

**STUDENTS' ACHIEVEMENT IN GEOMETRY AT
SECONDARY LEVEL**

Thesis Submitted by

Khem Raj Bhandari

Exam Roll No.: 7448056

T.U. Regd. No.: 6-1-48-582-2007

*In Partial Fulfillment of the Requirements for the Master's Degree in
Mathematics Education*

Submitted to:

Tribhuvan University

Prithvi Narayan Campus, Pokhara

Department of Mathematics

2022

DECLARATION

I hereby declare that the work presented in the this thesis entitled “**Students' Achievement in Geometry at Secondary Level**” has been done by myself and has not been submitted elsewhere for the aware of any degree. All sources information has been specifically acknowledge by reference to the authors.

Date: 2079/03/12

Khem Raj Bhandari

RECOMMENDATION LETTER

This is to certify that **Mr. Khem Raj Bhandari**, a Student of academic year 2074 with campus Roll No: 206 Exam Roll No: 7448056 and T.U. registration number 6-1-48-582-2007 has completed his thesis under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Nepal. The thesis entitled on “**Students' Achievement in Geometry at Secondary Level**” has been Prepared based on the result of his investigation conducted during the Period 2077/078 under the Department of Mathematics, Prithvi Narayan Campus, Pokhara. I recommend and forward that his thesis submitted for the evaluation as the partial requirement toward the degree of Masters of Mathematics Education.

Mr. Gangadhar Paudel

Supervisor

Department of Mathematics

Prithvi Narayan Campus

Bagar, Pokhara

Date: 2079/03/16

ACKNOWLEDGEMENTS

I would like to express my gratitude and gratefulness to my supervisor as well as my respected teacher, Mr. Gangadhar Poudel, the member of the department of mathematics, Prithvi Narayan Campus, Pokhara who provided me with all sorts of basic ideas, instruction and invaluable scholarly guidance for carrying out this research work from the very beginning to the end and enable me to present this dissertation in this form.

My sincere gratitude also goes to Mr. Rajendra Prasad Regmi, the Head of Department of Mathematics, Prithvi Narayan Campus Pokhara, who provided me an opportunity to write this thesis by approving my proposal. I am very grateful to express my gratitude to respected teacher Maheshwor Pokhrel, the member of research committee department of mathematics, Prithvi Narayan Campus Pokhara, for constructive suggestions, required feedback and encouragement to carry out this research.

Similarly, I am very grateful to express my gratitude to Associate Professor Dr. Tribhuvan Sharma, Associate Professor Dr. N.N Jha, respected teachers Mitra Bandhu Baral, Romharsan Poudel and Bishnu Bahadur Thapa for their valuable comments and suggestions to bring the work into present form. In preparation of this thesis, researcher has consulted several books, thesis and papers for which researcher is deeply indebted to the author. The researcher is thankful to the Head teachers (Principals) and mathematics teachers for their sincere co-operation and specially grateful to all students for their active participation during data collection of the study.

I would like to express deepest gratitude to my heavenly father/mother Bhuwani Prasad Bhandari and Tulki Bhandari, my beloved wife Mrs. Asika Bhandari, son Kshitiz Bhandari and all my family members who always encouraged me to continue my higher studies. I am obligated to all my friends who assisted me directly or indirectly in completing this study.

Lastly, I am also thankful to my lovely student as well as sister Miss Anu Rana for greatful support to complete this research. I would like to express thanks to Zerone Computer Solution for typing, binding and layout.

Khem Raj Bhandari

Date: 2079-03-10

ABSTRACT

This study aims to find out the level of students achievement in geometry, comparing the students' achievement among the secondary level students of Kaski district and seeking out the crucial factors that play roles in achievement gap of students.

The study survey was designed among 8 institutional and 8 community schools of Kaski district that were selected by stratified random sampling and all together 192 students such that 12 students (6 boys & 6 girls) from each of these schools were selected as sample. Students studying at IX grade were considered as sample population of this research. The status of fathers' education, mothers' education, fathers' occupation, students' regularity, class size of schools were also considered as the supplementary primary data.

The achievement test and a set of closed questionnaire were developed as the tools for data collection. The achievement in geometry were examined, compared and a set of closed questionnaire were filled up among the sample students. Mean, standard deviation were calculated and two tailed t-test with 0.05 level of significance was applied for the interpretation of results. There was no significance difference between the achievement in geometry among the boys and girls students. There was no significance difference between the achievement in geometry among the institutional and community schools students and also there was no significance difference between the achievement in geometry among the rural areas' and urban areas' schools students.

Also it is found that factors like status of fathers' education, mothers' education, fathers' occupation, students' regularity and class size of schools play an important role for the achievement gap of students

TABLE OF CONTENT

<i>Cover Page</i>	<i>i</i>
<i>Declaration</i>	<i>ii</i>
<i>Certificate</i>	<i>iii</i>
<i>Approval Letter</i>	<i>iv</i>
<i>Acknowledgement</i>	<i>v</i>
<i>Abstract</i>	<i>vii</i>
<i>Contents</i>	<i>viii</i>
<i>List of Table</i>	<i>x</i>
<i>List of Figure</i>	<i>xi</i>
CHAPTER I : INTRODUCTION	1
Background of the Study	1
Statement of the Problem	4
Significance of the Study	5
Objectives of the Study	7
Hypothesis of the Study	7
Definition of the Terms	8
Limitation of the Study	9
CHAPTER II : REVIEW OF RELATED LITERATURE	10
CHAPTER- III : METHODS AND PROCEDURES	18
Design of the Study	18
Population of the Study	19
Sample of the Study	19
Tools and Instrument of Data Collection	20

Achievement Test	20
Construction of Test	20
Data Collection Procedure	23
Data Analysis Procedure	24
CHAPTER IV : ANALYSIS AND INTERPRETATION OF DATA	25
CHAPTER V : FINDINGS, CONCLUSIONS AND IMPLICATIONS	40
Findings	40
Conclusion	41
Implications	43
REFERENCES	45
APPENDICES	

LIST OF TABLE

Table		Page
1	List of the Sampled Schools of this Study	25
2	Level of Achievement in Geometry	27
3	Achievement in Geometry of Boys and Girls Students	28
4	Achievement in Geometry of Institutional and Community Schools Students	29
5	Achievement in Geometry of Rural Areas'and Urban Areas' Schools Students	30
6	Students' Achievement in Geometry on the Basis of Fathers' Education Level	32
7	Students' Achievement in Geometry on the Basis of Mothers' Education Level	33
8	Students' Achievement in Geometry on the Basis of their Parents' Occupation	36
9	Students' Achievement in Geometry on the Basis of their Class Size of the Schools	38

LIST OF FIGURE

Figure		Page
1	Conceptual Framework of the Stud	16
2	Conceptual Framework of the Stud	17
3	Selection of sample Students	19
4	Influence of Fathers' Education Level in their Children's Achievement in Geometry	33
5	Influence of Mothers' Education Level in their Children's Achievement in Geometry	35
6	Influence of Fathers' Occupation in their Children's Achievement in Geometry	37

CHAPTER I

INTRODUCTION

This chapter begins with its introductory part, highlighting the background of the study, statement of the problem, objectives of the study, significance of the study, delimitation of the study and definition of the related terms.

Background of the Study

The word mathematics is derived from ancient Greek word 'Mathancian' which means "to learn" so, mathematics is the process of learning. Mathematics has played a vital role in development of all human civilization. It was originated together with the origin of human civilization. Every people need mathematics to solve the problems in the daily activities. Mathematics is a creation of human mind concerned with ideas, process and techniques (Mishra, 2017).

Mathematics is the science of logical study of numbers, shape, arrangement, quantity, measure and many related concepts. Today it is usually described as a science that investigates abstract structures that is created itself for their properties and patterns.(James & James, 2001, p. 23)

Mathematics is the free invention of the human intellect. Mathematical knowledge is gain by social activities which generates all kind of knowledge required for social living" (Poudel, 2013 as cited in Einstein, 1940).

"Mathematics as much as music or any other art, is one of the means which arise to a complete self-consciousness. The significance of mathematics recedes precisely in the fact that it is an art, by informing us of the nature of our own minds,

it informs us of much that depend on our own minds” (Parajuli, 2020 as cited in Sullivan, 1925).

Geometry is one of the oldest and most important branch of mathematics. It is concerned with properties of space that are related with distance, shape, size and relative position of figures. Geometry has been interlocked with many subjects and different kinds of human activities. Geometry includes an enormous range of ideas and can be viewed in many different ways.

The word “Geometry” is taken from the two Greek words “Geo” and “Metron” and Geo - mean earth and Metron - mean measure (Chaudhari, 2019). Geometry was extremely important to ancient societies and was used for surveying, astronomy, navigation, and building. Geometry is an aspect of mathematics which deals with the study of different shapes. These shapes may be plane or solid. A plane shape is a geometrical form such that the straight line that joins any two points on it wholly lies on the surface. On the other hand a solid shape is bounded by surfaces which may not wholly be represented on a plane surface (Battista, 1999).

About the development of geometry Betler and Wren say, “primitive people obtained their first knowledge of geometry from natural objected and later on from arts as well the needs that arose to understand and came to further the legacy of art, architecture, surveying, measurement etc. provides the stimulators the development of science of geometry” (Poudel, 2011 as cited in Betler and Wren, 1941).

Geometry is the study of the properties of shapes. Since the shape of the object is something visible we begin to acquire geometric knowledge and understanding in early childhood. The importance and essentiality of geometry was felt with the development and utility of geometrical concepts, which is proved in the

by the great and popular Greek philosopher Plato (427-347BC) who ordered carved of inscription "Let no one ignorant of geometry enter my doors". Euclidean Geometry developed by Euclid (300BC) took revolutionary change in the field of geometry, which collected all the geometrical development before him and his period. At this time, Euclid brought together and unified this knowledge by constructing the first definitely formal system of mathematics in the treatise "Elements". It is probable that Euclid's Elements is a highly successful compilation and systematic arrangement of work of writers. Euclid's Elements is not devoted to geometry alone but also contains much number theory and geometric algebra. The work is composed of 13 books which has 465 propositions (Limbu, 2007).

Mathematics is an essential part of curriculum. NESP (1971) recommended mathematics as a compulsory subject for students at school level. Although mathematics is the compulsory subject at secondary level (9 & 10), having same curriculum, similar examination system, same text books and similar evaluation system, people at large extent are found to be compared that achievements of institutional school with the students of community school. People prefer to send their children in institutional schools rather than community schools. Most of the institutional schools and urban areas' schools claim that they are providing quality education than the community schools and rural areas' schools. Similarly, many people and community schools claim that institutional schools' learning is rote learning, meaning less learning, so this research will help to find the difference between institutional and community schools' learning system.

The purpose of this research is to find out the level of achievement in geometry at secondary level students of kaski district so as to compare the achievement in geometry between boys and girls students at secondary level.

Also one of the major purpose of this research is to compare the achievement in geometry between students of institutional and community schools at secondary level. Also this research will investigate the crucial factors that play roles in achievement gap in geometry of students.

Though, there are same academic years, total teaching period, same curriculum, same qualification of subject teachers, but majority of the people prefer to institutional school rather than community school. To see the board examination result of every academic year in kaski district, the passed percentage of institutional school is greater than the public school. Hence, this study attempts to identify the level of mathematical achievement in geometry at secondary level in kaski district. Also it tries to identify the factors that play roles in achievement gap in geometry of students in kaski district.

Statement of the Problem

In the context of Nepal, many students have faced problems mainly in mathematics in which most of the problems have been seen in geometry. The students spent more time in mathematics compared to other subjects but still there is remaining high failure rate in mathematics. Even, the teachers gave emphasis to mathematics rather than other subjects, there could not be seen any satisfactory performance of students. I found that the students faced problems in geometry rather than arithmetic, algebra and statistics while teaching mathematics at school level. Moreover, researcher found that the students solved the geometrical problems less

than the other problems, if students attempted geometrical problems they could not solve completely while testing the answer sheet of SEE students. Throughout this study, the researcher wanted to find out the level of student achievement in geometry so researcher observed the significant difference between the achievement in geometry among the students at secondary level in Kaski district and also identify the factors that play vital roles in achievement gap of students. Specially, the study intends to answer the following questions:

- a. What is the level of achievement in geometry at secondary level students of Kaski district?
- b. Is there any significant difference between the achievement in geometry among the boys and girls students at secondary level?
- c. Is there any significant difference between the achievement in geometry among the students of institutional and community schools at secondary level?
- d. Is there any significant difference between the achievement in geometry among the students of rural areas' and urban areas' schools at secondary level?
- e. What are the factors that play roles in achievement gap of students?

Significance of the Study

Mathematics is an essential part of curriculum. NESP(1971) recommended mathematics as a compulsory subject for students at school level. Although mathematics is the compulsory subject at secondary level (9 & 10), having same curriculum, similar examination system, same text books and similar evaluation system, people at large extent are found to be compared that achievements of institutional school with the achievements of community school. People prefer to send their children in institutional schools rather than community schools. Most of the institutional schools and urban areas' schools claim that we are providing quality

education than the community schools and rural areas' schools. Different scholars and researcher have found various findings and conclusion in the field of mathematics achievement of students. But this research paper is different from other as it focus to find the level of achievement in geometry at secondary level students and to compare the achievement in geometry between the gender wise, school wise and area wise at secondary level students of Kaski district. Each and every research work has some significance. No one does any research without some importance.

Likewise this study has some of the significance which are as follows:

- a. This study helps to compare the achievement in geometry between boys and girls students.
- b. This study helps to compare the achievement in geometry between the students of institutional and community schools.
- c. The study provides hints to the administrator and mathematics teacher of kaski district in improving the achievement and competency level of students in geometry.
- d. This research provides the information to the concerned persons, agencies and communities about the achievement in geometry of students at secondary level of Kaski district.
- e. This research is useful for the students who are interested to do same type of research.
- f. It helps to find out the factors that play roles in achievement gap of students.

Objectives of the Study

The objectives of the study are:

- a. To find out the level of achievement in geometry at secondary level students of kaski district.
- b. To compare the achievement in geometry between boys and girls students at secondary level.
- c. To compare the achievement in geometry between the students of institutional and community schools at secondary level.
- d. To compare the achievement in geometry between the students of rural areas' and urban areas' schools at secondary level.
- e. To find out the crucial factors that play roles in achievement gap of the students.

Hypothesis of the Study

Research Hypothesis

1. There is no significant difference between the achievement in geometry among the boys and girls students.
2. There is no significant difference between the achievement in geometry among the students of institutional and community schools.
3. There is no significant difference between the achievement in geometry among the students of rural areas' and urban areas' schools.

Statistical Hypothesis

In order to make hypothesis testable, they are translated into statistical hypothesis which are presented below:

1. $H_0 : \mu_1 = \mu_2$ (Null hypothesis)

$H_1 : \mu_1 \neq \mu_2$ (Alternative hypothesis)

Where, μ_1 and μ_2 are the parametric means of achievement in geometry of boys and girls students respectively.

2. $H_0 : \mu_3 = \mu_4$ (Null hypothesis)

$H_1 : \mu_3 \neq \mu_4$ (Alternative hypothesis)

Where, μ_3 and μ_4 are the parametric means of achievement in geometry of students of institutional and community schools respectively.

3. $H_0 : \mu_5 = \mu_6$ (Null hypothesis)

$H_1 : \mu_5 \neq \mu_6$ (Alternative hypothesis)

Where, μ_5 and μ_6 are the parametric means of achievement in geometry of students of rural areas' and urban areas' schools respectively.

Definition of the Terms

Institutional schools : Institutional schools are those schools which do not receive any financial support or aid from the government of Nepal.

Community schools : Community schools are those schools which are established and sponsored by the government of Nepal.

Achievement : Achievement means mathematical achievement in geometry in this study. In this study achievement is defined in terms of the scores obtained by the students on the test conducted by the researcher.

Urban Area's School: Those schools which are located in Pokhara metropolitan city.

Rural Area's Schoo: Those schools which are located in Rural municipality.

Limitation of the Study

some limitations of the study are as follows:

- a. The study was limited to kaski district.
- b. The study was limited to only geometry part of compulsory mathematics.
- c. This study was limited to grade IX students of academic year 2077.
- d. This study was limited to secondary schools of kaski district.
- e. Eight institutional and eight community schools were selected by stratified sampling method.
- f. Only twelve students from each sample schools were selected by stratified random sampling method.

CHAPTER II

REVIEW OF RELATED LITERATURE

There are so many research studies about the mathematical achievement of students. Comparative study of achievement in mathematics under different variables are conducted. Some of these are different class size, parents' education, parents' occupation, students' gender, schools' type, schools' area, ethnic groups, teaching methods, teachers' gender, students' castes etc. The review of related literatures helps to make the concept clear for the study and also directs to analyze and interpret the data. With this assumption some related literatures have been reviewed as follows:

Thapa (2005), did his research in 'A comparative study of secondary level students' achievement in Mathematics between institutional and public school at Butwal municipality of Rupandehi district.' In his research, data were collected from 8 institutional and 8 public schools. The mathematics achievements were examined and were compared among 640 students (320 from each type of school i.e. institutional and public). The statistical techniques used in this study were mean scores, standard deviation and two tailed t-test was used to test whether there is significant difference or not in the mean scores of students in mathematics studying at tenth grade. All the test were tested at 0.05 level of significance. The mean score of institutional school students and public school students were 40.45 and 33.68 respectively. The mean score of institutional schools' students was higher than the public schools' students. This shows the significant difference at public and institutional schools students in their achievement.

Subedi (2005), did research work entitled 'Factors affecting failures in mathematics in SLC examination.' with the objective to measure the effect of school and out of school contextual factors in mathematics achievement in SLC examination and to determine the correlation between affecting factors and mathematics achievement, locating in sarlahi district. He concluded that the school environment such as school location, number of students in classroom, classroom environment and regularity of teacher had strongly positive effects on mathematics achievement. The school environment is very essential for increasing the mathematics achievement. Effecting classroom teaching, such as pleasing environment, initiation of lesson, use of instructional materials and appropriateness to teaching participation to discussion, teachers' activities had strongly positive effects on students' mathematics achievement. Time variable i.e. amount of time students spent out on school activities such as leisure reading, homework, discussion with peer had strongly positive effects on mathematics achievement.

Poudel (2006), conducted a research on 'A comparative study on mathematics achievement of secondary level students taught by trained and untrained teacher.' The purpose of this study was to compare the mathematics achievement of students taught by trained and untrained teacher. To collect the data, first a set of achievement test question was developed and administrated on 168 (84 boys and 84 girls) students of grade 9 from 12 schools of Kathmandu district. Secondly two of opinionaire were developed. That means, standard deviation, percentile, cumulative frequency curve and t-test were used as a statistical tools to analyzed and interpret the data. In the comparison of boy's achievement in mathematics, it was found that there was significant difference in the achievement of girls at the same grade taught by trained teacher was not equal to that of untrained

teacher and concluded that, there was significant difference in mathematics achievement of girls taught by trained teacher, the main achievement was difference in gender wise. It was concluded that there was significant difference of boys and girls achievement taught by trained teachers. But in the case of students who were taught by untrained teachers, It was found that the achievement of boys and girls had no difference. Thus, it was concluded that there was insignificant difference in the achievement of boys and girls who were taught by untrained teachers.

Poudel (2011), did her research in ‘Factors affecting the girls’ achievement in geometry’. The objectives of the study were to find the girls’ achievement level in geometry, to compare the achievement of girls and boys students in geometry and to identify the factors that effects the achievement of girls in geometry. This study was limited to syangja district. In this research, survey research design was applied. She concluded that mainly six factors were identified as influential variables for the achievement in geometry of girl’s students. Those six variables were:

- I. Home environment
- II. School environment
- III. Teaching learning process
- IV. Social variable
- V. Error in problem solving
- VI. Time variable.

Khadka (2013), did his research on ‘Comparative study on achievement of institutional and public school students in pyuthan district.’ He aimed to compare the achievement of institutional and public school students in mathematics. 15 schools were selected for the sample and 150 students were included for his research

as a sample. The statistical techniques used in this study were mean scores, standard deviation and two tailed t-test was used to test whether there is significance difference or not in the mean scores of the students in mathematics studying at ninth grade. He concluded that the mean score of institutional school students was of higher than the public school students.

Poudel (2013), did his research on 'A comparative study of mathematics achievement of students of squatter and non-squatter families.' His aim was to compare the mathematics achievement of students of squatter and non-squatter families and to compare the sex wise mathematics achievement of students of squatter and non-squatter families. He concluded that the mathematics achievement of students of non-squatter families were higher than the students of squatter families. And the mathematics achievement of male students of non-squatter families was much better than that of male students of squatter families and nearly equal to the achievement of female students of squatter and non-squatter families.

Researchers (Yeasmin, Halder, Maiti) 2016 had conducted the study on the topic 'A comparative study of achievement in mathematics between boys and girls students at the end of elementary education.' The aim of this study was to compare the achievement between boys and girls students in mathematics. Stratified random techniques were adopted for this study. 400 students were taken from 19 schools out of them, 210 students were boys and 190 students were girls. The authors prepared achievement test paper in mathematics for data collection tools. The authors concluded that the achievement of boys students was better than the achievement of girls students.

Bhugai (2014), conducted a research on ‘Comparative study on achievement in mathematics of Magar Chhantyal students at secondary level in Baglung district.’ The purpose of the study was to compare the mathematics achievement of student based on different ethnic group. To collect the data, Mr. Blungai had developed a MAT (Mathematical Achievement Test) for 128 students of which 64 were Magar and 64 were Chhantyal. All the students were taken from 9 public schools of Baglung district. Then the achievement score was calculated by using mathematical tools like mean, standard deviation, cumulative frequency curve and t-test, these score were used to analyze and interpret the data.

Nepali (2016), conducted his thesis entitled ‘Achievement in mathematics between institutional and community school.’ The objective of this study was to compare the students’ achievement in mathematics in institutional and community schools. This study was limited in the institutional and community schools of Sindhuli district. He had prepared two sets of tools which were achievement test and closed survey questionnaire. At last he concluded that the level of mathematics achievement of institutional school students was higher than the community school students.

Paudel (2016), conducted a thesis on ‘A comparative study of achievement in mathematics of Brahmin and Newar Students at Secondary Level in Parbat District.’ The purpose of the study was to compare the mathematical achievement between Brahmin and Newar students. To test their achievement level, Mr. Netra Prasad Paudel developed the mathematical achievement test for the sampled students. He recorded the t-score and calculated the result using mean, standard

deviation and t-table. In this study, he concluded that the achievement of Brahmin student was better than the Newar students.

Conceptual Framework

The conceptual Framework is an adaptation of a model used in previous study, with modifications to suit the inquiry. It is the direction of the study through which, the researcher showed the relationship of the different construct that he wanted to investigate. The conceptual framework of this study gives the clear picture on the relationship between dependent and independent variables used in this research. In the context of the study, the independent variables are: parents' education status, family economic status, student's regularity, class size, quality of teachers, tuition fees, family guidance, role of administration, extra-curricular activities.

The mathematics achievement difference between Community and Institutional schools is also a unit of analysis in the research which is the dependent variable of this study. The conceptual framework of this study is shown as the following figure.

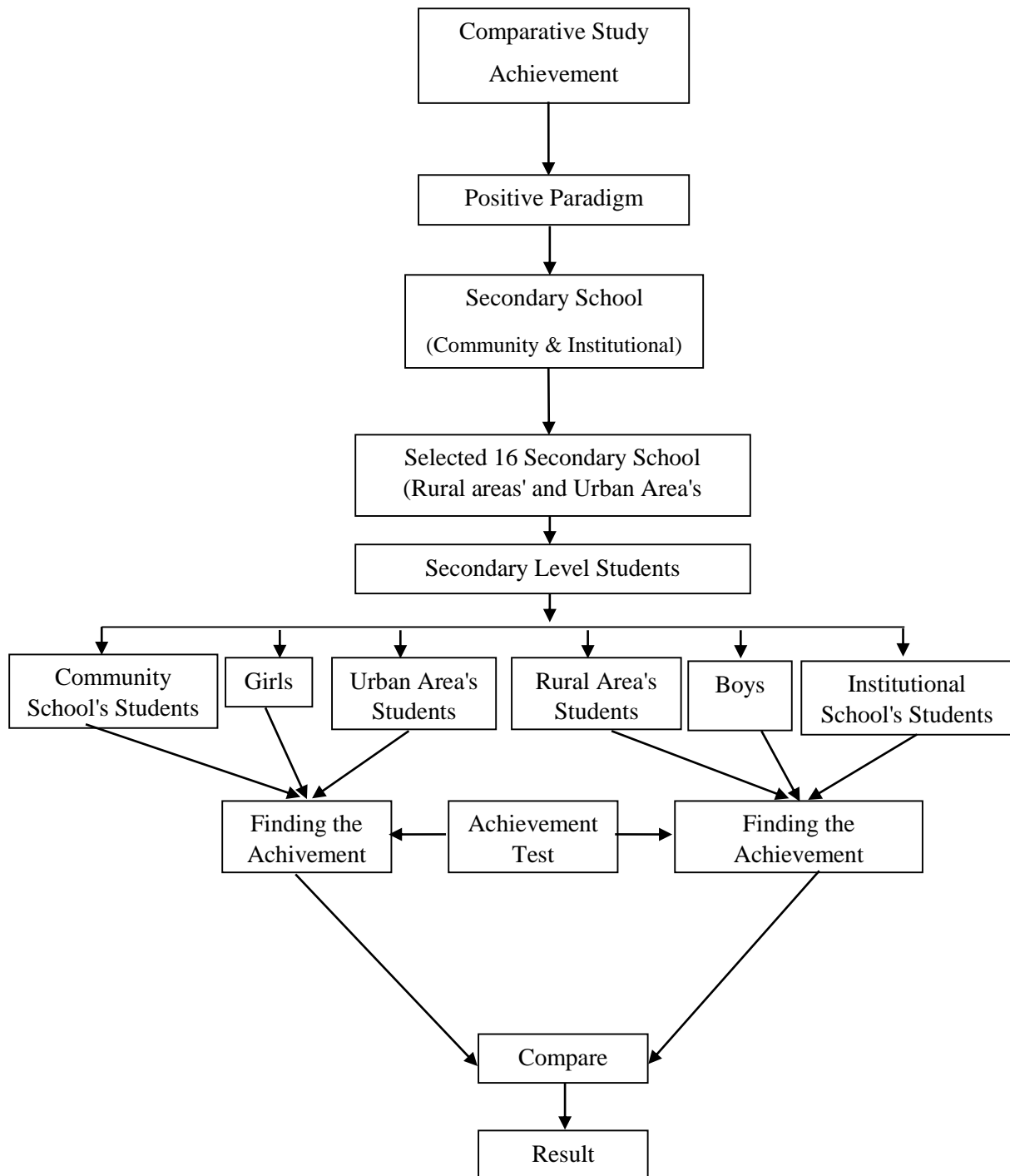


Figure 1: Conceptual Framework of the Stud

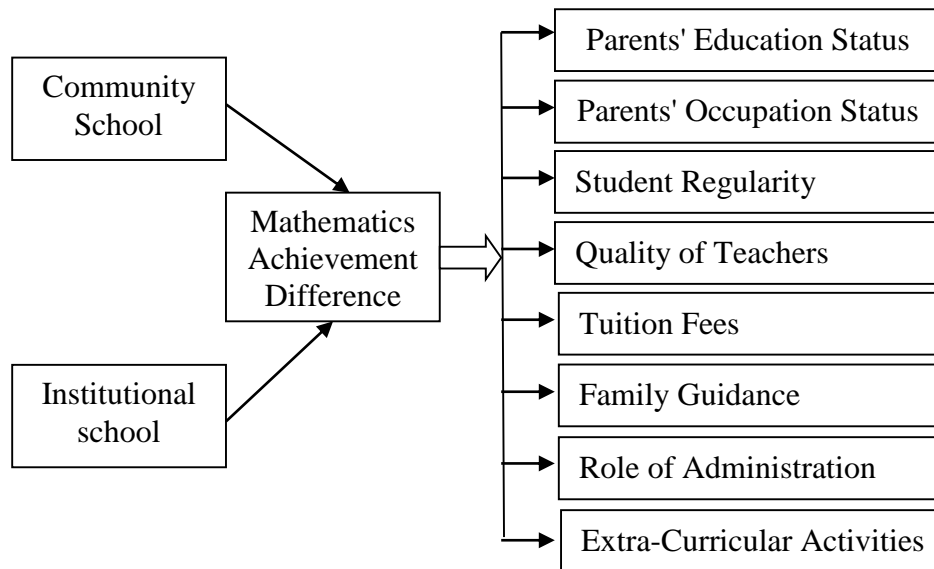


Figure 2: Conceptual Framework of the Stud

Source:- Olive Joy F. Andaya, Researcher World Journal of Arts, Science and Commerce

CHAPTER III

METHODS AND PROCEDURES

This chapter presents separate headings with their respective sub headings. The variables in the study includes achievement of students and parents educational and economic status. As already mentioned in the limitation, no other variables have been taken into consideration in the present study. This chapter is divided into the subtopics which are design of the study, population of the study, sample of the study, tools and instrument of data collection, pilot study, item analysis and discrimination index, data collection procedure, data analysis procedure, which are described below.

Design of the Study

Research design is the heart of the research. This is the most important part of research. This chapter describes about plan and procedures of the study which were carried out to achieve the objectives of this study. It intends to describe the design of the study, the size of samples and how they are selected the method of sampling, the sources and method of collecting the data, the instrument used to collect the data, the procedures used for collecting the data and statistical procedures used for the analysis and interpretation of the data. The present study follows the quantitative survey research procedure. The mean achievements of grade IX students of institutional and community schools of Kaski district are compared and hypothesis is tested and achievement test and questionnaire for the students are the main instruments used for the data collection.

Population of the Study

The target population for the achievement test consists of all the students of grade IX of academic year 2077. The total number of the institutional and community schools, total students and parents from the selected schools at Kaski district are taken as the target population of this research.

Sample of the Study

For this study, 10 wards of Pokhara Metropolitan city and 2 Rural Municipality were selected by random sampling method. Here, 16 Secondary Schools were selected in which 8 schools were community and rest of 8 schools were institutional with the total number of students were 192. Out of them 5 community and 5 institutional schools were taken as a sample from Pokhara Metropolitan city, and 3 community and 3 institutional schools were taken from rural municipality. The selection of schools and students were made by stratified random sampling method. In the total number of students (i.e. 192), 96 were selected from community schools and rest of 96 were selected from institutional schools. The number of students taken from each school was 12 in which 6 boys and 6 girls. The sampling procedure of this study is shown as following figure.

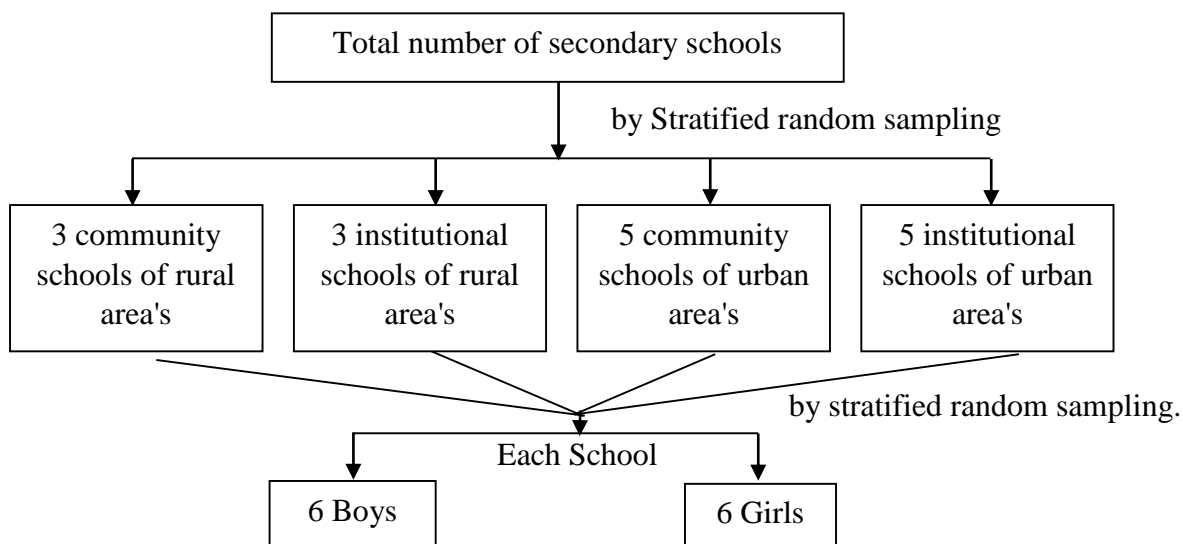


Figure 3: Selection of sample Student

Tools and Instrument of Data Collection

Mainly there are two tools for the study. These tools of data collection are for the students. The tool for the students are achievement test and closed survey questionnaire. The instruments used in this research are described below.

Achievement Test

Achievement test attempts to measure what an individual has learned and what his or her present level of performance is. Most tests used in schools are achievement tests. In this research, achievement test scores are used in evaluating the performance of the students in geometry. For this purpose, the researcher developed an achievement test with the help of supervisor. Methods and procedures of developing test are explained below:

Construction of Test

The researcher constructed an achievement test with the help of supervisor consisting of 52 multiple-choice items covering the contents of geometry of grade IX mathematics and the test items was based on the curriculum of grade IX mathematics. Similarly, test items contained knowledge, comprehension, skill and application level of cognitive domain. The achievement test items were taken from different areas of geometry of grade IX mathematics.

Pilot Study, Item Analysis and Discrimination Index

For the reliability of the test, the investigator had carried out a pilot study of the test prepared to 18 students of Shree Bishnupaduka Secondary School, Pokhara-25, Kaski. Before administrating the test paper, the investigator instructed the students about the methods of the test paper.

The final selection of the test-items were based on the item analysis of the pre-tested items. The test was refined by eliminating and modifying the

inappropriate item. Item analysis table determines the Difficulty Index (P-value) and the Discrimination Index (D-value) of each items in the instrument. The P-value and D-value of each items were calculated from the 33 percent of the highest scores and 33 percent of the lowest scores of 19 students who were participated in pilot test. Taking into account of the P-value and D-value of each items, as mentioned by Singh (1997) on test, 'Measurement and research methods in Behavioral Sciences', only those items were selected whose P-value is ranking between 30 to 70 percent and D-value 0.30 to 0.70.

From the item analysis, too easy and too difficult items which did not discriminate between the better and weaker pupil were omitted. From the pilot study, 12 questions were rejected and some were modified too. Thus, the refined achievement test paper contained only 40 questions. From the pilot study, the time required to respond the each questions were calculated and provided only 60 minutes for 40 test-items. The test was taken without pre-information in the class. The scoring of the answer sheets of administered test were carried out manually by researcher himself. The selected items for the tool were given in Appendix-I.

Validation of Test

A test should be both valid and reliable so as to be appropriate. So the validity and Reliability of the achievement test were established as mentioned below.

Establishment of Reliability

A test is reliable to the extent that it measures whatever it is measuring consistently. In tests that have a high coefficient of reliability, errors of measurement have been reduced to a minimum. Hence in order to reduce the probability of measurement errors and increase reliability, researcher had increased the number of items in the achievement test. Often it happens that some students with a great deal

of knowledge may do poorly because the test didn't sample their knowledge: that is, they knew a lot but not the answer to those few items. Others with only a partial understanding of the course content may guess and get the answers right. Thus, a test with only few items has great deal of measurement. Test items should be highly related to other test items. Thus to measure internal consistency Split-Half method was used where the test items were divided into two set (odd no. questions and even no. questions) The scores in the number of correct answer on the all odd number items and all even number items of the test were denoted by X and Y respectively which have been shown in appendix-VII. The coefficient of correlation obtained by split-half method was 0.31 and hence reliability coefficient of the test was found to be 0.47 which is moderate.

Establishment of Validity

"Validity refers to the degree to which evidence and theory support the interpretation of test scores entailed by proposed users of test" (Joint Committee on Standards for Educational and Psychological Test, 1999). Validity evidence is based on three sources: content, relations to others variables and construct.

In order to demonstrate evidence of validity of the content the researcher first defined the universe of content that could be included in the test and then selected sample items. Items were selected on the basis of their significance. To establish content validity, specification chart was prepared. In this chart each unit included in the content were listed and their behavioral objectives were analyzed. To measure the achievement of these objectives, multiple choice items question for the test was prepared. To improve the language used in the researcher, experts and his colleagues were consulted.

Closed Questionnaire

Questionnaire is a pre-defined series of questions used to collect information from individuals. In this study, researcher made a closed-form questions in which the student should give the best answer among the options given. The items in this questionnaire were taken from Olive Joy F. Andaya's study and a few items were modified in the context of Nepal. For the factors that are liable in causing achievement gap of students researcher made a closed questionnaire to know the parents' status and class size of the school. The factors included in the questionnaire are: fathers' education level, mothers' education level, fathers' occupation, class size of the schools and student's regularity only.

A set of closed questionnaire form was distributed among the 192 students at the same time when the achievement test was administered among them. The students were instructed to fill and select the actual information on the questionnaire.

Data Collection Procedure

In this study, first of all, the schools were sampled. For this, researcher contacted principal and mathematics teacher of the sample schools of Kaski district at different dates and times, explained in detail the purpose of the contact and sought permission and appointment to visit the mathematics class of grade IX and collect the data. Achievement tests were prepared by the researcher himself after pilot study. The test-items were based on the national curriculum prescribed by 'Ministry of Education'.

Thus, test items were given to the students and the performance of the students studying institutional and community schools was tested. The test was administered among 192 students participating equally from both institutional and community secondary schools. At the same time a set of closed questionnaire-form was also provided to those students who were attending in the test. The students were instructed not to copy or discuss and to fill actual information. The time was given 60 minutes and then researcher collected the responded sheets after allocated time. The date and time that the researcher visited the different sample sites and collected data using the well prepared test papers and closed questionnaire-forms, was mentioned in the Appendix-II.

Data Analysis Procedure

The researcher analyzed and interpreted the data by statistical test, table analysis of the tabulation of data which were collected by achievement test paper and survey questionnaires. For the statistical test mean (\bar{X}), standard deviation (σ) and t-value were used in the analysis of data. All the hypothesis were tested for their significance at 0.05 alpha levels i.e. at 95 percent confidence level. A two-tailed test is appropriate when the null hypothesis is $\mu_1 = \mu_2$ (μ_1, μ_2 being some specified values) and the alternative hypothesis $\mu_1 \neq \mu_2$. Thus, the researcher used two-tailed t-test for this study.

Also the statistical method, bar diagram and tables analysis were used to interpret the collected data. The closed questionnaire as responded by students were converted into numerical data, so as to change into percentage and other statistical means. The response given by the students were constructed into meaningful words and their quoted "narration" was prioritized to analyze the data which gave the meaning about the factors that affect achievement of the students.

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

The data for the study as described in chapter III were collected from secondary schools students of grade IX. The collected data were tabulated, analyzed and interpreted as mentioned below.

This section is grouped into different sub-sections to make easy for analysis on different sub-headings. The sub-sections deal with the statistical analysis and interpretation of data obtained from the sources of sample students in the achievement test. Those data were tabulated and analyzed using mean, standard deviation and two-tailed t-test. The data of the achievement test scores were analyzed under the following headings.

Table 1 : List of the Sampled Schools of this Study

S. N	Name of the schools	Address	Types of schools	Total no. of students included		
				Boys	Girls	Total
1.	Machhapuchhre Ma.Vi	Machhapuchhre-2	Community	6	6	12
2.	Bal Mandir Secondary School	Annapurna-3	Community	6	6	12
3.	Machhapuchhre Ma.Vi	Annapurna-2	Community	6	6	12
4.	Chhorepatan Ma.Vi	Pokhara-17	Community	6	6	12
5.	Mahendra Ma.Vi	Pokhara-19	Community	6	6	12
6.	Gogan Ma.Vi	Pokhara-32	Community	6	6	12
7.	Ambika Ma.Vi	Pokhara-25	Community	6	6	12
8.	Mahendra Ma.Vi	Pokhara-9	Community	6	6	12
9.	Gyanjoti Boarding School	Machhapuchhre-4	Institutional	6	6	12

10	Abhiman Memorial Secondary School	Annapurna-5	Institutional	6	6	12
11	Morning Star Boarding School	Annapurna-2	Institutional	6	6	12
12	KEF Secondary School	Pokhara-1	Institutional	6	6	12
13	Kaski Mordanized Academy	Pokhara-14	Institutional	6	6	12
14	Himanchal Boarding School	Pokhara-7	Institutional	6	6	12
15	Siddivinayak Boarding School	Pokhara-29	Institutional	6	6	12
16	Bagmara Academic Garden	Pokhara-33	Institutional	6	6	12

Analysis of the Student's Achievement in Geometry on the Basis of Achievement Test

Level of Achievement in Geometry

The first purpose of the study was to examine the level of achievement in geometry of secondary level students (Grade IX completers). The data obtained from standardized test items were analyzed. The analyzed data showed that the maximum and minimum score obtained by the students were 80 and 14 respectively out of total 40 items (each items carry out 2 marks). The student's performance in the achievement test was categorized into Nine levels according to national education board grading system. The level of student's achievement in kaski district is shown in Table No. 2.

Table 2 : Level of Achievement in Geometry

Level of achievement	Test score range	No. of examine	Percentage
Outstanding (A ⁺)	72-80	29	15.10
Excellent (A)	64-72	31	16.15
Very Good (B ⁺)	56-64	23	11.98
Good (B)	48-56	29	15.10
Satisfactory (C ⁺)	40-48	28	14.58
Acceptable (C)	32-40	25	13.02
Partially Acceptable (D ⁺)	24-32	18	9.38
Insufficient (D)	16-24	8	4.17
Very Insufficient (E)	0-16	1	0.52

From the above classification, it has been seen that the level of achievement in geometry of

29 (15.10%) students secured A⁺ grade (marks between 72-80),

31 (16.15%) students secured A grade (marks between 64-72)

23 (11.98%) students secured B⁺ grade (marks between 56-64)

29 (15.10%) students secured B grade (marks between 48-56)

28 (14.58%) students secured C⁺ grade (marks between 40-48)

25 (13.02%) students secured C⁺ grade (marks between 32-40)

18 (9.38%) students secured D⁺ grade (marks between 24-32)

8 (4.17%) students secured D grade (marks between 16-24)

1 (0.52%) students secured E grade (marks between 0-16)

Comparison of Achievement in Geometry between Boys and Girls Students

The mean, standard deviation and corresponding t-value of the scores obtained by boys and girls students at secondary level are presented in table no. 3

Table 3 : Achievement in Geometry of Boys and Girls Students

Group	No. of Students	Mean	S.D	Calculated t-value	Conclusion
Boys	96	52.50	18.07	0.31	0.31<1.96
Girls	96	51.75	15.51		No Significant

Significant at 0.05 level

where,

S.D = standard deviation

D.F = Degree of freedom (n_1+n_2-2) = 190

[The null hypothesis will be accepted if $-1.96 < t < 1.96$ at the table value $t_{0.025, 190} = 1.960$ (two tailed test) $\alpha = 0.05$]

The analysis of the information mentioned in the above table 3 shows that the number of the students who participated was 96 from both Boys and Girls. The mean scores of the boys students and girls students are 52.50 and 51.75 respectively. Therefore, the mean scores of boys students is higher than the mean scores of girls students by 0.75. The calculated standard deviation of boys students is 18.07 and girls students is 15.51. The calculated t-value is 0.31 which is less than the tabulated value ($t_{0.025,190}=1.96$). Therefore, our null hypothesis "There is no significant differences between the achievement in geometry of boys and girls students." is accepted and the alternative hypothesis is rejected. From the above table the

researcher has concluded that, there is no significant difference between the achievement in geometry among the boys and girls students.

Comparison of Achievement in Geometry between Institutional and Community Secondary Schools Students

The mean, standard deviation and corresponding t-value of the scores obtained by institutional and community secondary schools students are presented in Table No. 4

Table 4 : Achievement in Geometry between Institutional and Community Schools Students

Schools Type	No. of Students	Mean	S.D	Calculated t-value	Conclusion
Institutional	96	53.83	16.39	1.41	1.41 < 1.96
Community	96	50.42	17.11		No significant

Significant at 0.05 level

where,

S.D = standard deviation

D.F = Degree of freedom $(n_1+n_2-2) = 190$

[The null hypothesis will be accepted if $-1.96 < t < 1.96$ at the table value $t_{0.025, 190} = 1.960$ (two tailed test) $\alpha = 0.05$]

The analysis of the information mentioned in the above table 4 shows that there are 96 students from institutional schools and 96 students from Community schools. The mean score obtained by institutional schools students is 53.83 and

mean score obtained by Community schools students is 50.42. Therefore, the mean score of institutional schools students is higher than the community schools students by 3.41. The calculated standard deviation of institutional and community schools students are 16.39 and 17.11 respectively. The calculated t-value is 1.41 which is less than the tabulated value ($t_{0.025,190} = 1.960$). Hence the null hypothesis "There is no significant difference between the achievement in geometry among the students of institutional and community schools." is accepted and alternative hypothesis is rejected. From the above table 4 the researcher has concluded that there is no significant difference between the achievement in geometry among the students of institutional and community schools.

Comparison of Achievement in Geometry between Rural Areas' and Urban Areas' Schools Students.

The mean, standard deviation and corresponding t-value of the scores obtained by rural areas' and urban areas' schools students are presented in table no 5.

Table 5 : Achievement in Geometry between Rural Areas' and Urban Areas' Schools Students

Schools Location	No. of students	Mean	S.D	Calculated t-value	Conclusion
rural areas' schools	72	52.33	16.68		0.132 < 1.960
Urban areas' schools	120	52	16.94	0.132	No significant

Significant at 0.05 level

Where,

S.D = standard deviation

D.F = Degree of freedom $(n_1+n_2-2)=190$

[The null hypothesis will be accepted if $-1.960 < t < 1.960$ at the table value $t_{0.025,190} = 1.960$ (two tailed test) $\alpha = 0.05$]

The analysis of the information mentioned in the above table 5 shows that there were 72 students from rural areas' schools and 120 students from urban areas' schools. The mean score of rural areas' and urban areas' schools students are 52.33 and 52 respectively. Therefore the mean score of rural areas' schools students is higher than the mean score of urban areas' schools students by 0.33. The calculated standard deviation of rural areas' schools students and urban areas' schools students are 16.68 and 16.94 respectively. The calculated t-value is 0.132 which is less than tabulated value ($t_{0.025,190} = 1.960$). Hence, The null hypothesis "There is no significant difference between the achievement in geometry among the students of rural areas' and urban areas' schools." is accepted and alternative hypothesis is rejected. From the above table 5 the researcher has concluded that there is no significant difference between the achievement in geometry among the students of rural area's and urban areas' schools.

Analysis of the Factors Affecting in Achievement in Geometry Difference

Education Status of Parents

Learning environment plays a vital role in students' cognitive development positive home environment and educational activities support to such effective

learning parents' educational status refers to the parent's level of schooling. Parents' education level was based on the highest level of education attained by their parents.

An Analysis of the Students' Achievement in Geometry on the Basis of Fathers' Education Level

Table 6 : Students' Achievement in Geometry on the Basis of Fathers' Education Level

Fathers' Education Status	Level of Students' achievement		Total
	Marks obtained 60% or above 60% (in number)	Marks obtained below 60% (in number)	
Uneducated	4	7	11
Primary level	18	19	37
Secondary Level	43	40	83
Higher Level	47	14	61
Total	112	80	192

The above table shows that the comparative analysis of students' achievement according to fathers' educational status.

The level of students achievement with respect to their fathers' education has been measured by two factors i.e. students getting 60% or 60% above marks and students getting below 60% marks.

The table also shows that the only 4 students secured 60% or 60% above marks and other 7 students secured below 60% marks, whose father were uneducated. Similarly, 18 students secured 60% or 60% above marks and 19 students secured below 60% marks, whose fathers' education level were primary level.

43 students secured 60% or 60% above marks and 40 students secured below 60% marks, whose fathers' education level were secondary level. And 47 students secured 60% or 60% marks and 14 students secured below 60% marks, whose fathers'

education level were higher level. This shows that the significant effect of the fathers' education to their children's progress.

So, the education level of the father is one of the important factors in students' performance. It indicates that the educated fathers are more sensitive towards their children's learning and learning environment.

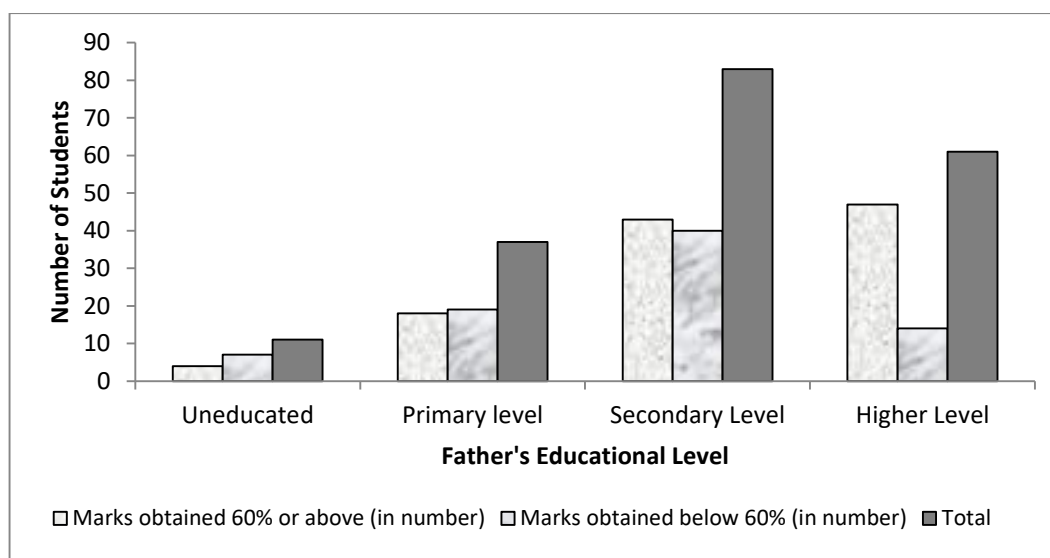


Figure 4: Influence of Fathers' Education Level in their Children's Achievement in Geometry

An Analysis of the Students' Achievement in Geometry on the Basis of Mothers' Education Level

Table 7 : Students' Achievement in Geometry on the Basis of Mothers' Education Level

Mothers' education Status	Level of Students' achievement		Total
	Marks obtained 60% or above 60% (in number)	Marks obtained below 60% (in number)	
Uneducated	7	10	17
Primary level	28	25	53
Secondary Level	48	39	87
Higher Level	29	6	35
Total	112	80	192

The above table shows that the comparative analysis of students' achievement according to mothers' educational status. It shows that the effect of mothers' educational status to their childrens' learning. Mothers' educational status was categorized into four parameters i.e uneducated, primary level, secondary level and Higher level. Similarly the level of students' achievement with respect to their mothers' educational level was measured by two factors i.e students getting 60% or 60% above marks and students getting below 60% marks.

The table also shows that only 7 students secured 60% or 60% above marks and other 10 students secured below 60% marks, whose mothers were uneducated. Similarly 28 students secured 60% or above 60% marks and 25 students secured below 60% marks, whose mothers' education level were primary level. 48 students secured 60% or above 60% marks and 39 students secured below 60% marks, whose mothers' education level were secondary level. And 29 students secured 60% or 60% above marks, whose mothers' education level were higher level.

This shows the significant role of the mothers' education to their childrens' progress. So, the education level of the mother is one of the important factors in student's learning. It indicates that the educated mothers are more sensitive towards their children's learning environment.

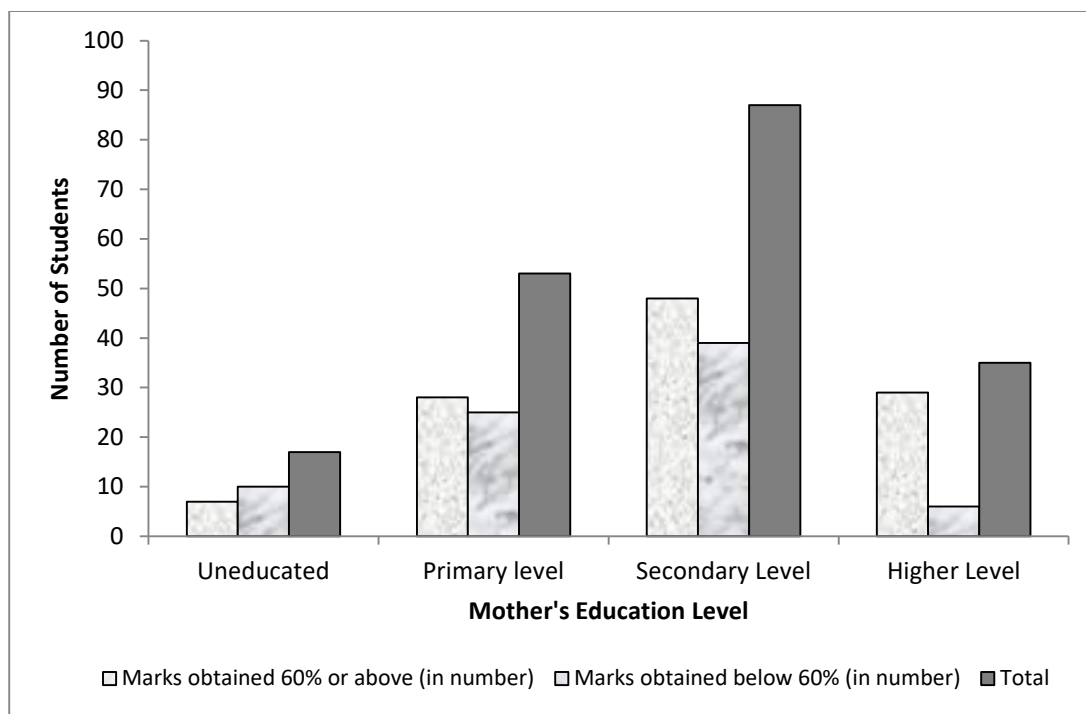


Figure 5 : Influence of Mothers' Education Level in their Children's Achievement in Geometry

Occupational Status of Parents

Parent's occupation normally determines their children's status. The parents who have the respected profession or well-paid job may create a good educational environment among their offspring. Educational aspects on the part of guardians play a significant and effective result to their children in learning process.

The parents with a respected job are supposed to be strong in their economic status. They can guide properly their children to bring them in a good track with the fulfillment of the children's basic requirement for educational background. As a result, educational achievement in their children increases.

An Analysis of the Students' Achievement in Geometry on the Basis of their Parents' Occupation

Table 8 : Students' Achievement in Geometry on the Basis of their Parents' Occupation

Parents' Occupation Status	Level of Student's achievement		Total
	Marks obtained 60% or above 60% (in number)	Marks obtained below 60% (in number)	
Agriculture	17	13	30
Service	22	4	26
Labour	8	3	11
Business	28	17	45
Others	37	43	80
Total	112	80	192

The table no 8 shows that effect of fathers' occupation to their childrens' learning, fathers' occupational status was categorized into five parameters i.e. Agriculture, service, labour, Business and others. Similarly, the level of student's achievement with respect to their fathers' occupation was measured by two factors i.e students getting 60% or 60% above marks and students getting below 60% marks. From the above table, it can be seen that the father who have services, business occupation and well-paid job have their children's good achievement in geometry. The table also shows that the children are getting low achievement whose fathers are working labour, agriculture, have low income and cannot pay special attention in their children's study.

This shows that the significant effect of the fathers' occupation to their children's progress. So the fathers' occupation is one of the important factors in student's learning.

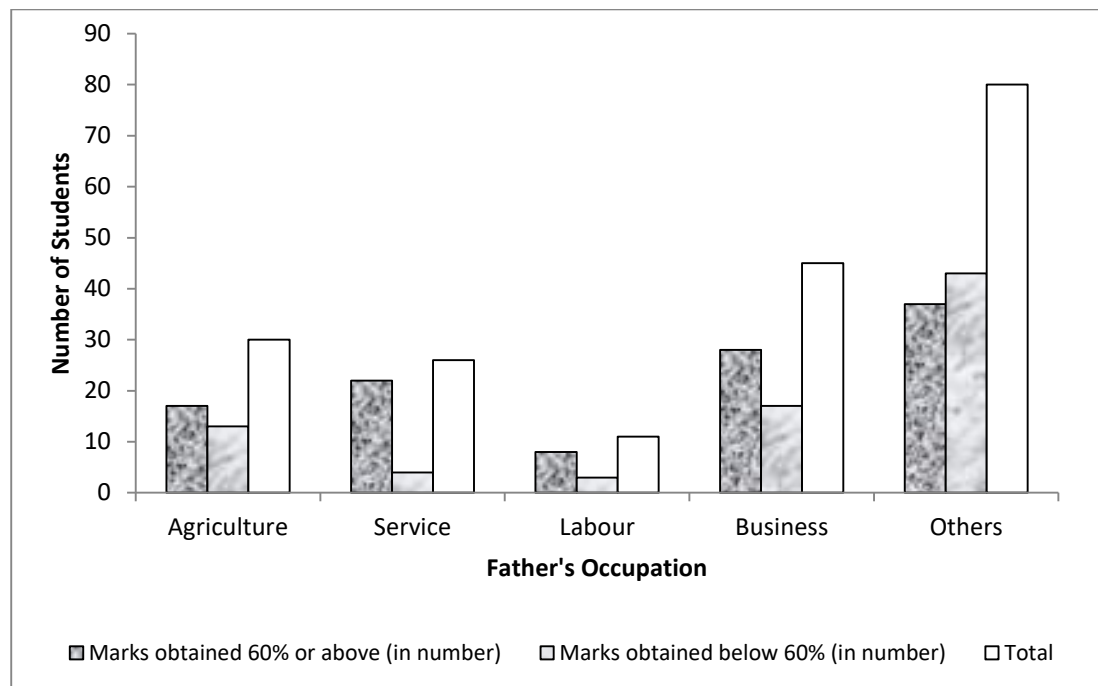


Figure 6 : Influence of Fathers' Occupation in their Children's Achievement in Geometry

Class Size of the Schools:

Class size plays an important role on deciding the student's academic achievement. It is difficult for both students to understand and teacher to make understand in a class with large number of students.

An Analysis of the Students' Achievement in Geometry on the Basis of their Class Size of the Schools

Table 9 : Students' Achievement in Geometry on the Basis of their Class Size of the Schools

Class size of the school	Level of students' achievement		Total
	Marks obtained 60% or above 60% (in number)	Marks obtained below 60% (in number)	
Below 20	0	12	12
20-30	41	19	60
30-40	43	29	72
above 40	28	20	48
Total	112	80	192

From the above table it can be shown the effect of class size to childrens' learning, class size of schools was categorized into four parameters i.e. below 20, 20-30, 30-40 and above 40. Similarly, the level of students' achievement with respect to class size of the school was measured by two factors i.e. students getting 60% or 60% above marks and students getting 60% below marks.

From the above table, it can be seen that the students getting good marks whose class size of schools are 20-30 and 30-40 and the students are getting low achievement whose class size of the schools are below 20 and above 40.

This shows the significant effect of the class size of the school to childrens' progress. So, the class size of the schools is one of the important factors that plays the vital role in achievement gap of the students.

Student Regularity

Mathematics is a subject which is difficult for the self study only. So, the presence in mathematics class is most important for the better achievement. So, the researcher had asked to the students by closed questionnaire forms, "How is your presence in the class?" The students' response of the questions had shown that the most of the students had good achievement who were regularly present in the class and students were found to have very poor performance who were not regularly present in the class. So, student regularity is most important factor that plays the roles in achievement gap of the students.

CHAPTER V

FINDINGS, CONCLUSIONS AND IMPLICATIONS

Findings

The scores of 192 students were analyzed by using the mean, standard deviation and two-tailed t-test. Also the table analysis, and bar diagram were used to analyze the influencing factors. Statistical analysis of the collected data yielded the following results as finding of the study.

- The analysis of the achievement score obtained by students in the test shows that 15.10 percent of the students secured A⁺ grade, 16.15 percent secured A grade, 11.98 percent secured B⁺ grade, 15.10 percent secured B grade, 14.58 percent secured C⁺ grade, 13.02 percent secured C grade, 9.38 percent secured D⁺ grade, 4.17 percent secured D grade and only 0.52 percent of the students secured E grade.
- The mean scores of boys and girls students are 52.50 and 51.75 respectively. The mean score of boys students is higher than the girls students by 0.75. The calculated t-value is less than tabulated t- value (i.e. cal. $t=0.31 < 1.96$). Hence, this difference in mean is no significant at 0.05 level.
- The mean score of the institutional and community schools students are 53.83 and 50.42 respectively. The mean score of institutional schools students is higher than the community schools students by 3.41. The calculated t-value is less than the tabulated t-value (i.e. cal. $t=1.41 < 1.96$). Hence, this difference in mean is no significant at 0.05 level.

- The mean score of rural areas' and urban areas' schools students are 52.33 and 52 respectively. The mean score of rural areas' schools students is higher than the urban areas' schools students by 0.33. The calculated t-value is less than the tabulated t-value (i.e. cal. $t=0.132 < 1.96$). Hence, this difference in mean is no significant at 0.05 level.
- When students' mean achievement is compared by the educational status of the parents, it has been observed that the students whose parents are educated, performed good performances than the students whose parents didn't have schooling.
- When the students' achievement is compared by the present occupation of the parents, it has been seen that the students whose parents can afford much have been performed better than the other. On the basis of parents' occupation, the analysis also shows that the students performed better whose parents have good services, business and earn more.
- It is found that class size also seriously affect the upcoming exam result that is high number and very low number of students in a classroom is adversely affected by their weak performance.
- It is found that the student regularity is directly related with students' performance in geometry.

Conclusion

From the analysis of the study and the findings it can be concluded that the performance of students in geometry at the secondary level has been unexpectedly slow. Several factors have been affecting the achievement in geometry. From the above findings, it can be concluded in the followings points.

- The level of achievement in geometry of the boys students is slightly higher than the girls students and there is no significance difference between achievement in geometry among the boys and girls students.
- The level of achievement in geometry of the institutional schools students is higher than the community schools students and there is no significance difference between achievement in geometry among the students of institutional and community schools.
- The level of achievement in geometry of the rural areas' schools students is higher than the urban areas' schools students and there is no significance difference between the achievement in geometry among the students of rural areas' and urban areas' schools.
- Five variables were concluded to be most important for influencing the academic achievement of the students. These variables are fathers' education level, mothers' education level, fathers' occupation, class size of schools and student regularity.
- Insufficiency of parents' education, their low level of educational pressure or aspiration towards their children and their inattention to the children's studies all contribute to the poor performance of students' achievement. The majority of the parents in Nepal, particularly in the rural region are illiterate or possess less-knowledge of education. The major reason of which could be that the parents are irresponsible towards their children's study. Thus efforts directed towards increasing the awareness of the parents might have a direct effect on students' achievement.
- The occupational status of the parents also plays a vital role. The parents who have got a good job and business earn sufficient and can afford much in their children's education; as a result, such children aren't deprived of any necessity

and have a better performance to those children whose parents lack such good business and earn less.

- It is found that the students were accumulated in a single classroom at a large number in community schools. But the students in institutional` schools were divided in different sections as per the need of supervision and teaching methodology. This also contributes for the achievement of the students.

Implications

From the above findings and conclusion, the researcher would like to suggest some recommendations for the improvement in mathematics instruction to get better achievement at secondary level.

- This study was limited to kaski district. Hence, the researcher has tried to generalize the findings of this study on the whole country in the context of secondary school achievement. So, the similar study should be done region-wise as well as nation-wise and other levels too, in order to establish the findings of the study.
- The achievement score of community schools students is lower than that of institutional schools students. Therefore, the concerned authority, educational policy makers and teachers in schools management should pay special attention to the community schools instruction and design a better plan to promote their educational standard.
- School must be provided with separate mathematics laboratory room with necessary equipment, lab manuals, teachers' teaching guide and appropriate environment inside them. The provided materials should be used in the classroom teaching as well.
- The special attention should be paid to ensure the effective teaching of

mathematics for community school students.

- Teacher should be provided with adequate instructional materials and incentives involving them in decision-making process, training, workshops and seminars.
- There should be effective mechanism at the district level to monitor and supervise the instructional processes as well as output of the schools to ensure the quality of education in each schools particularly in community sector.
- Community schools should learn from the institutional schools' quality education. Thus, the rules and regulations in community schools for both students and teachers should be conducted strictly, particularly in their regular presence in school.

REFERENCES

- Battista, M. T. (1999). The importance of spatial structuring in geometric reasoning. *Teaching Children Mathematics. Journal for Research in Mathematics Education.*
- Bhugain, B. (2014). *A comparative study of achievement in mathematics of Magar and Chhantyal students at Lower Secondary Level in Baglung District.* (Unpublished master's thesis), Department of Mathematics Education, Prithvi Narayan Campus, Tribhuvan University, Pokhara, Nepal
- CDC (2075). *Mathematics Grade 9.*, Government of Nepal, Ministry of Educaiton, Kathmandu.
- Chaudhary, R. (2019). *A study on difficulties in learning geometry at secondary level students.* (Unpublished master's thesis), Department of Mathematics Education, Tribhuvan University, Kirtipur, Nepal.
<https://www.researchgate.net/publication/313678763>
- James & James (2001). *Mathematics Dictionary, (4th ed.)*, New Delhi: CBS Publishers & Distributors, pp.23, 169-170, 239, 387
- Khadka, M. L. (2013). *Comparative study on achievement of institutional and public school students in pyuthan district.* (Unpublished master's thesis), Department of Mathematics Education, Tribhuvan University, Kirtipur, Nepal.
- Limbu, D. P. (2007). *A study of problem faced by students in geometry at secondary level.* (Unpublished master's thesis), Department of Mathematics Education, Tribhuvan University, Kirtipur, Nepal.

- Ministry of Education, (1971). *National Education System Plan for 1971-76*.
Retrieved from:http://www.moe.gov.np/assets/uploads/files/2028_English.pdf
- Mishra, G. (2017). *Factors affecting achievement in mathematics at secondary level*. (Unpublished master's thesis), Department of Mathematics Education, Tribhuvan University, Kirtipur, Nepal.
- Nepali, S (2016). *Achievement in Mathematics between institutional and community school*. (Unpublished master's thesis), Department of Mathematics Education, Tribhuvan University, Kirtipur, Nepal.
- Pandit, R. P. (2007). *Teaching mathematics*. Kathmandu: Ananta Prakashan.
- Parajuli, P. (2020). *The problems faced by female mathematics teachers at basic level*. (Unpublished master's thesis), Department of Mathematics Education, Prithvi Narayan Campus, Tribhuvan University, Pokhara, Nepal.
- Poudel, B. (2011). *Factors affecting the girls' achievement in geometry*. (Unpublished master's thesis), Department of Mathematics Education, Prithvi Narayan Campus, Tribhuvan University, Pokhara, Nepal.
- Poudel, B. H (2013). *A comparative study of mathematics achievement of students of squatter and non-squatter families*. (Unpublished master's thesis), Department of Mathematics Education, Prithvi Narayan Campus, Tribhuvan University, Pokhara, Nepal.
- Poudel, M. (2006). *A comparative study on mathematics achievement of secondary level students taught by trained and untrained teacher*. (Unpublished master's thesis), Department of Mathematics Education, Tribhuvan University, Kirtipur, Nepal.

- Poudel, N. P. (2016). *A comparative study of achievement in mathematics of Brahmin and Newar student at secondary level in Parbat district.*
(Unpublished master's thesis), Department of Mathematics Education,
Prithvi Narayan Campus, Tribhuvan University, Pokhara, Nepal.
- Subedi, G. P (2005). *Factors affecting failures in mathematics in SLC examination.*
(Unpublished master's thesis), Department of Mathematics Education,
Tribhuvan University, Kirtipur, Nepal.
- Singh, A. K. (1997). *Measurement and research methods in Behavioral Sciences,*
New Delhi: Tata Mcgraw-hill.
- Thapa, D. B. (2005). *A comparative study of secondary level students' achievement in Mathematics between institutional and public school at Butwal municipality of Rupandehi district.* (Unpublished master's thesis),
Department of Mathematics Education, Tribhuvan University, Kirtipur,
Nepal..

APPENDIX - I

ACHIEVEMENT TEST-2078

Students Name:

Class: Roll No.:

Gender: Name of School:

Types of School:

1. Which of the following statements is wrong?

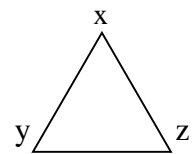
- a) The sum of the interior angle of a triangle is 180°
- b) Each angle of an equilateral triangle is 60°
- c) Base angle of an isosceles triangle are equal.
- d) The exterior angle of a triangle is less than the sum of two non-adjacent interior angles.

2. Which of the following statement is true?

- a) The angle less than 90° is called acute angle.
- b) The angle greater than 90° & less than 180° is obtuse angle.
- c) The angle greater than 180° & less than 360° is reflex angle.
- d) All of the above.

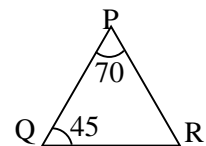
3. Which of the following is true?

- a) $xy + yz = xz$
- b) $zy + yz < xz$
- c) $xy + yz > xz$
- d) $xy + yz \geq xz$



4. Which is the longest side in the given figure?

- a) PQ
- b) QR
- c) PR
- d) all are equal

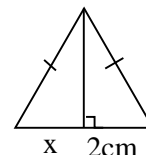


5. In ΔABC , side AC is the shortest, Find the smallest angle.

- a) $\angle ACB$
- b) $\angle BAC$
- c) $\angle ABC$
- d) none of them

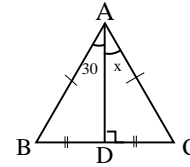
6. From the adjoining figure find the value of x.

- a) $x = 1\text{cm}$
- b) $x = 4\text{cm}$
- c) $x = 3\text{cm}$
- d) $x = 2\text{cm}$



7. From the adjoining figure find the value of x.

- a. 15° b. 30° c. 60° d. 90°

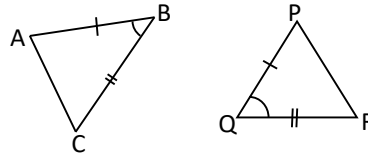


8. In $\triangle ABC$, $\angle A = 30^\circ$, $\angle B = 2x$ & $\angle C = x + 30$ then what is the value of x?

- a. $x = 40^\circ$ b. $x = 60^\circ$
 c. $x = 50^\circ$ d. $x = 70^\circ$

9. In which triangle ABC & PQR are congruent.

- a. A.S.A.
 b. S.A.S
 c. A.A.S
 d. S.S.S

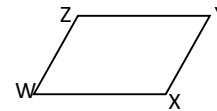


10. In $\triangle PQR$, $PQ = QR = PR$, then what is the value of $\angle PQR$?

- a. 45° b) 90° b) 60° b) None of them

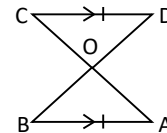
11. In a quadrilateral WXYZ, which angles should be equal to be a parallelogram?

- a) $\angle Z = \angle X$ b) $\angle W = \angle Y$
 c) $\angle Z = \angle W$ & $\angle X = \angle Y$ d) a and b both



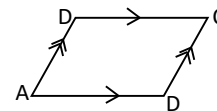
12. In the figure $AB = CD$ and $AB \parallel CD$, what is the relations between AC & BD?

- a) $AC = BD$ b) $AC = 2BD$
 c) AC & BD bisects each other at O d) $BD = 2AC$



13. In a parallelogram ABCD, $\angle ABC = 120^\circ$, what is the measure of $\angle BCD$?

- a) 120° b. 60°
 c. 80° d. 30°

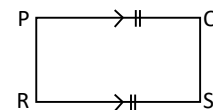


14. Which of the following statement is true?

- a. Diagonals of parallelogram are equal.
 b. Diagonals of parallelogram are bisects each other.
 c. All sides of parallelogram are equal.
 d. Each angle of parallelogram is 90°

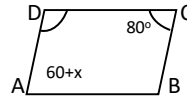
15. In the figure $PQ = RS$ and $PQ \parallel RS$, what is the relation between PR & QS?

- a) $PR = QS$ b) $PR \parallel QS$
 c) $PR = 2QS$ d) $PR = QS$ & $PR \parallel QS$



16. In a parallelogram ABCD, $\angle A = 60^\circ + x$ & $\angle C = 80^\circ$, What is the value of x ?

- a) 40° b) 140°
 c) 20° d) 10°

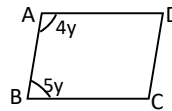


17. Which the following statement is not true?

- a) All parallelograms are rectangle.
 b) All rectangles are parallelogram.
 c) All squares are rhombus
 d) All squares are parallelogram.

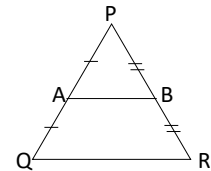
18. In a parallelogram ABCD, $\angle A = 4y$ & $\angle B = 5y$, What is the value of y ?

- a) 10° b. 15°
 c) 25° d. 20°



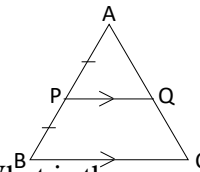
19. In $\triangle PQR$, A & B are mid points of PQ & PR respectively, what is the relation between AB & QR?

- a) $AB = QR$ b) $AB \parallel QR$
 c) $AB = \frac{1}{2} QR$ d) $AB \parallel QR$ & $AB = \frac{1}{2} QR$



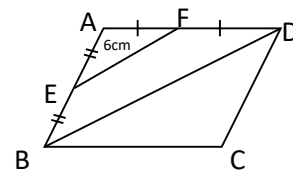
20. In $\triangle ABC$, P is mid-point of AB & $PQ \parallel BC$. If AC is 8cm, what is the measure of AQ?

- a) 8cm b) 16cm
 c) 4cm d) 10cm



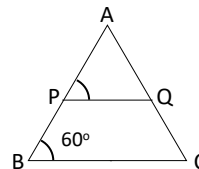
21. In the figure, ABCD is a parallelogram. If $EF = 6\text{cm}$, What is the measure of diagonal BD

- a) 6cm b) 8 cm
 c) 3cm d) 12cm



22. In $\triangle ABC$, P & Q are mid points of AB & AC respectively, find the value of x .

- a) 120° b) 30°
 c) 60° d) 80°



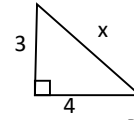
23. Which of the following is true?

- a. Diagonals of Trapezium are equal.
 b. Diagonals of parallelogram are equal.
 c. Diagonals of rhombus are equal.
 d. Diagonals of rectangle are equal.

24. Which of the following is true?
- All sides of equilateral triangle are equal.
 - Any two sides of scalene triangle are equal.
 - None of the sides of isosceles triangle are equal.
 - All sides of isosceles triangle are equal.

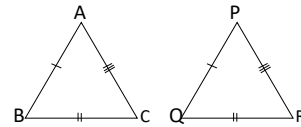
25. From the figure along side. Find the value of x ?

- a. 4 b. 3 c. 5 d. 2



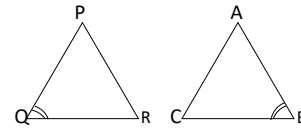
26. By which axiom given triangles are similar

- a) S.A.S. b) S.S.S.
c) A.A.A. d) A.S.S.



27. If the given triangles are similar, which one is the pair of corresponding sides.

- a) PR & AB b) PQ & AC
c) PR & AC d) QR & AC



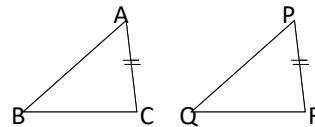
28. By which axiom given triangles are similar?

- a) A.A.A. b) S.S.S.
c) S.A.S. d) S.S.A



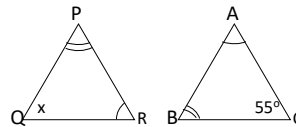
29. If the given triangles are similar which one is the pair of corresponding angles?

- a) $\angle B = \angle Q$ b) $\angle A = \angle Q$
c) $\angle C = \angle Q$ d) $\angle Q = \angle R$



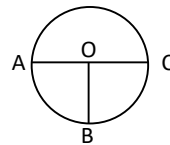
30. If the given triangles are similar, what is the value of x ?

- a) 60° b) 70°
c) 50° d) 55°



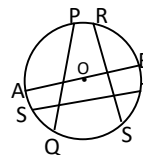
31. In the adjoining circle O is centre of circle & $AC = 7\text{cm}$. Find the measure of OB.

- a) 7 cm b) 14cm
c) 8 cm d) 3.5 cm



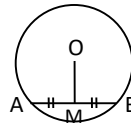
32. In the adjoining circle, O is centre of circle, which one is the longest chord.

- a) AB b) RS
c) PQ d) ST



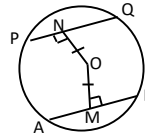
33. In the adjoining figure O is centre of circle & AB is chord of circle, what is the measure of $\angle OMA$?

- a) 75° b) 90°
 c) 60° d) 80°



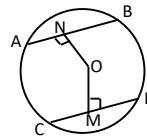
34. In the adjoining circle O is centre of circle, if $OM = ON$ & $AB = 8\text{cm}$, find the measure of PQ.

- a) 8cm b) 10cm
 c) 4cm d) 16cm



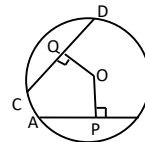
35. In the adjoining figure, O is centre of circle of $AB = CD$ & $OM = 4\text{cm}$. What is the measure of ON.

- a) 8cm b) 2cm
 c) 4cm d) 3cm



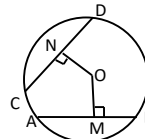
36. In the figure O is centre of circle, $AB = CD$ & $OP + OQ = 18\text{cm}$, find the measure of OP.

- a) 18cm b) 9cm
 c) 10cm d) 8cm



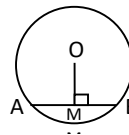
37. In the figure O is centre of circle, $ON = OM$ & $AM = 3\text{cm}$, what is the measure of CD?

- a) 5m b) 4cm
 c) 3cm d) 6cm



38. In the adjoining figure, O is centre of circle $AM = x\text{ cm}$, what is the measure of AB?

- a) xcm b) $2x\text{ cm}$
 c) 4cm d) $3x\text{ cm}$



39. The radius of circle is 7cm, what is the measure of longest chord of circle,
 a) 7cm b) 154 cm
 d) 44cm d) 14cm

40. Which of the following statement is not true?

- a) The diagonal of circle is a longest chord.
 b) The diagonal is double of its radius.
 c) The diagonal of circle passes through the centre....
 d) The diagonal is half of its radius.

APPENDIX - II
QUESTIONNAIRE FORM

1. Education level of father:
 - a. Uneducated
 - b. Primary level
 - c. Secondary level
 - d. Higher level

2. Education level of mother:
 - a. Uneducated
 - b. Primary level
 - c. Secondary level
 - d. Higher level

3. Father's occupation:
 - a. Agriculture
 - b. Service
 - c. Labour
 - d. Business
 - e. Other

4. Total number of students in your class:
 - a. Below 20
 - b. 20-30
 - c. 30- 40
 - d. Above 40

5. How is your presence in the class?
 - a. Regularly presence
 - b. Not regularly presence

6. Do you satisfy with your mathematics teacher in his teaching class?
 - a. Yes
 - b. No

APPENDIX:-III

DATE AND TIME OF VISITED DIFFERENT SAMPLE SITES

S.N.	Name of the schools	Examination Date
1.	Gyan Joti Boarding School	2078/03/20
2.	Bal Mandir Secondary School	2078/03/08
3.	Bagmara Academic Garden	2078/03/05
4.	KEF Secondary School	2078/03/18
5.	Machhapuchchre Ma. Vi.	2078/03/21
6.	Siddhibinayak Boarding School	2078/03/20
7	Kaski Modernized Academy	2078/03/17
8	Abhiman Memorial Secondary School	2078/03/22
9	Morning Star Secondary School	2078/03/23
10	Chhorepatan Ma. Vi.	2078/03/21
11	Gogan Ma. Vi.	2078/03/15
12	Mahendra Ma. Vi.	2078/03/12
13	Himanchal Boarding School	2078/03/25
14	Ambika Ma. Vi.	2078/03/26
15	MahendraMa.Vi.	2078/03/27
16	Machhpuchchhre Ma. Vi.	2078/03/28

APPENDIX:-IV
THE MARKS OBTAINED BY THE STUDENT ON
ACHIEVEMENT TEST ADMINISTERED AMONG THEM

S.N.	Name of the student	Name of school	Boy/ Girl	Marks Obt.
1.	Sarita Adhikari	Gyan Joti Boarding School, Machhhapuchhre-4	Girl	70
2.	Samir Adhikari	Gyan Joti Boarding School, Machhhapuchhre-4	Boy	72
3.	Purnima Ranabhat	GyanJoti Boarding School, Machhhapuchhre-4	Girl	58
4.	Nishan Dhakal	Gyan Joti Boarding School, Machhhapuchhre-4	Boy	68
5.	Monika Shahi	Gyan Joti Boarding School, Machhhapuchhre-4	Girl	54
6.	Sandip Adhikari	GyanJoti Boarding School, Machhhapuchhre-4	Boy	68
7.	Aashish Ranabhat	Gyan Joti Boarding School, Machhhapuchhre-4	Boy	76
8.	Dipisha Ranabhat	Gyan Joti Boarding School, Machhhapuchhre-4	Girl	76
9.	Anupa Adhikari	GyanJoti Boarding School, Machhhapuchhre-4	Girl	60
10.	Anu Shrestha	GyanJoti Boarding School, Machhhapuchhre-4	Girl	42
11.	Rajesh Timilsina	Gyan Joti Boarding School, Machhhapuchhre-4	Boy	54
12.	Bibek Pariyar	Gyan Joti Boarding School, Machhhapuchhre-4	Boy	38

13.	Sarita Gurung	Bal Mandir Secondary school, Annapurna-3	Girl	78
14.	Shova Adhikari	Bal Mandir Secondary school, Annapurna-3	Girl	76
15.	Pratik Sharma	Bal Mandir Secondary school, Annapurna-3	Boy	72
16.	Nischal Paudel	Bal Mandir Secondary school, Annapurna-3	Boy	68
17.	Purnima Adhikari	Bal Mandir Secondary school, Annapurna-3	Girl	72
18.	Niraj Khadka	Bal Mandir Secondary school, Annapurna-3	Boy	70
19.	Sadhana Paudel	Bal Mandir Secondary school, Annapurna-3	Girl	46
20.	Bishal Giri	Bal Mandir Secondary school, Annapurna-3	Boy	62
21.	Rohan Gurung	Bal Mandir Secondary school, Annapurna-3	Boy	48
22.	Rajit Gurung	Bal Mandir Secondary school, Annapurna-3	Boy	40
23.	Prizm Devkota	Bal Mandir Secondary school, Annapurna-3	Girl	48
24.	Rajani Pokhrel	Bal Mandir Secondary school, Annapurna-3	Girl	64
25.	Swagat Adhikari	Bagmara Academic Garden , Pokhara-33	Boy	70
26.	Sujata Karki	Bagmara Academic Garden, Pokhara-33	Girl	46
27.	Rajani Adhikari	Bagmara Academic Garden, Pokhara-33	Girl	70
28.	Rajan Nepali	Bagmara Academic Garden, Pokhara-33	Boy	36
29.	Sarita Poudel	Bagmara Academic Garden, Pokhara-33	Girl	54
30.	Pradip Poudel	Bagmara Academic Garden, Pokhara-33	Boy	46
31.	Yogendra Thapa	Bagmara Academic Garden, Pokhara-33	Boy	78
32.	Samari Lamichane	Bagmara Academic Garden, Pokhara-33	Girl	68
33.	Alisha Gurung	Bagmara Academic Garden, Pokhara-33	Girl	36
34.	Manab Nepali	Bagmara Academic Garden, Pokhara-33	Boy	66
35.	Samiya Thapa	Bagmara Academic Garden, Pokhara-33	Girl	32
36.	Kushal Adhikari	Bagmara Academic Garden, Pokhara-33	Boy	74
37.	Ujjal K.C	KEF Secondary School, Pokhara -1	Boy	54
38.	Binod Timilsina	KEF Secondary School, Pokhara -1	Boy	74
39.	Genius Tiwari	KEF Secondary School, Pokhara -1	Boy	70

40.	Sadikshya Devkota	KEF Secondary School, Pokhara -1	Girl	50
41.	Samjhana Acharya	KEF Secondary School, Pokhara -1	Girl	66
42.	Dikshita Thapa	KEF Secondary School, Pokhara -1	Girl	48
43.	Rajan Bhandari	KEF Secondary School, Pokhara -1	Boy	62
44.	Sangharsha Acharya	KEF Secondary School, Pokhara -1	Girl	44
45.	Pranisha Khadgi	KEF Secondary School, Pokhara -1	Girl	70
46.	Suyog Adhikari	KEF Secondary School, Pokhara -1	Boy	52
47.	Nirmal Bhattarai	KEF Secondary School, Pokhara -1	Boy	66
48.	Maunata Pokhrel	KEF Secondary School, Pokhara -1	Girl	72
49.	Devaka Bhandari	Machhapuchhre Ma.Vi. Annapurna-2	Girl	54
50.	Laxmi Rijal	Machhapuchhre Ma.Vi. Annapurna-2	Girl	34
51.	Bishal Bhandari	Machhapuchhre Ma.Vi. Annapurna-2	Boy	66
52.	Pramish Bhandari	Machhapuchhre Ma.Vi. Annapurna - 2	Boy	66
53.	Uzzal Poudel	Machhapuchhre Ma.Vi. Annapurna-2	Boy	64
54.	Samir B.K	Machhapuchhre Ma.Vi. Annapurna-2	Boy	54
55.	Endu Adhikari	Machhapuchhre Ma.Vi. Annapurna-2	Girl	44
56.	Anjali Sunar	Machhapuchhre Ma.Vi. Annapurna - 2	Girl	22
57.	Rabin Thapa	Machhapuchhre Ma.Vi. Annapurna-2	Boy	50
58.	Samikshya Adhikari	Machhapuchhre Ma.Vi. Annapurna-2	Girl	44
59.	Sarmila Giri	Machhapuchhre Ma.Vi. Annapurna-2	Girl	42
60.	Dipendra Rai	Machhapuchhre Ma.Vi. Annapurna - 2	Boy	50
61.	Tanisha Thapa	Siddivinayak Boarding School Pokhara- 29	Girl	66
62.	Anish Lamichhane	Siddivinayak Boarding School Pokhara- 29	Boy	70
63.	Aarati Ghimire	Siddivinayak Boarding School Pokhara- 29	Girl	36
64.	Dipesh B.K	Siddivinayak Boarding School Pokhara- 29	Boy	46
65.	Bibek Sunar	Siddivinayak Boarding School Pokhara- 29	Boy	46
66.	Karuna Poudel	Siddivinayak Boarding School Pokhara- 29	Girl	76

67.	Monika Garbuja Pun	Siddivinayak Boarding School Pokhara- 29	Girl	74
68.	Roshan Rana Magar	Siddivinayak Boarding School Pokhara- 29	Boy	38
69.	Sugam Gurung	Siddivinayak Boarding School Pokhara- 29	Boy	58
70.	Rabina Baraili	Siddivinayak Boarding School Pokhara- 29	Girl	58
71.	Tejan Gurung	Siddivinayak Boarding School Pokhara- 29	Boy	66
72.	Sital Pun	Siddivinayak Boarding School Pokhara- 29	Girl	50
73.	Rojan Chhetri	Kaski Modernized Academy Pokhara-14	Boy	44
74.	Sahil Khatri	Kaski Modernized Academy Pokhara-14	Boy	26
75.	Aakriti Sapkota	Kaski Modernized Academy Pokhara-14	Girl	72
76.	Nischala Pun	Kaski Modernized Academy Pokhara-14	Girl	60
77.	Seraph Pun	Kaski Modernized Academy Pokhara-14	Boy	48
78.	Sujata Khatri	Kaski Modernized Academy Pokhara-14	Girl	44
79.	Kriscina Gurung	Kaski Modernized Academy Pokhara-14	Girl	46
80.	Saurabh Khadka	Kaski Mordanige Academy Pokhara-14	Boy	74
81.	Rohit Gurung	Kaski Modernized Academy Pokhara-14	Boy	40
82.	Shivam Gurung	Kaski Modernized Academy Pokhara-14	Boy	78
83.	Soniya Rana	Kaski Modernized Academy Pokhara-14	Girl	48
84.	Rachana Thapa	Kaski Modernized Academy Pokhara-14	Girl	50
85.	Safal Malla	Abhiman Memorial Secondary School Annapurna-5	Boy	30
86.	Depak Bhandari	Abhiman Memorial Secondary School Annapurna-5	Boy	20
87.	Salina Bhusal	Abhiman Memorial Secondary School Annapurna-5	Girl	46
88.	Sonu Khatri	Abhiman Memorial Secondary School Annapurna-5	Girl	30
89.	Samir Rai	Abhiman Memorial Secondary School Annapurna-5	Boy	28

90.	Bidhya Karki	Abhiman Memorial Secondary School Annapurna-5	Girl	38
91.	Sandesh Khatri	Abhiman Memorial Secondary School Annapurna-5	Boy	28
92.	Nakul B.K	Abhiman Memorial Secondary School -5	Boy	30
93.	Sumit Sunar	Abhiman Memorial Secondary School Annapurna-5	Boy	24
94.	Chandu Sunar	Abhiman Memorial Secondary School Annapurna-5	Girl	42
95.	Roshni Timilsina	Abhiman Memorial Secondary School Annapurna-5	Girl	38
96.	Rakshya Chhetri	Abhiman Memorial Secondary School Annapurna-5	Girl	24
97.	Prakriti Bhandari	Morning Star Secondary School, Annapurna	Girl	38
98.	Rekha Nepali	Morning Star Secondary School, Annapurna	Girl	78
99.	Nishan Pariyar	Morning Star Secondary School, Annapurna	Boy	74
100.	Pratima Devkota	Morning Star Secondary School, Annapurna	Girl	80
101.	Nishant B.K	Morning Star Secondary School, Annapurna	Boy	20
102.	Suman Poudel	Morning Star Secondary School, Annapurna	Boy	66
103.	Afrin Ghale	Morning Star Secondary School, Annapurna	Girl	66

104.	Prayashna Poudel	Morning Star Secondary School, Annapurna	Girl	48
105.	Rashmi Giri	Morning Star Secondary School, Annapurna	Girl	46
106.	Yubraj KC	Morning Star Secondary School, Annapurna	Boy	54
107.	Sulab KC	Morning Star Secondary School, Annapurna	Boy	68
108.	Nabraj Bhandari	Morning Star Secondary School, Annapurna	Boy	54
109.	Dipika Lamichhane	Chhorepatan Ma.Vi, Pokhara-17	Girl	60
110.	Safal Kunwar	Chhorepatan Ma.Vi, Pokhara-17	Boy	58
111.	Asmita Marasini	Chhorepatan Ma.Vi, Pokhara-17	Girl	46
112.	Suren Poudel	Chhorepatan Ma.Vi, Pokhara-17	Boy	26
113.	Kismat Aryal	Chhorepatan Ma.Vi, Pokhara-17	Boy	72
114.	Anisha Poudel	Chhorepatan Ma.Vi, Pokhara-17	Girl	66
115.	Soniya Lamichhane	Chhorepatan Ma.Vi, Pokhara-17	Girl	46
116.	Anurodh Thapa	Chhorepatan Ma.Vi, Pokhara-17	Boy	74
117.	Shristi Ranabhat	Chhorepatan Ma.Vi, Pokhara-17	Girl	32
118.	Sujata Poudel	Chhorepatan Ma.Vi, Pokhara-17	Girl	34
119.	Nirman Shrestha	Chhorepatan Ma.Vi, Pokhara-17	Boy	34
120.	Sandesh Baral	Chhorepatan Ma.Vi, Pokhara-17	Boy	56
121.	Surakshya Khanal	Gogan Ma.Vi, Pokhara- 32	Girl	76
122.	Shristi Pandey	Gogan Ma.Vi, Pokhara- 32	Girl	58
123.	Aadarsha Adhikari	Gogan Ma.Vi, Pokhara- 32	Boy	64
124.	Saksham Rana	Gogan Ma.Vi, Pokhara- 32	Boy	30
125.	Binay Bastola	Gogan Ma.Vi, Pokhara- 32	Boy	62

126.	Pawan Jamarkattel	Gogan Ma.Vi, Pokhara- 32	Boy	78
127.	Bijaya Tiwari	Gogan Ma.Vi, Pokhara- 32	Boy	78
128.	Susmita Khatri	Gogan Ma.Vi, Pokhara- 32	Girl	52
129.	Sadina Pokhrel	Gogan Ma.Vi, Pokhara- 32	Girl	60
130.	Sonisha Bhandari	Gogan Ma.Vi, Pokhara- 32	Girl	68
131.	Ishwor Subedi	Gogan Ma.Vi, Pokhara- 32	Boy	78
132.	Shanti Nepali	Gogan Ma.Vi, Pokhara - 32	Girl	72
133.	Sudeep Pariyar	Mahendra Ma. Vi, Pokhara- 20	Boy	16
134.	Anjali Gharti	Mahendra Ma. Vi, Pokhara- 20	Girl	28
135.	Drona Psd Poudel	Mahendra Ma. Vi, Pokhara- 20	Boy	36
136.	Mandip G.C	Mahendra Ma. Vi, Pokhara- 20	Boy	30
137.	Shreya Bhandari	Mahendra Ma. Vi, Pokhara- 20	Girl	24
138.	Ankita Gharti	Mahendra Ma. Vi, Pokhara- 20	Girl	38
139.	Santosh Bastola	Mahendra Ma. Vi, Pokhara- 20	Boy	76
140.	Bharat Khatri	Mahendra Ma. Vi, Pokhara- 20	Boy	48
141.	Yeshu Sharma	Mahendra Ma. Vi, Pokhara- 20	Girl	58
142.	Susmita Tamang	Mahendra Ma. Vi, Pokhara- 20	Girl	54
143.	Samikshya Pariyar	Mahendra Ma. Vi, Pokhara- 20	Girl	22
144.	Shisir Rawal	Mahendra Ma. Vi, Pokhara- 20	Boy	58
145.	Rakshya Chhetri	Himanchal Boarding School Pokhara-7	Girl	42
146.	Binayak Bogati	Himanchal Boarding School Pokhara-7	Boy	34
147.	Rabindra Poudel	Himanchal Boarding School Pokhara-7	Boy	16
148.	Prashma Lamsal	Himanchal Boarding School Pokhara-7	Girl	56
149.	Sandesh Kadka	Himanchal Boarding School Pokhara-7	Boy	76
150.	Kristina Pun	Himanchal Boarding School Pokhara-7	Girl	64

151.	Raman Hamal	Himanchal Boarding School Pokhara-7	Boy	34
152.	Aaditya Gurung	Himanchal Boarding School Pokhara-7	Boy	60
153.	Naina Gurung	Himanchal Boarding School Pokhara-7	Girl	50
154.	Sima Subedi	Himanchal Boarding School Pokhara-7	Girl	64
155.	Krish Shrestha	Himanchal Boarding School Pokhara-7	Boy	58
156.	Shreya Tulachan	Himanchal Boarding School Pokhara-7	Girl	42
157.	Archana Poudel	Ambika Ma.Vi, Pokhara-25	Girl	60
158.	Nabin Thapa	Ambika Ma.Vi, Pokhara-25	Boy	58
159.	Bishnu Adhikari	Ambika Ma.Vi, Pokhara-25	Boy	34
160.	Sanju Bohora	Ambika Ma.Vi, Pokhara-25	Girl	48
161.	Puspa Rana Magar	Ambika Ma.Vi, Pokhara-25	Girl	26
162.	Rakshya Thapa Magar	Ambika Ma.Vi, Pokhara-25	Girl	40
163.	Srijana Magar	Ambika Ma.Vi, Pokhara-25	Girl	50
164.	Garima Magar	Ambika Ma.Vi, Pokhara-25	Girl	28
165.	Keshav Nepali	Ambika Ma.Vi, Pokhara-25	Boy	14
166.	Suman Adhikari	Ambika Ma.Vi, Pokhara-25	Boy	36
167.	Simon Mahato	Ambika Ma.Vi, Pokhara-25	Boy	58
168.	Suman Rashaili	Ambika Ma.Vi, Pokhara-25	Boy	38
169.	Dipika Nepali	Mahendra Ma. Vi, Pokhara-9	Girl	34
170.	Aakash Tamang	Mahendra Ma. Vi, Pokhara-9	Boy	44
171.	Yamin Gurung	Mahendra Ma. Vi, Pokhara-9	Boy	28
172.	Sabita Budha	Mahendra Ma. Vi, Pokhara-9	Girl	38
173.	Karuna Khadka	Mahendra Ma. Vi, Pokhara-9	Girl	34
174.	Anju Rana Magar	Mahendra Ma. Vi, Pokhara-9.	Girl	62
175.	Biplup Subedi	Mahendra Ma. Vi, Pokhara-9	Boy	42
176.	Premika Bhujel	Mahendra Ma. Vi, Pokhara-9	Girl	26
177.	Biva Das	Mahendra Ma. Vi, Pokhara-9	Girl	20

178.	Mausam Tamang	Mahendra Ma. Vi, Pokhara-9	Boy	18
179.	Season K.C	Mahendra Ma. Vi, Pokhara-9	Boy	44
180.	Sudarshan Baral	Mahendra Ma. Vi, Pokhara-9	Boy	72
181.	Swastika Tamang	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Girl	68
182.	Namrata Acharya	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Girl	44
183.	Kabita Poudel	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Girl	68
184.	Salina BK	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Girl	34
185.	Samjhana Chhetri	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Girl	58
186.	Sandhya Bhandari	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Girl	48
187.	Prakash Adhikari	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Boy	46
188.	Roshan Poudel	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Boy	34
189.	Bishal Pariyar	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Boy	24
190.	Iswor Tamang	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Boy	48
191.	Kusal Kunwar	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Boy	54
192.	Ashim Neupane	Machhapuchchhre Ma.Vi, Machhapuchchhre-2	Boy	64

APPENDIX: V

MEAN AND STANDARD DEVIATION CALCULATED FROM THE DATA OBTAINED FROM ACHIEVEMENT TEST

S.N.	Schools	No. of Students	Mean	SD
1.	Boys students	96	52.50	18.07
2.	Girls students	96	51.75	15.51
3.	Community schools	96	50.42	17.11
4.	Institutional schools	96	53.83	16.39
5.	Rural areas' schools	72	52.33	16.68
6.	Urban areas' schools	120	52.00	16.94

APPENDIX - VI
ITEM ANALYSIS TABLE

P and D Values with respect to each item of Mathematics Achievement Test.

Q.N.	U_r	L_r	$D.V.=\frac{U_r-L_r}{L_n}$	$P.V.=\frac{U_r+L_r}{U_n+L_n}\times 100\%$	Decision
1	6	2	0.67	67%	A
2	6	3	0.50	75%	R
3	6	2	0.67	67%	A
4	5	2	0.50	58%	A
5	5	1	0.67	50%	A
6	4	2	0.33	50%	A
7	6	2	0.67	67%	A
8	6	4	0.33	83%	R
9	6	2	0.67	67%	A
10	5	2	0.50	58%	A
11	5	3	0.33	67%	A
12	6	2	0.67	67%	A
13	6	5	0.17	92%	R
14	6	2	0.67	67%	A
15	5	3	0.33	67%	A
16	5	3	0.33	67%	A
17	6	4	0.33	83%	R
18	4	2	0.33	50%	A
19	5	1	0.67	50%	A
20	6	2	0.67	67%	A
21	4	0	0.67	33%	A
22	5	3	0.33	67%	A
23	6	4	0.33	83%	R

24	4	5	-1.67	75%	R
25	5	1	0.67	50%	A
26	6	4	0.33	83%	R
27	5	3	0.33	67%	A
28	5	2	0.50	58%	A
29	5	2	0.50	58%	A
30	5	1	0.67	50%	A
31	6	2	0.67	67%	A
32	0	0	0.00	0%	R
33	6	2	0.67	67%	A
34	6	2	0.67	67%	A
35	5	1	0.67	50%	A
36	5	2	0.50	58%	A
37	6	2	0.67	67%	A
38	5	3	0.33	67%	A
39	6	2	0.67	67%	A
40	5	1	0.67	50%	A
41	6	4	0.33	83%	R
42	5	3	0.33	67%	A
43	6	2	0.67	67%	A
44	5	2	0.50	58%	A
45	6	2	0.67	67%	A
46	6	2	0.67	67%	A
47	5	3	0.33	67%	A
48	6	2	0.67	67%	A
49	6	3	0.50	75%	R
52	5	3	0.33	67%	A
51	6	4	0.33	83%	R
52	3	5	-0.33	67%	R

APPENDIX VII

SPLIT-HALF RELIABILITY CALCULATION TABLE

Odd Questions Numbers	Obtained Marks (X)	Even Question Number	Obtained Marks (Y)
1	34	2	28
3	24	4	20
5	20	6	24
7	26	8	32
9	26	10	22
11	22	12	26
13	16	14	20
15	20	16	14
17	24	18	26
19	28	20	34
21	34	22	28
23	38	24	24
25	24	26	32
27	26	28	30
29	24	30	8
31	28	32	30
33	20	34	26
35	32	36	16
37	30	38	26
39	26	40	20
41	30	42	32
43	34	44	30
45	26	46	28
47	28	48	34
49	20	50	24
51	24	52	20

APPENDIX VIII

STATISTICAL FORMULA USED FOR DATA ANALYSIS

1. Mean $\bar{X} = \frac{\sum fx}{N}$
2. Standard Deviation (σ) = $\sqrt{\frac{(x-\bar{x})^2}{N}}$
3. Variance of statistic (σ^2) = $\frac{(x-\bar{x})^2}{N}$
4. t-score (t) = $\frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}\right)}}$ OR $\frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}\right)}}$

Where,

\bar{X}_1 = Mean of first sample

\bar{X}_2 = Mean of Second Sample

N_1 = No. of students in first sampled group.

N_2 = No. of students in second sampled group.

σ_1^2 = Variance of the first sample

σ_2^2 = Variance of the second sample

5. Degree of freedom = $n_1 + n_2 - 2$

6. Level of difficult (P) = $\frac{U_r + L_r}{U_n + L_n} \times 100\%$

7. Index of discrimination (D) = $\frac{U_r - L_r}{L_n}$

Where,

U_r = Number of students who gave right answer within upper marks group

L_r = Number of students who gave right answer within lower marks group

U_n = Number of students of upper marks group

L_n = Number of students of Lower marks group

$$8. r_{XY} = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

Where,

$\sum X$ = Sum of the marks obtained in odd number questions.

$\sum Y$ = Sum of the marks obtained in even number questions.

r_{XY} = Coefficient of correlation between the marks obtained in odd and even number questions in the test

N = Total number of odd or even number questions.

$$9. r_{tt} = \frac{2r_{\frac{1}{2}}}{1+r_{\frac{1}{2}}}$$

Where,

r_{tt} = Reliability of full test

$r_{\frac{1}{2}}$ = Coefficient of correlation obtained by Split-half method.