales for locating the individuals positions.

Now using the descriptive scales (Table 4.16) given in the previsous section, the scores of the testees could be classified and described their mental ability levels as given below :

Stanine I or PR 1 - 4 = Very low/Very weak

Stanine II or PR 5 - 11 = Low/Weak

Stanine III or PR 24-40	=	Average/Normal/ Satisfactory
Stanine IV or PR 41-59		
Stanine V or PR 60-76		
Stanine VII or PR 77-88	=	Good
Stanine VIII or PR 89-95	=	High/Excellent
Stanine IX or PR 96-99	=	Very high/ Superior

Stanine norms given same meanings to interprate the scores of the testees in the present test as illustrated above. But there is a lot of distinction between percentile ranking and stanines scoring, because the former is a 100 point scale whereas the later is only a nine-point scale. However, when the percentile ranks contracted to percentile bands equivalent to nine stanines cales, the equivalent raw-scores of the two norms can be regarded as same. Like in the case of percentile norms, in the stanine scores also the same raw-scores by different pupils could be interpreted and described unequallu.For example,three students with equal 42 score points awarded different stanines as -

Sl.No.	Name	Age	Score	Stanine	Classification
1.	Rokoselie	13	42	VI	Normal
2.	Nule	15	42	VII	Good
3.	Khetoli	12	42	VIII	High

Another example Mr.Chenithung of Class X scored 52. He was described as good or above average

student. Whereas Mr.Wapang of Class VIII student scored 52, but he was classified as very high group.

Therefore as given two examples above, if we follow the specified group norms, we will interprete and place under different mental ability levels. But in the case of general group norm the case is reversed. For instance some students scored 49,53, 57,55 respectively. But all of them could recieve stanine IX each and classified as superior. This was the reason that the two computations have got own merits and demerits. Therefore except to have a general glance, one should use specified norms for locating the positions of the testees.

Another very interesting activity is to interprate scores into IQ levels. In order to identify the real positions of pupils either in the total group or in the specific groups, raw scores have been transformed into derived scores. In the present test standardization, the IQ levels couldbe determined by calculating deviation IQs.Consequently testees have been classified and described as follows:

DIQ		Description
140 and above	=	Very superior
130 - 139 120 - 129	=	Superior
110 - 119	=	High average

110 - 109			
90 - 99		=	Average
80 - 89		=	Low average
70 - 79		=	Borderline defective
Below	70	=	Mentally defective

Since the derived scores were so systematically distributed over the IQ scale, it was observed that no student in the age-group of 13 and 14 could score to describe as superior mental ability group. Contrary to that situation age-group of 18 and 19 has no mentally defective students. It was also observed from an another angle that no student in class VIII could score to describe as a very high superior intelligent. So it could conclude that neither the age nor the grade can be taken as a major factor to strengthen the intellectual capacity. Intelligence varies from person to person. For instance, one student in class X who was 17 year could score the highest 67 points. So we shall have no right to role out the impact of academic achievements for solving abstract problems. But chronologically 17 years of age had been a period to score maximum and thereafter goes on declining towards lower side.

As wer have multiple scores and multiple groups, one's score may not be comparable with the same scores in another groups. IQ of a student can

only be compared with the scores of the same groups in which he or she belong. One such example is shown below :

Name	Score	Age	Description	Class	Description
Moa	42	12	Superior	VII	High Average
Neiph-rezo	42	16	High Average	X	Average

In this example two persons scored 42 each, but they were described twice in each case. This was because of the independent establishment of the specified age and class norms. But according to the total group test interpretation raw score 42 is falling between the IQ range of 110 to 119 which classified as high average mental ability. So both of them were classified three times each and placed under three different mental levels.

S U M M A R Y

TITLE OF THE PROBLEM

"CONSTRUCTION AND STANDARDIZATION OF A NON-VERBAL GROUP INTELLIGENCE TEST FOR THE AGE GROUP OF 13+TO 17+ IN NAGALAND"

Non-verbal group intelligence test is a standardized test instrument uses to administer in group for measuring mental ability and capacity to learn adequately and carry on abstract thinking to adopt, and response appropriately to a situation through non-verbal items.

OBJECTIVES OF THE TEST

(i) The main objective is to construct and standardize a non-verbal group intelligence test for the children of classes VII - X in the age group of 13+ to 17+ years in Nagaland.

(ii) It aims to measure the general intelligence of the high school students by non-verbal test-scale.

(iii) To study the pattern intelligence at different age and grade levels.

STATEMENT OF THE TOPIC

The statement of the topic was "to construct and standardize non-verbal group intelligence test for the high school students of Nagaland state in the age group of 13+ to 17+ years in Nagaland".

ASSUMPTIONS OF THE TEST

(1) That the intelligence of the Naga students will be same to students in other parts of the country, who are equivalent in age or grade.

(2) That the test scores will show high reliability and validity co-efficients.

(3) That the non-verbal group test will give significant measures of mental ability at par with verbal group tests.

(4) That the IQ of the individuals tested will be normally distributed.

(5) That the IQ levels may vary with age and grade.

CONSTRUCTION OF THE TEST

Test items were prepared in different sub-test. But initially a tentative frame work of the items were submitted to the supervisor for his consent and approval. Secondly a few items were tried out on a small sample of 20 students. On the basis of the corrections and suggestions and after properly editing the items preliminary test of 294 test items along with ten examples for 10 sub-test have been constructed. Instructions and directions were

properly worded. The answer sheets and stencil for the test were also prepared.

Following were the different sub-test for first try-out.

Sl No	Sub-tests	Number of items
1.	Arithmetic reasoning	32
2.	Number series	32
3.	Matrices	28
4.	Classification	28
5.	Picture complection	30
6.	Figure analogy	28
7.	Similarities	30
8.	Quantitative reasoning	30
9.	Synonym	28
10.	Opposites	28
	Total	294

ITEM ANALYSIS FOR THE TEST

Although there are many procedures for item analysis, the test constructor selected to compute item difficulty and discrimination indices. So a sample of 371 were given the test and analysed the items by using upper 27% and lower 27% method. The procedure adopted were as following :

(a) All scored papers were arranged in ascending order.

(b) Two extreme scores of highest 27% and lowerst 27% (i.e. 100 pupils each) were taken for analysis.

(c) Number of people who selected the alternative responses for each item had been tabulated.

(d) Difficulty index were computed by finding the mean proportion in percentages by the formula $P = \frac{R}{T} \times 100$

(e) Discrimination index was also computed by substracting the number of pupils in the lower from the number of pupils in the upper group who got the items right, and dividing by half of the combined group total. The formula use was

$$D = \frac{Ru - Rl}{\frac{1}{2} T}$$

On the basis of the two indices, items had been judiciously screened by eleminating undesirable items and accepting good items. Likewise, screening had been done at three stages as :

(a) All negative and zero scored items were discarded.

(b) All items having discriminative value n of .20 and below were rejected and

(c) All items having difficulty index ranging from 31% to 70% (or .31 to .70) were selected and retained in the test.

PREPARATION OF FINAL DRAFT

Finally 78 workable items were retained for the total test. Now the selected items had been re-arranged in nine sub-tests according to their order of difficulty as given below:

Sl No	Sub-tests	No.of items
1.	Arithmetic	10
2.	Matrices	10
3.	Classification	10
4.	Figure	10
5.	Quantitative	9
6.	Synonyms	9
7.	Opposites	7
8.	Similarities	7
9.	Picture	6
	Total	78

As a part of item analysis again, mean and standard deviation have been calculated for item wise scores in different sub-tests and in combined total test. On the basis of the computation of two indices it was found that the first try-out items were very hard for the sample of the population. Their performance inclined towards lower side but enough items could be retained for the final test.

ADMINISTRATION AND SCORING OF THE TEST

For the omnibus test, proper general instructions and directions have been worded along with the preparation of test booklets and answer sheets. A scoring key was also prepared for easy and accurate scoring of the responses.

TIME LIMIT FOR THE TEST

The time limit for the test was determined on the basis of the average time taken by the pupils in the first try-out of the test. The average time taken for each item was 23.30 seconds. Therefore the average time limit for the whole test will be (23.30 x 78 = 30) 30 minutes.

SAMPLING METHODS

The method of sampling for the test was a "Stratified Random Sampling". Following this method a sample of 2396 students had been taken from the

Further, histogram and frequency polygon have been drawn for different score groups. Analysing the scores it could be confirmed that the test scores have been distributed normally. This tells that the difficulty levels of the items in all the sub-tests were fairly distributed from easist to the hardest. The test is neither too easy nor too hard. Even the poorest could score atleast 5 marks and brightest could score only 67 marks.

STANDARDIZATION OF THE TEST

The establishment of reliability,validity and norms forms a very important aspect of standardization. Therefore the test was standardized by computing the methods mentioned earlier and analysing their results. The processes followed for test standardization were stated below:

RELIABILITY

Test reliability refers to the measurement of its internal consistency. This test reliability (r11) is expressed as decimal number ranging from .00 to 1.00. In the present test, correlation coefficients for reliability were estimated by split-half, test re-test methods and Kuder-Richardson Formula 21.

SPLIT-HALF METHOD

To compute the split half method odd numbered scores and even numbered scores of the items were separately kept for each of VII, VIII, IX and X classes. The sample for every class were consisted of 599 students. The correlation of coefficient had been calculated by Karl Person's Product - Moment Formula and then corrected by Spearman - Brown Formula for length test.

TABLE - 4.6

Table shows the result :

Class	X	IX	VIII	VII
$r_{1/2\ 1/2}$	0.88	0.87	0.86	0.89
r_{tt}	0.94	0.93	0.92	0.94

Table shows that the coefficients of reliability were positive and sufficient in value for standardization of the test.

TEST RE-TEST

Test re-test method was applied with a sample of 390 pupils. Test re-test was given 6 months after the first test administration. Coefficients of

correlation was computed by the product-moment formula and found 0.94. This indicated that the total length test is stable, consistent and highly significant for its standardization.

KUDER-RICHARDSON (K-R 21) FORMULA 21

Reliability coefficient of correlation of the test was also estimated by Kuder-Richardson Formula 21 (K-R 21). This method was applied for the total test as well as for all the classes of X, IX,VIII and VII consisting of a total sample of 2396 and 599 for each class respectively. Coffecient of correlations were found as 0.87; 0.84; 0.87; 0.83 and 0.87 respectively. Those results indicated that the test was highly reliable to use.

VALIDITY

Validity of the test was another important aspect of test standardization. It required to be validited with an external criterion, and concurrent validity was estimated with Dr.S.Jalota's "Group Test of Mental Ability." Both the tests were administered to a sample of 500 students in their school classes in an alternative process for their uniform responses. It was estimated by the direct method of Karl Person's Product-Moment correlation formula. The coefficient of correlation was foun d 0.88. This coefficient of correlation had been positively significant and high. So it was interpreted that the test had a high power

of validity with the external criterion and had the same value with those of verbal standard test.

In order to get inter sub-tests validity, all the nine sub-test had been correlated each other. The following steps had been taken for the purpose of pomputation :

(a) all the scores in the sub-test were arranged in order.

(b) approximately 5% from every single score range of each sub.test had been uniformly taken for a total of 500 pupils.

(c) Correlation of all sub.test were computed, and a correlation matrix has been prepared.

NORMS FOR THE TEST

A group test consists of a number of a representative sample. It is essential to have a multiple and stratified scale norms, because a single scale is is inappropriate for a multiple score group. In the present test standardization, percentile norms, stanine norms, and deviation IQs have been established for every age-group and class-group in addition to the total sample group.

PERCENTILE NORMS

Percentiles are the derived scores expressed in terms of percentages of persons. Percentile ranks

indicate the pupils' relative positions in a groups. Percentile is any one of the 99 points dividing a frequency distribution into 100 groups of equal size. The percentile ranks have been established by -

(a) Arranging raw-scores in descending order

(b) Finding frequency for every single score interval

(c) Finding cumulative frequency

(d) Computing cumulative frequency (cf) to mid-point of each score by addition 1/2 of the frequency to the cumulative frequency just below (f x 1/2 + cumulative frequency below).

(e) Converting to cumulative percentage to mid-point by multiplying cfmp by 100 and dividing by the total number $\left(\frac{100 \times cfmp}{N}\right)$ and

(f) Assigning percentile ranks.

Raw-scores equivalent percentile ranks for every cronological age and class group had been presented in the multiple scores tables. Percentile bands in nin (9) groups had been established for the purpose of interpreting derived scores and claffifying individuals mental abilities. This percentile scales in nine ranges for description of the scores were finalised as:-

Scale	Description
1 - 4	Very weak
5 - 11	Low/weak
12 - 23	Slightly weak
24 - 40	Average/normal
41 - 59	Average/normal
60 - 76	Average/normal
77 - 88	Good
89 - 95	High/excellent
96 - 99	Very high

Both the general norm with the total sample and specified norms with the stratified group sample had been computed. Following were the percentages of scores of the general norm in the descriptive scales:

PR Scale	Raw Scores	Percentage(s)	Description
96-99	54-67	4.13	Very high
89-95	47-53	7.84	High
77-88	41-46	11.39	Good(Above average)
60-76	35-40	16.69	Average/ Normal
41-59	29-34	17.73	Average/ Normal
24-40	23-28	19.53	Average/ Normal
12-23	19-22	10.18	Slightly weak
5-11	15-18	7.63	Weak
1-4	5-14	4.84	Very weak

STANINE NORMS

Stanine is a well known transformation scale. It provides a single-digit system of scores in inine(9) standard groups scale. In the present test, general and specified norms had been established in the form of stanines. Stanines had been determined according to a computation scale as :

SCALE

Stanine	I	II	III	IV	V	VI	VII	VIII	IX
Percentage	4	7	12	17	20	17	12	7	4
Ideal percentage	4	11	23	40	60	77	89	96	100

Keeping in view of the above given scale, Stanine norms had been computed in the following process by -

(a) drawing frequency distribution

(b) finding cumulative frequency (cf)

(c) converting cf. to percentages $\left(\frac{cf \times 100}{N}\right)$

(d) assigning stanines by approximating ideal percentages by calculating $\left(\frac{\% \times N}{100}\right)$.

After preparing stanine scale, it was also carefully estimated equivalent to the percentile rank scale for inter-changeable use of the two scales. Thus the two scales would measure same ranges of raw-scores to describe and classify the individuals as follows:-

Stanine	I	II	III	IV	V	VI	VII	VII	IX
PR	1-4	5-11	12-23	24-40	41-59	60-76	77-88	89-95	96-99
Description	Very weak	Weak	Slightly weak	Average/ Normal			Good	High	Very high

Similar to the percentile norms, stanine norms (scale) could give descriptions of the persons according to their age and grade levels. Two or more scores of the same group should get equal stanine. But equal scores of different groups should get different stanines and also describe according to their specified group norms. For example, Mr.Chenithung of class X scored 52 and Mr.Wapang of Class VIII also scored 52. But on the basis of the derived scores and descriptions in their respective specified norm groups, Mr.Chenithung received Stanine seven and classified as above average whereas Mr.Wapang was categorised as mentally superior as his Stanine score was nine.

DEVIATION IQ NORMS

Deviation IQ is a derived score scale for measuring mental abilities. Deviation IQs have been established for separate age and grade levels along with the total sample group. DIQs had been computed by following the formula DIQ = 16z + 100, which was a modified Stanford - Binet method published in 1972. After determining the deviation IQs for every single raw-score range, the percentages of scores in IQ scale had been worked out as reported below :-

IQ Scale	140 & above	120-139	110-119	90-109	80-89	70-79	Below 70
Number	13	274	414	1013	431	228	23
Percentage	0.54	11.43	17.27	42.27	17.98	9.51	0.95
Interpretation	Very superior	Superior	High	Average/ Normal	Low	Borderline defective	Mentally defective

It was found that the percentage of scores of boys and girls distributed quite normally with a maximum average scores and extented towards both sides of the curve. It was noticed that no age-group of 13 and 14 could score very high to describe as superior, whereas age-group of 18 and 19 had no mentally defective pupil. Highest raw-score could be

scored by a class X student, an age of 17. Thus this was concluded that both chronological age and academic grade had role to play on IQ.

The multiple scores of the stratified groups had been prepared and presented in the multiple tables. Therefore, IQs of the testees should be compared only with the same group scores. For example, two persons from different stratas scored 40 marks each, but they were classified as high average IQ and average IQ respectively. According to the general sample norm 42 fell between IQ range of 110 to 119 which is a high average group. Therefore it was desirable to use specified norms for the purpose of comparison.

All these percentiles, stanines and deviation IQs are derived score norms with their own advantages. As far as merits are concerned, however high or low the scores might be, both percentile and stanine methods would reveal extreme groups e.g. percentile 1 to 99 +, stanine I to IX. But DIQ had no such compulsion or merit. Although some people had suggested for interchangeable use of different scales, it was not so desirable to use for IQ description and classification.

Finally the users of the test can compute any method for finding the raw-score equivalent. But it is suggested to the users of the test that in order to save time, and to avoid errors one should use the norm tables for locating the position of any testee in the test.

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APPENDICES

Following are the appendices of the thesis:-

APPENDICES I

STATESTICS CALCULATION OF MEAN AND S.D.

CLASS-WISE TOTAL (Male & Female):

Classes X,IX,VIII,VII :-

Class-Interval	Mid.pt.	f	x'	fx'	fx'^2
5- 9	7	23	-5	-115	575
10-14	12	93	-4	-372	1488
15-19	17	231	-3	-693	2079
20-24	22	335	-2	-670	1340
25-29	27	407	-1	-407	407
30-34	32	347	0	0 -2257	0
35-39	37	329	1	-329	329
40-44	42	277	2	554	1108
45-49	47	166	3	498	1494
50-54	52	105	4	420	1680
55-59	57	63	5	315	1575
60-64	62	17	6	102	612
65-69	67	3	7	21	147
		2239			
		N= 2396		Σfx = -18	Σfx^2=12834

$$\text{Mean} = 32 + \frac{-18}{2396} \times 5$$

$$= 32 + 0.037 = 31.96$$

$$s = \sqrt{\left[\frac{2396 \quad 12834 - (-18)}{2396 \quad (2396-1)}\right] \times 5}$$

$$= \sqrt{\left[\frac{30750264 - 324}{5738420}\right] \times 5}$$

$$= \sqrt{\frac{30749940}{5738420} \times 5}$$

$$= \sqrt{5.3586^* \times 5}$$

$$= 11.57$$

CLASS-WISE TOTAL (Male & Female):

CLASS X:-

Class-Interval	Mid.pt.	f.	x	fx'	fx'^2
5- 9	7	4	-6	- 24	144
10-14	12	12	-5	- 60	300
15-19	17	42	-4	-168	672
20-24	22	64	-3	-192	576
25-29	27	78	-2	-156	312
30-34	32	82	-1	- 82	82
35-39	37	83	0	0 (-682)	0
40-44	42	91	1	91	91
45-49	47	43	2	86	172
50-54	52	42	3	126	378
55-59	57	40	4	80	320
60-64	62	16	5	80	400
65-69	67	2	6	12	72
		N=599		Σfx=-207 (475)	fx^2= 3319

$$\text{Mean} = 37 + \frac{-207}{599} \times 5$$

$$= 37 + -1.72$$

$$= 35.28$$

$$s = \sqrt{\left[\frac{599 \quad 3519 - (-207)^2}{599\ (599-1)}\right]} \times 5$$

$$= \sqrt{\left[\frac{2107881 - 42849}{358202}\right]} \times 5$$

$$= \sqrt{\frac{2065032}{358202}} \times 5$$

$$= \sqrt{5.76} \times 5$$

$$= 2.40 \times 5 = 12$$

CLASS IX (Male & Female):-

Class-Interval	Mid.pt.	f.	x'	fx'	fx'^2
5- 9	7	6	-5	- 30	150
10-14	12	23	-4	- 92	368
15-19	17	61	-3	-183	589
20-24	22	97	-2	-194	388
25-29	27	126	-1	-126	126
30-34	32	100	0	0 -625	0
35-39	37	76	1	76	76
40-44	42	52	2	104	208
45-49	47	25	3	75	225
50-54	52	22	4	88	352
55-59	57	9	5	45	225
60-64	62	1	6	6	36
65-69	67	1	7	7	49
				401	
		N=599		$\Sigma fx'=-224$	$\Sigma fx'^2=2703$

$$\text{Mean} = 32 + \frac{-224}{599} \times 5$$

$$= 32 + -1.86$$

$$= 30.14$$

$$s = \sqrt{\left[\frac{599 \quad 2703 - (-224)^2}{599\,(599-1)}\right]} \times 5$$

$$= \sqrt{\left[\frac{1619097 - 50176}{358202}\right]} \times 5$$

$$= \sqrt{\frac{1568921}{358202}} \times 5$$

$$= \sqrt{4.37} \times 5$$

$$= 2.09 \times 5$$

$$= 10.45$$

CLASS VIII (Male & Female):-

Class-Interval	Mid.pt.	f	x'	fx'	fx'^2
5- 9	7	10	-5	- 50	250
10-14	12	27	-4	-108	432
15-19	17	66	-3	-198	594
20-24	22	77	-2	-154	308
25-29	27	91	-1	- 91	91
30-34	32	66	0	0 -601	0
35-39	37	100	1	100	100
40-44	42	62	2	124	248
45-49	47	62	3	186	558
50-54	52	29	4	116	464
55-59	57	9	5	45	225
				571	
		N = 599		$\Sigma fx' = -30$	$\Sigma fx'^2 = 3270$

$$\text{Mean} = 32 + \frac{-30}{599} \times 5$$

$$= 32 + -0.25$$

$$= 31.75$$

$$s = \sqrt{\left[\frac{599}{599\ (599-1)}\ 3270 - (-30)^2\right]} \times 5$$

$$= \sqrt{\frac{[1958730 - 900]}{358202}} \times 5$$

$$= \sqrt{\frac{1957830}{358202}} \times 5$$

$$= \sqrt{5.46 \times 5}$$

$$= 11.56$$

CLASS VII (Male & Female):-

Class-Interval	Mid.pt.	f	x'	fx'	fx'^2
5- 9	7	3	-4	- 12	- 48
10-14	12	31	-3	- 93	-279
15-19	17	62	-2	-124	248
20-24	22	97	-1	- 97	97
				-326	
25-29	27	112	0	0	0
30-34	32	99	1	99	99
35-39	37	70	2	140	280
40-44	42	72	3	216	648
45-49	47	36	4	144	576
50-54	52	12	5	60	300
55-59	57	5	6	30	180
				689	
		N =599		$\Sigma fx'$= 363	$\Sigma fx'^2$=2755

$$\text{Mean} = 27 + \frac{363}{599} \times 5$$

$$= 27 + 3.03 = 30.03$$

$$s = \sqrt{\frac{[599 \ 2755 - (363)^2]}{599\ (599 - 1)}} \times 5$$

$$= \sqrt{\frac{[1650245 - 131769]}{358202}} \times 5$$

$$= \sqrt{\frac{1518476}{358202}} \times 5$$

$$= \sqrt{4.23} \times 5$$

$$= 2.05 \times 5$$

$$= 10.25$$

AGE-WISE MALE TOTAL:

Class-Interval	Mid. point	f	x'	fx'	fx'^2
5- 9	7	9	-5	- 45	225
10-14	12	51	-4	-204	816
15-19	17	107	-3	-321	963
20-24	22	162	-2	-324	648
25-29	27	190	-1	-190	190
				-1084	
30-34	32	179	0	0	0
35-39	37	194	1	194	194
40-44	42	157	2	314	628
45-49	47	97	3	291	873
50-54	52	54	4	216	864
55-59	57	39	5	195	975
60-64	62	9	6	54	324
65-69	67	3	7	21	147
				1285	
	N =	1251		$\Sigma fx'$ = 201	$\Sigma fx'^2$ = 6847

$$\text{Mean} = 32 + \frac{201}{1251} \times 5$$

$$= 32 + 0.80$$

$$= 32.80$$

$$s = \sqrt{\frac{[1251 \quad 6847 - (201)]}{1251\ (1251 - 1)}} \times 5$$

$$= \sqrt{\frac{[8565597 - 40401]}{1563750}} \times 5$$

$$= \sqrt{\frac{8525196}{1563750}} \times 5$$

$$= \sqrt{2.33} \times 5$$

$$= 2.33 \times 5 = 11.65$$

AGE-WISE FEMALE TOTAL:-

Class-Interval	Mid. point	f	x'	fx'	fx'^2
5- 9	7	14	-5	- 70	- 350
10-14	12	42	-4	-168	- 672
15-19	17	124	-3	-372	-1116
20-24	22	173	-2	-346	- 692
25-29	27	217	-1	-217	- 217
30-34	32	168	0	0 (-1173)	0
35-39	37	135	1	135	135
40-44	42	120	2	240	480
45-49	47	69	3	207	621
50-54	52	51	4	204	816
55-59	57	24	5	120	600
60-64	62	8	6	48	288
				954	

N = 1145 $\quad \Sigma fx' = 219 \quad \Sigma fx'^2 = 5987$

$$\text{Mean} = 32 + \frac{-219}{1145} \times 5$$

$$= 32 + -0.95$$

$$= 32.05$$

$$s = \sqrt{\left[\frac{1145 \quad 5987 - (-219)^2}{1145\ (1145 - 1)}\right]} \times 5$$

$$= \sqrt{\left[\frac{6855115 - 47961}{1309880}\right]} \times 5$$

$$= \sqrt{\frac{6807145}{1309880}} \times 5$$

$$= \sqrt{5.1967} \times 5$$

$$= 2.27 \times 5$$

$$= 11.35$$

AGE-WISE TOTAL BOTH MALE AND FEMALE:

AGE 12 (Male & Female):-

Class-Interval	Mid.pt.	f	x'	fx'	fx'^2
5- 9	0	0	0	0	0
10-14	12	3	-4	-12	48
15-19	17	11	-3	-33	99
20-24	22	13	-2	-26	52
25-29	27	15	-1	-15	15
30-34	32	19	0	0 (-86)	0
35-39	37	10	1	10	10
40-44	42	10	2	20	40
45-49	47	3	3	9	27
50-54	52	1	4	4	16
55-59	57	1	5	5 (38)	25

$N = 86 \quad \Sigma fx' = -46 \quad \Sigma fx'^2 = 332$

$$\text{Mean} = 32 + \frac{-48}{86} \times 5$$

$$= 32 + -2.79$$

$$= 29.21$$

$$s = \sqrt{\frac{[86 \ 332 - (-48)^2]}{86\ (86-1)}} \times 5$$

$$= \sqrt{\frac{[28552 - 2304]}{7310}} \times 5$$

$$= \sqrt{\frac{26248}{7310}} \times 5$$

$$= \sqrt{3.59} \times 5$$

$$= 1.89 \times 5$$

$$= 9.45$$

AGE 13 (Male & Female):-

Class-Interval	Mid.pt.	f	x'	fx'	fx'^2
5- 9	0	0	0	0	0
10-14	12	9	-4	-36	144
15-19	17	14	-3	-42	126
20-24	22	21	-2	-42	84
25-29	27	39	-1	-39	39
30-34	32	41	0	0 -159	0
35-39	37	28	1	28	28
40-44	42	32	2	64	128
45-49	47	23	3	69	207
50-54	52	16	4	64	256
55-59	57	6	5	30 255	150
60-64	0	0	0	0	0
65-69	0	0	0	0	0
		N = 229		$\Sigma fx'$= 96	Σfx^2=1162

$$\text{Mean} = 32 + \frac{96}{229} \times 5$$

$$= 32 + 2.09$$

$$= 34.09$$

$$s = \sqrt{\frac{[229 \quad 1162 - (96)^2]}{229\ (229 - 1)}} \times 5$$

$$= \sqrt{\frac{[\ 266098 - 9216\ ]}{52212}} \times 5$$

$$= \sqrt{\frac{256882}{52212}} \times 5$$

$$= \sqrt{4.91 \times 5}$$

$$= 2.21 \times 5$$

$$= 11.05$$

AGE 14 (Male & Female):-

Class-Interval	Mid. point	f	x'	fx'	fx'^2
5- 9	7	5	-5	- 25	125
10-14	12	9	-4	- 36	144
15-19	17	33	-3	- 99	297
20-24	22	44	-2	- 88	176
25-29	27	62	-1	- 62	62
30-34	32	49	0	0 -310	0
35-39	37	44	1	44	44
40-44	42	54	2	108	216
45-49	47	26	3	78	234
50-54	52	13	4	52	208
55-59	57	7	5	35 317	175

$N = 346 \qquad \Sigma fx' = 7 \qquad \Sigma fx^2 = 1681$

$$\text{Mean} = 32 + \frac{7}{346} \times 5$$

$$= 32 + 0.10$$

$$= 32.10$$

$$s = \sqrt{\frac{\left[346 \quad 1681 - (7)^2\right]}{346\ (346 - 1)}} \times 5$$

$$= \sqrt{\frac{\left[581626 - 49\right]}{119370}} \times 5$$

$$= \sqrt{\frac{581577}{119370}} \times 5$$

$$= \sqrt{4.87} \times 5$$

$$= 2.20 \times 5$$

$$= 11.$$

AGE 15 (Male & Female):-

Class-Interval	Mid. point	f	x'	fx'	fx'^2
5- 9	7	5	-5	- 25	125
10-14	12	19	-4	- 76	304
15-19	17	40	-3	-120	360
20-24	22	79	-2	-158	316
25-29	27	84	-1	- 84	84
30-34	32	66	0	0 (-463)	0
35-39	37	80	1	80	80
40-44	42	54	2	108	216
45-49	47	45	3	135	405
50-54	52	26	4	104	416
55-59	57	13	5	65	325
60-64	62	5	6	30 (522)	180
	N =	516		$\leq fx' =$ 59	$\leq fx'^2 =$ 2811

$$\text{Mean} = 32 + \frac{59}{516} \times 5$$

$$= 32 + 0.11 \times 5$$

$$= 32 + 0.57$$

$$= 32.57$$

$$s = \sqrt{\frac{[516 \quad 2811 - (59)^2]}{516\,(516-1)}} \times 5$$

$$= \sqrt{\frac{[1450476 - 3481]}{265740}} \times 5$$

$$= \sqrt{\frac{1446995}{265740}} \times 5$$

$$= \sqrt{5.44 \times 5}$$

$$= 2.33 \times 5 = 11.66$$

AGE 16 (Male & Female):-

Class-Interval	Mid. point	f	x'	fx'	fx'^2
5- 9	7	4	-5	- 20	100
10-14	12	23	-4	- 92	368
15-19	17	48	-3	-144	432
20-24	22	57	-2	-114	228
25-29	27	64	-1	- 64	128
30-34	32	62	0	0 -434	0
35-39	37	76	1	76	76
40-44	42	66	2	132	264
45-49	47	34	3	102	306
50-54	52	19	4	76	304
55-59	57	18	5	90	450
60-64	62	8	6	48	288
65-69	67	1	7	7	49
				531	
		N = 480		$\Sigma fx'$ = 97	$\Sigma fx'^2$=2993

$$\text{Mean} = 32 + \frac{97}{480} \times 5$$

$$= 32 + 1.01$$

$$= 33.01$$

$$s = \sqrt{\frac{[480 \;\; 2993 - (97)^2]}{480\,(480 - 1)}} \times 5$$

$$\equiv \sqrt{\frac{[1436640 - 9409\;]}{229920}} \times 5$$

$$= \sqrt{\frac{1427231}{229920}} \times 5$$

$$= \sqrt{6.20 \times 5}$$

$$= 2.49 \times 5 = 12.45$$

AGE 17 (Male & Female):-

Class-Interval	Mid. point	f	x'	fx'	fx'^2
5- 9	7	7	-5	- 35	175
10-14	12	11	-4	- 44	176
15-19	17	41	-3	-123	369
20-24	22	65	-2	-130	260
25-29	27	94	-1	- 94	94
30-34	32	69	0	0 -426	0
35-39	37	54	1	54	54
40-44	42	39	2	78	156
45-49	47	16	3	48	144
50-54	52	18	4	72	148
55-59	57	12	5	60	300
60-64	62	4	6	24	144
65-69	67	1	7	7 / 343	49
		N = 431		$\Sigma fx'$ = - 83	$\Sigma fx'^2$ = 2069

$$\text{Mean} = 32 + \frac{-83}{431} \times 5$$

$$= 32 + -0.96$$

$$= 31.04$$

$$s = \sqrt{\frac{[431 \quad 2069 - (-83)^2]}{431\ (431-1)}} \times 5$$

$$= \sqrt{\frac{[897739 - 6889]}{185330}} \times 5$$

$$= \sqrt{\frac{884850}{185330}} \times 5$$

$$= \sqrt{4.77} \times 5$$

$$= 2.18 \times 5 = 10.92$$

AGE 18 (Male & Female):-

Class-Interval	Mid. point	f	x'	fx'	fx'^{2}
5- 9	7	2	-4	- 8	32
10-14	12	17	-3	-51	153
15-19	17	26	-2	-52	104
20-24	22	38	-1	-38	38
25-29	27	37	0	0 -149	0
30-34	32	29	1	29	29
35-39	37	25	2	50	100
40-44	42	14	3	42	126
45-49	47	13	4	52	208
50-54	52	8	5	40	200
55-59	57	4	6	24	144
60-64	62	0	7	0	0
65-69	67	1	8	8 / 245	64
		N = 214		$\Sigma fx' = 96$	$\Sigma fx'^2 = 1198$

$$\text{Mean } 27 + \frac{96}{214} \times 5$$

$$= 27 + 2.24 \times 5$$

$$= 27 + 2.24$$

$$= 29.24$$

$$s = \sqrt{\left[\frac{214 \quad 1198 - (96)^2}{214\,(214-1)}\right]} \times 5$$

$$= \sqrt{\left[\frac{256372 - 9216}{45582}\right]} \times 5$$

$$= \sqrt{\frac{247156}{45582}} \times 5$$

$$= \sqrt{5.42} \times 5$$

$$= 2.32 \times 5$$

$$= 11.64$$

AGE 19 (Male & Female):-

Class-Interval	Mid. point	f	x'	fx'	fx'^{2}
5- 9	7	0	0	0	0
10-14	12	12	-4	- 8	32
15-19	17	18	-3	-54	162
20-24	22	18	-2	-36	72
25-29	27	12	-1	-12	12
30-34	32	12	0	0 -110	0
35-39	37	12	1	12	12
40-44	42	8	2	16	32
45-49	47	6	3	18	54
50-54	52	4	4	16	52
55-59	57	2	5	10	50
				68	
		N= 94		$\Sigma fx'$ = -42	$\Sigma fx'^2$ = 478

$$\text{Mean} = 32 + \frac{-42}{94} \times 5$$

$$= 32 + -2.23$$

$$= 29.77$$

$$s = \sqrt{\frac{[94 \ 478 - (-42)^2]}{94(94-1)}} \times 5$$

$$= \sqrt{\frac{[44932 - 1764]}{8742}} \times 5$$

$$= \sqrt{\frac{43168}{8742}} \times 5$$

$$= \sqrt{4.89} \times 5$$

$$= 2.21 \times 5$$

$$= 11.05$$

APPENDICES II

COMPUTATION OF PERCENTILES

PERCENTILE COMPUTATION FOR THE TOTAL SAMPLE.

SINGLE DIGIT SCORE	f.	cf.	cfmp.	cpmp.	PR.	SINGLE DIGIT SCORE	f.	cf.	cfmp.	cpmp.	PR.
67	1	2396	2395.5	99.97	99+	35	76	1512	1474	61.51	62
66	1	2395	2394.5	99.97	99+	34	63	1436	1404.5	58.61	59
65	1	2394	2393.5	99.89	99+	33	82	1373	1332	55.59	56
64	2	2393	2392	99.83	99+	32	68	1291	1257	52.46	52
63	4	2391	2389	99.58	99+	31	64	1223	1191	49.70	50
62	2	2387	2386	99.58	99+	30	70	1159	1124	46.91	47
61	2	2385	2384	99.49	99	29	78	1089	1050	43.82	44
60	7	2383	2379.5	99.31	99	28	84	1011	969	40.44	40
59	9	2376	2371.5	98.97	99	27	76	927	879	36.68	37
58	8	2367	2363	98.62	99	26	83	851	809.5	33.78	34
57	22	2359	2348	97.28	97	25	86	768	725	30.25	30
56	12	2337	2331	97.28	97	24	70	682	647	27.00	27
55	12	2325	2319	96.78	97	23	69	612	577.5	24.10	24
54	16	2313	2305	96.20	96	22	71	543	507.5	20.97	21
53	24	2297	2285	95.36	95	21	64	472	440	18.36	18
52	22	2273	2262	94.40	94	20	61	408	377.5	15.75	16
51	18	2251	2242	93.57	94	19	48	347	323	13.48	14
50	25	2233	2220.5	92.65	93	18	48	299	275	11.47	11
49	31	2208	2192.5	91.50	92	17	65	251	218.5	9.11	9
48	33	2177	2160.5	90.17	90	16	35	186	168.5	7.03	7
47	35	2174	2126.5	88.75	89	15	35	151	133.5	5.57	6
46	35	2109	2075.5	86.62	87	14	32	116	100	4.17	4
45	32	2074	2085	85.89	86	13	23	84	72.5	3.02	3
44	40	2042	2022	84.39	84	12	20	61	51	2.12	2
43	55	2002	1974.5	82.40	82	11	13	41	34.5	1.43	1
42	51	1947	1921.5	80.19	80	10	5	28	25.5	1.06	1
41	60	1896	1866	77.87	78	9	8	23	19	0.79	1
40	71	1836	1800.5	75.14	75	8	7	15	11.5	0.47	1
39	70	1765	1730	72.20	72	7	3	8	6.5	0.27	1
38	59	1695	1665.5	69.51	70	6	3	5	3.5	0.14	1
37	61	1636	1600.5	66.79	67	5	2	2	1	0.04	1
36	63	1575	1543.5	64.41	64	N =2396.					

PERCENTILE COMPUTATION FOR CLASS VII.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
58	1	599	598.5	99.91	99+	33	29	387	372.5	62.18	62
57	1	598	597.5	99.74	99+	32	13	358	351.5	58.68	59
56	1	597	596.5	99.58	99	31	15	345	337.5	56.34	56
55	2	596	595	99.33	99	30	25	330	317.5	53.00	53
54	2	594	593	98.99	99	29	26	305	292	48.74	49
53	2	592	591	98.66	99	28	28	279	265	44.24	44
52	2	590	589	98.33	98	27	19	251	241.5	40.31	40
51	2	588	587	97.99	98	26	24	232	220	36.72	37
50	4	586	584	97.49	97	25	15	208	200.5	33.47	33
49	6	582	579	96.66	97	24	17	193	184.5	30.80	31
48	13	576	569.5	95.07	95	23	19	176	166.5	27.79	28
47	2	563	562	93.82	94	22	26	157	144	24.04	24
46	10	561	556	92.82	93	21	20	131	121	20.20	20
45	5	551	548.5	91.56	92	20	15	111	103.5	17.27	17
44	18	546	537	89.64	90	19	11	96	90.5	15.10	15
43	20	528	518	86.47	86	18	13	85	75.5	13.10	13
42	8	508	504	84.14	84	17	18	72	63	10.51	11
41	11	500	494.5	82.55	83	16	8	54	50	8.34	8
40	15	489	481.5	80.38	80	15	12	46	40	6.67	7
39	15	474	466.5	77.87	78	14	14	34	27	4.50	5
38	13	459	452.5	75.54	76	13	6	20	17	2.83	3
37	21	446	435.5	72.70	73	12	5	14	11.5	1.91	2
36	9	425	420.5	70.20	70	11	5	9	6.5	1.08	1
35	12	416	410	68.44	68	10	1	4	3.5	0.58	1
34	17	404	395.5	66.02	66	9	1	3	2.5	0.41	1
						8	1	2	1.5	0.25	1
						7	1	1	.5	0.08	1

N =599.

PERCENTILE COMPUTATION FOR CLASS VIII.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
59	1	599	598.5	99.91	99+
58	0	598	598	99.83	99+
57	2	598	597	99.66	99+
56	6	596	593	98.99	99
55	0	590	590	98.49	98
54	4	590	588	98.16	98
53	5	586	583.5	97.41	97
52	7	581	577.5	96.41	96
51	6	574	571	95.32	95
50	7	568	564.5	94.24	94
49	13	561	554.5	92.57	93
48	11	548	542.5	90.56	91
47	15	537	529.5	88.39	88
46	13	522	515.5	86.06	86
45	10	509	504	84.14	84
44	7	499	495.5	82.72	83
43	12	492	486	81.13	81
42	12	480	474	79.13	79
41	14	468	461	76.96	77
40	17	454	447.5	74.70	75
39	20	437	427	71.28	71
38	19	417	407.5	68.03	68
37	14	398	391	65.27	65
36	19	384	374.5	62.52	63
35	28	365	351	58.59	59
34	17	337	328.5	54.84	55
33	12	320	314	52.42	52
32	9	308	303.5	50.66	51
31	13	299	292.5	48.83	49
30	15	286	278.5	46.49	46
29	16	271	263	43.90	44
28	16	255	247	41.23	41
27	19	239	229.5	38.31	38
26	18	220	211	35.22	35
25	22	202	191	31.88	32
24	18	180	171	28.54	29
23	13	162	155.5	25.95	26
22	17	149	140.5	23.45	23
21	12	132	126	21.03	21
20	17	120	111.5	18.61	19
19	11	103	97.5	16.27	16
18	15	92	84.5	14.10	14
17	22	77	66	11.01	11
16	10	55	50	8.34	8
15	8	45	41	6.84	7
14	5	37	34.5	5.75	6
13	10	32	27	4.50	5
12	6	22	19	3.17	3
11	5	16	13.5	2.25	2
10	1	11	10.5	1.75	2
9	2	10	9	1.50	2
8	3	8	6.5	1.08	1
7	0	5	5	0.83	1
6	3	5	3.5	0.58	1
5	2	2	1	0.16	1

N =599.

PERCENTILE COMPUTATION FOR CLASS IX.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
66	1	599	599.5	100.08	99+	36	17	441	441	73.71	74
65	0	599	599	100	99+	35	20	433	423	70.61	71
64	0	599	599	100	99+	34	15	413	405.5	67.69	68
63	0	599	599	100	99+	33	19	398	388.5	64.85	65
62	0	599	599	100	99+	32	31	379	364.5	60.85	61
61	0	599	598	99.83	99+	31	19	348	338.5	56.51	57
60	1	598	597.5	99.75	99+	30	16	329	321	53.58	54
59	1	597	596.5	99.58	99+	29	22	313	302	50.41	50
58	2	596	595	99.33	99	28	25	291	298.5	49.83	50
57	3	594	592.5	98.91	99	27	22	266	255	42.57	43
56	1	591	591.5	98.58	99	26	26	244	231	38.56	39
55	2	590	589	98.33	98	25	31	218	202.5	33.80	34
54	5	588	585	97.75	98	24	24	187	175	29.21	29
53	6	583	580	96.82	97	23	18	163	154	25.70	26
52	3	577	575.5	96.07	96	22	18	145	136	22.70	23
51	4	574	572	95.49	95	21	20	127	117	19.53	20
50	4	570	568	94.82	95	20	17	107	98.5	16.44	16
49	5	566	563.5	94.07	94	19	17	90	81.5	13.60	14
48	5	561	558.5	93.23	93	18	13	73	66.5	11.10	11
47	7	556	552.5	92.23	92	17	14	60	53	8.85	9
46	4	549	547	91.39	91	16	8	46	42	7.01	7
45	4	545	543	90.65	91	15	9	38	33.5	5.99	6
44	5	541	538.5	89.89	90	14	5	29	23.5	3.92	4
43	10	536	541	88.65	89	13	5	21	18.5	3.09	3
42	10	526	521	86.97	87	12	3	16	12.5	2.09	2
41	12	516	510	85.14	85	11	2	11	9	1.50	2
40	15	504	496.5	82.88	83	10	2	8	7	1.17	1
39	16	489	481	80.3	80	9	2	6	5	.83	1
38	11	473	467.5	78.38	78	8	2	4	3	.50	1
37	12	462	456	76.13	76	7	2	2	1	.17	1

N = 599.

PERCENTILE COMPUTATION FOR CLASS X.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
67	1	599	598.5	99.91	99+	37	14	331	324	54.09	54
66	0	598	598	99.83	99+	36	18	317	308	51.41	51
65	1	598	597.5	99.74	99+	35	16	299	291	48.58	49
64	1	597	596.5	99.58	99+	34	14	283	276	46.07	46
63	4	596	594	99.16	99	33	22	269	258	43.08	43
62	2	592	591	98.66	99	32	15	247	239.5	39.98	40
61	2	590	589	98.33	98	31	17	232	227	37.89	38
60	6	588	585	97.66	98	30	14	215	208	34.72	35
59	7	582	578.5	96.57	97	29	14	201	194	32.38	32
58	5	575	572.5	95.57	96	28	15	187	179.5	29.96	30
57	16	570	562	93.82	94	27	16	172	164	27.37	27
56	4	554	552	92.15	92	26	15	156	148.5	24.79	25
55	8	550	546	91.15	91	25	18	141	132	22.03	22
54	5	542	539.5	90.06	90	24	11	123	117.5	19.61	20
53	11	537	531.5	88.73	89	23	19	112	102.5	17.11	17
52	10	526	521	86.97	87	22	10	93	88	14.69	15
51	7	516	512.5	85.55	86	21	12	83	77	12.85	13
50	9	509	504.5	84.22	84	20	12	71	65	10.85	11
49	7	500	496.5	82.88	83	19	9	59	54.5	9.09	9
48	4	493	491	81.96	82	18	8	50	46	7.67	8
47	11	489	483.5	80.71	81	17	11	42	36.5	6.09	6
46	8	478	474	79.13	79	16	9	31	26.5	4.42	4
45	13	470	463.5	77.37	77	15	6	22	19	3.17	3
44	10	457	452	75.45	75	14	4	16	14	2.33	2
43	13	447	440.5	73.53	74	13	2	12	11	1.83	2
42	21	434	423.5	70.70	71	12	4	10	8	1.33	1
41	23	413	402.5	67.19	67	11	1	6	5.5	0.98	1
40	24	390	378	63.10	63	10	1	5	4.5	0.75	1
39	19	366	356.5	59.51	60	9	3	4	2.5	0.41	1
38	16	347	339	56.59	57	8	1	1	.5	0.08	1

N =599

PERCENTILE COMPUTATION FOR AGE GROUP 12.

SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.	SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.
56	1	86	85.5	99.41	99	30	4	46	44	51.16	51
55	0	85	85	98.83	99	29	2	42	41	47.67	48
54	0	85	85	98.83	99	28	2	40	39	45.34	45
53	0	85	85	98.83	99	27	5	38	35.5	41.27	41
52	1	85	84.5	98.25	98	26	3	33	31.5	36.62	37
51	0	84	84	97.67	98	25	3	30	28.5	33.13	33
50	0	84	84	97.98	98	24	2	27	26	30.23	30
49	1	84	83.5	97.09	97	23	3	25	23.5	27.32	27
48	0	83	83	96.51	97	22	4	22	20	23.25	23
47	0	83	83	96.51	97	21	3	18	16.5	19.18	19
46	1	83	82.5	95.93	96	20	1	15	14.5	16.86	17
45	1	82	81.5	94.76	95	19	2	14	13	15.11	15
44	2	81	80	93.02	93	18	3	9	10.5	12.20	12
43	1	79	78.5	91.27	91	17	3	9	7.5	8.72	9
42	1	78	77.5	90.11	90	16	1	6	5.5	6.39	6
41	0	77	77	89.53	90	15	2	5	4	4.65	5
40	6	77	74	86.04	86	14	1	3	2.5	2.32	2
39	1	71	70.5	81.97	82	13	1	2	1.5	1.75	2
38	3	70	68.5	79.65	80	12	0	1	1	1.16	1
37	3	67	65.5	76.16	76	11	1	1	0.5	0.58	1
36	0	64	64	74.41	74						
35	3	64	62.5	72.67	73						
34	4	61	59	68.60	69						
33	9	57	52.5	61.04	61						
32	0	48	48	55.81	56						
31	2	48	47	54.65	55						

N = 86.

PERCENTILE COMPUTATION FOR AGE 13.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
58	1	229	228.5	99.78	99+	32	9	105	100.5	43.88	44
57	2	228	227	99.12	99	31	5	96	93.5	40.82	41
56	2	226	225	98.25	98	30	8	91	87	37.99	38
55	1	224	223.5	97.59	98	29	15	83	75.5	32.96	33
54	2	223	222	96.94	97	28	9	68	63.5	27.72	28
53	3	221	219.5	95.85	96	27	5	59	56.5	24.67	25
52	4	218	216	94.32	94	26	2	54	53	23.14	23
51	3	214	212.5	92.79	93	25	8	52	48	20.96	21
50	4	211	209	91.26	91	24	1	44	43.5	18.99	19
49	6	207	204	89.08	89	23	3	43	41.5	18.12	18
48	7	201	197.5	86.24	86	22	11	40	34.5	15.06	15
47	1	194	193.5	84.49	84	21	2	29	28	12.22	12
46	7	193	189.5	82.75	83	20	4	27	25	10.91	11
45	2	186	185	80.78	81	19	1	23	22.5	9.82	10
44	4	184	182	79.47	79	18	3	22	20.5	8.95	9
43	9	180	175.5	76.63	77	17	7	19	15.5	6.76	7
42	4	171	169	73.79	74	16	3	12	10.5	4.58	5
41	7	167	163.5	71.39	71	15	0	9	9	3.93	4
40	8	160	156	68.12	68	14	4	9	7	3.05	3
39	3	152	150.5	65.72	66	13	2	5	4	1.74	2
38	2	149	148	64.61	65	12	0	3	3	1.31	1
37	10	147	142	62.00	62	11	2	3	2	0.87	1
36	6	137	134	58.51	59	10	1	1	0.5	0.21	1
35	7	131	127.5	55.67	56						
34	7	124	120.5	52.62	53						
33	12	117	111	48.47	48						

N= 229.

PERCENTILE COMPUTATION FOR AGE 14.

Single Digit Score CI	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
59	1	346	345.5	99.85	99	29	8	153	149	43.06	43
58	2	345	344	99.42	99	28	18	145	136	39.30	39
57	2	343	342	98.84	99	27	8	127	123	35.54	36
56	0	341	341.5	98.69	99	26	20	119	109	31.50	32
55	2	341	340	98.26	98	25	8	99	95	27.45	27
54	3	339	337.5	97.54	98	24	10	91	86	24.85	25
53	5	336	333.5	96.38	96	23	8	81	77	22.25	22
52	1	331	330.5	95.52	96	22	8	73	69	19.94	20
51	2	330	329	95.08	95	21	8	65	61	17.63	18
50	2	328	327	94.50	95	20	10	57	52	15.02	15
49	2	326	325	93.93	94	19	5	47	44.5	12.86	13
48	8	324	320	92.48	92	18	3	42	40.5	11.70	12
47	3	316	317.5	91.76	92	17	16	39	31	8.95	9
46	6	313	310	89.59	90	16	3	23	21.5	6.21	6
45	7	307	303	87.71	88	15	6	20	17	4.91	5
44	11	300	294.5	85.11	85	14	4	14	12	3.46	3
43	15	289	281.5	81.35	81	13	2	10	9	2.60	3
42	7	274	270.5	78.17	78	12	1	8	7.5	2.16	2
41	9	267	262.5	75.85	76	11	2	7	6	1.73	2
40	12	258	252	72.83	73	10	0	5	5.5	1.58	2
39	12	246	240	69.36	69	9	3	5	3.5	1.01	1
38	6	234	231	66.76	67	8	1	2	1.5	0.43	1
37	7	228	224.5	64.88	65	7	0	1	1	0.28	1
36	10	221	216	62.42	62	6	0	1	1	0.28	1
35	9	211	206.5	59.68	60	5	1	1	.5	0.14	1
34	7	202	198.5	57.36	57						
33	10	195	190	54.91	55						
32	8	185	181	52.31	52						
31	12	177	171	49.42	49						
30	12	165	159	45.95	46						

N = 346.

PERCENTILE COMPUTATION FOR AGE 15.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
64	1	516	515.5	99.90	99+	34	13	293	286.5	55.52	56
63	2	515	514	99.61	99+	33	12	280	274	53.10	53
62	1	513	512.5	99.32	99	32	16	268	260	50.38	50
61	0	512	512	99.22	99	31	13	252	245.5	47.57	48
60	1	512	511.5	99.12	99	30	12	239	233	45.15	45
59	2	511	510	98.82	99	29	12	227	221	42.82	43
58	1	509	509.5	98.74	99	28	20	215	205	39.72	40
57	4	508	506	98.06	98	27	20	195	185	35.85	36
56	4	504	502	97.28	97	26	18	175	166	32.17	32
55	2	500	499	96.70	97	25	14	157	150	29.06	29
54	5	498	495.5	96.02	96	24	21	143	132.5	25.67	26
53	5	493	490.5	95.05	95	23	21	122	111.5	21.60	22
52	6	488	485	93.99	94	22	11	101	95.5	18.50	19
51	5	482	479.5	92.92	93	21	14	90	83	16.08	16
50	5	477	474.5	91.95	92	20	12	76	70	13.56	14
49	8	472	468	90.69	91	19	8	64	60	11.62	12
48	6	464	461	89.34	89	18	7	56	52.5	10.17	10
47	15	458	450.5	87.30	87	17	8	49	45	8.72	9
46	6	443	440	85.27	85	16	9	41	36.5	7.07	7
45	10	437	432	83.72	84	15	8	32	28	5.42	5
44	10	427	422	81.78	83	14	7	24	20.5	3.97	4
43	8	417	413	80.03	80	13	4	17	15	2.90	3
42	13	409	402.5	78.00	78	12	5	13	10.5	2.03	2
41	13	396	389.5	75.48	75	11	2	8	7	1.35	1
40	10	383	378	73.25	73	10	1	6	5.5	1.06	1
39	20	373	363	70.32	70	9	0	5	5	0.96	1
38	17	353	344.5	66.77	67	8	0	5	5	0.96	1
37	9	336	344.5	64.24	64	7	2	5	4	0.77	1
36	14	327	320	62.01	62	6	3	3	1.5	0.29	1
35	20	313	303	60.65	61						

N = 516.

PERCENTILE COMPUTATION FOR AGE 16.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
65	1	480	479.5	99.89	99+	35	16	274	266	55.41	55
64	0	479	479	99.79	99+	34	17	258	249.5	51.97	52
63	1	419	478.5	99.68	99+	33	12	241	235	48.95	49
62	1	478	477.5	99.47	99	32	15	229	221.5	46.14	46
61	2	477	476	99.16	99	31	7	214	210.5	43.85	44
60	4	475	473	98.54	99	30	11	207	201.5	41.97	42
59	4	471	469	97.70	98	29	14	196	189	39.37	39
58	2	467	466	97.08	97	28	9	182	177.5	36.97	37
57	9	465	460.5	95.93	96	27	11	173	167.5	34.89	35
56	1	456	455.5	94.89	95	26	12	162	156	32.5	33
55	2	455	454	94.58	95	25	18	150	141	29.37	29
54	1	453	452.5	94.27	94	24	16	132	124	25.83	26
53	7	452	448.5	93.43	93	23	11	116	110.5	23.02	23
52	3	445	443.5	92.39	92	22	9	105	100.5	20.93	21
51	3	442	440.5	91.77	92	21	10	96	91	18.95	19
50	5	439	436.5	90.93	91	20	11	86	70.5	14.68	15
49	7	434	430.5	89.68	90	19	12	75	69	14.37	14
48	4	427	425	88.54	89	18	7	63	59.5	12.39	12
47	6	423	420	87.5	88	17	15	56	48.5	10.10	10
46	11	417	411	85.62	86	16	5	41	38.5	8.02	8
45	6	406	403	83.95	84	15	9	36	31.5	6.56	7
44	8	400	396	82.5	83	14	9	27	22.5	4.68	5
43	13	392	385.5	80.31	80	13	5	18	13.5	2.81	3
42	13	379	372.5	77.60	78	12	6	13	10	2.08	2
41	12	366	360	75	75	11	2	7	6	1.25	1
40	20	354	344	71.66	72	10	1	5	4.5	1.25	1
39	14	334	327	68.12	68	9	0	4	4	0.83	1
38	14	320	313	65.20	65	8	3	4	2.5	0.52	1
37	17	306	297.5	61.97	62	7	1	1	.5	0.10	1
36	15	289	281.5	58.64	59	N = 480					

PERCENTILE COMPUTATION FOR AGE 17.

Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.	Single Digit Score CI.	f.	cf.	cfmp.	cpmp.	PR.
67	1	431	430.5	99.88	99+	35	17	304	295.5	68.56	69
66	0	430	430	99.76	99+	34	5	287	284.5	66.00	66
65	0	430	430	99.76	99+	33	16	282	272	63.10	63
64	1	430	429.5	99.65	99+	32	11	266	260.5	60.44	60
63	1	429	428.5	99.41	99	31	20	255	245	56.84	57
62	0	428	428	99.30	99	30	17	235	226.5	52.55	53
61	0	428	428	99.30	99	29	21	218	207.5	48.14	48
60	2	428	427	99.07	99	28	18	197	188	43.61	44
59	2	426	425	98.60	99	27	16	179	171	39.67	40
58	1	424	423.5	98.25	98	26	19	163	153.5	35.61	36
57	4	423	421	97.67	98	25	20	144	134	31.09	31
56	1	419	418.5	97.09	97	24	10	124	119	27.61	28
55	4	418	416	96.51	97	23	12	114	108	25.05	25
54	4	414	412	95.59	96	22	19	102	92.5	21.46	21
53	2	410	409	94.89	95	21	17	83	74.5	17.28	17
52	5	408	405.5	94.08	94	20	7	66	62.5	14.50	15
51	0	403	403	93.50	94	19	9	59	54.5	12.64	13
50	7	403	399.5	92.69	93	18	10	50	45	10.44	10
49	6	396	393	91.18	91	17	9	40	35.5	8.12	8
48	3	390	391.5	90.83	91	16	10	31	26	6.03	6
47	0	387	387	89.79	90	15	3	21	19.5	4.52	5
46	4	387	385	89.32	89	14	4	18	16	3.71	4
45	3	383	381.5	88.39	88	13	6	14	11	2.55	3
44	3	380	378.5	87.81	88	12	1	8	7.5	1.74	2
43	6	377	374	86.77	87	11	0	7	7	1.62	2
42	11	371	365.5	84.80	85	10	0	7	7	1.62	2
41	9	360	355.5	82.48	82	9	3	7	5.5	1.27	1
40	10	351	346	80.27	80	8	3	4	2.5	0.58	1
39	12	341	335	77.72	78	7	0	1	1	0.23	1
38	7	329	325.5	75.52	76	6	0	1	1	0.23	1
37	8	322	318	73.78	74	5	1	1	.5	0.11	1
36	10	314	309	71.69	72	N =431.					

PERCENTILE COMPUTATION FOR AGE 18.

SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.	SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.
66	1	214	213.5	99.76	99+	37	7	165	161	75.23	75
65	0	213	213	99.53	99+	36	7	158	154.5	72.19	72
64	0	213	213	99.53	99+	35	2	151	150	70.09	70
63	0	213	213	99.53	99+	34	6	149	146	68.22	68
62	0	213	213	99.53	99+	33	10	143	138	64.48	64
61	0	213	213	99.53	99+	32	4	133	131	61.21	61
60	0	213	213	99.53	99+	31	4	129	127	59.34	59
59	0	213	213	99.53	99+	30	5	125	122.5	57.24	57
58	0	213	213	99.53	99+	29	2	120	119	55.60	56
57	1	213	212.5	99.29	99	28	6	118	115	53.73	54
56	3	212	210.5	98.36	98	27	8	112	108	50.46	50
55	0	209	209	97.66	98	26	8	104	100	46.72	47
54	1	209	208.5	97.42	97	25	13	96	89.5	41.82	42
53	2	208	207	96.72	97	24	5	83	80.5	37.61	38
52	2	206	205	95.79	96	23	5	78	75.5	35.28	35
51	2	204	203	94.85	95	22	9	73	68.5	32.00	32
50	1	202	201.5	94.15	94	21	5	64	61.5	28.73	29
49	1	201	200.5	93.69	94	20	14	59	52	24.29	24
48	3	200	198.5	93.45	93	19	5	45	42.5	19.85	20
47	6	197	194	90.65	91	18	9	40	35.5	16.58	17
46	0	191	191	89.25	89	17	4	31	29	13.55	14
45	3	191	189.5	88.55	89	16	3	27	25.5	11.91	12
44	2	188	187	87.38	87	15	5	24	21.5	10.04	10
43	2	186	185	86.44	86	14	3	19	17.5	8.17	8
42	2	184	183	85.51	86	13	2	16	15	7.00	7
41	5	182	179.5	83.87	84	12	6	14	11	5.14	5
40	3	177	175.5	82.00	82	11	4	8	6	2.80	3
39	2	174	173	80.84	81	10	2	4	3	1.40	1
38	7	172	168.5	78.73	79	9	2	2	1	0.46	1

N = 214.

PERCENTLIE COMPUTATION FOR AGE 19.

SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.	SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.
58	1	94	93.5	99.46	99	35	2	64	63	67.02	67
57	0	93	93	98.93	99	34	4	62	60	63.82	61
56	0	93	93	98.93	99	33	1	58	57.5	61.17	61
55	1	93	92.5	98.40	98	32	5	57	54.5	57.97	58
54	0	92	92	97.87	98	31	1	52	51.5	54.78	55
53	0	92	92	97.87	98	30	1	51	50.5	53.72	54
52	0	92	92	97.87	98	29	4	50	48	51.06	51
51	3	92	90.5	96.27	96	28	2	46	45	47.87	48
50	1	89	88.5	94.14	94	27	3	44	42.5	45.21	45
49	0	88	88	93.61	94	26	1	41	40.5	43.08	43
48	2	88	87	92.55	93	25	2	40	39	41.48	41
47	4	86	84	89.36	89	24	5	38	35.5	37.76	38
46	0	82	82	87.23	87	23	6	33	30	31.91	32
45	0	82	82	87.23	87	22	0	27	27	28.72	29
44	0	82	82	87.23	87	21	5	27	24.5	26.06	26
43	1	82	81.5	86.70	87	20	2	22	21	22.34	22
42	0	81	81	86.17	86	19	6	20	17	18.08	18
41	5	81	78.5	83.51	84	18	6	14	11	11.70	12
40	2	76	75	79.78	80	17	3	8	6.5	6.9	7
39	6	74	71	75.53	76	16	1	5	4.5	4.78	5
38	3	68	66.5	70.74	71	15	2	4	3	3.19	3
37	0	65	65	69.14	69	14	0	2	2	2.12	2
36	1	65	64.5	68.61	69	13	1	2	1.5	1.59	2
						12	1	1	.5	0.53	1

N = 94.

PERCENTLIE COMPUTATION FOR AGE 19.

SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.	SINGLE DIGIT SCORE CI.	f.	cf.	cfmp.	cpmp.	PR.
58	1	94	93.5	99.46	99	35	2	64	63	67.02	67
57	0	93	93	98.93	99	34	4	62	60	63.82	61
56	0	93	93	98.93	99	33	1	58	57.5	61.17	61
55	1	93	92.5	98.40	98	32	5	57	54.5	57.97	58
54	0	92	92	97.87	98	31	1	52	51.5	54.78	55
53	0	92	92	97.87	98	30	1	51	50.5	53.72	54
52	0	92	92	97.87	98	29	4	50	48	51.06	51
51	3	92	90.5	96.27	96	28	2	46	45	47.87	48
50	1	89	88.5	94.14	94	27	3	44	42.5	45.21	45
49	0	88	88	93.61	94	26	1	41	40.5	43.08	43
48	2	88	87	92.55	93	25	2	40	39	41.48	41
47	4	86	84	89.36	89	24	5	38	35.5	37.76	38
46	0	82	82	87.23	87	23	6	33	30	31.91	32
45	0	82	82	87.23	87	22	0	27	27	28.72	29
44	0	82	82	87.23	87	21	5	27	24.5	26.06	26
43	1	82	81.5	86.70	87	20	2	22	21	22.34	22
42	0	81	81	86.17	86	19	6	20	17	18.08	18
41	5	81	78.5	83.51	84	18	6	14	11	11.70	12
40	2	76	75	79.78	80	17	3	8	6.5	6.9	7
39	6	74	71	75.53	76	16	1	5	4.5	4.78	5
38	3	68	66.5	70.74	71	15	2	4	3	3.19	3
37	0	65	65	69.14	69	14	0	2	2	2.12	2
36	1	65	64.5	68.61	69	13	1	2	1.5	1.59	2
						12	1	1	.5	0.53	1

N = 94.

APPENDICES III

COMPUTATION OF STANINES

STANINE COMPUTATION FOR TOTAL SAMPLE.

SINGLE DIGIT SCORE DISTR.	f.	cf.	cf.% ($\frac{cf \times 100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)	SINGLE DIGIT Score DISTR.	f.	cf.	cf.% ($\frac{cf \times 100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)
67	1	2396	100	100%	35	76	1512	63.10	1437.6 (60%)
66	1	2395	99.96		34	63	1436	59.93	
65	1	2394	99.91		33	82	1373	57.38	
64	2	2393	99.87		32	68	1291	53.88	
63	4	2391	99.79		31	64	1223	51.04	
62	2	2387	99.62		30	70	1159	48.37	
61	2	2385	99.54		29	78	1089	45.45	
60	7	2383	99.45		28	84	1011	42.19	958.4 (40%)
59	9	2376	99.16		27	76	927	38.68	
58	8	2367	96.76		26	83	851	35.51	
57	22	2359	98.45		25	86	768	32.05	
56	12	2337	97.53		24	70	682	28.46	
55	12	2325	97.03		23	69	612	25.54	551.08 (23%)
54	16	2313	96.53	2300.15 (96%)	22	71	543	22.66	
53	24	2297	95.86		21	64	472	19.69	
52	22	2273	94.86		20	61	408	17.02	
51	18	2251	93.94		19	48	347	14.48	
50	25	2233	93.19		18	48	299	12.47	263.56 (11%)
49	31	2208	92.15		17	65	251	10.47	
48	33	2177	90.85		16	35	186	7.76	
47	35	2144	89.48	2132.44 (89%)	15	35	151	6.30	
46	35	2109	88.02		14	32	116	4.84	95.84 (4%)
45	32	2074	86.56		13	23	84	3.50	
44	40	2042	83.22		12	20	61	2.54	
43	55	2002	83.55		11	13	41	1.71	
42	51	1947	81.26		10	5	28	1.16	
41	60	1896	79.13	1844.92 (77%)	9	8	23	0.95	
40	71	1836	76.62		8	7	15	0.62	
39	70	1765	73.66		7	3	8	0.33	
38	59	1695	70.65		6	3	5	0.20	
37	61	1636	68.28		5	2	2	0.08	
36	63	1575	65.73		N = 2396.				

STANINE COMPUTATION FOR AGE 19.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$	SINGLE DIGIT	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$
56	1	94	100		33	1	58	61.70	
57	0	93	98.93		32	5	57	60.63	56.4
56	0	93	98.93		31	1	52	55.31	(60%)
55	1	93	98.93		30	1	51	54.25	
54	0	92	97.87		29	4	50	53.19	
53	0	92	97.87		28	2	46	48.93	
52	0	92	97.87		27	3	44	46.80	
51	3	92	97.87	90.24	26	1	41	43.61	
50	1	89	94.68	(96%)	25	2	40	42.55	
49	0	88	93.61		24	5	38	40.42	37.6
48	2	88	93.61		23	6	33	35.10	(40%)
47	4	86	91.48	83.66	22	0	27	28.72	
46	0	82	89.23	(89%)	21	5	27	28.72	
45	0	82	89.23		20	2	22	23.40	21.62
44	0	82	89.23		19	6	20	21.27	(23%)
43	0	82	89.23		18	6	14	14.89	10.34
42	0	81	86.17		17	3	8	8.51	(11%)
41	5	81	86.17		16	1	5	5.31	
40	2	76	80.85		15	2	4	4.25	3.76
39	6	74	78.72	72.38	14	0	2	2.12	(4%)
38	3	68	72.34	(77%)	13	1	2	2.12	
37	0	65	69.14		12	1	1	1.06	
36	1	65	69.14						
35	2	64	68.08						
34	4	62	65.95						

N =94

STANINE COMPUTATION FOR THE AGE 18.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$
66	1	214	100		36	7	158	73.83	
65	0	213	99.53		35	2	151	70.56	
64	0	213	99.53		34	6	149	69.63	
63	0	213	99.53		33	10	143	66.82	
62	0	213	99.53		32	4	133	62.15	
61	0	213	99.53		31	4	129	69.28	128.4 (60%)
60	0	213	99.53		30	5	125	58.41	
59	0	213	99.53		29	2	120	56.07	
58	0	213	99.53		28	6	118	55.14	
57	0	213	99.53		27	8	112	52.34	
56	3	212	90.06		26	8	104	48.59	
55	0	209	97.66		25	13	96	44.85	85.46 (40%)
54	1	209	97.66		24	5	83	38.79	
53	2	208	97.19		23	5	78	36.45	
52	2	206	96.26	205.44 (96%)	22	9	73	34.11	
51	2	204	95.32		21	15	64	29.90	
50	1	202	94.39		20	14	59	27.57	49.22 (23%)
49	1	201	93.92		19	5	45	21.03	
48	3	200	99.45		18	9	40	18.69	
47	6	197	92.05		17	4	31	14.48	
46	0	191	98.25		16	3	27	12.62	23.54 (11%)
45	3	191	98.25	190.46 (89%)	15	5	24	11.21	
44	2	188	87.85		14	3	19	8.87	
43	2	186	86.91		13	2	16	7.47	
42	2	184	85.95		12	6	14	6.54	8.56 (4%)
41	5	182	85.04		11	4	8	3.74	
40	3	177	82.71		10	2	4	1.86	
39	2	174	81.30		9	2	2	0.93	
38	7	172	80.37	164.78 (77%)					
37	7	165	77.10						

N = 214.

STANINE COMPUTATION FOR THE AGE 17.

SINGLE DIGIT SCORE DISTRI.	f.	cf	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf. \times 100}{N})$	-Ideal cf.% $(\frac{\% \times N}{100})$
67	1	431	100		35	17	304	70.53	
66	0	430	99.76		34	5	287	66.58	
65	0	430	99.76		33	16	282	65.24	
64	1	430	99.76		32	11	266	61.71	
63	1	429	99.53		31	20	255	59.16	
62	0	428	99.30		30	17	235	54.52	
61	0	428	99.30		29	21	218	50.58	228.6 (60%)
60	2	428	99.30		28	18	197	45.70	
59	2	426	98.83		27	16	179	41.53	
58	1	424	98.37		26	19	163	37.81	172.4 (40%)
57	4	423	98.14		25	20	144	33.41	
56	1	419	97.21		24	10	124	28.77	
55	4	418	96.98	413.76 (96%)	23	12	114	26.45	
54	4	414	96.05		22	19	102	23.66	99.13
53	2	410	95.12		21	17	83	19.25	(23%)
52	5	408	94.66		20	7	66	15.31	
51	0	403	93.50		19	9	59	13.68	
50	7	403	93.50		18	10	50	11.60	
49	6	396	91.87		17	9	40	9.28	47.41 (11%)
48	3	390	90.48		16	10	31	7.19	
47	0	387	89.79		15	3	21	4.87	
46	4	387	89.79	383.59 (89%)	14	4	18	4.17	17.24
45	3	383	88.86		13	6	14	3.24	(4%)
44	3	380	88.16		12	1	8	1.85	
43	6	377	87.47		11	0	7	1.62	
42	11	371	86.07		10	0	7	1.62	
41	9	360	83.52		9	3	7	1.62	
40	10	351	81.43		8	3	4	0.92	
39	12	341	79.11	331.87 (77%)	7	0	1	0.23	
38	7	329	76.33		6	0	1	0.23	
37	8	322	74.70		5	1	1	0.23	
36	10	314	72.85						

N = 431.

STANINE COMPUTATION FOR THE AGE 16.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{cf. \times N}{100})$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$
65	1	480	100		35	16	274	57.08	
64	0	479	99.79		34	17	258	53.75	
63	1	479	99.79		33	12	241	50.20	
62	1	478	99.58		32	15	229	47.70	
61	2	477	99.37		31	7	214	44.58	
60	4	475	98.95		30	11	207	43.12	
59	4	471	98.12		29	14	196	40.83	
58	2	467	97.29		28	9	182	37.91	192 (40%)
57	9	465	96.87	460.8	27	11	173	36.04	
56	1	456	95	(96%)	26	12	162	33.75	
55	2	455	94.79		25	18	150	31.25	
54	1	453	94.37		24	16	132	27.5	
53	7	452	94.16		23	11	116	24.16	110.8 (23%)
52	3	445	92.70		22	9	105	21.81	
51	3	442	92.08		21	10	96	20	
50	5	439	91.45		20	11	86	17.91	
49	7	434	90.41	427.2	19	12	75	15.62	
48	4	427	88.95	(89%)	18	7	63	13.12	
47	6	423	88.12		17	15	56	11.66	52.8 (11%)
46	11	417	86.87		16	5	41	8.54	
45	6	406	84.58		15	9	36	7.5	
44	8	400	83.33		14	9	27	5.62	19.2 (4%)
43	13	392	81.66		13	5	18	3.75	
42	13	379	78.95	369.6	12	6	13	2.70	
41	12	366	76.25	(77%)	11	2	7	1.45	
40	20	354	73.79		10	1	5	1.04	
39	14	334	69.58		9	0	4	0.83	
38	14	320	66.66		8	3	4	0.83	
37	17	306	63.75	(60%)	7	1	1	0.20	
36	15	289	60.20	288					

N = 480

STANINE COMPUTATION FOR THE AGE 15.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% ($\frac{cf \times 100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)	SINGLE DIGIT	f.	cf.	cf.% ($\frac{cf \times 100}{N}$)	Ideal cf% ($\frac{cf \times N}{100}$)
54	1	516	100		34	13	293	56.78	
63	2	515	99.80		33	12	280	54.26	
62	1	513	99.41		32	16	268	51.93	
61	0	512	99.22		31	13	252	48.83	——
60	1	512	99.22		30	12	239	46.31	
59	2	511	99.03		29	12	227	43.99	
58	1	509	98.64		28	20	215	41.66	
57	4	508	98.44		27	20	195	37.79	206.4 (40%)
56	4	504	97.67		26	18	175	33.91	
55	2	500	96.51		25	14	157	30.42	
54	5	498	96.51	495.36	24	21	143	27.71	
53	5	493	95.54	(96%)	23	21	122	23.64	
52	6	488	94.57		22	11	101	19.57	118.68 (23%)
51	5	482	93.41		21	14	90	17.44	
50	5	477	92.44		20	12	76	14.72	
49	8	472	91.47		19	8	64	12.40	
48	6	464	89.92	459.24	18	7	56	10.85	
47	15	458	88.75	(89%)	17	8	49	9.49	56.76 (11%)
46	6	443	85.85		16	9	41	7.94	
45	10	437	84.68		15	8	32	6.20	
44	10	427	82.75		14	7	24	4.65	
43	8	417	80.81		13	4	17	3.29	20.61 (4%)
42	13	409	79.26	397.32	12	5	13	2.51	
41	13	396	76.74	(77%)	11	2	8	1.55	
40	10	383	74.22		10	1	6	1.16	
39	20	383	72.28		9	0	5	0.96	
38	17	353	68.41		8	0	5	0.96	
37	9	336	65.11		7	0	5	0.96	
36	14	327	63.37	(60%)	6	3	3	0.58	
35	20	313	60.65	309.6	N = 516				

STANINE COMPUTATION FOR THE AGE 14.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{cf \times N}{100})$
59	1	346	100		32	8	185	53.46	
58	2	345	99.71		31	12	177	51.15	
57	2	343	99.13		30	12	165	47.68	
56	0	341	98.55		29	8	153	44.21	
55	2	341	98.55		28	18	145	41.90	
54	3	339	97.97		27	8	127	36.70	138.4 (40%)
53	5	336	97.10	332.16	26	20	119	34.39	
52	1	331	95.66	(96%)	25	8	99	28.61	
51	2	330	95.37		24	10	91	26.30	
50	2	328	94.79		23	8	81	23.41	
49	2	326	94.21		22	8	73	21.09	97.58 (23%)
48	8	324	93.64		21	8	65	18.78	
47	3	316	91.32		20	10	57	16.47	
46	6	313	90.46		19	5	47	13.58	
45	7	307	88.72	307.14	18	3	42	12.13	
44	11	300	86.70	(89%)	17	16	39	11.27	
43	15	289	83.52		16	3	23	6.64	38.06 (11%)
42	7	274	79.19		15	6	20	5.78	
41	9	267	77.16	266.42	14	4	14	4.04	13.84
40	12	258	74.56	(77%)	13	2	10	2.89	(4%)
39	12	246	71.09		12	1	8	2.31	
38	6	234	67.63		11	2	7	2.02	
37	7	228	65.89		10	0	5	1.44	
36	10	221	63.87		9	3	5	1.44	
35	9	211	60.98	207.6	8	1	2	0.57	
34	7	202	58.38	(60%)	7	0	1	0.28	
33	10	195	56.35		6	0	1	0.28	
					5	1	1	0.28	

N = 346.

STANINE COMPUTATION FOR THE AGE 13.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $(\frac{cf \times 100}{N})$	Ideal cf.% $(\frac{\% \times N}{100})$
58	1	229	100		33	12	117	51.09	
57	2	228	99.56		32	9	105	45.85	
56	2	226	98.68		31	5	96	41.92	91.6
55	1	224	97.82		30	8	91	39.73	(40%)
54	2	223	97.37		29	15	83	36.24	
53	3	221	96.50	219.84	28	9	68	29.69	
52	4	218	95.19	(96%)	27	5	59	25.75	
51	3	214	93.44		26	2	54	23.58	52.67
50	4	211	92.14		25	88	52	22.70	(23%)
49	6	207	90.39	203.81	24	1	44	19.21	
48	7	201	87.77	(89%)	23	3	43	18.77	
47	1	194	84.71		22	11	40	17.46	
46	7	193	84.27		21	2	29	12.66	
45	2	186	81.22		20	4	27	11.79	25.19
44	4	184	80.35		19	1	23	10.04	(11%)
43	9	180	78.60	176.33	18	3	22	29.60	
42	4	171	74.67	(77%)	17	7	19	8.29	
41	7	167	72.92		16	3	12	5.24	9.16
40	8	160	69.86		15	0	9	3.93	(4%)
39	3	152	66.37		14	4	9	3.93	
38	2	149	65.06		13	2	5	2.18	
37	10	147	64.19	137.4	12	0	3	1.31	9.16
36	6	137	59.82	(60%)	11	2	3	1.31	(4%)
35	7	131	57.21		10	1	1	0.43	
34	7	124	54.15						

N = 229.

STANINE COMPUTATION FOR AGE 12.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% ($\frac{cfX100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)	SINGLE DIGIT	f.	cf.	cf.% ($\frac{cfX100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)
56	1	86	100		33	9	57	66.27	51.6 (60%)
55	0	85	98.83		32	0	48	55.81	
54	0	85	98.83		31	2	48	55.81	
53	0	85	98.83		30	4	46	53.48	
52	1	86	98.83		29	2	42	48.83	
51	0	84	97.67		28	2	40	46.51	
50	0	84	97.67		27	5	38	44.18	34.4 (40%)
49	1	84	97.67	82.56 (96%)	26	3	33	38.37	
48	0	83	96.51		25	3	30	34.88	
47	08	83	96.51		24	2	27	31.39	
46	1	83	96.51		23	3	25	29.06	
45	1	82	95.34		22	4	22	25.58	19.78 (23%)
44	2	81	94.18		21	3	18	20.93	
43	1	79	91.86		20	1	15	17.44	
42	1	78	90.69	76.54 (89%)	19	2	14	16.27	
41	0	77	89.53		18	3	12	13.95	
40	6	77	89.53		17	3	9	10.46	9.46 (11%)
39	1	71	82.55		16	1	6	6.97	
38	3	70	81.39		15	2	5	5.81	
37	3	67	77.90	66.22 (77%)	14	1	3	3.48	3.44 (4%)
36	0	64	74.41		13	1	2	2.32	
35	3	64	74.41		12	0	1	1.16	
34	4	61	70.93		~~11~~	~~1~~	~~1~~	~~1.16~~	

N = 86.

STANINE COMPUTATION FOR CLASS X.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $\left\{\frac{cf \times 100}{N}\right\}$	Ideal cf.% $\left\{\frac{\% \times N}{100}\right\}$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $\left\{\frac{cf \times 100}{N}\right\}$	Ideal cf.% $\left\{\frac{\% \times N}{100}\right\}$
67	1	599	100		37	14	331	55.25	
66	0	598	99.83		36	18	317	52.92	
65	1	598	99.83		35	16	299	49.91	
64	1	597	99.66		34	14	283	47.24	
63	4	596	99.49		33	22	269	44.90	
62	2	592	98.83		32	15	247	41.23	239.6
61	2	590	98.49		31	17	232	38.73	(40%)
60	6	588	98.16		30	14	215	35.89	
59	7	582	97.16	575.04	29	14	201	33.55	
58	5	575	95.99	(96%)	28	15	187	31.21	
57	16	570	95.15		27	16	172	28.71	
56	4	554	92.48		26	15	156	26.04	
55	8	550	91.81		25	18	141	23.53	
54	5	542	90.48		24	11	123	20.53	137.77
53	11	537	89.64	533.11	23	19	112	18.69	(23%)
52	10	526	87.81	(89%)	22	10	93	15.52	
51	7	516	86.14		21	12	83	13.85	
50	9	509	84.97		20	12	71	11.85	65.89
49	7	500	83.47		19	9	59	9.84	(11%)
48	4	493	82.30		18	8	50	8.34	
47	11	489	81.63		17	11	42	7.01	
46	8	478	79.79		16	9	31	5.17	23.96
45	13	470	78.46		15	6	22	3.67	(4%)
44	10	457	76.29	461.23	14	4	16	2.67	
43	13	447	74.62	(77%)	13	2	12	2.00	
42	21	432	72.45		12	4	10	1.66	
41	23	413	68.94		11	1	6	1.00	
40	24	390	65.10		10	1	5	0.83	
39	19	366	61.10	359.4	9	3	4	0.66	
38	16	347	57.92	(60%)	8	1	1	0.16	

N =599.

STANINE COMPUTATION FOR CLASS IX.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $\left\{\frac{cf \times 100}{N}\right\}$	Ideal cf.% $\left\{\frac{\% \times N}{100}\right\}$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $\left\{\frac{cf \times 100}{N}\right\}$	Ideal cf.% $\left\{\frac{\% \times N}{100}\right\}$
66	1	599	100		36	17	450	75.12	
65	0	598	99.83		35	20	433	72.28	
64	0	598	99.83		34	15	413	68.94	
63	0	598	99.83		33	19	398	66.44	359.4
62	0	598	99.83		32	31	379	63.27	(60%)
61	0	598	99.83		31	19	348	58.09	
60	1	598	99.83		30	16	329	54.92	
59	1	597	99.66		29	22	313	52.25	
58	2	596	99.49		28	25	291	48.58	
57	3	594	99.16		27	22	266	44.40	
56	1	591	98.66		26	26	244	40.73	
55	2	590	98.49		25	31	218	36.39	239.6
54	5	588	98.16		24	24	187	31.21	(40%)
53	6	583	97.32		23	18	163	27.21	
52	3	577	96.32		22	18	145	24.20	137.77
51	4	574	95.82	575.04	21	20	127	21.20	(23%)
50	4	570	95.15	(96%)	20	17	107	17.85	
49	5	566	94.49		19	17	90	15.02	
48	5	561	93.65		18	13	73	12.18	
47	7	556	92.82		17	14	60	10.01	65.89
46	4	549	91.65		16	8	46	7.67	(11%)
45	4	545	90.98		15	9	38	6.34	
44	5	541	90.31		14	8	29	4.84	
43	10	536	89.48		13	5	21	3.50	23.96
42	10	526	87.81	533.11	12	5	16	2.67	(4%)
41	12	516	86.14	(89%)	11	3	11	1.83	
40	15	504	84.14		10	2	8	1.33	
39	16	489	81.63		9	2	6	1.00	
38	11	473	78.96		8	2	4	0.66	
37	17	450	75.12	(77%)	7	2	2	0.33	
				461.23					

N = 599.

STANINE COMPUTATION FOR CLASS VIII.

SINGLE DIGIT SCORE	f.	cf.	cf.% ($\frac{cf \times 100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)	SINGLE DIGIT SCORE	f.	cf.	cf.% ($\frac{cf \times 100}{N}$)	Ideal cf.% ($\frac{\% \times N}{100}$)
DISTRI.					DISTRI.				
59	1	599	100		32	9	308	51.41	
58	0	598	99.83		31	13	299	49.92	
57	2	598	99.83		30	15	286	47.75	
56	6	596	99.49		29	16	271	45.24	
55	0	590	98.49		28	16	255	42.57	239.6
54	4	590	98.49		27	19	239	39.89	(40%)
53	5	586	97.82		26	18	220	36.72	
52	7	581	96.99	575.04	25	22	202	33.72	
51	6	574	95.82	(96%)	24	18	180	30.05	
50	7	568	94.82		23	13	162	27.04	
49	13	561	93.65		22	17	149	24.87	137.77
48	11	548	91.48		21	12	132	22.04	(23%)
47	15	537	89.64	533.11	20	17	120	20.03	
46	13	522	87.14	(89%)	19	11	103	17.19	
45	10	509	84.97		18	15	92	15.35	
44	7	499	83.30		17	22	77	12.85	65.89
43	12	492	82.13		16	10	55	9.18	(11%)
42	12	480	80.13		15	8	45	7.51	
41	14	468	78.13	461.23	14	5	37	6.17	
40	17	454	75.79	(77%)	13	10	32	5.34	23.96
39	20	437	72.95		12	6	22	3.67	(4%)
38	19	417	69.61		11	5	16	2.67	
37	14	398	64.94		10	1	11	1.83	
36	19	384	64.10		9	2	10	1.66	
35	28	365	60.93	359.4	8	3	8	1.33	
34	17	337	56.26	(60%)	7	0	5	0.83	
33	12	320	53.42		6	3	5	0.83	
					5	2	2	0.33	

N =599.

STANINE COMPUTATION FOR CLASS VII.

SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $\left(\frac{cf \times 100}{N}\right)$	Ideal cf.% $\left(\frac{\% \times N}{100}\right)$	SINGLE DIGIT SCORE DISTRI.	f.	cf.	cf.% $\left(\frac{cf \times 100}{N}\right)$	Ideal cf.% $\left(\frac{cf \times N}{100}\right)$
58	1	599	100		32	13	358	59.76	
57	1	598	99.83		31	15	345	57.59	
56	1	597	99.66		30	25	330	55.09	
55	2	596	99.49		29	26	305	50.91	
54	2	594	99.16		28	28	279	46.57	
53	2	592	98.83		27	19	251	41.90	239.6 (40%)
52	2	590	98.49		26	24	232	38.73	
51	2	588	98.16		25	15	208	34.72	
50	4	586	97.82		24	17	193	32.22	
49	6	582	97.16		23	19	176	29.38	
48	13	576	96.16	575.04 (96%)	22	26	157	26.21	137.77 (23%)
47	2	563	93.98		21	20	131	21.86	
46	10	561	93.65		20	15	111	18.53	
45	5	551	91.98		19	11	96	16.02	
44	18	546	91.15	533.11 (89%)	18	13	85	14.19	
43	20	528	88.19		17	18	72	12.02	65.89 (11%)
42	8	508	84.80		16	8	54	9.01	
41	11	500	83.47		15	12	46	7.67	
40	15	489	81.63		14	14	34	5.67	23.96 (4%)
39	15	474	79.13		13	6	20	3.33	
38	13	459	76.62	461.23 (77%)	12	5	14	2.33	
37	21	446	74.45		11	5	9	1.50	
36	9	425	70.95		10	1	4	0.66	
35	12	416	69.44		9	1	3	0.50	
34	17	404	67.44	(60%)	8	1	2	0.33	
33	29	387	64.60	359.4	7	1	1	0.16	

N = 599

APPENDICES IV

DETERMINATION OF DEVIATION IQs.

DETERMINATION OF DEVIATION IQ FOR AGE 12.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
56	2.83	145.35=145	29	-.02	99.64=100
52	2.41	138.58=139	28	-.12	97.95= 98
49	2.09	133.50=134	27	-.23	96.25= 96
46	1.77	128.42=128	26	-.33	94.56= 95
45	1.67	126.73=127	25	-.44	92.87= 93
44	1.56	125.04=125	24	-.55	91.17= 91
43	1.45	123.2 =123	23	-.65	89.48= 89
42	1.35	121.65=122	22	-.76	87.79= 88
40	1.14	118.26=118	21	-.86	86.09= 86
39	1.03	116.57=117	20	-.97	84.40= 84
38	0.93	114.88=115	19	-1.08	82.71= 83
37	0.82	113.18=113	18	-1.18	81.02= 81
35	0.61	109.80=110	17	-1.29	79.32= 74
34	0.50	108.11=108	16	-1.39	77.63= 78
33	0.40	106.41=106	15	-1.50	75.94= 76
31	0.18	103.03=103	14	-1.60	74.24= 74
30	-.08	101.33=101	13	-1.71	72.55= 73
			11	-1.92	69.16= 69

Mean = 29.21 S.D. = 9.45

DETERMINATION OF DEVIATION IQ FOR AGE GROUP OF 13.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
58	2.16	134.62=135	31	-0.27	95.52=96
57	2.07	133.17=133	30	-0.38	94.07=94
56	1.98	131.72=132	29	-0.46	92.62=93
55	1.89	130.27=130	28	-0.55	91.18=91
54	1.80	128.82=129	27	-0.64	89.73=90
53	1.71	127.38=127	26	-0.73	88.28=88
52	1.62	125.93=126	25	-0.82	86.83=87
51	1.53	124.48=124	24	-0.91	85.39=85
50	1.43	123.03=123	23	-0.00	83.94=84
49	1.34	121.58=122	22	-1.09	82.49=82
48	1.25	120.14=120	21	-1.18	81.04=81
47	1.16	118.69=119	20	-1.27	79.59=80
46	1.07	117.24=117	19	-1.36	78.15=78
45	0.98	115.79=116	18	-1.45	76.70=77
44	0.89	114.34=114	17	-1.54	75.25=75
43	0.80	112.90=113	16	-1.63	73.80=74
42	0.71	111.45=111	15	-1.81	70.91=71
41	0.62	110.00=110	14	-1.90	69.46=69
40	0.53	108.55=109	13	-2.08	66.56=67
39	0.44	107.10=107	12	-2.18	65.11=65
38	0.35	105.66=106			
37	0.27	104.21=104			
36	0.17	102.75=103			
35	0.08	101.31=101			
34	-0.08	99.86=100			
33	-0.09	98.42= 98			
32	-0.18	96.97= 97			

MEAN = 34.09, S.D. = 11.05.

DETERMINATION OF DEVIATION IQ FOR AGE 14.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
59	2.44	139.12=139	31	-0.1	98.4 =98
58	2.35	137.21=138	30	-0.19	96.94=97
57	2.26	136.21=136	29	-0.37	95.49=95
55	2.08	133.30=133	28	-0.37	94.03=94
54	1.99	131.85=132	27	-0.46	92.58=93
53	1.9	130.4 =130	26	-0.55	91.12=91
52	1.80	128.94=129	25	-0.64	89.67=90
51	1.71	127.49=127	24	-0.73	88.21=88
50	1.62	126.03=126	23	-0.82	86.76=87
49	1.53	124.58=125	22	-0.91	85.30=85
48	1.44	123.12=123	21	-0.99	83.85=84
47	1.35	121.67=122	20	-1.1	82.4 =82
46	1.26	120.21=120	19	-1.19	80.94=81
45	1.17	118.76=119	18	-1.28	79.49=79
44	1.08	117.30=117	17	-1.37	78.03=78
43	0.99	115.85=116	16	-1.46	76.58=77
42	0.9	114.4 =114	15	-1.55	75.12=75
41	0.80	112.94=113	14	-1.64	73.67=74
40	0.71	111.49=111	13	-1.73	72.21=72
39	0.62	110.03=110	12	-1.82	70.76=71
38	0.53	108.58=109	11	-1.91	69.30=69
37	0.44	107.12=107	9	-2.1	66.4 =66
36	0.35	105.67=106	8	-2.19	64.94=65
35	0.26	104.21=104	5	-2.46	60.58=61
34	0.17	102.76=103			
33	0.08	101.30=101			
32	-0.09	99.85=100			

Mean = 32.10, S.D. = 11.

DETERMINATION OF DEVIATION IQ FOR THE AGE OF 15.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
64	2.95	147.26=147	31	-0.05	99.05=99
63	2.86	145.80=146	30	-0.15	97.58=98
62	2.77	144.34=144	29	-0.24	96.12=96
60	2.58	141.42=141	28	-0.33	94.66=95
59	2.49	139.96=140	27	-0.42	93.20=93
58	2.40	138.50=139	26	-0.51	91.74=92
57	2.31	137.04=137	25	-0.60	90.28=90
56	2.22	135.57=136	24	-0.69	88.82=89
55	2.13	134.11=134	23	-0.78	87.36=87
54	2.04	132.65=133	22	-0.88	85.89=86
53	1.94	131.19=131	21	-0.97	84.43=84
52	1.85	129.73=130	20	-1.06	82.97=83
51	1.76	128.27=128	19	-1.15	81.51=82
50	1.67	126.81=127	18	-1.24	80.05=80
49	1.58	125.35=125	17	-1.33	78.59=79
48	1.49	123.89=124	16	-1.42	77.13=77
47	1.40	122.42=122	15	-1.52	75.67=76
46	1.31	120.96=121	14	-1.61	74.21=74
45	1.21	119.50=120	13	-1.70	72.74=73
44	1.12	118.04=118	12	-1.79	71.28=71
43	1.03	116.58=117	11	-1.88	69.82=70
42	0.94	115.12=115	10	-1.97	68.36=68
41	0.85	113.66=114	7	-2.25	63.98=64
40	0.76	112.20=112	6	-2.34	62.52=63
39	0.67	110.73=111			
38	0.57	109.27=109	MEAN = 31.65		
37	0.48	107.81=108	S.D. = 10.95		
36	0.39	106.35=106			
35	0.30	104.89=105			
34	0.21	103.43=103			
33	0.12	101.97=102			
32	0.03	100.51=101			

DETERMINATION OF DEVIATION IQ FOR THE AGE GROUP OF 16.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
65	2.56	141.11=141	36	0.24	103.84=104
63	2.40	138.54=139	35	0.15	102.55=103
62	2.32	137.25=137	34	0.07	101.27=101
61	2.24	135.97=136	33	-0.00	99.98=100
60	2.16	134.68=135	32	-0.08	98.70= 98
59	2.08	133.40=133	31	-0.16	97.41= 97
58	2.00	132.11=132	30	-0.24	96.13= 96
57	1.92	130.83=131	29	-0.32	94.84= 95
56	1.84	129.54=130	28	-0.40	93.56= 94
55	1.76	128.26=128	27	-0.48	92.27= 92
54	1.68	126.97=127	26	-0.56	90.99= 91
53	1.60	125.68=126	25	-0.64	89.70= 90
52	1.52	124.40=124	24	-0.72	88.42= 88
51	1.44	123.11=123	23	-0.80	87.13= 87
50	1.36	121.83=122	22	-0.88	85.85= 86
49	1.28	120.54=121	21	-0.96	84.56= 85
48	1.20	119.26=119	20	-1.04	83.28= 83
47	1.12	117.97=118	19	-1.12	81.99= 82
46	1.04	116.69=117	18	-1.20	80.71= 81
45	0.96	115.40=115	17	-1.28	79.42= 79
44	0.88	114.12=114	16	-1.36	78.13= 78
43	0.80	112.83=113	15	-1.44	76.85= 77
42	0.72	111.55=112	14	-1.52	75.56= 76
41	0.64	110.26=110	13	-1.60	74.28= 74
40	0.64	108.98=109	12	-1.68	72.99= 73
39	0.48	107.69=108	11	-1.76	71.71= 72
38	0.40	106.41=106	10	-1.84	70.42= 70
37	0.32	105.12=105	8	-2.00	67.85= 68
			7	-2.08	66.57= 67

MEAN = 33.01 : S.D. = 12.45.

DETERMINATION OF DIQ FOR AGE GROUP OF 17.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
67	3.29	152.68=153	34	0.27	104.33=104
64	3.01	148.29=148	33	0.17	102.87=103
63	2.92	146.82=147	32	0.08	101.40=101
60	2.65	142.43=142	31	-0.03	99.94=100
59	2.56	140.96=141	30	-0.09	98.47= 98
58	2.46	139.50=140	29	-0.18	97.01= 97
57	2.37	138.03=138	28	-0.27	95.54= 96
56	2.28	136.57=137	27	-0.36	94.08= 94
55	2.19	135.10=135	26	-0.46	92.61= 93
54	2.10	133.64=134	25	-0.55	91.15= 91
53	2.01	132.17=132	24	-0.64	89.68= 90
52	1.91	130.71=131	23	-0.73	88.21= 88
50	1.73	127.78=128	22	-0.82	86.75= 87
49	1.64	126.31=126	21	-0.91	85.28= 85
48	1.55	124.84=125	20	-1.01	83.82= 84
46	1.36	121.91=122	19	-1.10	82.35= 82
45	1.27	120.45=120	18	-1.19	80.89= 81
44	1.18	118.98=119	17	-1.28	79.42= 79
43	1.09	117.52=118	16	-1.37	77.76= 78
42	1.00	116.05=116	15	-1.46	76.49= 76
41	0.91	114.59=115	14	-1.56	75.03= 75
40	0.82	113.12=113	13	-1.65	73.56= 74
39	0.72	111.66=112	12	-1.74	72.10= 72
38	0.63	110.19=110	9	-2.01	67.70= 68
37	0.54	108.73=109	8	-2.10	66.24= 66
36	0.45	107.26=107	5	-2.38	61.84= 62
35	0.36	105.80=106			

MEAN =31.04 : S.D. = 10.92

DETERMINATION OF DEVIATION IQ FOR AGE GROUP OF 18.

SCORE RANGE	Z	DIQ	SCORE SCORE	Z	DIQ
66	3.15	150.52=151	32	0.23	103.79=104
57	2.38	138.15=138	31	0.15	102.41=102
56	2.29	136.78=137	30	0.06	101.04=101
54	2.12	134.03=134	29	-0.02	99.67=100
53	2.04	132.65=133	28	-0.10	98.29= 98
52	1.95	131.28=131	27	-0.19	96.92= 97
51	1.86	129.91=130	26	-0.27	95.54= 96
50	1.78	128.53=129	25	-0.36	94.17= 94
49	1.69	127.16=127	24	-0.45	92.79= 93
48	1.61	125.78=126	23	-0.53	91.42= 91
47	1.52	124.41=124	22	-0.62	90.04= 90
45	1.35	121.66=122	21	-0.70	88.67= 89
44	1.26	120.28=120	20	-0.79	87.29= 87
43	1.18	118.91=119	19	-0.87	85.92= 86
42	1.09	117.53=118	18	-0.96	84.54= 85
41	1.01	116.16=116	17	-1.05	83.17= 83
40	0.92	114.79=115	16	-1.13	81.80= 82
39	0.83	113.41=113	15	-1.22	80.42= 80
38	0.75	112.04=112	14	-1.30	79.05= 79
37	0.66	110.66=111	13	-1.39	77.67= 78
36	0.58	109.29=109	12	-1.48	76.30= 76
35	0.49	107.91=108	11	-1.56	74.92= 75
34	0.40	106.54=107	10	-1.65	73.55= 74
33	0.32	105.16=105	9	-1.73	72.17= 72

MEAN =29.24: S.D. = 11.64.

DETERMINATION OF DEVIATION IQ FOR THE AGE GROUP OF 19.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
58	2.55	140.87=141	32	0.20	103.22=103
55	2.28	136.53=137	31	0.11	101.78=102
51.	1.92	130.74=131	30	0.02	100.33=100
50	1.83	129.29=129	29	-0.06	98.88= 99
48	1.64	126.39=126	28	-0.16	97.43= 97
47	1.55	124.94=125	27	-0.25	95.98= 96
43	1.19	119.15=119	26	-0.34	94.54= 95
41	1.01	116.26=116	25	-0.43	93.09= 93
40	0.92	114.81=115	24	-0.52	91.64= 92
39	0.83	113.36=113	23	-0.61	90.19= 90
38	0.74	111.91=112	21	-0.79	87.30= 87
36	0.56	109.02=109	20	-0.88	85.85= 86
35	0.47	107.57=108	19	-0.97	84.40= 84
34	0.38	106.12=106	18	-1.06	82.95= 83
33	0.29	104.67=105	17	-1.15	81.50= 82
			16	-1.25	79.97= 80
			15	-1.33	78.61= 79
			13	-1.51	75.71= 76
			12	-1.60	74.26= 74

MEAN = 29.77

S.D. = 11.05

DETERMINATION OF DEVIATION IQ FOR CLASS X.

SCORE RANGE	Z	Dev.IQ	SCORE RANGE	Z	Dev.IQ
67	2.64	142.29=142	36	0.06	100.96=101
66	2.47	139.62=140	35	0.02	99.62=100
64	2.39	138.29=138	34	-0.10	98.29= 98
63	2.31	136.96=137	33	-0.19	96.96=97
62	2.22	135.62=136	32	-0.27	95.62= 96
61	2.14	134.29=134	31	-0.35	94.29= 94
60	2.06	132.96=133	30	-0.44	92.96= 93
59	1.97	131.62=132	29	-0.52	91.62= 92
58	1.89	130.29=130	28	-0.60	90.29= 90
57	1.81	128.96=129	27	-0.69	88.96= 89
56	1.72	127.62=128	26	-0.77	87.62= 88
55	1.64	126.29=126	25	-0.85	86.29= 86
54	1.56	124.96=125	24	-0.94	84.96= 85
53	1.47	123.62=124	23	-1.02	83.62= 84
52	1.39	122.29=122	22	-1.10	82.29= 82
51	1.31	120.96=121	21	-1.19	80.96= 81
50	1.22	119.62=120	20	-1.27	79.62= 80
49	1.14	118.29=118	19	-1.35	78.29= 78
48	1.06	116.96=117	18	-1.44	76.96= 77
47	0.97	115.62=116	17	-1.52	75.62= 76
46	0.89	113.71=114	16	-1.60	74.29= 74
45	0.81	112.96=113	15	-1.69	72.96= 73
44	0.72	111.62=112	14	-1.77	71.62= 72
43	0.64	110.29=110	13	-1.85	70.29= 70
42	0.56	108.96=109	12	-1.94	68.96= 69
41	0.47	107.62=108	11	-2.02	67.62= 68
40	0.39	106.29=106	10	-2.10	66.29= 66
39	0.31	104.96=105	9	-2.19	64.96= 65
38	0.22	103.62=104	8	-2.27	63.62= 64
37	0.14	102.29=102			

DETERMINATION OF DEVIATION IQ FOR CLASS IX.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
66	3.43	154.90=155	33	0.27	104.37=104
60	2.85	145.71=146	32	0.17	102.84=103
59	2.76	144.18=144	31	0.08	101.31=101
58	2.66	142.65=143	30	-0.01	99.78=100
57	2.57	141.12=141	29	-0.10	98.25= 98
56	2.47	139.59=140	28	-0.20	96.72= 97
55	2.37	137.85=138	27	-0.30	95.19= 95
54	2.28	136.53=137	26	-0.39	93.66= 94
53	2.18	135.00=135	25	-0.49	92.13= 92
52	2.09	133.46=133	24	-0.58	90.59= 91
51	1.99	131.93=132	23	-0.68	89.06= 89
50	1.90	130.40=130	22	-0.77	87.53= 88
49	1.80	128.87=129	21	-0.87	86.00= 86
48	1.70	127.34=127	20	-0.97	84.47= 84
47	1.61	125.81=126	19	-1.06	82.94= 83
46	1.51	124.28=124	18	-1.16	81.41= 81
45	1.42	122.75=123	17	-1.25	79.88= 80
44	1.32	121.22=121	16	-1.35	78.35= 78
43	1.23	119.68=120	15	-1.44	76.81= 77
42	1.13	118.15=118	14	-1.54	75.28= 75
41	1.03	116.62=117	13	-1.64	73.75= 74
40	0.94	115.06=115	12	-1.73	72.32= 72
39	0.84	113.56=114	11	-1.83	70.69= 71
38	0.75	112.03=112	10	-1.92	69.16= 69
37	0.65	110.50=111	9	-2.02	67.63= 68
36	0.56	108.97=109	8	-2.11	66.10= 66
35	0.46	107.44=107	7	-2.21	64.57= 65
34	0.36	105.91=106			

DETERMINATION OF DEVIATION IQ FOR CLASS VIII.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
59	2.33	137.42=137	31	-0.06	98.96=99
58	-	- -	30	-0.15	97.59=98
57	2.16	134.67=135	29	-0.23	96.22=96
56	2.08	133.30=133	28	-0.32	94.84=95
55	1.99	131.93=132	27	-0.40	93.47=93
54	1.90	130.55=131	26	-0.49	92.10=92
53	1.82	129.18=129	25	-0.57	90.72=91
52	1.73	127.81=128	24	-0.66	89.35=89
51	1.65	126.43=126	23	-0.75	87.98=88
50	1.56	125.06=125	22	-0.83	86.60=87
49	1.48	123.69=124	21	-0.92	85.23=85
48	1.39	122.31=122	20	-1.00	83.86=84
47	1.30	120.94=121	19	-1.09	82.48=82
46	1.22	119.57=120	18	-1.18	81.11=81
45	1.13	118.19=118	17	-1.26	79.74=80
44	1.05	116.82=117	16	-1.35	78.36=78
43	0.96	115.45=115	15	-1.43	76.99=77
42	0.87	114.07=114	14	-1.52	75.62=76
41	0.70	112.70=113	13	-1.60	74.24=74
40	0.70	111.33=111	12	-1.69	72.87=73
39	0.62	109.95=110	11	-1.78	71.50=72
38	0.53	108.58=109	10	-1.86	70.12=70
37	0.45	107.21=107	9	-1.95	68.75=69
36	0.36	105.83=106	8	-2.03	67.38=67
35	0.27	104.46=104	7	-	- -
34	0.19	103.09=103	6	-2.21	64.63=65
33	0.10	101.71=102	5	-2.29	63.26=63
32	0.02	100.34=100			

Mean = 31.75 S.D.= 11.55

DETERMINATION OF DEVIATION IQ FOR CLASS VII.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
58	2.72	143.66=144	33	0.28	104.63=105
57	2.63	142.09=142	32	0.19	103.07=103
56	2.53	140.53=141	31	0.09	101.51=102
55	2.43	138.97=139	30	-0.02	99.95=100
54	2.33	137.41=137	29	-0.00	98.39=98
53	2.24	135.85=136	28	-0.19	96.83= 97
52	2.14	134.29=134	27	-0.25	95.27= 95
51	2.04	132.73=133	26	-0.39	93.70= 94
50	1.94	131.17=131	25	-0.49	92.14= 92
49	1.85	129.61=130	24	-0.58	90.58= 91
48	1.75	128.05=128	23	-0.68	89.02= 89
47	1.65	126.48=126	22	-0.78	87.46= 87
46	1.55	124.92=125	21	-0.88	85.90= 86
45	1.46	123.36=123	20	-0.97	84.34= 84
44	1.36	121.80=122	19	-1.07	82.78= 83
43	1.26	120.24=120	18	-1.17	81.22= 81
42	1.16	118.68=119	17	-1.27	79.66= 80
41	1.07	117.12=117	16	-1.36	78.09= 78
40	0.97	115.56=116	15	-1.46	76.53= 77
39	0.87	114.00=114	14	-1.56	74.97= 75
38	0.77	112.44=112	13	-1.66	73.41= 73
37	0.68	110.88=111	12	-1.75	71.85= 72
36	0.58	109.31=109	11	-1.85	70.29= 70
35	0.48	107.75=108	10	-1.95	68.73= 69
34	0.38	106.19=106	9	-2.05	67.17= 67
			8	-2.14	65.61= 66
			7	-2.24	64.05= 64

Mean =30.03 S.D. = 10.25

DETERMINATION OF DEVIATION IQ FOR THE TOTAL SAMPLE.

SCORE RANGE	Z	DIQ	SCORE RANGE	Z	DIQ
67	3.03	148.48=148	35	0.26	104.23=104
66	2.94	147.18=147	34	0.17	102.85=103
65	2.86	145.79=146	33	0.09	101.46=101
64	2.77	144.41=144	32	0.05	100.08=100
63	2.68	143.02=143	31	-0.08	98.72= 99
62	2.60	141.64=142	30	-0.16	97.44= 97
61	2.51	140.25=140	29	-0 .25	95.92= 96
60	2.42	138.87=139	28	-0.34	94.54= 95
59	2.34	137.48=137	27	-0.42	93.15= 93
58	2.25	136.10=136	26	-0.51	91.77= 92
57	2.16	134.71=135	25	-0.60	90.38= 90
56	2.08	133.32=133	24	-0.68	89.00= 89
55	1.99	131.94=132	23	-0.77	87.61= 88
54	1.90	130.55=131	22	-0.86	86.23= 86
53	1.82	129.17=129	21	-0.94	84.84= 85
52	1.73	127.78=128	20	-1.03	83.45= 83
51	1.65	126.40=126	19	-1.12	82.07= 82
50	1.56	125.01=125	18	-1.20	80.68= 81
49	1.47	123.63=124	17	-1.29	79.79= 79
48	1.39	122.24=122	16	-1.38	77.98= 78
47	1.30	120.86=121	15	-1.46	76.53= 77
46	1.21	119.47=119	14	-1.55	75.14= 75
45	1.13	118.09=118	13	-1.63	73.76= 74
44	1.04	116.70=117	12	-1.72	72.37= 72
43	0.95	115.32=115	11	-1.81	70.99= 71
42	0.87	113.93=114	10	-1.89	69.60= 70
41	0.78	112.55=113	9	-1.98	68.22= 68
40	0.69	111.16=111	8	-2.07	66.83= 67
39	0.61	109.79=110	7	-2.15	65.45= 65
38	0.52	108.39=108	6	-2.24	64.06= 64
37	0.43	107.00=107	5	-2.33	62.68= 63
36	0.35	105.62=106			

Mean = 31.94, S.D.= 11.55.

APPENDICES V

COMPUTATION OF CORRELATIONS FOR INTER - SUBTESTS VALIDITY.

SUB-TESTS VALIDITY CORRELATION.

FOLLOWING ARE THE STATISTICS CALCULATION BETWEEN DIFFERENT SUB-TESTS FOR THE VALIDITY CORRELATIONS.

FORMULA USED:-

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

Sub-Test 1 and 2.

Total Values:-

$\Sigma X = 2496$
$\Sigma X^2 = 14840$
$\Sigma Y = 2028$
$\Sigma Y^2 = 10549$
$\Sigma XY = 11529$
$N = 500$

Solution:-

$$r = \frac{500 \times 11529 - (2496)(2028)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 10549 - (2028)^2]}}$$

$$= \frac{5764500 - 5061888}{\sqrt{[7420000 - 6230016][5274500 - 4112784]}}$$

$$= \frac{702612}{\sqrt{1189984 \times 1161716}}$$

$$= \frac{702612}{\sqrt{1382423452544}}$$

$$= \frac{702612}{1175765.05}$$

$$= 0.60$$

Sub-Test 1 and 3: **Total Values:-** $\Sigma X = 2496$, $\Sigma X^2 = 14840$, $\Sigma Y = 2407$, $\Sigma Y^2 = 14679$, $\Sigma XY = 13567$, $N = 500$

Solution:-

$$r = \frac{500 \times 13567 - (2496)(2407)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 14679 - (2407)^2]}}$$

$$= \frac{6783500 - 6007872}{\sqrt{[7420000 - 6230016][7339500 - 5793649]}}$$

$$= \frac{775628}{\sqrt{1189984 \times 1545851}}$$

$$= \frac{775628}{\sqrt{1839537956384}}$$

$$= \frac{775628}{1356295.69}$$

$$= 0.57$$

Sub-Test 1 and 4: **Total Values:-**

$\Sigma X = 2496$, $\Sigma X^2 = 14840$, $\Sigma Y = 2189$, $\Sigma Y^2 = 10669$, $\Sigma XY = 11099$, $N = 500$

Solution:-

$$r = \frac{500 \times 11099 - (2496)(2189)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 10669 - (2189)^2]}}$$

$$= \frac{5549500 - 5463744}{\sqrt{[7420000 - 6230016][5334500 - 4791721]}}$$

$$= \frac{85756}{\sqrt{1189984 \times 542779}}$$

$$= \frac{85756}{\sqrt{645898325536}}$$

$$= \frac{85756}{803678.00}$$

$$= 0.11$$

Sub-Test 1 and 5:

Total Values:-

$\Sigma X = 2496$ $\quad \Sigma Y^2 = 8885$

$\Sigma X^2 = 14840$ $\quad \Sigma XY = 10397$

$\Sigma Y = 1851$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 10397 - (2496)(1851)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 8885 - (1851)^2]}}$$

$$= \frac{5198500 - 4620096}{\sqrt{[7420000 - 6230016][4442500 - 3426201]}}$$

$$= \frac{578404}{\sqrt{1189984 \times 1016299}}$$

$$= \frac{578404}{\sqrt{1209379549216}}$$

$$= \frac{578404}{1099717.94}$$

$$= 0.53$$

Sub-Test 1 and 6:

Total Values:-

$\Sigma X = 2496$ $\quad \Sigma Y^2 = 7574$

$\Sigma X^2 = 14840$ $\quad \Sigma XY = 9676$

$\Sigma Y = 1671$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 9676 - (2496)(1671)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 7574 - (1671)^2]}}$$

$$= \frac{4838000 - 4170816}{\sqrt{[7420000 - 6230016][3787000 - 2792241]}}$$

$$= \frac{667184}{\sqrt{1189984 \times 994759}}$$

$$= \frac{667184}{\sqrt{1183747293856}}$$

$$= \frac{667184}{1088001.51}$$

$$= 0.61$$

SUB-TEST 1 And 7:

TOTAL Values:-

$\Sigma X = 2496$ $\quad \Sigma Y^2 = 5603$

$\Sigma X^2 = 14840$ $\quad \Sigma XY = 8009$

$\Sigma Y = 1435$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 8009 - (2496)(1435)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 5603 - (1435)^2]}}$$

$$= \frac{4004500 - 3581760}{\sqrt{[7420000 - 6230016][2801500 - 2059225]}}$$

$$= \frac{422740}{\sqrt{1189984 \times 742275}}$$

$$= \frac{422740}{\sqrt{883295373600}}$$

$$= \frac{422740}{939837.95}$$

$$= 0.45$$

SUB-TEST 1 And 8:

TOTAL Values:-

$\Sigma X = 2496$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 14840$ $\quad \Sigma XY = 6459$

$\Sigma Y = 1148$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 6459 - (2496)(1148)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{3229500 - 2865408}{\sqrt{[7420000 - 6230016][1867000 - 1317904]}}$$

$$= \frac{364092}{\sqrt{1189984 \times 549096}}$$

$$= \frac{364092}{\sqrt{653415454464}}$$

$$= \frac{364092}{808341.17}$$

$$= 0.45$$

Sub-Test 1 and 9:

Total Values:-

$\Sigma X = 2496$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 14840$ $\quad \Sigma XY = 5611$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 5611 - (2496)(983)}{\sqrt{[500 \times 14840 - (2496)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{2805500 - 2453568}{\sqrt{[7420000 - 6230016][1417500 - 966289]}}$$

$$= \frac{351932}{\sqrt{1189984 \times 451211}}$$

$$= \frac{351932}{\sqrt{536933870624}}$$

$$= \frac{351932}{732757.72}$$

$$= 0.48$$

Sub-Test 2 and 3 :

Total Values:-

$\Sigma X = 2028$ $\quad \Sigma Y^2 = 14679$

$\Sigma X^2 = 10549$ $\quad \Sigma XY = 11422$

$\Sigma Y = 2407$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 11422 - (2028)(2407)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 14679 - (2407)^2]}}$$

$$= \frac{5711000 - 4888396}{\sqrt{[5274500 - 4112784][7339500 - 5793649]}}$$

$$= \frac{829604}{\sqrt{1161716 \times 1545851}}$$

$$= \frac{829604}{\sqrt{1795839840316}}$$

$$= \frac{829604}{1340089.49}$$

$$= 0.62$$

Sub-Test 2 and 4:

Total Values:-

$\Sigma X = 2028$ $\quad \Sigma Y^2 = 10669$

$\Sigma X^2 = 10549$ $\quad \Sigma XY = 9216$

$\Sigma Y = 2189$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 9216 - (2028)(2189)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 10669 - (2189)^2]}}$$

$$= \frac{4608000 - 4439292}{\sqrt{[5274500 - 4112784][5334500 - 4791721]}}$$

$$= \frac{168708}{\sqrt{1161716 \times 542779}}$$

$$= \frac{168708}{\sqrt{630555048764}}$$

$$= \frac{168708}{794074.96}$$

$$= 0.21$$

Sub-Test 2 and 5:

Total Values:-

$\Sigma X = 2028$ $\quad \Sigma Y^2 = 8885$

$\Sigma X^2 = 10549$ $\quad \Sigma XY = 8379$

$\Sigma Y = 1851$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 8379 - (2028)(1851)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 8885 - (1851)^2]}}$$

$$= \frac{4189500 - 3753828}{\sqrt{[5274500 - 4112784][4442500 - 3426201]}}$$

$$= \frac{435672}{\sqrt{1161716 \times 1016299}}$$

$$= \frac{435672}{\sqrt{1180650809084}}$$

$$= \frac{435672}{1086577.57}$$

$$= 0.40$$

Sub-Test 2 and 6 :

Total Values:-

$\leq X = 2028$ $\quad \leq Y^2 = 7574$

$\leq X^2 = 10549$ $\quad \leq XY = 7704$

$\leq Y = 1671$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 7704 - (2028)(1671)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 7574 - (1671)^2]}}$$

$$= \frac{3852000 - 3388788}{\sqrt{[5274500 - 4112784][3787000 - 2792241]}}$$

$$= \frac{463212}{\sqrt{1161716 \times 994759}}$$

$$= \frac{463212}{\sqrt{1155627446444}}$$

$$= \frac{463212}{1075001.14}$$

$$= 0.43$$

Sub-Test 2 and 7 :

Total Values:-

$\leq X = 2028$ $\quad \leq Y^2 = 5603$

$\leq X^2 = 10549$ $\quad \leq XY = 6599$

$\leq Y = 1435$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 6599 - (2028)(1435)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 5603 - (1435)^2]}}$$

$$= \frac{3299500 - 2910180}{\sqrt{[5274500 - 4112784][2801500 - 2059225]}}$$

$$= \frac{389320}{\sqrt{1161716 \times 742275}}$$

$$= \frac{389320}{\sqrt{862312743900}}$$

$$= \frac{389320}{938607.96}$$

$$= 0.41$$

SUB-TEST 2 And 8:

TOTAL Values:-

$\Sigma X = 2028$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 10549$ $\quad \Sigma XY = 5243$

$\Sigma Y = 1149$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 5243 - (2028)(1148)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{2621500 - 2328144}{\sqrt{[5274500 - 4112784][1867000 - 1317904]}}$$

$$= \frac{293356}{\sqrt{1161716 \times 549096}}$$

$$= \frac{293356}{\sqrt{637893608736}}$$

$$= \frac{293356}{798682.42}$$

$$= 0.37$$

SUB-TEST 2 And 9:

TOTAL Values:-

$\Sigma X = 2028$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 10549$ $\quad \Sigma XY = 4480$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 4480 - (2028)(983)}{\sqrt{[500 \times 10549 - (2028)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{2240000 - 1993524}{\sqrt{[5274500 - 4112784][1417500 - 966289]}}$$

$$= \frac{246476}{\sqrt{1161716 \times 451211}}$$

$$= \frac{246476}{\sqrt{524179038076}}$$

$$= \frac{246476}{724002.10}$$

$$= 0.34$$

SUB-TEST 3 And 4:

TOTAL Values:-

$\Sigma X = 2407$ $\quad \Sigma Y^2 = 10669$

$\Sigma X^2 = 14679$ $\quad \Sigma XY = 10873$

$\Sigma Y = 2189$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 10873 - (2407)(2189)}{\sqrt{[500 \times 14679 - (2407)^2][500 \times 10669 - (2189)^2]}}$$

$$= \frac{5436500 - 5268923}{\sqrt{[7339500 - 5793649][5334500 - 4791721]}}$$

$$= \frac{167577}{\sqrt{1545851 \times 542779}}$$

$$= \frac{167577}{\sqrt{839055459929}}$$

$$= \frac{167577}{915999.71}$$

$$= 0.18$$

SUB-TEST 3 And 5:

TOTAL Values:-

$\Sigma X = 2407$ $\quad \Sigma Y^2 = 8885$

$\Sigma X^2 = 14679$ $\quad \Sigma XY = 10051$

$Y = 1851$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 10051 - (2407)(1851)}{\sqrt{[500 \times 14679 - (2407)^2][500 \times 8885 - (1851)^2]}}$$

$$= \frac{5025500 - 4455357}{\sqrt{[7339500 - 5793649][4442500 - 3426201]}}$$

$$= \frac{570143}{\sqrt{1545851 \times 1016299}}$$

$$= \frac{570143}{\sqrt{1571046825449}}$$

$$= \frac{570143}{1253414.07}$$

$$= 0.45$$

SUB-TEST 3 And 6:

TOTAL Values:-

$\Sigma X = 2407$ $\quad \Sigma Y^2 = 7574$

$\Sigma X^2 = 14679$ $\quad \Sigma XY = 9383$

$\Sigma Y = 1671$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 9383 - (2407)91671)}{\sqrt{[500 \times 14679 - (2407)^2][500 \times 7574 - (1671)^2]}}$$

$$= \frac{4691500 - 4022097}{\sqrt{[7339500 - 5793649][3787000 - 2792241]}}$$

$$= \frac{669403}{\sqrt{1545851 \times 994759}}$$

$$= \frac{669403}{\sqrt{1537749194909}}$$

$$= \frac{669403}{1240060.16}$$

$$= 0.54$$

SUB-TEST 3 And 7:

TOTAL Values:-

$\Sigma X = 2407$ $\quad \Sigma Y^2 = 5603$

$\Sigma X^2 = 14679$ $\quad \Sigma XY = 7928$

$\Sigma Y = 1435$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 7928 - (2407)(1435)}{\sqrt{[500 \times 14679 - (2407)^2][500 \times 5603 - (1435)^2]}}$$

$$= \frac{3964000 - 3454045}{\sqrt{[7339500 - 5793649][2801500 - 2059225]}}$$

$$= \frac{509955}{\sqrt{1545851 \times 742275}}$$

$$= \frac{509955}{\sqrt{1147446551025}}$$

$$= \frac{509955}{1071189.32}$$

$$= 0.48$$

SUB-TEST 3 And 8:

TOTAL Values:-

$\Sigma X = 2407$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 14679$ $\quad \Sigma XY = 6052$

$\Sigma Y = 1148$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 6052 - (2407)(1148)}{\sqrt{[500 \times 14679 - (2407)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{3026000 - 2763236}{\sqrt{[7339500 - 5793649][1867000 - 1317904]}}$$

$$= \frac{262764}{\sqrt{1545851 \times 549096}}$$

$$= \frac{262764}{\sqrt{848820600696}}$$

$$= \frac{262764}{921314.60}$$

$$= 0.29$$

SUB-TEST 3 And 9:

TOTAL Values:-

$\Sigma X = 2407$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 14679$ $\quad \Sigma XY = 5147$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 5147 - (2407)(983)}{\sqrt{[500 \times 14679 - (2407)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{2573500 - 2366081}{\sqrt{[7339500 - 5793649][1417500 - 966289]}}$$

$$= \frac{207419}{\sqrt{1545851 \times 451211}}$$

$$= \frac{207419}{\sqrt{697504975561}}$$

$$= \frac{207419}{835167.63}$$

$$= 0.25$$

SUB-TEST 4 And 5:

TOTAL Values:-

$\Sigma X = 2189$ $\quad \Sigma Y^2 = 8885$

$\Sigma X^2 = 10669$ $\quad \Sigma XY = 8529$

$\Sigma Y = 1851$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 8529 - (2189)(1851)}{\sqrt{[500 \times 10669 - (2189)^2][500 \times 8885 - (1851)^2]}}$$

$$= \frac{4264500 - 4051839}{\sqrt{[5334500 - 4791721][4442500 - 3426201]}}$$

$$= \frac{212661}{\sqrt{542779 \times 1016299}}$$

$$= \frac{212661}{\sqrt{551625754921}}$$

$$= \frac{212661}{742713.12}$$

$$= 0.29$$

SUB-TEST 4 And 6:

TOTAL Values:-

$\Sigma X = 2189$ $\quad \Sigma Y^2 = 7574$

$\Sigma X^2 = 10669$ $\quad \Sigma XY = 7770$

$\Sigma Y = 1671$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 7770 - (2189)(1671)}{\sqrt{[500 \times 10669 - (2189)^2][500 \times 7574 - (1671)^2]}}$$

$$= \frac{3885000 - 3657819}{\sqrt{[5334500 - 4791721][3787000 - 2792241]}}$$

$$= \frac{227181}{\sqrt{542779 \times 994759}}$$

$$= \frac{227181}{\sqrt{539934295261}}$$

$$= \frac{227181}{734802.22}$$

$$= 0.31$$

SUB-TEST 4 And 7:

TOTAL Values:-

$\Sigma X = 2189$ $\quad \Sigma Y^2 = 5603$

$\Sigma X^2 = 10669$ $\quad \Sigma XY = 6327$

$\Sigma Y = 1435$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 6327 - (2189)(1435)}{\sqrt{[500 \times 10669 - (2189)^2][500 \times 5603 - (1435)^2]}}$$

$$= \frac{316500 - 3141215}{\sqrt{[5334500 - 479172][2801500 - 2059225]}}$$

$$= \frac{22285}{\sqrt{542779 \times 742275}}$$

$$= \frac{22285}{\sqrt{402891282225}}$$

$$= \frac{22285}{634737.18}$$

$$= 0.04$$

SUB-TEST 4 And 8:

TOTAL Values:-

$\Sigma X = 2189$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 10669$ $\quad \Sigma XY = 5141$

$\Sigma Y = 1148$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 5141 - (2189)(1148)}{\sqrt{[500 \times 10669 - (2189)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{2570500 - 2512972}{\sqrt{[5334500 - 4791721][1867000 - 1317904]}}$$

$$= \frac{67528}{\sqrt{542779 \times 549096}}$$

$$= \frac{67528}{\sqrt{298037777784}}$$

$$= \frac{67528}{545928.36}$$

$$= 0.12$$

SUB-TEST 4 And 9:

TOTAL Values:-

$\Sigma X = 2189$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 10669$ $\quad \Sigma XY = 4392$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 4392 - (2189)(983)}{\sqrt{[500 \times 10669 - (2189)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{2196000 - 2151787}{\sqrt{[5334500 - 4791721][1417500 - 966289]}}$$

$$= \frac{44213}{\sqrt{542779 \times 451211}}$$

$$= \frac{44213}{\sqrt{244907355369}}$$

$$= \frac{44213}{494881.66}$$

$$= 0.09$$

SUB-TEST 5 And 6:

TOTAL Values:-

$\Sigma X = 1851$ $\quad \Sigma Y^2 = 7574$

$\Sigma X^2 = 8885$ $\quad \Sigma XY = 6209$

$\Sigma Y = 1671$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 6209 - (1851)(1671)}{\sqrt{[500 \times 8885 - (1851)^2][500 \times 7574 - (1671)^2]}}$$

$$= \frac{3104500 - 3093021}{\sqrt{[4442500 - 3426201][3787000 - 2792241]}}$$

$$= \frac{11479}{\sqrt{10106299 \times 994759}}$$

$$= \frac{11479}{\sqrt{10109725769 41}}$$

$$= \frac{11479}{1005471.32}$$

$$= 0.01$$

SUB-TEST 5 And 7:

TOTAL Values:-

$\Sigma X = 1851$ $\quad \Sigma Y^2 = 5603$

$\Sigma X^2 = 8885$ $\quad \Sigma XY = 5889$

$\Sigma Y = 1435$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 5889 - (1851)(1435)}{\sqrt{[500 \times 8885 - (1851)^2][500 \times 5603 - (1435)^2]}}$$

$$= \frac{2944500 - 2656185}{\sqrt{[4442500 - 3426201][2801500 - 2059225]}}$$

$$= \frac{288315}{\sqrt{1016299 \times 74225}}$$

$$= \frac{288315}{\sqrt{75454373340225}}$$

$$= \frac{288315}{868546.68}$$

$$= 0.33$$

SUB-TEST 5 And 8:

TOTAL Values:-

$\Sigma X = 1851$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 8885$ $\quad \Sigma XY = 4737$

$\Sigma Y = 1148$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 4737 - (1851)(1148)}{\sqrt{[500 \times 8885 - (1851)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{2368500 - 2124948}{\sqrt{[4442500 - 3426201][1867000 - 1317904]}}$$

$$= \frac{243552}{\sqrt{1016299 \times 549096}}$$

$$= \frac{243552}{\sqrt{558045715704}}$$

$$= \frac{243552}{747024.58}$$

$$= 0.33$$

SUB-TEST 5 And 9:

TOTAL Values:-

$\Sigma X = 1851$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 8885$ $\quad \Sigma XY = 4136$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 4136 - (1851)(983)}{\sqrt{[500 \times 8885 - (1851)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{2068000 - 1819533}{\sqrt{[4442500 - 3426201][1417500 - 966289]}}$$

$$= \frac{248467}{\sqrt{1016299 \times 451211}}$$

$$= \frac{248467}{\sqrt{458565288089}}$$

$$= \frac{248467}{2141413.69}$$

$$= 0.12$$

SUB-TEST 6 And 7:

TOTAL Values:-

$\Sigma X = 1671$ $\quad \Sigma Y^2 = 5603$

$\Sigma X^2 = 7574$ $\quad \Sigma XY = 5499$

$\Sigma Y = 1435$ $\quad N = 500$

SOLUTION:-

$$r = \frac{500 \times 5499 - (1671)(1435)}{\sqrt{[500 \times 7574 - (1671)^2][500 \times 5603 - (1435)^2]}}$$

$$= \frac{2749500 - 2397885}{\sqrt{[3787000 - 2792241][2801500 - 2059225]}}$$

$$= \frac{351615}{\sqrt{994756 \times 742275}}$$

$$= \frac{351615}{\sqrt{738382509900}}$$

$$= \frac{351615}{859291.87}$$

$$= 0.41$$

SUB-TEST 6 And 8:

TOTAL Values:-

$\Sigma X = 1671$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 7574$ $\quad \Sigma XY = 5203$

$\Sigma Y = 1148$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 5203 - (1671)(1148)}{\sqrt{[500 \times 7574 - (1671)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{2601500 - 1918308}{\sqrt{[3787000 - 2792241][1867000 - 1317904]}}$$

$$= \frac{683192}{\sqrt{994756 \times 549096}}$$

$$= \frac{683192}{\sqrt{546216540576}}$$

$$= \frac{683192}{739064.64}$$

$$= 0.92$$

SUB-TEST 6 And 9:

TOTAL Values:-

$\Sigma X = 1671$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 7574$ $\quad \Sigma XY = 3868$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 3868 - (1671)(983)}{\sqrt{[500 \times 7574 - (1671)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{1934000 - 1642593}{\sqrt{[3787000 - 2792241][1417500 - 966289]}}$$

$$= \frac{291407}{\sqrt{994756 \times 451211}}$$

$$= \frac{291407}{\sqrt{443844849516}}$$

$$= \frac{291407}{669958.84}$$

$$= 0.43$$

SUB-TEST 7 And 8:

TOTAL Values:-

$\Sigma X = 1435$ $\quad \Sigma Y^2 = 3734$

$\Sigma X^2 = 5603$ $\quad \Sigma XY = 3575$

$\Sigma Y = 1148$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 3575 - (1435)(1148)}{\sqrt{[500 \times 5603 - (1435)^2][500 \times 3734 - (1148)^2]}}$$

$$= \frac{1787500 - 1647380}{\sqrt{[2801500 - 2059225][1867000 - 1317904]}}$$

$$= \frac{140120}{\sqrt{742275 \times 549096}}$$

$$= \frac{140120}{\sqrt{407580233400}}$$

$$= \frac{140120}{638420.11}$$

$$= 0.22$$

SUB-TEST 7 And 9:

TOTAL Values:-

$\Sigma X = 1435$ $\quad \Sigma Y^2 = 2835$

$\Sigma X^2 = 5603$ $\quad \Sigma XY = 2969$

$\Sigma Y = 983$ $\quad N = 500$

Solution:-

$$r = \frac{500 \times 2969 - (1435)(983)}{\sqrt{[500 \times 5603 - (1435)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{1484500 - 1410605}{\sqrt{[2801500 - 2059225][1417500 - 966289]}}$$

$$= \frac{73895}{\sqrt{742275 \times 451211}}$$

$$= \frac{73895}{\sqrt{334922645025}}$$

$$= \frac{73895}{578725.02}$$

$$= 0.13$$

SUB-TEST 8 And 9:

TOTAL Values:-

$\Sigma X = 1148$

$\Sigma X^2 = 3734$

$\Sigma Y = 983$

$\Sigma Y^2 = 2835$

$\Sigma XY = 2591$

$N = 500$

Solution:-

$$r = \frac{500 \times 2591 - (1148)(983)}{\sqrt{[500 \times 3734 - (1148)^2][500 \times 2835 - (983)^2]}}$$

$$= \frac{1295500 - 1128484}{\sqrt{[1867000 - 1317904][1417500 - 966289]}}$$

$$= \frac{167016}{\sqrt{549096 \times 451211}}$$

$$= \frac{167016}{\sqrt{247758155256}}$$

$$= \frac{167016}{497753.11}$$

$$= 0.34$$

APPENDICES VI

BASIC DATA FOR THE TOTAL TEST, EVEN & ODD AND NINE SUBTESTS.

APPENDICES NO.VI.

FOLLOWING ARE THE BASIC DATA OF THE TOTAL TEST, EVEN & ODD AND ALL NINE SUB-TESTS, SCORED BY 2396 HIGH SCHOOL STUDENTS IN NAGALAND.

SCORE	EVEN	ODD	1	2	3	4	5	6	7	8	9
67	34	33	10	8	8	10	7	9	4	6	5
66	34	32	10	8	7	10	7	9	5	5	5
65	32	33	9	8	8	9	6	8	7	6	4
64	32	32	10	8	9	8	8	8	4	4	5
64	30	34	9	8	7	10	6	7	5	5	5
63	30	33	9	9	10	7	8	7	4	4	5
63	30	33	10	8	9	8	6	9	7	4	2
63	30	33	10	9	7	10	5	5	6	6	5
63	33	30	9	8	8	10	6	8	6	4	4
62	29	33	10	8	8	9	5	8	7	5	2
62	32	30	10	8	7	9	6	7	5	5	5
61	32	29	9	7	7	7	8	8	6	5	4
61	29	32	9	6	9	9	7	6	4	6	5
60	28	32	10	8	8	9	6	5	7	4	3
60	28	32	9	7	9	10	7	4	4	5	5
60	29	31	9	8	8	8	4	8	6	6	3
60	29	31	10	8	9	8	6	5	7	4	3
60	29	31	9	8	8	7	7	8	5	3	5
60	30	30	10	7	7	6	8	8	5	5	4
60	33	27	9	8	4	10	6	8	6	4	5
59	30	29	10	9	8	8	6	5	7	2	4
59	26	33	9	6	7	4	2	8	6	3	4
59	30	29	10	8	8	10	5	7	5	2	4
59	32	26	9	8	8	9	6	7	4	5	3
59	30	29	8	9	9	10	5	4	6	6	3
59	24	35	10	9	9	6	6	6	5	4	4
59	26	33	9	6	10	7	6	7	6	4	4
59	31	28	10	5	7	8	9	7	6	4	3
59	30	29	10	8	7	8	6	7	4	4	5

(Continuing in the following pages)

Score	Even	Odd	1	2	3	4	5	6	7	8	9
58	26	32	9	7	10	9	6	4	4	4	5
58	28	30	9	8	9	8	7	7	5	4	1
58	29	29	10	8	8	7	6	5	7	4	3
58	28	30	9	7	9	9	6	7	6	2	3
58	26	22	8	7	9	9	6	6	6	3	4
58	28	30	9	7	9	7	7	6	5	3	5
58	26	32	10	8	9	7	7	7	3	3	4
57	26	31	8	9	9	8	3	8	5	5	2
57	27	30	9	8	9	9	5	6	5	2	4
57	29	28	7	8	8	7	7	6	7	3	4
57	25	32	8	8	9	8	7	7	6	6	3
57	26	31	10	8	8	6	7	6	6	3	3
57	27	30	10	9	8	6	6	5	7	3	3
57	27	30	9	5	10	6	7	7	5	4	4
57	29	28	9	7	8	9	5	6	6	5	2
57	27	30	10	6	9	8	7	7	5	5	4
57	28	29	10	7	8	7	6	8	2	4	5
57	27	30	9	7	9	9	6	7	6	2	3
57	28	29	10	7	8	7	6	6	7	3	3
57	27	30	9	5	10	6	7	7	5	4	4
57	26	31	8	7	8	8	6	4	7	4	5
57	27	30	9	9	7	8	7	5	5	4	3
57	28	29	10	8	8	7	5	5	7	4	3
57	30	29	7	10	8	9	7	4	6	6	2
57	28	34	5	10	10	9	6	6	5	3	3
57	26	31	8	7	9	6	8	8	4	5	2
57	31	26	7	7	4	7	9	8	6	5	4
57	31	26	8	6	7	6	5	8	6	7	4
57	28	29	9	8	9	5	7	6	6	5	2
56	25	31	10	5	9	7	8	8	3	2	4
56	26	30	9	9	9	5	7	6	5	1	4
56	27	30	9	7	9	8	4	7	6	5	3
56	29	27	8	7	4	9	8	7	3	5	5
56	30	26	9	9	7	7	6	8	4	3	3
56	28	28	5	9	10	9	7	6	4	2	4
56	26	30	10	7	5	9	7	4	5	4	5
56	24	30	9	7	9	7	6	8	3	3	4
56	25	31	10	6	9	7	6	8	3	3	4
56	29	27	7	10	8	8	6	5	5	5	2
56	28	28	9	7	9	6	5	5	6	5	4
56	26	30	9	7	10	7	6	6	3	3	5
55	25	30	8	5	8	9	7	6	2	5	5
55	26	29	9	9	8	5	8	8	3	3	2
55	28	27	10	7	7	7	6	5	6	3	4
55	26	29	9	7	8	10	8	6	4	2	4
55	27	28	8	5	9	8	6	7	5	5	2
55	25	30	9	5	8	7	7	7	5	3	4

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Score	Even	Odd	1	2	3	4	5	6	7	8	9
55	28	27	10	7	7	4	5	7	6	5	4
55	24	31	9	5	8	7	7	7	5	3	4
55	27	28	8	7	9	6	5	5	8	3	4
55	23	32	9	6	9	6	9	5	6	2	3
55	29	26	5	9	7	8	7	7	3	4	5
55	25	30	9	8	9	7	8	6	2	2	4
54	23	31	9	9	7	6	6	5	4	3	3
54	23	31	9	8	9	10	6	2	6	2	2
54	25	29	10	6	8	6	6	7	3	3	5
54	24	30	10	5	8	9	7	7	4	1	3
54	24	30	10	5	8	9	7	7	4	1	3
54	27	27	10	7	6	7	6	5	6	3	4
54	28	26	10	7	7	4	3	7	7	5	4
54	29	25	5	10	9	7	7	6	5	3	1
54	30	24	8	8	9	7	7	7	2	1	4
54	25	19	8	2	8	8	6	8	5	6	3
54	29	25	7	6	9	8	6	5	6	3	4
54	25	29	9	6	9	4	7	7	4	3	5
54	28	26	9	5	8	8	6	7	3	4	4
54	25	29	5	2	9	6	6	9	5	7	5
54	23	31	10	7	7	5	8	6	4	5	2
54	24	30	10	6	9	8	7	5	5	2	2
53	24	29	8	7	9	7	5	8	2	5	2
53	24	29	8	7	6	6	8	5	5	5	3
53	25	27	5	6	9	9	6	5	5	5	3
53	28	25	8	7	9	9	6	5	4	2	3
53	28	25	5	7	10	8	6	7	5	2	3
53	25	28	6	7	9	9	7	5	6	2	2
53	23	30	8	4	9	2	8	4	4	3	1
53	24	29	9	5	8	9	7	7	4	1	3
53	23	30	8	4	7	6	6	7	6	3	4
53	25	28	9	7	8	6	6	6	6	4	1
53	27	26	8	8	8	10	7	4	3	3	2
53	23	30	10	5	8	9	7	7	3	1	3
53	27	26	9	10	10	5	6	4	5	2	2
53	28	25	8	6	8	9	4	7	5	2	4
53	29	24	9	6	7	9	5	3	5	4	5
53	26	27	8	8	7	6	6	7	3	3	5
53	25	28	8	5	8	7	6	5	3	4	5
53	25	28	5	7	9	9	5	4	6	4	4
53	25	28	9	8	7	8	5	5	4	2	4
53	28	25	9	6	8	5	7	7	4	2	5
53	23	30	8	6	7	7	7	6	4	5	3
53	26	27	9	6	9	7	7	5	4	3	3
53	26	27	9	7	8	5	7	6	3	3	5
53	27	26	9	7	8	7	7	5	4	3	3
52	26	26	8	9	8	9	4	7	2	2	3
52	24	28	6	10	8	7	5	3	6	5	2
52	26	26	6	7	7	10	6	5	4	3	4
52	25	28	9	8	8	9	7	2	4	2	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
52	25	28	10	8	3	9	6	6	3	2	5
52	24	28	9	6	6	8	5	6	5	5	2
52	22	30	9	6	8	8	5	6	4	1	5
52	24	28	8	4	7	8	7	6	4	2	6
52	23	29	10	5	8	8	7	7	3	1	3
52	23	29	9	5	8	6	6	7	4	3	4
52	27	25	8	6	7	6	7	5	3	4	6
52	27	25	8	8	7	6	5	6	6	2	4
52	27	25	9	6	3	8	7	6	5	3	5
52	25	27	8	6	9	9	6	5	4	2	3
52	25	27	5	7	9	9	5	3	6	4	4
52	27	25	8	8	8	6	7	4	4	4	3
52	24	28	10	7	7	7	4	5	5	2	5
52	27	25	9	8	8	9	2	6	4	2	4
52	23	29	9	2	7	6	6	7	4	7	4
52	27	25	9	5	7	8	6	7	3	4	3
52	26	26	9	8	5	8	5	5	5	4	3
52	26	26	9	4	7	7	6	5	4	5	5
51	24	27	7	6	9	8	4	6	5	2	4
51	23	28	10	6	8	5	5	4	5	5	3
51	25	26	8	8	8	8	6	4	3	3	3
51	22	29	8	3	7	5	8	7	6	4	3
51	26	25	6	6	7	4	9	4	6	4	5
51	25	26	7	5	6	8	7	4	4	6	4
51	25	26	6	8	9	8	7	4	4	1	4
51	25	26	5	8	8	9	6	5	6	2	2
51	26	25	9	7	7	7	6	5	5	2	3
51	24	27	8	6	9	7	4	8	2	3	4
51	23	28	7	10	7	8	4	4	5	4	2
51	22	29	7	7	8	7	6	3	4	4	5
51	25	26	6	6	9	7	4	4	6	5	4
51	26	25	8	6	10	9	6	4	3	2	3
51	26	25	8	6	10	9	6	4	3	2	3
51	24	27	8	7	9	9	7	7	1	0	3
51	24	27	7	5	6	8	4	7	4	6	4
51	21	30	8	7	6	8	5	5	5	4	3
50	25	25	7	5	7	7	5	8	6	4	1
50	22	28	6	5	8	7	5	8	4	4	3
50	25	25	6	8	9	8	7	3	3	2	4
50	23	27	7	4	8	5	7	7	3	5	4
50	26	24	9	6	8	7	4	6	2	5	3
50	27	23	6	5	10	7	7	6	5	3	1
50	26	24	5	8	9	8	6	7	4	1	2
50	25	25	10	7	8	3	6	6	3	3	4
50	25	25	9	4	8	5	7	5	6	3	3
50	24	26	8	6	7	9	4	6	4	2	4
50	25	25	8	6	10	9	6	4	3	2	3
50	25	25	7	5	10	9	5	5	3	3	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
50	28	22	7	5	9	10	5	4	3	4	3
50	24	26	8	5	7	8	6	6	4	3	3
50	23	27	8	7	8	5	6	6	4	2	4
50	24	26	7	7	8	8	7	5	3	2	3
50	23	27	7	4	8	9	7	5	3	2	5
50	24	26	9	5	8	7	7	6	2	2	4
50	24	26	9	4	6	3	8	7	3	7	3
50	24	26	8	5	4	9	7	7	7	2	1
50	27	23	5	5	2	8	5	8	6	5	5
50	23	27	5	3	9	7	6	7	4	5	4
50	22	28	8	5	0	8	7	8	6	5	3
50	25	25	8	5	4	8	7	6	4	4	4
50	22	28	7	7	8	6	8	6	3	2	3
49	27	22	8	5	8	6	6	5	4	6	1
49	22	27	8	6	8	2	8	6	3	6	2
49	22	27	8	7	8	2	4	8	6	3	3
49	25	24	7	8	8	7	5	5	4	1	4
49	20	29	7	7	9	7	6	6	4	0	3
49	21	28	8	4	10	3	7	6	3	3	5
49	24	25	4	8	6	8	7	4	6	4	2
49	22	27	9	7	9	6	5	4	5	4	0
49	23	26	8	7	8	7	5	5	4	4	1
49	23	26	6	5	7	10	7	6	3	4	1
49	23	26	9	5	7	5	4	6	4	4	5
49	22	27	7	4	8	9	7	6	4	1	3
49	24	25	9	9	9	7	4	3	3	3	2
49	25	24	7	7	3	8	6	7	5	2	4
49	23	26	9	7	5	4	6	8	4	2	4
49	30	19	6	5	8	3	4	3	5	2	2
49	23	26	9	5	8	7	6	6	4	3	1
49	24	25	7	5	9	6	6	4	6	3	3
49	21	28	8	9	9	8	5	3	4	1	2
49	25	24	8	6	8	7	4	3	5	5	3
49	24	25	8	7	9	4	8	5	2	4	2
49	25	24	9	5	9	6	6	6	2	3	3
49	25	24	7	7	8	6	6	6	3	3	3
49	23	26	9	4	8	1	8	7	4	6	2
49	23	26	9	8	5	7	3	4	4	4	5
49	25	24	7	5	6	9	7	5	3	3	4
49	21	28	7	5	8	6	5	6	5	3	2
49	21	28	9	8	7	6	4	3	5	4	3
49	21	28	8	6	1	10	7	7	7	2	1
49	26	23	7	4	5	7	5	7	7	6	1
49	22	27	9	5	0	8	6	8	6	4	3
48	25	23	6	3	10	7	5	4	4	5	4
48	24	24	5	3	9	5	5	6	5	6	4
48	25	23	7	4	8	9	6	6	3	3	2
48	24	24	6	7	9	7	5	7	4	1	2
48	20	28	4	2	1	10	7	7	5	5	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
48	23	25	7	5	9	3	6	3	4	5	1
48	23	25	5	2	10	9	7	6	6	2	2
48	24	24	7	7	7	7	6	4	5	2	3
48	22	26	7	8	10	3	3	4	4	4	2
48	22	26	6	7	8	5	5	6	5	3	3
48	25	23	8	5	9	7	5	4	4	3	3
48	23	25	8	9	8	4	7	2	6	1	3
48	23	25	10	6	5	8	5	3	6	4	1
48	22	26	9	8	9	8	4	4	3	2	1
48	21	27	9	5	6	6	5	6	3	3	5
48	23	25	5	4	6	8	5	7	4	4	5
48	25	23	7	5	7	4	7	7	5	2	4
48	24	24	8	8	8	8	6	1	4	3	2
48	23	25	7	5	9	8	6	5	6	4	3
48	23	25	9	6	9	5	5	4	5	3	2
48	26	22	6	7	8	8	7	4	5	0	3
48	20	28	8	5	4	7	8	4	4	2	6
48	24	24	6	4	8	9	9	7	1	1	5
48	22	26	9	7	7	7	6	6	3	1	2
48	24	24	6	4	8	10	6	4	5	4	1
48	21	27	5	2	8	8	6	7	5	3	4
48	25	23	7	6	6	2	8	7	4	5	3
48	22	26	9	7	8	2	6	5	5	4	2
48	25	23	8	8	9	5	6	6	4	4	3
48	24	24	7	8	6	9	7	6	3	2	5
48	25	23	7	6	8	2	6	7	4	5	3
48	25	23	6	8	10	8	5	7	4	1	4
47	23	24	8	7	8	8	6	7	4	3	1
47	22	25	8	6	7	6	4	7	4	2	3
47	27	20	6	4	9	10	4	4	3	4	3
47	21	26	7	10	7	6	7	5	3	1	1
47	24	23	5	7	8	8	6	5	4	2	2
47	21	26	7	6	8	5	6	3	4	4	4
47	24	23	7	6	6	6	5	7	4	3	3
47	24	23	7	7	5	7	5	5	4	3	4
47	23	24	7	8	6	7	7	4	3	3	2
47	23	24	7	9	6	4	6	4	6	2	3
47	21	26	9	6	7	8	5	1	6	2	3
47	23	24	9	6	7	4	4	6	3	5	3
47	22	25	8	5	6	5	7	5	4	2	3
47	23	24	7	7	7	7	4	5	3	2	5
47	23	24	8	8	10	8	4	4	3	1	1
47	23	24	7	8	9	8	5	4	3	2	1
47	22	25	7	7	10	8	5	4	3	1	2
47	24	23	8	6	7	6	6	5	4	2	3
47	25	22	7	7	8	5	7	4	3	4	2
47	23	24	7	6	9	8	6	3	5	3	1
47	22	25	7	5	9	5	7	4	6	2	2
47	22	25	6	6	9	5	6	7	4	3	1
47	24	23	10	4	9	6	5	6	3	2	2

Score	Even	Odd	1	2	3	4	5	6	7	8	99
47	22	25	8	7	7	5	7	3	3	2	5
47	27	20	6	6	9	7	6	4	5	3	3
47	23	24	5	2	5	9	9	8	3	3	3
47	23	24	8	6	7	8	6	7	1	1	3
47	23	24	8	7	3	9	6	4	4	4	3
47	22	25	8	5	3	6	6	6	4	7	2
47	22	25	10	3	7	9	5	3	3	3	4
47	22	25	9	3	8	4	9	7	2	2	3
47	25	22	0	5	9	7	9	7	5	1	4
47	23	24	9	1	4	9	6	9	4	5	0
47	23	24	9	5	7	5	6	6	3	3	3
47	22	25	7	4	3	10	5	6	5	4	3
46	20	26	7	6	9	3	6	6	1	3	5
46	24	22	5	6	9	7	5	7	4	1	2
46	22	24	7	7	7	6	7	6	3	2	4
46	26	20	5	9	9	4	5	6	5	1	2
46	21	25	9	4	8	6	5	6	2	2	4
46	24	22	8	6	6	7	3	5	5	3	3
46	15	31	8	4	7	2	5	2	5	1	2
46	20	26	7	6	8	5	7	5	3	3	2
46	20	26	8	6	7	8	5	3	4	2	3
46	23	23	6	7	7	6	6	5	4	3	2
46	20	26	9	8	8	4	6	5	3	1	2
46	18	28	7	4	8	6	5	8	3	3	2
46	23	23	9	5	8	7	3	4	3	4	3
46	22	24	3	7	6	9	9	6	3	0	3
46	23	23	8	6	8	5	7	2	2	4	4
46	23	23	10	5	7	6	7	7	3	3	4
46	21	25	7	6	5	5	8	6	3	2	4
46	24	22	9	5	2	3	6	7	4	7	3
46	22	24	10	6	7	3	5	4	5	3	3
46	24	22	6	7	8	7	7	4	5	0	2
46	22	24	8	6	9	5	5	7	2	2	2
46	21	25	5	7	9	0	6	5	5	5	4
46	25	21	7	6	7	7	3	4	5	4	3
46	25	21	8	6	6	8	2	5	5	2	4
46	22	24	7	7	9	1	6	3	5	3	5
46	22	24	8	7	5	5	6	6	2	5	2
46	23	23	8	3	6	8	5	7	4	3	2
46	26	20	5	5	9	9	6	3	4	2	3
46	22	24	5	4	9	7	6	7	2	3	3
46	20	26	7	3	7	8	2	8	3	4	3
46	26	20	7	8	6	8	5	3	3	1	5
46	23	23	10	2	8	4	7	6	3	3	3
46	21	25	8	3	5	5	6	1	3	3	4
46	24	22	7	7	6	8	5	3	4	1	5
46	27	19	7	6	5	7	7	7	1	2	4
45	22	23	9	5	2	5	7	5	3	6	3
45	22	23	9	4	7	6	5	2	5	4	3
45	23	22	9	4	3	6	7	5	3	6	2
45	19	26	4	6	9	5	5	7	3	4	2
45	20	25	8	5	7	4	6	5	4	3	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
45	21	24	7	8	7	4	5	4	3	5	2
45	19	26	5	6	9	6	5	5	5	2	2
45	20	25	9	6	8	5	4	4	5	1	3
45	23	22	9	8	6	5	4	3	6	4	0
45	18	27	8	5	8	5	5	5	4	2	3
45	19	26	9	8	7	6	7	2	4	1	1
45	21	24	5	6	6	7	8	5	4	2	2
45	23	22	8	3	7	7	5	6	4	2	3
45	18	27	8	6	9	2	8	4	4	3	1
45	20	25	6	7	8	8	4	4	4	3	1
45	18	27	7	7	8	6	6	5	1	3	2
45	19	26	4	8	10	6	5	4	5	2	1
45	23	22	7	5	6	3	5	8	5	2	4
45	25	20	9	2	7	4	5	5	6	4	3
45	19	26	10	3	7	3	6	5	3	4	4
45	20	25	8	6	2	10	6	5	6	1	1
45	19	26	10	7	5	6	6	3	3	3	2
45	24	21	7	3	3	7	6	6	6	3	4
45	23	22	8	5	4	8	7	4	3	2	4
45	23	22	10	5	4	3	6	6	5	4	2
45	20	25	5	5	5	8	6	4	4	4	4
45	23	22	6	5	4	3	8	7	3	7	6
45	23	22	7	3	8	9	6	3	4	2	3
45	21	24	8	5	2	8	5	6	5	3	3
45	22	23	5	5	4	7	5	7	7	2	3
45	22	23	4	6	6	6	8	7	5	2	1
45	24	21	9	6	6	5	6	2	4	5	2
44	23	21	5	5	7	7	5	6	5	1	3
44	22	22	5	8	7	6	6	5	3	2	2
44	20	24	6	4	10	8	6	5	3	0	2
44	21	23	9	7	8	4	7	8	3	1	2
44	20	24	8	5	5	4	5	5	7	4	1
44	22	22	7	5	6	6	4	7	1	5	3
44	24	20	6	6	6	5	5	5	6	4	1
44	22	22	8	6	8	3	3	6	4	4	2
44	23	21	7	7	6	5	6	4	4	5	0
44	25	19	9	1	7	6	7	5	3	3	3
44	15	29	8	6	8	2	8	4	4	3	1
44	21	23	7	5	9	9	4	4	3	2	1
44	19	25	6	5	8	8	5	4	6	0	2
44	22	22	5	5	6	7	6	6	3	3	3
44	20	24	6	5	5	7	6	5	6	3	1
44	16	28	3	3	8	4	4	4	4	3	1
44	21	23	7	6	7	4	4	5	4	4	3
44	18	26	6	8	6	4	6	6	4	1	3
44	16	28	6	7	5	4	7	7	4	1	3
44	23	21	5	5	9	7	8	3	4	0	3
44	21	23	6	6	3	4	4	3	4	2	2
44	22	22	8	6	5	7	2	5	5	2	4
44	24	20	5	6	8	9	5	4	4	0	3
44	24	20	7	5	7	8	4	5	4	2	2
44	24	20	7	5	7	7	4	5	5	2	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
44	23	21	7	6	6	6	4	3	5	4	3
44	22	22	7	6	9	5	5	4	3	3	2
44	20	24	8	7	4	6	5	6	4	2	2
44	20	24	9	5	3	3	5	6	6	4	3
44	19	25	8	3	7	4	5	5	4	5	3
44	22	22	9	5	6	9	6	3	2	1	3
44	17	27	7	5	3	6	8	5	4	2	4
44	21	23	3	6	8	2	7	7	4	5	2
44	21	23	7	5	6	8	5	3	3	4	3
44	16	28	9	5	6	8	7	3	0	2	4
44	23	21	6	0	6	6	8	7	3	5	3
44	21	23	6	4	6	5	7	4	4	4	4
44	17	27	10	1	7	4	8	5	1	5	3
44	19	25	7	6	4	2	6	6	6	2	4
44	22	22	7	3	9	5	6	4	4	4	2
43	18	25	6	5	8	4	6	5	4	2	3
43	20	23	4	6	7	3	5	6	4	5	3
43	18	25	5	7	6	6	3	8	1	4	3
43	16	27	7	4	7	5	6	6	3	3	2
43	21	22	8	7	8	5	4	5	3	0	3
43	19	24	5	6	9	5	6	4	2	5	2
43	21	22	7	6	5	6	5	5	4	1	4
43	21	22	4	5	8	6	4	6	4	2	4
43	23	20	9	8	7	2	6	5	3	1	2
43	22	21	7	7	5	7	3	4	3	3	4
43	24	19	7	6	7	6	2	5	4	5	1
43	23	20	2	5	10	7	5	4	4	3	3
43	20	23	10	4	7	6	5	4	3	3	1
43	23	20	9	7	6	6	7	2	1	3	2
43	21	22	9	6	8	5	4	3	4	1	3
43	20	23	8	6	6	3	7	5	2	4	2
43	20	23	5	5	5	7	6	6	3	3	3
43	20	23	3	4	4	8	8	6	4	3	3
43	20	23	7	2	5	5	6	7	7	2	2
43	20	23	6	8	9	7	5	3	3	1	1
43	20	23	6	6	7	8	5	3	4	2	2
43	23	20	5	5	7	7	5	6	5	1	2
43	21	22	7	4	8	5	5	5	5	2	2
43	23	20	7	6	7	5	4	6	3	2	3
43	20	27	7	5	7	6	4	5	3	5	1
43	21	22	6	6	5	7	4	6	3	4	2
43	21	22	5	6	6	9	6	3	4	3	1
43	23	20	7	4	6	3	5	8	4	2	4
43	23	20	7	4	6	3	5	8	4	2	4
43	18	25	8	7	8	5	4	4	3	1	3
43	19	24	8	8	8	4	8	4	2	1	0
43	22	21	7	5	6	8	4	5	4	2	2
43	24	19	6	5	7	8	4	5	4	2	2
43	19	24	7	4	8	5	5	4	4	4	2
43	19	24	7	4	9	5	5	4	5	3	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
43	24	19	6	5	6	8	4	6	4	2	2
43	23	20	6	5	6	8	4	5	5	2	2
43	24	19	7	5	7	7	4	5	4	2	2
43	24	19	6	5	8	7	4	5	4	2	2
43	24	19	6	5	7	8	4	5	4	2	2
43	22	21	6	5	4	2	4	8	5	6	3
43	19	24	8	6	7	3	7	5	2	3	2
43	22	21	8	5	8	6	7	5	0	2	2
43	18	25	8	6	4	8	6	5	2	2	2
43	18	25	8	6	8	5	6	2	3	2	3
43	23	20	5	6	6	4	6	7	5	1	3
43	19	24	6	2	4	5	6	6	5	5	4
43	19	24	7	6	8	5	4	5	3	3	2
43	18	25	10	4	4	6	7	4	2	4	2
43	22	21	6	4	7	8	5	7	2	2	2
43	21	22	8	5	5	6	6	3	4	3	3
43	22	21	9	5	7	3	6	2	5	2	4
43	22	21	7	5	4	6	5	6	3	3	4
43	20	23	7	5	4	7	5	5	3	6	1
43	17	26	9	7	7	4	4	6	1	4	1
42	20	22	9	4	7	5	4	4	3	3	3
42	20	22	5	6	7	7	3	4	4	2	4
42	20	22	5	3	9	4	7	5	4	4	1
42	22	20	8	5	9	5	4	3	4	1	3
42	20	22	5	3	9	4	7	5	4	4	1
42	19	23	8	6	5	4	4	3	6	4	2
42	20	22	3	1	8	2	6	5	4	1	2
42	25	17	6	4	5	6	5	4	5	4	3
42	23	19	7	3	8	5	6	5	3	4	1
42	20	22	4	4	8	7	7	5	4	0	3
42	19	23	3	7	9	2	2	5	5	5	4
42	18	24	9	4	9	4	3	5	4	4	0
42	17	25	8	5	7	7	6	0	4	2	3
42	19	23	8	6	8	2	7	3	4	1	3
42	19	23	8	6	7	5	5	2	4	1	4
42	21	21	7	5	6	2	7	7	3	3	2
42	20	22	6	6	6	5	6	2	5	3	3
42	22	20	7	7	7	7	2	2	5	4	1
42	20	22	4	4	6	8	6	5	3	3	3
42	19	23	6	6	7	6	4	6	3	2	2
42	22	20	5	5	8	3	7	5	4	4	1
42	19	23	9	7	8	3	4	6	2	2	1
42	23	19	6	5	6	6	5	7	3	4	5
42	20	22	5	6	8	5	2	5	4	3	4
42	24	18	5	3	7	7	3	4	5	4	4
42	20	22	6	6	7	5	6	5	4	3	0
42	21	21	6	9	3	4	5	6	3	4	2
42	20	22	7	3	7	7	4	6	5	1	2
42	18	24	2	7	9	8	5	4	4	1	4
42	22	20	6	5	5	5	3	5	5	4	4

Score	Even	Odd	1	2	3	4	5	6	7	8	9
42	22	20	6	6	8	6	3	4	4	2	3
42	24	18	7	5	6	7	4	5	4	2	2
42	23	19	7	6	6	6	3	3	5	4	3
42	24	18	10	1	8	5	5	6	3	2	2
42	19	23	7	7	8	4	4	7	1	2	2
42	23	19	6	7	6	4	3	8	3	3	2
42	24	18	3	3	6	6	8	7	3	5	1
42	14	28	6	6	2	6	5	7	3	3	4
42	19	23	9	1	2	7	7	6	3	4	3
42	16	26	9	3	5	4	6	6	4	2	3
42	21	21	7	5	6	2	8	7	3	1	3
42	21	21	5	4	9	4	7	6	3	1	3
42	20	22	5	6	8	2	5	6	3	4	3
42	19	23	6	4	9	3	6	5	2	4	3
42	17	25	9	9	1	3	6	4	4	2	4
42	19	23	8	6	4	2	6	6	4	2	4
42	20	22	3	3	6	5	9	7	3	5	1
42	24	18	7	7	5	6	4	6	5	1	1
42	21	21	8	5	8	5	3	6	1	3	3
42	18	24	8	1	7	3	7	3	5	5	3
42	21	21	8	4	8	8	1	3	3	4	3
41	20	21	7	5	9	6	3	5	5	2	1
41	22	19	7	3	5	5	5	4	5	3	3
41	16	25	8	3	7	3	5	4	6	3	2
41	20	21	5	6	4	6	4	5	4	3	4
41	21	20	7	5	6	7	3	3	5	4	1
41	21	20	7	3	9	1	6	2	6	4	3
41	22	19	4	8	7	3	5	4	5	2	3
41	19	22	3	1	8	2	6	5	4	1	1
41	20	21	6	6	6	4	7	5	4	1	2
41	18	23	9	6	8	3	5	5	2	2	1
41	21	20	7	4	7	6	4	2	5	3	3
41	17	24	6	5	6	4	6	4	5	2	1
41	17	24	6	6	7	6	3	5	6	0	2
41	21	20	7	4	7	6	5	4	4	2	2
41	20	21	6	7	8	2	2	4	5	5	2
41	21	20	8	6	7	4	3	3	4	3	3
41	18	23	9	5	8	4	5	3	4	3	0
41	22	19	3	4	7	9	6	4	1	5	2
41	21	20	6	4	8	4	6	3	4	4	2
41	22	19	5	5	7	2	6	5	6	1	4
41	20	21	6	5	7	6	4	6	3	1	3
41	20	21	6	7	5	5	6	2	4	3	3
41	23	18	8	3	8	3	5	5	3	2	4
41	20	21	6	6	8	3	5	5	2	4	2
41	17	24	7	4	6	5	6	5	3	4	1
41	19	22	6	3	9	4	7	5	4	2	1
41	16	25	8	3	7	3	5	4	6	3	2
41	20	21	8	7	4	4	4	4	4	4	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
41	23	18	6	7	5	6	5	2	2	5	3
41	20	21	6	7	7	5	7	5	2	2	0
41	21	20	6	7	6	5	6	4	5	2	0
41	19	22	4	8	9	3	6	3	4	1	3
41	19	22	6	7	7	4	6	5	4	2	0
41	21	20	9	3	9	6	3	4	4	3	0
41	19	22	6	7	5	3	4	7	4	2	3
41	22	19	9	3	5	4	6	5	4	1	3
41	18	23	7	5	8	3	5	5	5	1	2
41	18	23	2	7	3	8	5	4	4	1	2
41	21	20	5	5	5	5	3	5	5	4	4
41	21	20	7	5	8	3	4	5	5	3	1
41	22	19	7	5	6	3	6	5	3	3	3
41	20	21	8	4	9	4	6	5	3	1	1
41	19	22	5	6	7	4	5	5	5	2	2
41	21	20	4	9	7	2	6	4	5	2	2
41	19	22	5	4	6	6	5	5	4	3	3
41	21	20	8	4	7	5	3	1	8	3	2
41	20	21	6	4	3	9	6	6	1	4	2
41	26	15	6	6	3	3	7	7	3	4	2
41	17	24	7	6	5	5	6	4	2	4	2
41	21	20	10	3	2	4	6	5	5	3	3
41	21	20	10	4	3	9	6	6	4	4	1
41	19	22	9	2	3	4	4	5	1	4	4
41	21	20	7	2	1	9	7	4	4	4	3
41	19	22	10	4	6	5	4	3	3	3	3
41	19	22	8	4	7	4	4	4	5	5	2
41	20	21	6	6	7	9	7	3	0	0	3
41	21	20	6	1	3	5	6	6	3	7	4
41	19	22	4	7	9	6	5	6	0	1	3
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41	21	20	6	3	6	4	5	3	3	5	5
40	20	20	7	5	7	6	6	2	2	2	3
40	17	23	3	6	5	8	4	2	4	4	4
40	19	21	7	7	6	6	4	3	5	2	0
40	20	20	8	4	4	5	5	5	4	2	3
40	15	25	5	6	9	2	4	2	5	5	2
40	18	22	3	5	10	1	6	5	6	1	3
40	23	17	5	3	3	6	5	6	2	3	2
40	22	18	3	2	6	7	4	5	5	5	3
40	18	22	6	3	5	7	5	4	4	2	4
40	20	20	6	5	6	6	2	3	5	2	5
40	18	22	7	7	4	6	4	3	4	3	2
40	19	21	7	5	3	7	4	4	4	3	3
40	21	19	7	5	5	6	3	6	2	3	3
40	17	23	6	4	8	5	5	3	3	5	1
40	19	21	7	4	5	4	6	4	5	3	2
40	18	22	10	3	6	3	4	4	4	3	3
40	17	23	7	5	7	3	7	6	3	0	2
40	20	20	6	6	9	4	5	2	2	3	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
40	21	19	2	5	10	9	6	3	1	1	3
40	18	22	6	8	5	3	5	2	6	2	3
40	20	20	5	7	6	5	5	4	2	2	4
40	21	19	6	5	6	4	6	4	4	4	1
40	23	17	5	5	7	4	5	5	5	2	2
40	16	24	7	4	8	5	5	5	3	2	1
40	17	23	6	7	6	1	8	3	4	2	3
40	20	20	6	2	7	2	6	7	4	3	3
40	21	19	4	5	5	6	4	4	4	4	4
40	17	23	7	4	7	5	7	2	5	1	2
40	22	18	8	7	7	3	5	6	0	2	2
40	16	24	6	4	8	4	5	5	4	3	1
40	19	21	9	6	5	2	7	2	3	3	3
40	18	22	8	8	9	3	1	5	4	2	0
40	18	22	0	6	9	8	5	5	4	1	2
40	20	20	4	8	9	3	5	3	4	1	3
40	19	21	8	5	7	5	5	2	3	3	2
40	22	18	5	3	8	6	5	2	3	3	3
40	16	24	7	5	8	5	6	3	3	3	0
40	17	23	7	5	8	6	5	3	3	3	0
40	19	21	8	5	5	6	6	5	1	2	2
40	21	19	6	8	4	4	5	6	3	2	2
40	19	21	7	5	7	4	4	6	3	2	2
40	20	20	7	7	6	3	5	1	5	3	3
40	17	23	3	4	8	5	7	6	4	2	1
40	17	23	8	6	8	3	5	2	4	3	1
40	19	21	7	3	7	6	4	7	3	0	3
40	21	19	7	5	9	4	4	4	3	1	3
40	19	21	6	8	6	2	6	5	4	1	2
40	22	18	5	9	7	4	2	2	4	4	3
40	18	22	7	6	7	5	5	4	3	2	1
40	23	17	6	5	6	7	3	5	4	2	2
40	19	21	7	6	9	1	5	3	4	3	2
40	22	18	10	5	7	3	5	3	2	3	2
40	17	23	8	1	7	6	6	4	2	2	4
40	16	24	3	3	10	8	4	5	4	4	3
40	16	24	6	4	6	9	6	2	3	3	1
40	17	23	7	3	3	8	5	5	3	3	3
40	20	20	7	5	8	5	4	4	1	2	4
40	17	23	8	6	2	5	3	5	4	4	3
40	21	19	5	5	3	10	6	6	0	4	2
40	21	19	6	0	0	9	6	7	3	6	3
40	23	17	6	5	6	3	7	6	2	3	2
40	19	21	6	2	6	5	5	7	2	4	3
40	19	21	8	5	8	4	3	3	3	4	3
40	20	20	9	8	3	6	5	2	4	1	2
40	20	20	10	3	9	3	5	5	4	1	0
40	19	21	3	6	2	8	2	4	4	3	3
40	17	23	8	3	5	7	7	4	2	2	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
39	16	23	6	5	4	6	5	4	3	3	3
39	20	19	7	5	6	6	3	3	4	3	2
39	19	20	8	2	7	5	2	5	4	4	2
39	19	20	5	2	4	6	6	6	3	4	3
39	21	18	8	5	5	5	6	3	2	3	2
39	19	20	7	5	5	4	7	4	2	3	2
39	19	20	4	5	5	4	6	5	5	1	4
39	17	22	6	5	5	1	8	7	3	1	3
39	20	19	6	5	4	7	4	5	4	2	2
39	21	18	10	7	4	5	2	1	2	5	3
39	18	21	6	3	5	3	7	6	4	3	2
39	14	25	9	4	4	2	7	5	2	1	5
39	19	20	5	6	5	4	7	7	3	2	2
39	17	22	7	4	9	2	6	6	3	2	0
39	18	21	7	3	8	2	6	5	4	3	1
39	20	19	9	0	9	2	6	3	4	3	3
39	17	22	8	4	6	3	6	2	5	1	4
39	20	19	5	4	6	3	7	2	5	5	2
39	17	22	8	4	8	6	4	3	4	1	1
39	20	19	9	6	4	2	7	3	4	1	3
39	20	19	7	4	5	7	5	3	4	2	2
39	17	22	6	6	5	3	8	5	2	3	2
39	16	23	7	7	3	2	5	4	3	4	4
39	19	20	5	6	4	4	2	6	5	5	2
38	24	14	5	6	6	5	4	5	3	2	2
38	16	22	8	4	7	6	3	4	2	4	0
38	17	21	4	7	8	2	5	5	2	3	2
38	21	17	9	8	4	4	5	3	1	2	2
38	20	18	6	2	8	3	7	4	5	1	2
38	19	19	6	4	4	5	5	4	3	3	4
38	20	18	5	6	4	5	4	3	4	4	3
38	18	20	6	5	5	4	4	3	3	4	4
38	19	19	5	6	5	4	3	5	4	3	3
38	18	20	5	6	6	3	3	6	5	2	2
38	18	20	3	4	7	3	4	7	4	5	1
38	20	18	5	5	6	6	3	6	2	6	0
38	20	18	4	5	7	3	4	4	7	2	2
38	16	22	6	6	4	7	3	6	1	2	3
38	18	20	6	5	3	7	5	8	1	2	1
38	21	17	2	3	7	4	6	6	7	2	1
38	18	20	6	1	8	4	5	3	5	4	2
38	15	23	5	5	5	6	4	3	6	1	3
38	19	19	6	6	5	3	5	3	5	2	3
38	15	23	9	4	5	4	4	3	4	2	3
38	18	20	2	7	7	3	5	5	3	3	3
38	20	18	4	7	6	4	5	4	2	2	4
38	18	20	7	3	7	4	6	3	4	2	2
38	20	18	6	5	6	2	6	4	4	4	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
38	21	17	4	5	6	4	6	4	5	2	2
38	21	17	4	6	5	6	6	6	2	2	1
38	18	20	5	6	7	7	3	3	3	2	2
38	23	15	6	5	6	6	5	2	5	2	1
38	18	20	7	5	6	4	5	4	4	2	1
38	21	17	7	5	7	2	4	3	5	2	2
38	20	18	5	6	7	4	4	4	3	3	2
38	19	19	7	6	6	4	3	5	5	1	1
38	22	16	3	6	4	8	5	4	3	2	3
38	16	22	4	5	7	3	6	5	5	2	1
38	18	20	7	5	8	6	3	1	3	3	2
38	16	22	6	5	7	4	3	2	4	4	3
38	17	21	7	2	7	2	4	8	3	2	3
38	19	18	6	4	6	5	3	4	4	3	3
38	18	20	6	5	8	1	2	4	5	5	2
38	20	18	6	4	5	5	6	4	5	0	3
38	20	18	6	5	6	5	2	6	3	3	2
38	21	17	6	5	7	5	4	2	5	2	2
38	21	17	5	4	4	10	6	1	3	3	2
38	17	21	6	0	6	6	6	2	5	3	4
38	15	23	8	4	9	3	3	3	3	3	2
38	17	21	8	4	4	5	4	3	3	4	3
38	15	23	10	6	4	3	2	1	3	6	3
38	18	20	7	4	10	2	4	2	4	2	3
38	18	20	6	4	8	3	7	6	1	2	1
38	16	22	9	4	3	6	5	4	1	3	3
38	16	22	8	5	6	7	5	1	2	2	2
38	16	22	4	1	10	5	7	4	3	2	2
38	18	20	7	3	6	5	7	3	3	1	3
38	20	18	7	2	2	8	7	4	3	3	2
38	19	19	5	0	6	5	7	3	4	4	4
38	18	20	6	4	7	5	4	4	5	1	2
38	16	22	1	4	8	6	7	6	3	0	3
38	17	21	9	1	5	7	4	3	3	4	2
37	19	18	7	5	8	5	4	4	4	1	3
37	15	22	4	3	8	1	6	5	6	4	0
37	19	18	5	5	6	2	4	6	3	3	3
37	20	17	6	4	4	6	4	3	4	3	3
37	20	17	6	4	8	5	3	4	3	1	3
37	16	21	6	4	8	5	6	2	2	2	2
37	20	17	6	5	7	4	4	5	1	2	3
37	17	20	4	7	9	3	0	5	5	3	1
37	18	19	3	5	10	1	4	4	6	2	2
37	20	17	4	4	6	5	4	5	5	2	2
37	18	19	6	3	9	2	6	3	3	3	2
37	19	18	5	5	7	6	3	3	5	2	1
37	21	16	3	7	5	5	7	3	2	2	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
37	18	19	7	5	7	4	2	3	3	3	3
37	20	17	5	8	8	2	5	6	1	1	1
37	18	19	6	7	4	4	6	5	3	1	1
37	17	20	6	4	6	6	4	2	3	3	3
37	17	20	4	4	4	4	5	6	2	4	4
37	19	18	6	3	8	1	5	7	3	5	0
37	18	19	6	3	6	7	4	4	2	4	1
37	21	16	6	6	6	6	4	4	2	1	2
37	19	18	3	7	6	4	5	4	2	2	4
37	17	20	6	2	10	2	6	6	2	1	2
37	18	19	4	4	6	6	4	3	5	3	2
37	18	19	6	6	8	4	2	3	2	4	2
37	22	15	3	4	4	6	6	6	4	3	1
37	19	18	2	8	9	3	2	3	4	4	2
37	17	20	7	3	6	4	5	6	1	3	2
37	16	21	5	5	5	5	7	2	2	3	3
37	16	21	3	6	7	2	5	4	3	6	1
37	16	21	5	5	7	3	4	4	5	1	3
37	15	22	7	5	5	3	5	1	3	3	3
37	19	18	5	4	7	2	7	3	3	3	3
37	19	18	8	4	6	6	5	2	1	3	2
37	17	20	7	4	6	4	2	4	4	3	3
37	17	20	8	5	8	4	5	1	3	3	0
37	17	20	7	5	3	4	5	3	3	2	2
37	19	18	7	2	6	6	2	5	5	3	1
37	17	20	7	4	7	5	3	3	2	3	3
37	19	18	6	5	7	6	3	4	3	1	2
37	20	17	7	3	4	3	6	5	6	1	2
37	18	19	8	6	7	4	4	3	2	1	2
37	20	17	6	4	5	6	4	3	3	4	2
37	21	16	7	6	7	4	4	3	1	3	2
37	18	19	5	3	4	6	5	4	5	3	2
37	17	20	2	7	8	7	2	3	5	2	1
37	16	21	6	4	4	4	4	5	4	2	4
37	17	20	5	5	5	4	2	7	1	6	2
37	17	20	10	5	7	3	6	0	4	0	2
37	17	20	6	2	3	7	6	8	2	1	2
37	18	19	7	7	5	3	4	2	4	2	3
37	20	17	3	5	5	6	6	6	2	3	1
37	18	19	3	2	2	8	7	8	2	2	3
37	19	18	4	3	2	7	7	5	1	4	4
37	20	17	6	4	5	1	8	6	5	1	3
37	16	21	6	4	4	6	5	3	3	4	2
37	17	20	9	1	8	3	1	5	3	5	3
37	18	19	5	0	0	10	5	5	3	6	3
37	15	22	8	7	2	3	8	5	2	1	1
37	18	19	8	6	6	0	6	6	4	1	0
37	20	17	6	0	7	5	6	5	2	2	4
36	17	19	5	5	5	4	5	4	3	2	3
36	17	19	6	5	5	4	3	3	4	3	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
36	17	19	8	5	5	3	5	3	4	2	1
36	18	18	6	2	4	7	3	4	4	3	3
36	19	17	5	5	5	5	4	5	3	2	2
36	16	20	4	4	6	3	7	5	2	4	1
36	16	20	6	3	8	5	5	2	3	3	1
36	18	18	5	4	5	5	6	3	3	3	2
36	19	17	6	5	4	4	3	3	4	3	4
36	17	19	5	5	4	5	4	4	2	3	4
36	20	16	3	4	8	7	3	2	2	5	2
36	19	17	3	3	4	6	4	4	7	5	3
36	16	20	9	2	8	0	7	5	5	3	2
36	20	16	5	5	5	7	4	4	3	3	0
36	18	18	4	4	6	6	3	3	5	3	2
36	20	16	6	6	4	6	6	3	1	2	2
36	19	17	8	2	2	3	5	4	2	6	4
36	17	19	3	4	9	6	5	2	5	2	0
36	19	17	7	4	7	4	5	2	2	2	3
36	19	17	6	5	5	6	3	2	5	1	3
36	20	16	4	5	5	3	4	5	4	2	4
36	16	20	5	5	6	6	2	4	4	2	2
36	17	19	4	4	7	1	7	4	5	3	1
36	18	18	4	5	6	2	6	4	5	1	2
36	18	18	5	4	4	6	2	5	4	3	3
36	18	18	3	3	7	4	6	3	6	2	2
36	19	17	2	7	4	6	3	4	4	3	3
36	18	18	6	3	5	4	3	4	4	3	1
36	16	20	5	6	7	4	3	1	5	4	1
36	16	20	7	4	6	2	7	2	3	2	3
36	19	17	7	7	7	3	3	4	3	1	1
36	18	18	4	3	6	5	5	3	5	3	2
36	19	17	6	4	3	6	4	2	4	3	3
36	16	20	4	4	8	6	5	3	4	2	0
36	19	17	2	3	7	6	5	6	2	4	1
36	18	18	6	6	3	5	5	2	5	2	2
36	18	18	4	5	4	3	5	3	5	3	4
36	16	20	5	2	9	2	6	3	5	1	3
36	17	19	6	4	5	7	4	2	3	2	3
36	15	21	4	5	5	5	5	5	4	3	0
36	20	16	1	4	10	4	5	5	4	1	2
36	18	18	6	7	10	3	0	3	4	2	1
36	16	20	4	5	6	3	4	5	5	1	3
36	18	18	5	5	7	3	4	4	4	2	2
36	17	19	5	4	5	2	4	6	4	5	1
36	20	16	2	4	8	1	4	7	6	2	4
36	18	18	6	4	6	4	5	3	2	4	2
36	19	17	7	6	6	3	2	3	3	5	1
36	16	20	5	4	6	6	3	3	5	1	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
36	18	18	8	6	5	3	3	1	3	6	1
36	20	16	3	5	5	6	6	5	2	2	2
36	16	20	9	5	9	1	1	4	2	2	3
36	18	18	4	2	4	5	7	7	3	2	2
36	17	19	6	3	5	8	4	4	2	3	1
36	19	17	6	3	7	5	5	5	2	2	1
36	18	18	9	4	0	8	1	6	3	2	3
36	17	19	2	1	3	9	4	7	3	5	2
36	16	20	4	3	3	4	7	5	4	3	3
36	16	20	5	2	3	3	7	6	3	3	4
36	19	17	7	4	6	5	6	2	1	3	2
36	16	20	7	5	5	4	5	3	1	3	3
36	18	18	3	5	2	10	3	3	3	4	3
36	19	17	5	3	0	8	6	4	1	4	5
35	18	17	6	4	8	3	4	2	3	4	1
35	16	19	8	5	6	2	0	3	4	6	1
35	21	14	4	6	6	3	5	3	1	4	3
35	19	16	3	8	6	3	2	3	4	5	1
35	15	20	5	3	6	7	3	2	4	3	2
35	20	15	4	3	6	6	4	4	5	3	0
35	15	20	4	3	9	1	4	3	6	2	3
35	18	17	2	7	5	3	2	4	7	3	2
35	19	16	5	6	4	6	3	4	2	2	3
35	16	19	6	3	8	6	4	3	2	2	1
35	20	15	6	7	8	3	2	3	3	1	2
35	21	14	5	6	4	5	5	3	3	2	2
35	14	21	4	5	5	3	4	8	2	0	4
35	16	19	2	1	7	7	5	4	2	5	2
35	16	19	4	2	6	2	6	5	5	3	2
35	19	16	6	3	7	5	4	4	2	2	2
35	16	19	4	7	6	6	4	2	3	2	1
35	19	16	2	7	6	6	6	1	1	2	4
35	18	17	6	6	7	4	5	1	2	2	2
35	19	16	4	6	7	7	4	3	1	2	1
35	15	20	6	4	5	2	5	4	1	1	2
35	18	17	4	7	9	4	0	4	4	2	1
35	16	19	6	3	6	6	2	4	2	4	2
35	15	20	10	4	8	0	5	2	3	1	2
35	15	20	7	4	4	6	3	4	3	3	1
35	20	15	6	5	5	6	3	5	2	1	2
35	17	18	7	1	4	2	4	8	3	3	3
35	20	15	4	3	7	6	4	2	4	3	2
35	20	15	4	4	4	6	5	5	4	3	0
35	15	20	8	2	8	5	5	3	4	0	0
35	17	18	3	6	8	3	4	5	4	0	2
35	16	17	5	3	6	5	4	4	4	2	2
35	18	17	4	5	3	6	5	5	4	2	1
35	17	18	4	7	10	3	0	5	3	2	1
35	17	18	2	6	4	5	4	6	4	2	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
35	21	14	5	6	3	5	4	2	3	3	4
35	17	18	8	6	5	5	3	3	2	2	1
35	19	16	6	4	4	6	4	2	4	3	2
35	17	18	6	4	3	6	4	2	4	3	3
35	15	20	4	1	9	5	6	4	3	2	1
35	20	15	2	2	7	4	7	5	4	2	2
35	15	20	7	4	2	1	5	5	2	5	4
35	18	17	5	6	7	3	3	5	3	0	3
35	15	20	8	2	7	1	4	5	2	2	4
35	18	17	2	6	8	5	6	1	3	2	2
35	18	17	6	3	9	8	6	3	3	2	1
35	15	20	6	7	2	1	4	5	2	4	4
35	18	17	9	6	5	4	5	4	1	0	1
35	17	18	2	2	8	5	5	4	5	2	2
35	18	17	7	4	5	8	2	1	3	3	2
35	18	17	6	6	5	6	4	2	4	1	1
35	18	17	5	6	7	3	5	3	3	2	1
35	19	16	6	5	5	5	2	3	3	2	4
35	16	19	7	6	6	3	2	3	3	5	1
35	17	18	5	4	3	5	5	6	3	3	1
35	16	19	9	3	5	5	2	4	4	1	2
35	16	19	6	5	8	3	4	3	3	0	3
35	16	19	9	6	1	5	1	5	3	3	2
35	18	17	7	5	5	1	5	6	1	3	2
35	17	18	10	2	4	8	3	2	3	1	2
35	18	17	3	6	1	7	6	5	2	2	3
35	13	22	7	5	3	1	5	3	3	2	3
35	18	17	8	5	6	4	1	4	2	2	3
35	19	16	5	3	5	5	5	3	6	3	3
35	16	19	6	3	5	3	6	5	2	3	2
35	17	18	4	3	8	2	7	4	2	3	2
35	19	16	7	1	1	5	6	5	2	4	4
35	17	18	6	5	7	6	1	2	2	4	2
35	16	19	6	2	6	4	8	5	1	2	1
35	18	17	5	5	9	5	1	2	0	5	3
35	18	17	5	2	7	2	4	5	4	3	3
35	17	18	9	4	4	1	7	5	0	3	2
35	18	17	2	1	8	5	5	6	2	3	3
35	17	18	8	4	2	5	2	4	5	3	2
35	16	19	7	2	8	2	3	5	2	4	2
35	18	17	4	3	3	5	7	3	3	2	3
34	19	15	4	5	5	5	4	2	2	4	3
34	17	17	5	4	6	5	3	2	4	2	3
34	18	16	4	5	5	5	4	3	3	2	3
34	17	17	4	4	5	4	5	4	2	3	3
34	20	14	3	3	7	4	5	5	2	2	3
34	16	18	5	6	6	0	4	4	3	3	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
34	17	17	3	5	7	3	5	2	5	3	1
34	18	16	6	2	3	5	5	7	3	1	2
34	17	17	3	5	4	6	4	3	3	4	2
34	18	16	6	3	7	0	3	4	5	4	2
34	17	17	3	5	7	4	4	4	4	3	0
34	18	16	4	6	7	6	4	3	2	1	1
34	17	17	3	5	8	7	5	2	3	0	1
34	16	18	6	1	6	6	4	2	4	4	1
34	15	19	4	6	7	3	5	5	1	2	1
34	18	16	5	2	9	5	4	2	1	5	1
34	15	19	5	5	6	6	4	1	2	3	2
34	15	19	6	5	7	3	4	3	1	2	3
34	14	20	7	4	5	5	2	3	6	1	1
34	16	18	7	4	6	1	3	8	2	1	3
34	15	19	5	1	4	5	6	4	3	4	2
34	16	18	4	4	5	6	2	6	4	1	2
34	17	17	6	7	7	4	1	4	3	2	0
34	18	16	3	5	4	5	6	7	2	2	0
34	17	17	5	2	4	5	7	3	3	3	2
34	16	18	1	6	8	2	6	3	3	3	2
34	17	17	6	4	6	4	3	4	2	4	1
34	15	19	7	5	6	7	4	3	1	1	0
34	17	17	4	1	7	3	4	4	4	5	2
34	16	18	8	5	5	4	2	3	5	2	0
34	18	16	4	3	5	3	7	4	3	3	2
34	16	18	3	4	6	7	4	1	2	4	3
34	18	16	5	2	9	4	1	3	5	2	3
34	17	17	5	3	5	4	5	5	2	3	2
34	17	17	5	4	4	4	1	6	4	4	2
34	17	17	3	5	7	3	5	2	4	3	2
34	16	18	7	5	8	3	4	3	3	0	3
34	15	19	5	4	3	6	3	4	5	2	2
34	18	16	6	4	6	3	4	3	2	5	1
34	19	15	6	6	6	3	4	2	3	2	2
34	18	16	4	4	7	5	3	2	4	1	4
34	16	18	6	4	6	5	3	2	5	1	2
34	19	15	6	6	2	9	4	4	4	3	1
34	17	17	6	2	6	3	4	3	6	3	1
34	17	17	8	4	4	4	5	2	2	0	5
34	17	17	5	6	7	3	3	4	3	2	1
34	16	18	8	5	2	2	4	6	2	3	2
34	18	16	6	3	5	6	5	2	4	2	1
34	19	15	3	7	7	5	3	5	1	1	2
34	16	18	6	5	5	3	7	5	2	1	0
34	18	16	6	3	6	7	3	2	4	1	2
34	19	15	5	5	5	3	3	3	3	3	4
34	15	19	2	4	4	5	4	2	4	5	4
34	15	19	9	3	0	2	6	4	4	3	3
34	17	17	7	2	4	8	2	4	2	2	3
34	16	18	8	2	6	5	4	2	3	2	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
34	15	19	6	2	6	5	7	5	1	1	1
34	16	18	7	4	6	5	2	3	2	1	4
34	18	16	5	4	0	7	4	4	1	5	4
34	19	15	7	5	1	2	2	3	2	4	2
34	17	17	8	2	3	5	3	3	4	3	3
34	16	18	3	4	7	3	3	4	2	5	3
34	17	17	5	5	3	4	6	4	2	3	2
33	17	16	3	3	6	3	5	4	4	3	2
33	16	17	2	2	9	1	6	5	4	2	2
33	18	15	8	4	5	5	3	3	2	2	1
33	16	17	2	2	9	1	6	5	4	2	2
33	18	15	7	5	6	2	3	1	4	2	3
33	18	15	3	3	7	4	5	2	4	3	2
33	15	18	4	5	6	1	3	2	4	5	2
33	17	16	5	7	2	3	2	4	3	2	5
33	15	18	6	4	3	5	2	4	3	2	4
33	16	17	6	3	8	6	4	2	2	2	0
33	19	14	6	6	6	0	6	3	4	1	1
33	15	18	5	3	7	3	4	4	4	2	1
33	17	16	5	6	5	4	2	3	4	2	2
33	15	18	5	3	4	6	2	3	3	4	3
33	16	17	5	3	6	5	4	3	4	2	1
33	17	16	6	3	8	1	6	5	1	1	2
33	16	17	7	3	5	4	4	2	3	3	2
33	16	17	4	6	5	3	4	2	2	4	3
33	18	15	7	2	6	3	4	2	4	3	2
33	15	18	3	2	6	5	4	5	3	3	2
33	18	15	6	3	4	4	4	2	4	3	3
33	16	17	7	7	4	5	1	0	4	4	1
33	16	17	5	5	7	4	4	3	1	1	3
33	17	16	5	1	10	4	2	5	4	1	1
33	16	17	3	5	4	5	5	7	2	2	0
33	15	18	4	2	5	5	3	3	4	5	2
33	16	17	4	3	5	6	2	5	3	3	2
33	15	18	3	7	4	3	4	5	4	3	1
33	15	18	0	1	8	8	6	2	2	5	1
33	18	15	6	5	1	8	4	4	1	2	2
33	16	17	4	1	4	4	6	2	5	2	1
33	16	17	6	6	6	2	5	4	3	1	2
33	16	17	5	4	7	0	4	5	3	3	2
33	18	15	4	3	5	2	4	5	2	5	3
33	16	17	4	6	6	6	2	5	4	3	1
33	16	17	5	4	7	0	4	5	3	3	2
33	19	14	4	3	5	2	4	5	2	5	3
33	16	17	3	5	6	4	5	1	0	6	3
33	15	19	3	2	1	4	4	2	2	2	3
33	18	15	5	4	5	5	4	3	3	3	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
33	17	16	5	4	6	3	5	4	2	2	2
33	17	16	3	5	7	3	5	2	4	3	2
33	15	18	4	3	5	4	5	4	5	3	0
33	16	17	3	7	7	2	3	1	3	4	3
33	15	18	5	3	5	6	2	4	4	2	2
33	15	18	4	3	4	5	4	4	4	2	1
33	16	17	3	2	8	3	7	3	3	2	2
33	15	18	5	3	7	4	5	4	2	1	2
33	17	16	6	3	5	6	5	3	2	1	2
33	16	17	5	5	6	5	4	3	2	2	1
33	17	16	6	2	5	3	4	4	5	3	1
33	18	15	3	5	7	5	4	2	2	2	3
33	15	18	3	3	5	5	5	4	4	2	2
33	18	15	4	4	7	4	4	2	3	2	3
33	18	15	3	4	5	5	5	4	4	2	1
33	16	17	7	2	5	5	3	4	2	3	2
33	15	18	8	4	3	3	5	2	4	1	3
33	16	17	4	3	8	5	4	1	5	3	0
33	15	18	4	7	3	1	5	8	2	1	2
33	17	16	6	6	5	4	3	4	2	1	3
33	18	15	5	2	7	8	3	2	2	3	1
33	14	19	5	5	5	5	7	2	1	1	2
33	16	17	9	4	4	5	2	5	2	2	0
33	16	17	5	6	7	3	3	2	2	2	3
33	16	17	6	5	6	4	3	2	4	3	0
33	16	17	7	5	4	2	5	5	1	2	1
33	16	17	6	5	6	2	4	4	2	2	2
33	15	18	4	3	4	6	5	5	2	2	2
33	14	19	6	4	4	6	4	5	1	1	2
33	15	18	6	1	6	2	7	2	2	1	6
33	14	19	5	5	5	3	3	5	3	2	2
33	16	17	1	5	6	6	5	3	2	5	0
33	16	17	2	6	4	3	7	5	1	1	4
33	16	17	6	6	7	5	4	2	3	0	0
33	18	15	3	2	6	5	4	4	4	2	3
33	19	14	0	2	3	5	7	4	5	4	3
33	18	15	9	5	5	2	2	2	2	5	4
33	16	17	4	2	3	5	6	4	4	3	2
33	17	16	3	3	3	6	6	4	4	3	4
33	15	18	8	5	5	1	2	2	2	5	3
33	16	17	3	2	7	4	6	6	2	1	2
33	14	19	6	4	3	5	5	4	0	3	3
33	15	18	3	6	5	5	4	5	3	2	0
33	17	16	0	5	7	4	7	3	4	0	3
33	18	15	5	7	7	6	3	1	2	2	0
32	16	16	4	1	7	8	5	3	4	3	1
32	17	15	5	5	5	4	4	3	4	1	1
32	14	18	4	4	6	3	2	4	3	5	1
32	17	15	6	4	7	3	2	4	4	1	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
32	16	16	3	4	3	3	7	4	2	5	1
32	18	14	6	1	1	7	4	3	3	5	1
32	18	14	5	5	6	2	2	3	4	3	2
32	16	16	6	4	3	5	2	3	2	4	3
32	15	17	4	6	4	2	3	4	4	3	2
32	17	15	5	5	3	4	3	3	4	2	3
32	16	16	5	4	3	3	4	3	4	4	2
32	19	13	4	5	3	4	7	2	2	4	1
32	13	19	3	6	7	2	3	1	3	4	3
32	16	16	4	4	7	3	4	4	2	1	3
32	16	16	5	5	6	2	3	3	3	3	2
32	13	19	4	3	6	2	5	4	2	3	3
32	17	15	4	0	6	4	7	4	4	3	0
32	16	16	3	5	7	4	2	3	4	2	2
32	14	18	2	6	7	1	2	3	2	6	3
32	15	17	7	5	6	1	4	2	2	3	2
32	13	19	6	3	5	5	5	4	2	0	2
32	19	13	5	7	5	6	2	2	1	3	1
32	17	15	6	3	2	3	5	3	1	5	4
32	17	15	4	3	5	2	5	3	4	3	3
32	16	16	3	6	7	2	2	1	3	5	3
32	13	19	8	2	6	2	5	4	1	3	1
32	17	15	3	3	5	4	5	1	5	4	2
32	15	17	4	4	7	7	4	2	2	1	1
32	16	16	6	5	8	4	1	1	2	2	3
32	18	14	5	3	4	3	6	4	2	3	2
32	16	16	5	3	6	2	6	3	3	2	2
32	14	18	3	3	8	4	4	3	4	2	1
32	16	16	3	2	7	5	3	2	5	4	1
32	14	18	8	5	4	4	4	3	2	1	1
32	16	16	2	4	6	4	6	6	1	2	1
32	15	17	5	4	7	3	6	3	1	2	1
32	15	17	3	4	7	1	3	4	5	2	3
32	13	19	3	3	5	6	4	7	1	2	1
32	20	12	3	4	5	6	4	2	4	3	1
32	14	18	2	5	7	2	2	3	2	6	3
32	14	18	5	3	5	5	2	5	3	2	2
32	14	18	4	7	5	3	3	4	1	2	3
32	16	16	3	3	6	1	7	4	4	1	3
32	15	17	3	4	6	2	7	4	4	1	1
32	16	16	3	7	6	0	6	2	2	5	1
32	17	15	3	4	3	3	5	4	3	2	5
32	17	15	6	2	6	5	5	3	5	3	0
32	16	16	8	5	4	3	2	5	3	2	0
32	16	16	5	5	6	5	3	6	1	1	0
32	19	13	3	3	7	3	6	4	4	0	2
32	17	15	6	5	4	3	3	3	3	2	3
32	12	20	3	6	6	0	4	4	6	2	1
32	16	16	4	5	6	0	1	4	5	5	2

Score	Even	Odd	1	2	3	4	5	6	7	8	09
32	16	16	4	5	6	0	1	4	5	5	2
32	16	16	4	5	7	3	5	3	3	2	0
32	16	16	4	6	6	4	4	3	2	1	2
32	17	15	1	6	7	7	4	2	2	2	1
32	13	19	6	4	6	5	5	1	2	3	0
32	15	17	3	7	4	2	4	5	3	2	2
32	16	16	5	5	5	5	0	3	4	1	4
32	12	20	8	5	3	4	6	3	2	0	1
32	17	15	1	5	3	5	3	3	1	3	2
32	16	16	9	2	5	3	2	1	3	3	4
32	14	18	5	1	4	2	5	6	2	4	3
32	15	17	5	3	9	3	1	5	1	3	2
32	14	18	3	1	3	8	3	7	1	3	3
32	16	16	8	4	3	2	2	2	2	5	2
32	16	16	3	4	4	4	6	4	1	2	4
32	14	18	7	4	1	5	7	1	2	2	3
31	14	17	5	4	3	3	6	6	2	2	0
31	19	12	6	7	4	4	4	1	4	0	1
31	16	15	7	6	6	1	2	5	2	1	1
31	15	16	6	7	4	3	3	4	1	2	1
31	17	14	4	6	4	3	2	2	4	3	3
31	16	15	5	4	7	4	3	3	1	2	2
31	17	14	3	2	5	4	5	5	2	2	3
31	13	18	5	2	7	2	4	4	5	2	1
31	12	19	2	4	5	3	6	7	2	2	0
31	16	15	4	4	7	1	5	3	4	2	1
31	15	16	2	2	6	5	5	3	4	4	1
31	17	14	3	2	7	3	4	5	3	2	2
31	18	13	4	4	6	6	1	3	3	5	0
31	16	15	3	4	7	3	3	4	2	3	2
31	18	13	5	3	6	2	1	4	3	4	3
31	13	18	3	2	6	3	3	3	3	4	4
31	15	16	6	1	5	2	4	3	4	5	1
31	14	17	5	4	4	4	4	1	3	2	4
31	15	16	6	1	3	3	4	3	6	4	1
31	16	15	7	3	5	4	3	3	3	3	0
31	16	15	6	3	4	3	4	4	2	3	2
31	20	11	4	4	4	3	5	4	4	3	0
31	18	13	5	2	6	4	3	4	2	2	3
31	14	17	5	5	4	4	1	4	4	3	1
31	14	17	4	2	6	3	4	5	2	4	1
31	11	20	6	4	4	2	6	0	3	3	3
31	15	16	5	4	3	7	3	3	2	4	0
31	17	14	2	6	7	3	4	3	2	1	1
31	16	15	6	6	6	3	0	5	3	2	0
31	15	16	3	3	8	4	4	3	4	2	0
31	17	14	5	1	6	5	5	4	3	1	1
31	14	17	4	3	3	3	6	3	5	3	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
31	11	20	1	2	3	3	2	4	3	1	2
31	14	17	4	3	6	3	3	6	2	3	1
31	16	15	3	6	4	4	5	3	1	2	3
31	19	12	3	4	7	3	5	3	1	3	2
31	14	17	4	5	6	7	2	3	3	5	1
31	14	17	5	4	6	4	0	4	3	4	1
31	17	14	6	3	6	3	2	2	3	1	5
31	15	16	2	5	5	5	6	6	1	1	0
31	14	17	4	3	6	5	3	4	0	5	1
31	13	18	5	6	4	3	4	1	3	2	3
31	13	18	6	4	7	3	3	4	0	3	1
31	15	16	2	3	7	2	4	5	4	1	3
31	15	16	3	2	5	4	4	4	2	4	3
31	13	18	5	2	2	4	4	7	2	3	2
31	16	15	3	2	6	5	3	4	4	3	1
31	15	16	2	3	8	1	2	4	5	4	2
31	17	14	7	5	3	4	3	3	1	3	2
31	14	17	3	7	4	2	4	5	3	2	1
31	14	17	7	4	6	1	5	3	2	1	2
31	16	15	7	5	3	5	3	3	1	3	1
31	14	17	6	3	6	4	7	2	1	2	0
31	13	18	5	6	6	2	3	3	3	1	2
31	15	16	4	3	9	4	4	2	2	3	0
31	15	16	6	5	2	3	5	2	4	1	3
31	15	16	7	3	1	3	4	4	3	3	3
31	16	15	5	3	5	3	5	3	3	1	3
31	15	16	6	4	5	6	3	1	2	2	2
31	16	15	9	2	0	8	1	4	3	2	2
31	15	16	8	6	3	1	3	2	2	4	2
31	12	19	6	3	5	5	5	2	2	3	0
31	15	16	8	7	5	0	2	0	4	1	4
31	16	15	5	4	5	4	3	2	5	1	2
30	14	16	5	5	4	2	2	4	1	5	2
30	14	16	6	5	5	2	1	3	3	3	2
30	14	16	5	4	3	3	4	6	1	3	1
30	19	11	6	2	7	2	4	0	3	2	3
30	15	15	6	3	4	4	4	4	2	1	2
30	15	15	5	6	5	3	2	1	3	3	2
30	16	14	3	2	7	4	4	2	3	3	2
30	16	14	3	3	6	4	6	3	2	2	1
30	17	13	6	5	6	3	2	2	0	5	1
30	16	14	3	3	6	4	4	4	4	1	1
30	14	16	5	4	6	4	2	4	2	2	1
30	13	17	2	2	8	3	4	5	3	2	1
30	12	18	2	6	7	3	3	1	4	2	2
30	17	13	4	4	8	2	2	5	2	3	0
30	14	16	2	3	3	3	4	3	2	0	0
30	15	15	4	5	5	6	4	3	1	2	0
30	15	15	2	2	7	4	3	4	5	2	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
30	16	14	4	4	5	4	6	3	1	1	2
30	15	15	4	3	5	3	4	1	4	4	2
30	13	17	5	2	6	4	3	3	2	3	2
30	13	17	6	4	5	3	5	3	3	1	0
30	15	15	3	5	5	1	4	1	3	6	2
30	14	16	6	6	4	2	1	4	4	2	1
30	14	16	4	5	2	2	2	2	4	5	4
30	15	15	4	5	4	5	3	6	1	0	2
30	14	16	3	2	7	1	5	4	5	2	1
30	15	15	3	2	3	3	5	6	3	3	2
30	15	15	4	4	4	5	3	2	4	2	2
30	16	14	9	4	7	3	0	2	3	0	2
30	13	17	5	5	6	2	2	1	4	3	2
30	16	14	3	5	5	4	4	1	3	3	1
30	16	14	3	4	4	6	3	4	2	3	1
30	17	13	3	5	5	5	2	2	3	2	3
30	14	16	4	3	5	4	4	4	0	5	1
30	17	13	4	3	7	1	3	6	3	2	1
30	14	16	3	7	7	2	2	4	0	3	2
30	17	13	2	6	5	5	3	2	4	1	2
30	17	13	2	2	5	3	4	6	2	4	2
30	17	13	3	4	4	2	4	4	2	6	1
30	13	17	4	5	7	0	3	2	2	5	2
30	14	16	6	5	3	5	4	2	1	2	2
30	14	16	5	5	5	1	5	2	3	2	2
30	14	16	5	5	5	1	5	2	3	2	2
30	17	13	4	4	4	5	4	3	2	1	3
30	15	15	7	4	5	5	3	3	3	1	0
30	17	13	7	4	6	0	3	4	2	3	1
30	15	15	3	5	6	6	4	2	3	1	0
30	13	17	3	3	7	2	3	3	5	3	1
30	13	17	7	5	5	4	1	3	1	2	2
30	15	15	6	4	5	3	4	4	1	1	2
30	16	14	2	3	1	2	4	5	3	2	3
30	15	15	5	3	6	2	5	4	1	2	2
30	12	18	7	4	6	4	1	3	3	1	1
30	14	16	5	5	4	4	2	2	3	4	1
30	15	15	2	6	7	1	2	4	3	3	2
30	18	12	4	4	5	6	2	4	1	2	2
30	17	13	6	6	6	3	3	1	0	2	3
30	13	17	3	6	4	2	4	5	3	2	1
30	16	14	6	5	5	2	3	3	2	1	3
30	15	15	5	5	4	3	3	3	4	2	1
30	13	17	5	6	4	2	2	3	3	3	2
30	15	15	2	5	3	4	2	3	3	4	4
30	13	17	3	5	2	6	4	2	4	2	2
30	16	14	6	6	6	3	4	1	3	1	0
30	13	17	6	2	5	3	1	5	1	4	3
30	16	14	4	3	3	3	6	2	1	3	3
30	16	14	5	3	3	4	4	6	2	1	2
30	12	18	5	2	5	5	3	3	2	3	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
30	15	15	4	4	2	5	5	4	0	4	2
30	16	14	4	3	5	3	4	2	3	2	4
29	15	14	6	7	4	6	0	0	0	2	4
29	15	14	4	4	5	3	3	3	4	2	1
29	12	17	4	5	2	3	4	4	2	4	1
29	14	15	4	2	5	3	4	4	3	0	2
29	14	15	3	4	6	5	2	2	2	4	1
29	17	12	6	2	6	2	3	3	3	1	5
29	18	11	6	3	5	3	2	4	2	2	2
29	16	13	3	2	1	5	7	3	3	3	2
29	16	13	6	7	7	1	1	2	3	1	1
29	16	13	6	4	5	2	3	2	6	0	1
29	15	14	4	4	5	3	4	4	2	1	2
29	13	16	2	3	7	4	2	3	5	1	2
29	16	13	4	2	5	1	5	5	4	2	1
29	15	14	7	5	5	2	2	2	2	2	2
29	11	18	6	5	3	2	5	2	2	2	2
29	14	15	4	4	4	2	3	4	5	3	0
29	14	15	6	1	6	5	1	3	2	2	3
29	14	15	6	3	4	4	2	2	3	3	2
29	14	15	5	6	4	1	3	3	3	2	2
29	12	17	6	6	4	2	1	4	2	2	2
29	11	18	5	3	4	2	5	2	4	2	2
29	18	11	4	6	5	4	3	2	3	1	1
29	14	15	2	5	6	6	3	3	1	2	1
29	16	13	4	4	4	1	5	3	2	4	2
29	12	17	4	1	4	4	4	4	2	4	2
29	15	14	6	4	6	2	2	2	3	1	3
29	15	14	3	4	4	5	3	6	1	2	1
29	14	15	6	4	6	3	3	4	1	2	0
29	15	14	4	2	5	4	5	3	2	4	0
29	15	14	5	3	2	6	6	3	0	2	2
29	15	14	3	5	6	4	4	2	3	1	1
29	13	16	3	5	8	1	0	4	3	2	1
28	17	12	6	2	2	3	5	3	5	3	1
29	12	17	7	4	3	1	3	1	3	3	4
29	11	18	0	4	5	3	6	4	5	2	0
29	17	12	3	2	6	3	5	2	4	1	3
29	10	19	3	1	6	4	6	3	2	3	1
29	16	13	6	3	3	2	5	5	2	1	2
29	15	14	4	2	4	3	7	4	3	0	2
29	14	15	5	4	3	4	3	4	4	0	2
29	12	17	4	3	7	4	2	2	5	1	1
29	15	14	2	4	7	3	4	3	4	1	1
29	15	14	8	3	3	2	4	2	2	4	1
29	17	12	4	3	7	1	3	6	2	2	1
29	16	13	6	4	6	3	4	1	3	1	1
29	13	16	2	1	10	2	3	3	4	3	1
29	14	15	6	5	4	4	4	2	1	1	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
29	18	11	7	1	3	3	3	5	4	2	1
29	11	18	5	4	6	5	1	2	2	1	3
29	15	14	6	7	5	2	2	4	0	1	2
29	11	18	6	1	4	4	3	6	3	2	0
29	17	12	2	6	5	5	3	2	3	2	1
29	14	15	4	3	4	4	5	4	4	1	0
29	17	12	4	2	5	7	3	2	1	3	2
29	14	15	3	3	8	2	2	5	2	3	1
29	16	13	2	6	6	2	5	2	2	2	2
29	15	14	6	3	4	5	3	4	1	1	2
29	15	14	6	4	4	3	4	2	3	2	1
29	17	12	7	5	4	1	2	2	3	2	3
29	15	14	3	6	6	3	5	1	2	1	2
29	15	14	5	6	3	2	3	4	2	2	2
29	16	13	5	5	3	4	4	3	2	1	2
29	16	13	6	3	7	3	1	3	2	2	2
29	16	13	5	5	6	2	0	3	2	4	2
29	14	15	3	3	7	5	3	3	1	2	2
29	14	15	4	5	4	2	4	4	2	1	3
29	11	18	3	3	4	4	2	5	4	3	1
29	14	15	6	4	7	2	3	1	3	1	2
29	11	18	3	2	2	5	7	4	0	3	3
29	16	13	3	3	3	4	6	4	1	2	3
29	13	16	6	1	3	5	2	4	4	2	2
29	11	18	7	4	3	2	3	2	3	4	1
29	14	15	4	6	8	1	4	0	4	0	2
28	10	18	7	2	5	0	3	4	4	1	2
28	11	17	8	4	3	3	3	2	3	2	0
28	13	15	8	2	5	1	2	1	5	1	3
28	14	14	5	2	6	4	3	1	1	3	3
28	14	14	6	4	3	2	4	4	2	1	2
28	16	12	4	3	3	2	5	5	4	1	1
28	13	15	5	5	2	3	2	2	3	3	3
28	11	17	3	6	2	4	3	2	3	3	2
28	12	16	6	3	4	3	4	3	3	1	1
28	14	14	5	4	3	4	3	4	2	2	1
28	13	15	3	5	3	3	3	2	3	3	3
28	15	13	4	4	2	3	2	2	4	3	4
28	14	14	4	3	5	3	2	3	3	3	2
28	11	17	2	7	5	3	5	2	3	1	0
28	12	16	6	3	5	3	1	3	1	4	2
28	14	14	2	3	4	4	2	3	2	4	4
28	12	16	5	4	3	3	3	4	5	0	1
28	12	16	4	3	2	4	2	5	4	3	1
28	14	14	2	2	3	2	4	4	4	3	4
28	16	12	4	3	6	4	3	5	1	2	0
28	15	13	1	5	5	3	3	4	4	1	2
28	14	14	6	2	7	3	5	1	2	1	1
28	14	14	5	3	5	5	3	2	2	2	1
28	16	12	3	3	6	4	3	3	3	1	2
28	13	15	6	3	4	5	2	1	3	2	2

score	Even	Odd	1	2	3	4	5	6	7	8	9
28	16	12	4	4	4	5	3	1	2	2	3
28	14	14	5	4	0	6	2	3	2	4	2
28	13	15	3	1	7	5	2	4	2	2	2
28	14	14	5	4	3	2	5	4	1	5	1
28	14	14	4	3	6	2	4	3	2	1	1
28	12	16	5	2	4	2	4	3	4	1	3
28	13	15	4	0	7	4	7	5	1	1	1
28	12	16	6	4	4	2	3	5	2	0	2
28	15	13	6	3	4	3	2	5	1	3	1
28	14	14	3	1	8	5	3	4	2	1	1
28	13	15	2	3	7	1	3	4	3	2	3
28	15	13	4	4	3	4	5	3	3	2	0
28	17	11	5	3	5	3	3	2	3	3	1
28	14	14	3	2	4	4	2	4	4	2	3
28	17	11	2	6	7	3	6	2	2	2	2
28	13	15	3	2	8	3	5	2	2	2	1
28	14	14	3	3	5	1	3	5	3	4	1
28	16	12	2	4	5	3	4	4	2	2	2
28	16	12	5	4	7	1	3	3	1	1	3
28	18	13	4	6	2	4	4	2	3	1	2
28	16	12	4	3	6	4	4	2	4	1	0
28	17	11	3	2	4	4	3	4	5	2	1
28	15	13	4	6	3	3	2	2	3	2	3
28	13	15	3	4	2	2	5	4	2	4	2
28	12	16	4	2	4	5	3	4	0	5	1
28	13	15	1	4	3	6	2	4	3	3	2
28	16	12	8	1	2	3	5	4	1	3	1
28	17	11	4	5	5	1	3	2	2	4	2
28	16	12	4	2	3	5	1	6	3	3	1
28	13	15	5	3	3	5	5	2	2	2	1
28	15	13	3	4	3	3	3	3	3	3	3
28	14	14	4	5	5	1	5	2	3	1	2
28	15	13	6	2	6	1	3	4	3	1	2
28	15	13	6	4	6	3	1	2	4	1	1
28	13	15	3	3	4	4	2	4	4	2	2
28	13	15	4	6	3	5	4	3	2	1	0
28	11	17	3	5	6	3	3	4	1	3	0
28	17	11	4	3	4	4	4	3	1	2	3
28	16	12	3	3	6	3	4	5	1	2	1
28	15	13	6	3	5	2	3	4	3	1	1
28	16	12	5	3	5	2	4	2	3	3	1
28	16	12	3	3	5	4	3	2	4	3	1
28	15	13	5	6	2	2	2	4	2	3	2
28	13	15	4	5	4	3	3	2	4	2	1
28	14	14	5	4	2	4	3	6	1	2	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
28	17	11	3	4	4	6	4	3	1	2	1
28	16	12	3	4	4	5	3	2	1	3	3
28	13	15	6	4	4	3	3	3	2	1	2
28	14	14	5	2	4	3	4	2	2	2	4
28	12	16	6	2	2	6	3	2	2	2	3
28	17	11	4	3	6	4	3	2	3	2	1
28	18	10	5	3	6	4	2	2	3	2	1
28	10	18	6	4	7	4	2	3	1	0	1
28	14	14	5	4	6	1	4	3	2	1	2
28	12	16	3	5	7	5	4	2	2	0	0
28	12	16	3	1	4	5	4	4	4	2	1
28	15	13	4	4	5	4	2	3	2	3	1
28	13	15	5	5	4	2	4	3	1	1	3
28	12	16	4	3	2	5	5	3	2	2	2
27	12	15	7	2	3	2	4	3	2	3	1
27	13	14	4	7	4	1	4	2	2	2	1
27	12	15	3	5	5	1	5	4	2	1	1
27	15	12	6	3	7	1	2	2	2	3	1
27	12	15	5	3	5	2	4	3	4	0	1
27	13	14	4	4	5	3	3	2	1	2	3
27	11	16	3	4	4	3	1	3	5	1	3
27	14	13	6	3	4	3	2	3	2	3	1
27	11	16	5	2	6	3	4	1	3	1	2
27	14	13	4	3	5	4	2	3	2	2	2
27	14	13	4	3	4	3	3	3	4	1	2
27	13	14	5	2	3	4	2	3	3	2	3
27	15	12	3	3	3	4	2	3	4	3	2
27	16	11	4	4	3	2	3	3	3	2	3
27	13	14	3	4	4	3	5	4	1	1	2
27	17	10	4	3	6	4	2	3	3	1	1
27	12	15	3	5	2	4	3	2	4	3	1
27	17	10	2	3	6	3	2	4	4	3	0
27	14	13	3	2	4	3	4	4	4	2	1
27	13	14	5	3	5	4	4	2	1	3	0
27	11	16	3	5	4	1	5	1	3	1	4
27	16	11	5	1	3	1	5	2	3	4	3
27	14	13	5	6	3	1	5	2	2	2	1
27	16	11	5	8	2	2	0	2	2	6	0
27	15	12	6	2	5	3	2	3	2	2	2
27	17	10	4	2	3	4	5	3	3	1	2
27	10	17	3	1	8	4	3	3	2	3	1
27	14	13	5	3	3	3	3	5	2	1	2
27	16	11	3	2	4	4	6	2	3	0	3
27	12	15	3	3	2	5	3	4	3	2	2
27	15	12	4	4	3	6	3	3	2	2	0
27	13	14	4	5	2	3	5	1	4	3	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
27	14	13	2	5	4	4	1	4	1	2	2
27	17	10	4	7	2	3	2	4	1	1	3
27	12	15	6	5	3	2	2	5	3	1	1
27	10	17	7	2	5	4	4	1	2	2	0
27	12	15	4	4	6	3	1	4	2	2	1
27	15	12	3	3	5	1	5	2	2	2	4
27	17	10	6	3	5	4	0	2	2	4	1
27	16	11	4	3	5	5	2	3	3	1	1
27	15	12	5	4	4	2	2	2	3	2	3
27	13	14	3	4	7	1	3	2	2	4	2
27	14	13	4	4	4	2	2	3	4	3	1
27	12	15	4	5	4	2	3	3	4	1	1
27	14	13	4	5	2	3	4	4	2	2	1
27	13	14	3	5	3	4	1	5	3	2	1
27	11	16	5	5	4	3	3	2	1	2	2
27	11	16	3	1	4	5	3	2	3	4	2
27	12	15	8	2	1	3	4	4	1	3	1
27	14	13	3	3	4	3	4	5	3	2	0
27	14	13	2	2	2	5	1	6	4	4	0
27	14	13	6	3	1	3	4	2	2	4	2
27	13	14	4	6	2	4	1	4	1	5	0
27	14	13	2	5	2	4	0	4	4	3	3
27	16	11	3	3	4	3	2	5	2	3	2
27	10	17	5	4	4	1	4	1	3	4	2
27	12	15	2	2	4	5	2	4	3	2	3
27	12	15	2	4	5	2	4	4	1	2	3
27	13	14	5	4	4	5	2	2	3	1	1
27	12	15	5	5	6	0	3	1	3	1	3
27	13	14	3	4	3	5	4	3	2	1	2
27	13	14	3	6	1	2	4	2	4	1	4
27	15	12	4	4	5	4	2	1	3	3	1
27	12	15	2	4	4	4	3	4	3	1	3
27	13	14	3	4	4	3	5	3	2	2	1
27	13	14	5	5	5	1	1	3	2	2	3
27	12	15	4	6	6	3	2	1	2	1	2
27	16	11	5	5	4	2	4	5	0	1	1
27	12	15	3	4	8	0	5	2	2	1	2
27	13	14	5	6	5	0	1	2	2	2	4
27	14	13	6	3	5	5	2	3	2	3	1
27	14	13	3	4	6	4	4	3	2	0	1
27	12	15	6	2	0	4	2	5	3	2	0
27	13	14	3	8	3	2	0	2	1	2	3
27	14	13	4	2	6	2	4	0	2	5	2
27	11	16	5	3	4	2	1	3	4	4	1
26	11	15	2	5	6	4	3	2	1	1	2
26	10	16	3	4	2	3	4	3	3	2	2
26	11	15	3	2	5	1	3	4	2	3	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
26	14	12	2	3	5	3	4	2	2	3	2
26	14	12	6	5	2	3	2	3	1	3	1
26	14	12	8	2	5	3	3	2	1	2	0
26	11	15	4	2	6	3	2	3	2	3	1
26	13	13	4	4	4	2	3	3	2	2	2
26	11	15	4	3	6	2	4	3	2	2	0
26	13	13	3	4	3	2	5	0	2	2	5
26	15	11	7	3	5	0	4	3	2	1	1
26	12	14	6	3	5	1	5	4	2	0	0
26	12	14	1	4	3	4	3	5	2	3	1
26	17	9	4	3	5	1	3	5	2	2	1
26	15	11	3	1	6	1	3	3	5	2	0
26	12	14	5	3	5	4	3	1	3	0	2
26	12	14	4	4	5	4	1	2	3	1	2
26	16	10	3	3	4	3	3	4	4	0	2
26	14	12	5	3	3	1	3	2	3	3	3
26	12	14	6	2	4	2	4	3	3	1	1
26	12	14	6	2	4	2	4	1	3	2	2
26	13	13	5	2	5	2	4	2	2	2	2
26	10	16	4	5	4	0	3	5	4	1	0
26	14	12	5	2	3	3	5	3	3	1	1
26	10	16	4	4	7	1	5	1	3	1	0
26	16	10	3	2	5	7	3	1	1	2	2
26	14	12	2	5	6	5	2	3	2	0	1
26	15	11	1	2	6	3	4	4	3	1	2
26	14	12	4	4	3	4	4	4	2	1	0
26	12	14	4	2	3	3	6	1	3	0	4
26	13	13	2	4	7	4	3	3	2	1	0
26	14	12	4	3	5	3	2	2	3	2	0
26	14	12	5	1	3	6	2	4	3	2	2
26	12	14	3	3	2	2	2	2	2	3	3
26	11	15	6	4	5	4	0	1	2	4	0
26	14	12	3	3	6	2	2	3	4	1	2
26	13	13	5	5	6	1	3	0	4	1	1
26	14	12	5	5	2	3	2	1	2	2	4
26	13	13	5	3	4	2	3	4	2	2	1
26	15	11	2	3	5	3	1	1	3	4	4
26	13	13	5	4	3	5	4	2	1	0	2
26	12	14	6	5	3	2	2	2	0	4	2
26	13	13	2	7	1	2	2	3	4	5	0
26	13	13	5	3	5	3	4	3	2	0	1
26	12	14	4	2	5	2	4	2	4	1	2
26	13	13	6	5	3	2	2	2	1	3	2
26	15	11	1	4	4	4	3	1	5	1	3
26	13	13	7	3	2	1	5	2	1	2	2
26	11	15	6	1	4	1	4	4	1	3	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
26	10	16	4	5	5	2	3	1	1	1	4
26	13	13	2	2	5	5	4	3	3	0	2
26	10	16	5	4	6	1	3	2	1	2	2
26	12	14	5	4	2	5	3	3	1	1	2
26	15	11	6	3	4	3	1	3	0	3	3
26	13	13	8	5	5	2	4	0	1	1	0
26	12	14	5	4	5	4	2	2	1	1	2
26	14	12	5	3	3	4	2	4	3	0	2
26	14	12	5	5	4	1	2	2	2	4	1
26	13	13	5	3	6	3	3	0	1	2	3
26	12	14	5	2	6	1	3	4	3	1	1
26	14	12	1	4	6	5	2	4	1	2	1
26	14	12	4	5	6	1	1	2	1	3	3
26	12	14	4	4	3	4	4	1	1	2	3
26	11	15	6	5	4	0	1	3	3	2	2
26	14	12	4	5	5	2	3	3	2	1	1
26	14	12	5	3	3	3	4	2	2	2	2
26	13	13	5	3	5	4	2	3	2	0	2
26	13	13	6	4	5	1	4	2	2	2	0
26	13	13	3	5	4	3	3	2	3	3	0
26	13	13	5	2	4	2	2	7	7	5	3
26	15	11	4	5	2	3	2	5	2	2	1
26	13	13	4	2	5	5	2	3	3	0	2
26	11	15	2	5	5	2	3	3	4	2	0
26	15	11	3	5	7	3	2	1	3	1	1
26	11	15	5	3	4	2	1	3	4	4	1
26	13	13	0	5	7	3	3	3	1	2	2
26	13	13	5	2	7	2	4	2	2	1	1
26	12	14	4	5	1	5	5	1	2	2	1
26	11	15	4	2	6	4	4	2	0	2	2
26	11	15	7	7	4	0	0	0	5	1	2
26	11	15	4	3	3	4	6	0	0	4	2
26	12	14	2	1	4	2	6	4	3	0	4
25	11	14	5	3	4	4	1	2	3	2	1
25	13	12	6	4	3	2	2	2	2	3	1
25	13	12	4	5	3	2	2	5	2	1	1
25	14	11	6	3	5	1	5	2	0	3	0
25	11	14	4	3	6	3	4	2	2	0	1
25	14	11	5	4	3	2	2	3	2	3	2
25	12	13	4	5	6	4	1	2	2	1	0
25	13	12	7	6	2	1	3	4	1	1	0
25	13	12	2	4	7	0	3	4	4	1	0
25	12	13	5	3	6	3	1	2	1	4	0
25	12	13	3	3	7	2	3	4	3	0	0
25	10	15	6	3	5	2	4	0	0	3	2
25	11	14	5	5	3	1	2	2	4	0	3

Score	Even	Odd	1	2	3	4	5	6	7	8	9
25	16	9	5	1	5	2	3	3	3	2	1
25	14	11	4	5	2	3	1	4	1	5	0
25	14	11	4	6	2	3	1	3	1	5	0
25	10	15	4	3	2	2	3	3	3	2	3
25	10	15	3	3	5	2	3	4	1	2	2
25	11	14	3	4	5	2	3	2	4	1	1
25	12	13	5	4	6	1	4	2	1	1	1
25	13	12	3	6	5	1	0	3	2	4	1
25	12	13	4	2	6	2	3	3	2	1	2
25	14	11	3	5	1	5	3	2	2	3	1
25	13	12	2	5	4	2	3	6	2	1	0
25	13	12	4	3	3	4	3	2	3	2	1
25	12	13	5	2	5	2	1	2	3	5	0
25	10	15	2	1	3	3	5	3	4	3	1
25	10	15	4	2	5	1	4	2	3	3	1
25	11	14	4	2	6	3	1	3	2	2	2
25	12	13	4	5	4	2	4	1	3	1	1
25	12	13	5	4	4	2	2	2	4	2	0
25	10	15	2	4	7	0	2	3	6	1	0
25	12	13	6	2	6	2	2	3	0	3	1
25	12	13	4	1	7	2	3	3	2	2	1
25	13	12	4	5	4	2	0	1	3	4	2
25	11	14	3	3	1	3	3	2	4	4	2
25	12	13	1	6	4	5	3	4	2	0	0
25	12	13	2	4	4	4	3	4	0	2	2
25	11	14	6	4	4	5	4	2	0	0	0
25	13	12	5	1	4	1	3	3	3	2	3
25	14	11	4	6	2	2	2	4	2	3	0
25	12	13	4	3	2	4	3	2	2	3	2
25	13	12	3	4	3	2	2	3	3	2	3
25	11	14	4	3	3	3	2	2	4	2	2
25	13	12	4	3	2	2	3	4	2	2	3
25	15	10	3	4	3	1	4	3	2	3	2
25	12	13	3	3	3	3	1	5	1	3	3
25	10	15	5	3	6	2	3	3	3	0	0
25	10	15	5	2	1	2	3	5	3	2	2
25	12	13	5	3	5	2	3	3	1	2	1
25	14	11	3	5	2	2	3	3	3	2	2
25	12	13	4	2	2	6	1	3	4	1	2
25	11	14	3	3	3	2	2	4	2	3	3
25	11	14	3	3	2	3	3	4	2	3	2
25	13	12	8	2	4	4	1	1	1	2	2
25	13	12	6	6	3	2	0	3	1	3	1
25	13	12	4	4	4	1	4	1	3	1	3
25	11	14	4	3	3	5	2	2	4	3	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
26	10	15	6	2	6	0	2	2	3	3	1
25	11	14	7	4	4	0	0	2	3	2	3
25	12	13	2	5	5	2	4	2	3	1	1
25	14	11	2	4	4	2	5	2	3	3	0
25	12	13	3	2	4	3	5	4	1	1	2
25	10	15	2	5	5	3	3	0	3	3	1
25	12	13	1	2	7	3	3	3	3	3	0
25	12	13	6	2	1	3	4	4	1	3	1
25	11	14	6	0	1	2	5	3	2	1	5
25	12	13	4	5	2	3	2	2	2	2	3
25	13	12	6	6	4	3	3	0	0	2	1
25	10	15	5	4	4	3	3	1	3	0	2
25	14	11	6	3	2	3	2	3	1	3	2
25	13	12	1	4	4	4	2	5	2	2	1
25	11	14	2	3	6	1	3	5	4	1	0
25	14	11	3	3	5	4	3	3	1	2	1
25	12	13	3	3	2	1	4	3	3	4	2
25	13	12	3	5	3	2	4	4	2	1	1
25	14	11	3	5	4	3	1	3	3	0	3
25	14	11	3	4	5	3	2	2	3	2	1
25	13	12	3	2	5	2	4	2	4	2	1
25	12	13	5	3	5	0	1	2	4	3	2
25	11	14	6	5	3	2	1	3	2	0	3
25	14	11	7	5	4	1	2	2	2	1	1
25	11	14	3	4	3	1	3	4	3	1	3
25	13	12	7	4	2	2	3	1	1	2	3
25	10	15	7	3	3	2	5	2	2	1	0
25	12	13	3	1	4	5	4	1	4	2	1
24	10	14	5	1	5	2	5	1	0	1	4
24	13	11	2	1	5	5	4	1	3	3	0
24	13	11	4	2	3	3	3	5	2	1	1
24	10	14	1	2	6	3	2	2	5	2	1
24	10	14	2	5	3	2	4	1	3	2	2
24	11	13	3	5	2	5	3	3	2	1	0
24	10	14	3	1	4	2	2	4	4	2	2
24	12	12	4	5	6	3	2	1	2	0	1
24	12	12	5	3	4	3	1	2	2	1	3
24	11	13	5	4	4	5	5	0	1	0	0
24	11	13	6	1	4	2	4	3	1	2	1
24	12	12	2	5	5	5	2	1	2	0	2
24	11	13	2	4	5	0	2	1	7	2	1
24	11	13	4	2	6	3	2	3	2	0	2
24	12	12	4	4	2	4	2	4	2	1	1
24	12	12	3	0	5	5	7	2	1	1	0
24	11	13	5	3	2	3	5	3	2	0	1
24	13	11	4	3	4	4	1	4	3	1	0

Score	Even	Odd	1	2	3	4	5	6	7	8	9
24	12	12	1	3	5	3	2	3	2	3	2
24	11	13	3	5	4	3	2	3	2	2	0
24	12	12	2	5	5	2	3	2	4	1	0
24	12	12	1	4	5	1	3	2	4	3	1
24	12	12	5	2	4	2	1	4	2	2	2
24	11	13	3	2	5	4	1	2	4	2	1
24	11	13	2	2	7	0	2	2	6	2	1
23	10	13	3	2	3	3	4	4	1	3	0
23	13	10	5	3	3	3	3	2	2	0	2
23	12	11	3	3	6	4	2	3	2	0	0
23	14	9	3	3	2	1	4	3	3	3	1
23	11	12	5	2	1	2	4	4	2	1	2
23	9	14	4	5	4	1	3	3	1	1	1
23	10	13	3	4	3	3	1	1	3	3	2
23	9	14	3	3	6	1	5	2	0	2	1
23	14	9	5	3	3	3	1	2	3	1	2
23	14	9	3	1	3	2	3	1	4	2	4
23	9	14	4	4	3	2	2	2	2	2	2
23	11	12	3	3	6	1	3	2	4	0	1
23	13	10	3	1	6	3	3	1	4	1	1
23	12	11	1	4	4	4	2	3	2	3	0
23	12	11	1	4	6	3	2	2	2	0	3
23	11	12	3	4	1	3	2	2	2	0	3
23	10	13	2	3	3	2	5	3	1	3	0
23	13	10	1	2	4	3	2	3	4	1	3
23	12	11	5	4	3	1	3	2	3	0	2
23	11	12	2	4	7	2	3	2	1	1	1
23	13	10	5	3	2	2	2	2	1	2	4
23	12	11	3	2	4	2	2	3	2	3	2
23	13	10	5	3	1	3	3	3	1	3	1
23	12	11	2	3	4	3	3	4	4	0	0
23	12	11	4	2	5	2	4	2	2	1	1
23	13	10	4	3	1	3	3	4	1	3	1
23	11	12	5	3	3	2	3	1	3	1	2
23	14	9	3	2	4	4	2	2	2	1	3
23	13	10	3	2	2	3	4	3	2	3	1
23	11	12	2	4	2	4	3	5	1	0	2
23	14	9	2	4	2	2	4	2	4	2	1
23	11	12	2	5	5	5	2	0	2	1	1
23	11	12	2	5	5	5	2	0	2	1	1
23	11	12	4	5	2	2	2	3	0	3	2
23	10	13	2	4	5	3	2	2	3	1	1
23	12	11	6	3	6	1	2	2	0	2	1
23	10	13	3	3	5	1	2	4	3	1	1
23	10	13	8	3	5	1	1	1	2	1	1
23	11	12	2	3	7	0	3	2	5	1	0

Score	Even	Odd	1	2	3	4	5	6	7	8	9
23	13	10	5	3	5	4	1	0	2	2	2
23	10	13	4	4	2	4	3	2	1	1	2
23	9	14	4	2	4	2	3	3	1	2	2
23	13	10	2	3	2	5	3	4	2	0	2
23	10	13	3	3	4	2	3	3	1	2	2
23	12	11	7	2	3	1	3	2	2	2	1
23	13	10	2	5	8	0	1	3	3	1	0
23	11	12	5	4	2	2	3	2	2	1	2
23	12	11	6	4	4	2	1	3	2	0	1
23	10	13	4	3	4	2	2	3	1	2	2
23	12	11	5	4	5	2	0	3	3	0	1
23	10	13	3	1	3	3	4	3	4	0	2
23	12	11	3	4	5	2	4	2	2	1	0
23	11	12	3	2	5	0	2	3	3	3	2
23	11	12	4	3	3	3	2	3	2	1	1
23	13	10	4	3	3	2	3	1	2	4	1
23	11	12	3	4	3	2	4	3	2	1	1
23	9	14	4	2	3	1	3	2	2	3	3
23	13	10	5	2	3	1	0	1	4	5	2
23	10	13	4	1	4	2	1	2	1	2	4
23	9	14	5	3	6	2	4	0	0	1	2
23	9	14	4	1	5	3	2	4	1	3	0
23	11	12	4	2	5	3	1	1	2	3	2
23	12	11	3	3	2	2	3	4	3	2	1
23	12	11	2	2	5	3	3	1	3	1	3
23	12	11	5	2	4	5	2	3	1	1	0
23	10	13	3	3	3	1	2	3	3	1	4
23	12	11	6	1	5	2	2	1	2	0	4
23	10	13	3	1	4	2	3	2	0	2	1
23	13	10	0	2	2	6	5	2	1	2	3
22	12	10	5	3	1	4	1	3	3	0	3
22	10	12	3	2	4	3	4	2	2	1	1
22	10	12	3	3	3	2	3	2	2	3	1
22	11	11	1	3	7	0	3	2	4	1	1
22	13	9	2	2	5	4	4	2	3	0	0
22	11	11	3	2	1	3	3	4	1	4	1
22	11	11	2	2	4	4	2	1	5	1	1
22	9	13	3	2	3	2	2	4	2	4	0
22	10	12	3	4	1	2	3	3	3	2	1
22	10	12	4	2	2	2	4	5	1	2	0
22	10	12	5	3	3	3	3	1	1	1	2
22	12	10	3	2	5	4	2	3	3	0	0
22	12	10	4	3	2	1	3	3	1	3	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
22	12	10	3	3	3	3	2	3	3	1	1
22	11	11	3	2	3	1	2	4	2	3	2
22	10	12	4	3	1	2	2	3	3	2	2
22	12	10	2	4	2	1	2	2	4	3	2
22	12	10	4	3	6	2	2	3	1	1	0
22	10	12	3	5	3	1	2	0	3	2	3
22	13	9	4	3	5	4	2	1	2	0	1
22	14	8	3	1	5	3	3	4	1	2	0
22	10	12	3	2	3	3	2	2	3	1	3
22	11	11	4	3	1	3	2	1	3	1	4
22	10	12	5	3	4	3	2	1	0	2	2
22	9	13	5	4	1	2	3	2	1	2	2
22	10	12	3	0	6	2	3	4	3	1	0
22	11	11	3	3	2	3	2	2	3	2	2
22	10	12	1	5	4	2	2	2	2	1	2
22	13	9	3	1	2	3	4	2	3	1	3
22	10	12	5	5	2	1	2	2	3	1	1
22	11	11	1	4	6	1	3	2	3	1	1
22	9	13	3	3	3	2	3	1	1	1	1
22	13	9	1	1	3	3	3	5	3	2	1
22	10	12	5	3	4	0	2	2	2	4	0
22	11	11	4	6	4	0	4	1	2	0	1
22	12	10	2	2	3	3	2	4	3	2	1
22	10	12	4	3	4	2	3	3	1	1	1
22	10	12	2	3	3	2	2	4	3	1	2
22	8	14	2	4	5	2	2	1	3	1	2
22	13	9	3	3	2	4	4	3	1	1	1
22	10	12	4	3	5	1	5	3	0	1	0
22	12	10	3	2	1	3	4	5	0	3	1
22	10	12	2	5	4	1	3	3	2	2	0
22	10	12	5	2	3	3	2	2	2	1	2
22	10	12	4	6	2	1	2	2	2	2	1
22	9	13	2	3	3	2	2	3	3	1	3
22	11	11	3	4	3	2	2	4	2	1	1
22	11	11	1	1	5	4	2	4	2	1	2
22	13	9	2	6	4	2	2	2	0	2	2
22	13	9	0	2	2	2	3	5	2	4	2
22	10	12	4	4	4	2	3	1	1	2	1
22	11	11	4	3	4	3	2	2	2	1	1
22	10	12	3	2	4	1	4	5	4	2	1
22	10	12	4	2	5	4	2	1	3	1	0
22	11	11	1	4	5	5	2	1	2	1	1
22	10	12	3	4	4	4	1	2	2	0	2
22	8	14	2	3	6	1	3	3	3	1	0
22	10	12	3	4	4	2	1	3	3	1	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
22	11	11	3	4	3	1	4	5	0	1	1
22	10	12	2	4	5	2	2	1	2	2	2
22	11	11	4	4	3	3	1	2	1	1	3
22	13	9	2	2	3	4	2	3	2	2	2
22	11	11	4	3	5	1	3	2	1	2	1
22	11	11	3	4	4	3	2	2	2	0	2
22	10	12	4	2	6	3	3	2	1	1	0
22	8	14	6	0	7	3	1	2	1	1	1
22	10	12	6	0	6	3	1	2	1	1	2
22	11	11	3	4	0	1	4	1	3	2	4
22	9	13	2	4	4	3	2	2	3	1	1
22	11	11	5	4	1	3	4	0	3	1	1
22	12	10	1	1	5	5	3	1	3	3	0
21	9	12	7	2	2	3	0	0	5	0	2
21	9	12	3	4	0	1	4	1	3	2	2
21	12	9	5	3	4	3	0	0	0	3	3
21	13	8	4	5	3	3	2	2	0	0	2
21	10	11	5	4	2	1	2	1	3	2	1
21	9	12	6	2	4	2	3	2	1	1	0
21	10	11	4	5	3	1	3	1	2	2	0
21	12	9	4	3	2	3	2	2	1	2	2
21	12	9	4	4	1	3	1	6	1	1	0
21	10	11	5	2	0	1	5	1	3	2	2
21	11	10	3	2	6	2	1	3	2	1	1
21	11	10	3	4	3	1	2	1	0	4	3
21	10	11	5	2	3	1	2	2	2	3	1
21	11	10	5	5	2	1	2	1	1	1	3
21	9	12	1	4	5	1	2	3	2	2	3
21	8	13	2	4	5	2	2	0	2	2	2
21	12	9	3	2	2	4	3	4	0	2	1
21	10	11	5	4	2	2	2	0	3	2	1
21	13	8	5	3	2	2	3	2	2	1	1
21	9	12	6	2	1	2	3	3	1	2	1
21	12	9	3	1	3	0	3	3	6	0	2
21	10	11	2	2	5	1	5	3	1	0	2
21	8	13	4	0	3	2	1	5	3	2	1
21	10	11	3	3	5	2	2	3	2	1	0
21	11	10	1	4	4	1	2	5	3	0	1
21	9	12	3	1	3	3	3	1	5	0	2
21	8	13	4	3	3	4	0	1	3	2	1
21	11	10	4	1	2	1	0	4	3	4	1
21	11	10	4	1	5	3	1	4	2	1	0
21	12	9	4	5	5	1	1	1	1	2	1
21	13	8	1	2	4	2	2	3	5	0	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
21	9	12	3	2	1	3	4	5	0	2	1
21	8	13	5	3	3	2	4	1	1	1	1
21	10	11	3	3	4	2	4	2	0	3	0
21	9	12	6	3	1	2	3	2	2	1	1
21	9	12	6	2	5	0	2	2	2	1	1
21	11	10	6	3	3	0	0	1	3	3	2
21	11	10	2	1	5	0	4	3	2	2	2
21	12	9	3	3	3	1	3	2	5	0	1
21	12	9	2	4	3	3	1	2	2	2	2
21	9	12	2	2	4	2	4	1	3	2	1
21	11	10	1	4	3	3	2	3	3	2	0
21	8	13	8	4	2	5	2	3	1	2	0
21	10	11	3	6	2	1	4	1	0	2	2
21	11	10	4	3	3	1	1	3	3	1	2
21	12	9	4	3	1	3	3	3	3	1	0
21	13	8	1	3	4	4	3	2	2	2	0
21	8	13	6	3	2	2	1	1	0	1	2
21	11	10	4	3	2	2	1	4	1	2	2
21	12	9	4	3	5	3	1	0	2	1	2
21	10	11	3	2	6	0	1	2	2	2	3
21	8	13	1	4	3	2	4	2	1	1	1
21	10	11	4	4	2	5	6	0	0	0	0
21	12	9	5	1	4	3	3	2	2	1	0
21	10	11	1	1	6	4	5	2	1	1	0
21	10	11	3	3	5	1	1	3	3	2	0
21	11	10	6	3	3	1	2	0	1	1	4
21	10	11	4	5	4	1	2	2	1	1	1
21	11	10	3	4	3	2	2	3	0	3	1
21	8	13	3	4	3	4	3	1	1	1	1
21	10	11	4	5	3	1	1	3	2	1	1
21	10	11	4	4	4	4	0	3	1	0	1
21	13	8	3	2	6	3	0	3	2	1	1
21	8	13	2	2	6	1	2	4	2	1	1
20	8	12	5	2	0	2	2	2	2	3	2
20	9	11	2	2	5	1	1	4	2	2	1
20	11	9	3	1	4	2	3	2	1	1	3
20	10	10	4	3	3	1	4	2	0	2	1
20	10	10	5	3	4	2	1	1	3	0	1
20	10	10	4	5	4	3	0	2	2	0	0
20	8	12	2	1	3	2	3	4	2	1	2
20	9	11	3	3	2	3	3	4	0	0	2
20	9	11	5	4	1	2	3	2	1	2	0
20	10	10	2	3	5	1	3	3	1	3	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
20	10	10	2	2	6	2	4	1	2	0	1
20	10	10	4	0	4	1	3	4	1	1	2
20	9	11	1	4	3	1	2	2	3	1	3
20	9	11	4	6	3	0	1	2	1	2	1
20	10	10	3	2	5	2	4	2	1	1	1
20	10	10	2	3	2	3	2	1	5	0	2
20	10	10	3	2	3	3	2	3	4	0	0
20	11	9	3	2	1	4	5	1	1	3	0
20	8	12	6	5	3	2	2	0	1	0	1
20	12	8	3	2	5	1	2	2	1	3	1
20	9	11	2	1	4	2	2	2	4	1	2
20	8	12	4	2	4	1	1	3	1	2	2
20	12	8	4	0	3	5	2	2	2	1	1
20	11	9	1	6	2	1	2	1	3	3	1
20	10	10	3	3	1	2	1	2	3	1	4
20	8	12	3	1	4	0	4	2	2	2	4
20	10	10	1	4	3	3	3	1	2	2	2
20	9	11	2	4	1	4	2	2	1	2	2
20	9	11	2	5	1	2	3	2	1	2	2
20	10	10	3	0	6	2	2	4	3	0	0
20	10	10	2	4	5	2	2	2	3	0	0
20	10	10	3	3	4	2	3	1	2	1	1
20	10	10	6	3	4	2	3	2	0	0	0
20	10	10	4	4	4	2	2	2	0	0	2
20	11	9	2	1	2	2	3	4	3	2	1
20	11	9	4	4	2	2	2	2	1	2	1
20	9	11	4	2	2	0	2	3	3	3	1
20	11	9	6	1	5	2	1	2	2	1	0
20	11	9	1	3	4	1	3	3	2	3	0
20	11	9	2	2	7	0	3	0	3	1	2
20	11	9	1	2	3	3	3	4	2	1	1
20	11	9	1	3	5	4	1	3	1	2	0
20	10	10	1	2	3	3	3	4	2	1	1
20	10	10	1	0	7	3	3	2	2	0	2
20	9	11	2	1	3	3	4	2	1	4	0
20	10	10	5	2	2	3	3	2	2	0	1
20	10	10	2	2	1	3	3	4	1	3	1
20	7	13	3	3	5	1	1	1	1	1	4
20	10	10	3	1	3	4	2	3	1	3	0
20	12	8	2	5	3	1	2	4	1	1	1
20	11	9	2	2	5	1	1	2	4	2	1
20	8	12	3	3	2	3	3	3	2	1	1
20	8	12	2	5	1	2	4	2	2	0	2
20	10	10	4	1	6	0	3	2	2	2	0
20	9	11	3	4	1	4	1	2	3	1	0

Score	Even	Odd	1	2	3	4	5	6	7	8	9
20	10	10	2	4	3	3	1	2	1	3	1
20	8	12	3	4	5	0	2	2	4	0	0
20	10	10	3	2	3	3	2	3	3	0	1
20	10	10	4	4	4	3	2	1	2	0	0
20	9	11	3	4	7	1	1	0	1	1	2
20	10	10	2	5	2	3	1	2	3	1	1
19	12	7	3	4	7	1	0	0	3	1	0
19	11	8	5	4	3	0	4	2	1	0	0
19	9	10	6	3	1	1	4	2	0	1	1
19	11	8	4	4	2	1	2	3	2	1	0
19	8	11	3	3	1	5	1	1	2	0	1
19	8	11	5	1	3	1	3	2	2	1	1
19	9	10	2	2	6	1	3	0	2	2	1
19	9	10	4	2	5	2	3	0	0	2	4
19	9	10	2	2	4	1	3	1	4	1	1
19	10	9	5	2	2	2	3	1	1	1	2
19	10	9	3	3	3	1	3	1	0	3	2
19	9	10	3	1	1	1	5	0	2	1	5
19	8	11	2	3	4	1	2	1	3	2	1
19	10	9	4	4	2	2	0	1	2	2	2
19	10	9	5	2	3	0	3	2	2	1	1
19	12	7	1	2	5	3	5	1	1	1	0
19	9	10	4	3	2	2	1	3	2	1	1
19	8	11	3	1	2	0	3	2	3	3	2
19	8	11	3	2	4	1	2	3	4	0	0
19	9	10	1	3	2	4	3	2	0	2	2
19	12	7	3	4	1	2	0	5	2	1	1
19	8	11	2	3	4	1	2	2	4	1	0
19	10	9	3	3	3	0	2	2	1	2	1
19	7	12	3	5	1	2	2	2	0	2	2
19	8	11	4	2	0	1	3	2	2	4	1
19	9	10	3	4	3	2	1	1	2	1	2
19	8	11	4	3	3	2	1	2	3	1	0
19	12	7	3	1	3	4	3	4	0	0	1
19	9	10	6	1	1	4	4	1	1	1	0
19	13	7	0	5	4	2	2	2	1	2	1
19	11	8	3	1	1	2	2	7	2	1	0
19	9	10	3	2	4	0	3	3	1	1	2
19	11	8	2	3	2	1	1	3	2	3	2
19	9	10	2	3	3	1	3	1	2	2	2
19	8	11	5	3	3	2	2	2	1	0	1
19	10	9	5	2	2	3	1	3	1	2	3
19	7	12	1	2	4	2	2	4	2	1	1
19	9	10	5	4	2	0	1	2	2	2	1
19	10	9	3	3	3	4	2	0	3	0	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
19	9	10	4	1	3	3	3	1	2	2	0
19	9	10	2	4	4	2	2	2	1	0	2
19	10	9	1	3	3	2	2	3	2	3	0
19	11	8	3	2	3	3	2	2	3	0	1
19	11	8	1	2	4	2	4	3	1	2	0
19	10	9	3	6	1	2	0	2	1	4	0
19	8	11	3	2	0	4	2	3	2	2	1
19	9	10	1	4	1	3	2	2	2	3	1
18	7	11	4	4	1	1	2	2	2	0	2
18	9	9	3	1	4	4	1	1	1	0	3
18	9	9	4	1	2	2	0	2	2	2	3
18	9	9	2	2	4	0	2	2	5	1	0
18	8	10	1	2	2	3	3	3	1	2	1
18	10	8	2	2	3	1	3	0	4	1	2
18	8	10	1	3	3	1	5	0	2	3	0
18	9	9	4	3	2	3	2	3	1	0	1
18	8	10	2	5	2	2	3	0	1	1	2
18	11	7	1	2	5	3	2	3	0	1	2
18	9	9	2	3	4	1	0	1	3	2	2
18	10	8	0	1	4	2	3	2	4	1	1
18	8	10	3	2	2	3	4	2	1	1	0
18	9	9	4	2	3	2	3	1	2	1	0
18	8	10	2	3	2	3	2	2	3	0	1
18	8	10	2	1	4	3	3	1	3	1	0
18	11	7	1	1	3	3	2	4	2	1	1
18	10	8	3	2	5	3	0	0	4	0	1
18	7	11	4	2	3	1	2	2	1	1	2
18	9	9	1	3	2	2	1	3	3	1	2
18	9	9	1	3	3	2	4	3	2	0	0
18	11	7	1	4	2	2	2	1	2	2	2
18	10	8	2	2	2	3	2	2	2	1	2
18	8	10	4	3	2	4	0	0	3	0	2
18	9	9	3	4	0	0	1	3	1	3	3
18	10	8	1	2	3	3	2	0	3	1	3
18	9	9	2	1	3	1	2	4	3	1	1
18	9	9	2	4	2	1	3	2	2	2	0
18	9	9	2	2	4	3	2	3	1	0	1
18	9	9	3	2	4	2	2	3	0	1	1
18	6	12	4	3	1	3	2	0	2	0	1
18	6	12	3	0	4	2	2	2	2	2	1
18	9	9	2	3	0	1	1	3	2	2	3
18	7	11	3	1	3	2	1	3	0	3	2
18	10	8	3	2	3	2	1	1	2	1	3
18	10	8	5	2	3	2	1	2	0	2	1
18	7	11	4	2	3	3	2	1	2	1	0
18	7	11	1	3	2	3	2	2	1	4	0

Score	Even	Odd	1	2	3	4	5	6	7	8	9
17	8	9	5	2	3	2	1	0	1	2	1
17	8	9	2	1	3	1	0	3	2	2	3
17	7	10	2	4	1	2	0	3	1	4	0
17	8	9	2	2	3	2	2	2	1	3	0
17	9	8	4	1	6	2	1	1	2	0	0
17	8	9	2	1	2	3	2	4	3	0	0
17	8	9	2	4	3	1	1	3	2	1	0
17	7	10	2	2	2	0	7	0	1	1	2
17	10	7	4	2	3	0	0	3	1	3	1
17	12	5	3	2	5	3	0	1	0	3	1
17	12	5	1	3	1	2	1	4	1	2	2
17	9	8	1	4	2	3	2	1	3	1	0
17	8	9	3	1	4	2	1	2	1	1	2
17	10	7	3	1	5	2	1	2	1	2	0
17	9	8	1	3	5	2	2	0	2	1	1
17	9	8	3	3	2	3	1	1	2	2	0
17	8	9	3	2	3	2	1	4	1	0	1
17	9	8	3	3	1	3	0	1	2	3	1
17	7	10	4	2	4	2	1	1	1	1	1
17	10	7	1	3	1	3	0	3	1	3	2
17	7	10	3	6	1	1	0	1	1	3	1
17	8	9	4	3	3	1	2	2	1	0	1
17	9	8	4	2	4	3	1	1	0	2	0
17	10	7	2	2	3	3	1	2	3	1	0
17	8	9	2	3	4	0	1	2	4	1	0
17	11	6	4	2	3	3	2	1	2	0	0
17	8	9	3	3	3	0	0	3	1	1	3
17	9	8	1	3	5	1	3	2	2	0	0
17	11	6	4	2	2	3	1	1	2	0	2
17	7	10	3	4	4	0	2	2	2	0	0
17	7	10	2	0	2	4	2	2	3	1	1
16	8	8	2	3	3	1	1	1	2	2	1
16	9	7	4	0	2	2	1	2	0	3	2
16	8	8	1	3	1	2	2	2	1	0	4
16	7	9	2	5	1	1	0	2	4	0	1
16	9	7	1	2	2	2	2	3	2	1	1
16	5	11	3	5	0	1	0	2	1	4	0
16	8	8	1	2	5	2	2	0	3	0	1
16	6	10	2	2	2	2	3	2	1	1	1
16	6	10	2	1	2	2	3	2	2	1	1
16	9	7	3	5	1	1	1	1	2	1	1
16	9	7	1	2	2	2	2	3	2	1	1
16	6	10	3	1	1	2	2	2	1	2	2
16	10	6	1	2	1	3	2	1	3	1	2
16	9	7	3	2	4	1	1	0	3	1	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
16	9	7	3	3	4	0	1	2	2	0	1
16	9	7	0	2	1	1	2	3	5	1	1
16	10	6	2	3	5	0	2	2	2	0	0
16	10	6	4	1	4	1	2	1	1	1	1
16	8	8	2	3	3	3	1	2	0	0	2
16	7	9	3	1	5	2	3	1	0	1	0
16	7	9	3	0	1	1	4	1	3	2	1
16	7	9	3	1	2	1	3	4	1	1	0
16	8	8	3	4	3	1	1	1	2	0	1
16	8	8	1	1	5	2	2	3	3	0	1
16	8	8	1	1	2	3	2	1	3	2	1
16	7	9	2	1	4	1	3	2	1	1	1
16	9	7	2	3	1	1	1	1	1	5	1
16	9	7	1	1	3	4	1	2	1	1	2
16	7	9	4	4	3	1	0	1	2	0	1
16	9	7	3	2	2	1	1	3	1	1	2
16	9	7	1	2	3	1	1	2	3	2	1
16	8	8	1	4	2	0	1	2	4	1	1
16	8	8	1	1	3	2	0	3	3	3	0
16	9	7	1	2	3	3	3	2	1	1	0
16	7	9	0	2	4	3	2	2	1	2	0
15	9	6	1	4	1	2	2	2	1	1	1
15	9	6	2	3	3	2	2	2	1	0	0
15	7	8	2	3	2	1	1	3	2	0	0
15	7	8	3	3	3	1	1	2	1	0	1
15	9	6	4	2	1	3	1	0	1	1	2
15	7	8	2	2	4	2	2	0	0	2	1
15	7	8	1	2	4	1	2	0	1	2	2
15	8	7	2	2	2	3	2	2	1	1	0
15	8	7	3	3	0	2	1	2	2	0	2
15	6	9	2	0	3	0	2	2	3	2	1
15	7	8	1	1	0	2	2	3	2	2	2
15	7	8	1	2	2	4	1	2	2	0	1
15	7	8	2	4	3	0	2	1	4	1	0
15	6	9	1	3	0	3	1	4	1	1	1
15	7	8	5	3	3	1	1	1	0	0	1
15	8	7	3	4	2	0	2	1	2	1	0
15	8	7	3	7	0	0	3	2	0	0	0
15	9	6	1	2	4	1	2	1	2	2	0
15	9	6	2	4	2	0	2	1	2	2	0
15	9	6	2	2	3	2	2	0	0	2	2
15	6	9	1	1	2	0	4	0	2	2	3
15	6	9	0	2	1	4	2	3	1	2	0
15	8	7	1	1	2	1	2	2	2	2	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
15	8	7	2	3	3	0	3	3	0	0	1
15	7	8	3	2	2	1	2	2	1	1	1
15	8	7	2	2	3	4	1	0	0	2	1
15	6	9	1	2	3	0	2	2	4	1	0
15	8	7	3	1	2	2	3	3	1	0	0
15	8	7	2	0	5	2	1	2	1	1	1
15	5	10	4	2	4	1	0	4	0	0	0
15	10	5	3	2	2	2	1	1	3	0	1
15	7	8	2	0	3	1	1	3	2	2	1
15	9	6	4	3	2	0	0	3	2	1	0
15	9	6	4	0	0	5	4	0	1	1	0
15	5	10	1	2	3	3	2	0	3	1	0
14	7	7	2	2	2	1	2	1	3	1	3
14	7	7	3	1	0	3	1	1	1	2	2
14	8	6	2	0	2	1	3	2	1	3	0
14	7	7	2	2	2	3	1	2	2	0	0
14	7	7	1	2	2	2	1	1	1	4	0
14	8	6	2	2	3	2	3	0	1	2	2
14	9	5	0	3	3	3	1	2	0	1	1
14	7	7	1	0	4	2	1	1	2	3	0
14	5	9	4	3	0	1	3	1	0	1	1
14	7	7	3	2	2	1	1	1	2	1	1
14	8	6	1	1	3	1	2	1	1	2	2
14	10	4	3	2	2	2	2	0	0	1	2
14	10	4	3	1	1	0	4	2	1	1	1
14	8	6	3	0	1	1	2	2	2	2	1
14	8	6	4	1	2	1	2	2	1	1	0
14	8	6	3	2	2	2	2	1	0	1	1
14	7	7	1	1	2	2	3	0	2	2	1
14	9	5	6	3	4	0	2	6	3	1	1
14	5	9	0	3	4	1	2	2	2	0	0
14	8	6	3	1	1	3	1	1	4	0	0
14	9	5	2	1	2	3	1	1	3	0	1
14	6	8	1	0	3	3	3	3	0	1	0
14	8	6	2	2	0	1	1	2	3	3	0
14	6	8	3	1	2	2	1	2	1	0	2
14	7	7	2	0	3	0	4	2	2	1	0
14	6	8	1	1	4	2	2	1	1	1	1
14	7	7	5	5	2	2	0	0	0	0	0
14	7	7	3	1	2	2	3	2	0	1	0
14	7	7	2	2	4	2	1	0	0	1	2
14	7	7	3	1	3	2	1	2	1	1	0
14	6	8	2	2	1	2	0	2	0	3	2
14	6	8	3	2	3	1	1	1	1	1	1
13	6	7	1	3	3	0	1	2	2	2	1
13	8	5	1	3	2	1	1	2	1	2	0
13	8	5	4	2	0	1	0	1	1	2	2

Score	Even	Odd	1	2	3	4	5	6	7	8	9
13	6	7	3	0	5	2	1	0	1	0	0
13	7	6	2	4	1	2	1	0	0	1	2
13	5	8	2	3	2	1	2	2	0	0	1
13	9	4	3	2	2	2	1	0	1	0	2
13	4	9	3	1	1	1	3	3	0	0	1
13	6	7	4	0	3	0	1	2	1	2	0
13	7	6	3	1	2	1	1	1	2	1	1
13	8	5	2	1	3	1	1	1	1	2	1
13	6	7	2	4	3	1	1	0	2	0	0
13	8	5	1	2	2	3	1	0	1	2	1
13	9	4	4	1	1	2	2	1	2	0	0
13	6	7	0	2	3	2	3	1	1	1	0
13	5	8	4	2	4	1	2	0	0	0	0
13	6	7	1	0	2	2	2	3	3	0	0
13	8	5	3	1	4	2	1	1	0	1	0
13	5	8	0	2	2	4	2	1	0	2	0
13	10	3	1	5	0	1	2	2	1	0	1
13	7	6	4	4	1	0	1	2	0	0	1
12	7	5	2	1	4	2	1	0	0	2	0
12	7	5	2	1	0	2	2	1	2	2	0
12	6	6	2	1	2	0	2	0	4	1	0
12	5	7	2	2	1	2	0	2	1	2	0
12	6	6	2	2	2	1	2	2	0	1	0
12	6	6	2	2	1	1	1	2	2	1	0
12	5	7	4	1	1	2	1	1	1	1	0
12	4	8	3	0	3	2	1	0	1	0	2
12	7	5	1	5	2	1	0	2	1	0	0
12	3	9	3	0	2	2	2	0	2	0	1
12	5	7	3	1	4	1	1	1	1	0	0
12	6	6	2	2	2	2	1	2	0	1	0
12	8	4	2	2	1	0	3	2	1	0	1
12	8	4	2	3	0	2	1	1	1	1	1
12	6	6	1	2	2	1	2	2	1	1	0
12	3	9	2	0	4	1	3	0	0	1	1
12	7	5	2	3	1	1	1	1	1	1	1
12	6	6	3	3	0	1	1	1	1	0	2
12	3	9	1	1	4	1	1	1	1	1	1
12	6	6	4	5	3	0	0	0	0	0	0
11	6	5	2	1	2	1	1	1	1	1	1
11	6	5	2	3	1	1	1	0	1	1	1
11	6	5	0	2	1	2	0	1	3	1	1
11	5	6	0	2	3	1	2	1	2	0	0
11	7	4	1	2	3	1	0	0	2	1	1
11	6	5	0	5	1	2	0	1	2	0	1
11	4	7	2	2	1	2	0	2	0	1	1
11	5	6	2	2	1	3	0	1	1	0	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
13	6	7	3	0	5	2	1	0	1	0	0
13	7	6	2	4	1	2	1	0	0	1	2
13	5	8	2	3	2	1	2	2	0	0	1
13	9	4	3	2	2	2	1	0	1	0	2
13	4	9	3	1	1	1	3	3	0	0	1
13	6	7	4	0	3	0	1	2	1	2	0
13	7	6	3	1	2	1	1	1	2	1	1
13	8	5	2	1	3	1	1	1	1	2	1
13	6	7	2	4	3	1	1	0	2	0	0
13	8	5	1	2	2	3	1	0	1	2	1
13	9	4	4	1	1	2	2	1	2	0	0
13	6	7	0	2	3	2	3	1	1	1	0
13	5	8	4	2	4	1	2	0	0	0	0
13	6	7	1	0	2	2	2	3	3	0	0
13	8	5	3	1	4	2	1	1	0	1	0
13	5	8	0	2	2	4	2	1	0	2	0
13	10	3	1	5	0	1	2	2	1	0	1
13	7	6	4	4	1	0	1	2	0	0	1
12	7	5	2	1	4	2	1	0	0	2	0
12	7	5	2	1	0	2	2	1	2	2	0
12	6	6	2	1	2	0	2	0	4	1	0
12	5	7	2	2	1	2	0	2	1	2	0
12	6	6	2	2	2	1	2	2	0	1	0
12	6	6	2	2	1	1	1	2	2	1	0
12	5	7	4	1	1	2	1	1	1	1	0
12	4	8	3	0	3	2	1	0	1	0	2
12	7	5	1	5	2	1	0	2	1	0	0
12	3	9	3	0	2	2	2	0	2	0	1
12	5	7	3	1	4	1	1	1	1	0	0
12	6	6	2	2	2	2	1	2	0	1	0
12	8	4	2	2	1	0	3	2	1	0	1
12	8	4	2	3	0	2	1	1	1	1	1
12	6	6	1	2	2	1	2	2	1	1	0
12	3	9	2	0	4	1	3	0	0	1	1
12	7	5	2	3	1	1	1	1	1	1	1
12	6	6	3	3	0	1	1	1	1	0	2
12	3	9	1	1	4	1	1	1	1	1	1
12	6	6	4	5	3	0	0	0	0	0	0
11	6	5	2	1	2	1	1	1	1	1	1
11	6	5	2	3	1	1	1	0	1	1	1
11	6	5	0	2	1	2	0	1	3	1	1
11	5	6	0	2	3	1	2	1	2	0	0
11	7	4	1	2	3	1	0	0	2	1	1
11	6	5	0	5	1	2	0	1	2	0	1
11	4	7	2	2	1	2	0	2	0	1	1
11	5	6	2	2	1	3	0	1	1	0	1

Score	Even	Odd	1	2	3	4	5	6	7	8	9
11	5	6	0	2	3	0	0	2	2	1	1
11	5	6	1	1	2	2	0	1	2	2	0
11	5	6	2	2	0	1	1	1	3	0	1
11	7	4	3	0	1	2	1	1	1	0	2
11	5	6	2	3	0	1	0	2	1	1	1
10	4	6	2	0	4	3	1	0	0	0	0
10	6	4	3	4	0	2	0	0	1	0	0
10	5	5	1	1	3	1	0	1	1	1	1
10	6	4	3	0	2	1	1	0	2	0	1
10	4	6	3	2	1	1	2	1	0	0	0
9	3	6	2	0	3	1	0	2	1	0	0
9	3	6	1	2	0	0	2	2	1	1	0
9	5	4	2	2	2	2	0	0	0	1	0
9	5	4	1	1	1	2	0	1	2	0	0
9	3	6	2	0	1	1	1	2	1	1	0
9	5	4	1	2	1	1	0	2	0	1	1
9	6	3	1	1	3	2	0	0	0	2	0
9	5	4	2	4	0	1	0	0	1	0	1
8	5	3	3	2	0	0	0	0	1	1	1
8	4	4	0	2	3	0	0	0	0	0	3
8	6	2	2	1	1	0	0	0	2	1	1
8	6	2	3	2	0	2	0	0	1	0	0
8	4	4	0	2	0	0	2	0	2	2	0
8	4	4	1	0	2	0	0	2	1	2	0
8	3	5	0	1	2	2	1	0	1	0	1
7	2	5	1	1	0	0	0	2	1	1	1
7	5	2	1	1	0	1	2	0	1	1	0
7	4	3	4	1	0	0	0	0	0	2	0
6	2	4	3	1	0	1	0	1	0	0	0
6	3	3	1	1	0	1	1	0	1	0	1
6	4	2	0	1	0	2	0	0	1	1	1
5	3	2	1	1	1	0	0	0	1	0	1
5	2	3	0	2	0	0	0	1	0	0	2