CHAPTER- I

INTRODUCTION

1.1 Background of the Study

The word "mathematics is derived from an ancient Greek word 'Mathancian' which meant, "to learn". So mathematics is a process of learning and it is an expression of human mind, concerned chiefly with ideas, processes and reasoning. Its basic elements are logic and intuition, analysis and construction; generality and individuality. It is a way of thinking, a way of organizing a logical proof. As a way of reasoning, it gives us insight into the power of the human mind and becomes a challenge to intellectual curiosity. It is a language in which we use diagram and symbols, instead of words. So mathematics is an organized structure of knowledge in which each proposition is deduced logically from previously proved propositions or assumptions and it comprises skill, techniques and arts by which man conveys ideas, concepts and fact.

> "*Pure mathematics involves the study and development of the principle of mathematics for their own sake and possible usefulness, rather than for their immediate usefulness in the field of science and knowledge. The study of mathematics independently of experience in other scholarly discipline often the study of problems in applied mathematics and leads to new development in pure mathematics and theories developed as pure mathematics often find application latter. Applied mathematics is a branch of mathematics concerned with the*

study of physical, biological, and sociological worlds. It includes mechanics of rigid and de-formable bodies, theory of electricity and magnetism, relatively, theory of potential, thermodynamics, bio-mathematics and statistics. Broadly speaking, a mathematical structure utilizing, in addition to the purely mathematics concepts of space and numbers, the notions of time and matter belong to the domain of applied mathematics. In statistical sense, the term refers to the use of mathematics principles as tools in the fields of physics, chemistry, engineering, biology and social studies"(James; 239:2000).

Mathematics has grown with the development of humankind from its earlier civilization up to the present modern civilization. No one can deny the importance of mathematics because of its wide utility from day to day activities to space technology. According to Rogers Bacon" Mathematics is the gate and key of all sciences. Neglect of mathematics works injury to all knowledge, since he/she who is ignorant of it cannot know the sciences or the things of the world." It is a body of ides structured by logical, reasoning, the fact, the principles and methods developed early. Mesopotamia, Egypt and Greece played central role in the development of mathematics in early human civilization. Mathematics holds a unique place in every society today. It has become essential for the existence and the progress of the modern world, the information technology based and more scientific oriented world of today. The application of mathematics has become an integral part of every innovation.

Mathematics is not only essential to the every day life but also indispensable language and tools in the field of science and technology. Greater value is given to mathematics at school as a background for the higher study. Today mathematics has been used in every activities of human life and no one can be away from its use. So mathematics has been occupying a well-established position in school curriculum. Supporting this view, Traverseetal 1977 (writes) "Ever since the school of ancient Greeks over two thousand years ago mathematics has been a key subject in the curriculum. The four liberal arts consisting of arithmetic, geometry, astronomy and music where basically mathematics studies."

The liberal arts in the early Greek were studied basically focusing for the aesthetic values. Society changed in it's economic activities, life pattern, and cultural value system. But the needs and demands of the society also changed. The aim of education is to prepare citizen for the changing reality according to the needs and demand of the existing society and the immediate future society. Consequently, mathematics education in the 20^{th} century is no more limited to aesthetic values only. It puts great emphasis in today's mathematics programme to meet the needs and demands of rapidly growing society due to changes in science and technology. In deed, the study of mathematics occupies a central place in the school programmes of all countries. It has been estimated that in most school systems, 20 percent of the total instruction time is devoted to mathematics. Only mother tongue, reading and Literature are allotted as much time as mathematics.(Husen and postteth waite, 1985, P. 32-58).

The history of modern education is not much longer as it is in the western countries. Establishment of Durbar High School (Oct. 1853) for educating Rana families, then the rule, opened the door of today's formal education in Nepal. This formal education needed course of study/curriculum to run the classes regularly. Both the teachers and the students needed textbooks and other curricular materials to teach and learn mathematics. There was no curriculum and text book written for the Nepalese context. So Durbar High School then had used Indian courses of study and Indian textbooks. This tradition of using Indian text books continued when Durbar High School had been opened to all public and in other schools in different parts of the country for there were no alternatives excepts Indian publication. Teacher came from India and aboard (Britain, America) to teach mathematics. Before 1971, there had been some attempts to bring a national curriculum relevant to Nepalese Society's needs and for the first time in 1966, a national Curriculum up to grade Seven was developed and implemented in Nepal. Later on several other attempts had been made to bring a national curriculum in use. Realizing the need of own curriculum to support the national development producing innovative, creative and efficient manpower with patriotic felling and attitude. New Education System plan 1971(NESP)had been implemented with a new curriculum. This is the milestone in the history of curriculum development in Nepal. Since the Nepali writer wrote mathematics textbooks in Nepali language and came into practice in schools through out the country. It is an indispensable fact that the new curriculum development and teacher training should go hand in hand. Therefore, NESP developed teachers guide, teaching units and textbook to explain the intended curriculum properly. Similarly, emphasis on teachers training and teachers facility was given. These were the signification tasks of NESP

related to curriculum development and mathematics education improvement in Nepal.

The Nepal National Education Planning Commission (NNEPC) was established in 1914 to create an education system. The plan proposed by the NNEPC was to "device a uniform pattern of education for the country." It has included mathematics education as an important subject. The All Round National Education Committee (ARNEC) developed a second education plan in 1961. The conclusion of the plan was "There is lack of education opportunists for all section of the people and the prevailing education system was completely unrelated to the objectives of the national development plan (Sharma 1982).

The present school level curriculum has been divided into three parts- primary mathematics curriculum (1993), Lower secondary level (1994), and secondary level curriculum (1997).

In Nepal, significant changes in the field of education have taken place with introduction of multiparty democracy in 1990 A.D. The National Education Commission 1992 recommended that the school curriculum be revised in the contest of recent political change and needs of the society to meet the demands of the modem days. Accordingly, several attempts have been made for the development of curriculum in effective ways; especially focus was given on the development of mathematics. Considering this view, several searches have been done to find out of weakness behind the poor achievement in mathematics.

The National Education System Plan (NESP 1971-76) as well as other education commissions has realized that a well-grounded understanding in mathematics is essential in every life as well as for higher studies in the field of science and technology. So the NESP stated about the need and important of mathematics in school curriculum as:

"A well ground understanding of mathematics is essential for everyday life as well as for higher studies in the field of science and technology. Mathematics like language is a basic of communication. Daily transactions and communications involve the frequent use of mathematical concept."

Since NESP consider compulsory mathematics as an essential component of secondary school education. With the reestablishment of democracy in Nepal in 1990 A.D. Curriculum Development Center (CDC) has brought some improvements in school curriculum and textbooks. Accordingly, the improved textbooks of different grades are being implemented from 1992 A.D. observing the result of school leaving Certificate (SLC) examinations of the last three years, no more than 46% of the students have been passed as a whole and nearly 60% students have been failed in mathematics. This failure percent is high in comparison to other subjects. In such situation, it is common that students, parents, teachers along with others are worrying about it. Only one reason may not responsible behind the high rate of failure in mathematics. Curriculum, textbooks, teachers training and its preparation teaching materials and its use, teaching method, language, socio cultural and economical status may be the other responsible factors behind high failure rate in mathematics. Several studies have shown that the achievement in mathematics is affected by variables of languages, ethnicity, gender, socio economic condition of the students' families. (Rama kumari k.c. 2001)Thus,

the researcher in this present study is interested in finding out how far the variables in gender, rural or urban area of the family are affecting in the achievement in mathematics of the students in Kaski and Parbat districts.

1.2 Statement of the Problem

The problem under investigation is titled as 'The achievement in mathematics of the students of grade 8 of Kaski & Parbat districts in Nepal.'

So the presentation of this study intends to answer the following questions.

Does the achievement in mathematics of the students at grade 8 in lower secondary level in Kaski & Parbat districts differ?

In details

Regarding gender i.e. male and female?

1. Does the mathematics achievement of students of Kaski differ from students of Parbat district?
2. Does the mathematics achievement of male students of Kaski differ from the female students of Kaski district?
3. Does the mathematics achievement of male students of Parbat differ from the female students of Parbat district?
4. Does the mathematics achievement of male students of Kaski differ from the male students of Parbat district?
5. Does the mathematics achievement of the female students of Kaski differ from the female students of Parbat district?

Regarding area i.e. rural & urban

I. Does the mathematics achievement of the students of rural area and urban area in Kaski districts differ?
II. Does the mathematics achievement of the students of rural area and urban area in Parbat districts differ?
III. Does the mathematics achievement of the students of rural area in Kaski and Parbat districts differ?
IV. Does the mathematics achievement of the students of urban area in Kaski and Parbat districts differ?

1.3 Significance of the Study

Mathematics is an essential part of curriculum NESP (1971) recommended mathematics as a compulsory subject for students at each level of schooling. The national policies of education (1997) has also considered the importance of mathematics in general education and suggest that "Mathematics should be visualized as the vertical to train a child to think, reason, analyzed and to articulated logically." So every student should study it and gain better achievement.

Nepal is one of the smallest landlocked country and the least developed country among developing nations in the world. It is full of environmental and geographical variations. Its resources are extremely limited which affect socially, economically and politically in Nepali way of existence. The present study seeks to ascertain the impact of any of the geography and environment of the places where students lived studied.

Every research is important in its self because it unfolds various unseen fact in any area of study. As stated in the problem statement, the study will find out if there is a variation in mathematics achievement among the students of Kaski and Parbat districts regarding gender, rural and urban areas. The result of this study can give insight to the teachers of the districts to bring some reform in the teaching and learning management.

Nepal is implementing national curriculum. Nepal is a country of multiple diversity. So It becomes necessary to explore the appropriateness of the existing curriculum of mathematics to the students from different social group i.e gender, poor and rich, urban and rural which are regarding affecting factors in the achievement of mathematics. The result of the study provides the study provide information on how far the present curriculum is relevant to these socio-cultural phenomenon of the country.

The finding of the present study will be significant for making new dimension of approach to improve mathematics curriculum of lower secondary education of Nepal. It is also to be expected that the finding of the study can give preliminary information about the existing curriculum issues in mathematics education for its improvement to the curriculum planners, administrators, policy makers, educationists and other researchers engaged in chalking out plans and programmes for the lower secondary level students on geographical basis.

1.4 Objectives of the Study

This study will be intended to have the following objectives:

i) To compare the achievement in mathematics of the students of lower secondary level of Kaski and Parbat districts.

1.5 Statement of Research Hypothesis

Research hypothesis formulated for this study were as follows:-

i. There is a significant difference between the achievements in mathematics of the students of lower secondary level of Parbat and Kaski districts.
ii. There is a significant difference between the achievements in mathematics of male students and female students of lower secondary level in Kaski district.
iii. There is a significant difference between the achievements in mathematics of the students of rural and urban areas of Kaski districts.
iv. There is a significant difference between the achievements in mathematics of male and female students of lower secondary level in Parbat district.
v. There is a significant difference between the achievements in mathematics of the students of rural and urban areas of Parbat districts.
vi. There is a significant difference between the achievements in mathematics of male students of Kaski and Parbat districts.
vii. There is a significant difference between the achievements in mathematics of female students of Parbat and Kaski districts.

viii. There is a significant difference between the achievement in mathematics of the students of rural areas of Kaski and Parbat districts.

ix. There is a significant difference between the achievement in mathematics of students of urban areas of Kaski and Parbat district.

1.6 Statistical Hypothesis

In order to make hypothesis testable they are translated into statistical hypothesis as follows:-

i) $H_o: «_1 = «_2$ (Null Hypothesis)

$H_1: «_1 \neq «_2$ (Alternate Hypothesis)

Where $«_1$ and $«_2$ are the parametric means of achievements of students of Kaski and Parbat districts.

ii) $H_o: «_3 = «_4$ (Null Hypothesis)

$H_1: «_3 \neq «_4$ (Alternate Hypothesis)

Where $«_3$ and $«_4$ are the parametric means of achievements of male and female students of Kaski districts.

iii) $H_o: «_5 = «_6$ (Null Hypothesis)

$H_1: «_5 \neq «_6$ (Alternate Hypothesis)

Where $«_5$ and $«_6$ are the parametric means of achievements of the students of rural and urban area of Kaski district.

iv) $H_o: «_7 = «_8$ (Null Hypothesis)

$H_1: «_7 \neq «_8$ (Alternate Hypothesis)

Where $«_7$ and $«_8$ are the parametric means of achievements of male and female students of Parbat district.

v) H_o: $«_9 = «_{10}$ (Null Hypothesis)

H_1: $«_9 \neq «_{10}$ (Alternate hypothesis)

Where $«_9$ and $«_{10}$ are the parametric means of achievements of the students of rural and urban area of Parbat district.

vi) H_o: $«_3 = «_7$ (Null Hypothesis)

H_1: $«_3 \neq «_7$ (Alternate Hypothesis)

Where $«_3$ and $«_7$ are the parametric means of achievements of male students of Kaski and Parbat districts.

vii) H_o: $«_4 = «_8$ (Null Hypothesis)

H_1: $«_4 \neq «_8$ (Alternate Hypothesis)

Where $«_4$ and $«_8$ are the parametric means of achievements of female students of Kaski and Parbat districts.

viii) H_o: $«_5 = «_9$ (Null Hypothesis)

H_1: $«_5 \neq «_9$ (Alternate Hypothesis)

Where $«_5$ and $«_9$ are the parametric means of achievements of the students of rural area of Kaski and Parbat districts.

ix) H_o: $«_6 = «_{10}$ (Null Hypothesis)

H_1: $«_6 \neq «_{10}$ (Alternate Hypothesis)

Where $«_6$ and $«_{10}$ are the parametric means of achievements of the students of urban area of Kaski and Parbat districts.

1.7 Limitation of the Study

The limitations of the study were as follow:

1. This study was limited to only the public schools appearing district level examination of grade 8 in 2064 from Kaski and Parbat district
2. This study examined only scores of examination, it did not tell any thing about the managerial functions (planning, organizing, leading and controlling) of examination system.
3. This study was include only 8 selected public schools from Kaski and Parbat district where four schools from Parbat and four school from Kaski district.
4. This study was included students from various genders.
5. This study was included only public schools.
6. In the case of Parbat district there is not municipality area, so that the schools of headquarter are urban schools and other are rural. But in Kaski, there is municipality area, so that those schools which lie in municipality area are urban schools and other schools are rural schools.

1.8 Definitions of the Term

Achievement: Achievement is defined in terms of the score obtained by the students in the district level examination of grade 8.

Public school: The schools that are established by the government aid which runs along with help of local people. Nepal government provides 100 percent of the salary of teachers.

Gender: The condition of being male or female, here it refers to the male students and female students.

CHAPTER II

REVIEW OF RELATED LITERATURE

There are several studies towards the comparative study on the achievements in mathematics have been done during last five decades in Nepal some of them are related to find out the achievement of the students in mathematics using various independent variables. The related literatures for this study are reviewed in the following passage.

The first international mathematics study and the second international mathematics study (1964) found that the mathematics achievement of Japanese students was higher than that of American students of grade eight. Further they studied mathematics achievement of 12^{th} grade students of Japan and America and concluded that mathematics achievement of Japanese students were higher than that of American students.

"The second international mathematics study" by F. Joe Cross white and John A Dossey (1981-82) in United State, was done for grade eight sample was composed of students and teachers of approximately 500 classroom in about 250 Public and private schools. These classrooms were selected through a stratified random sampling regarding grade eight curriculums was highly focused by arithmetic rather than algebra and geometry, but the achievement of arithmetic was not satisfactory. The US eight grade sample was not effective and it never achieved better than median national performance. The achievement score of the private school students was found better than that of the public school students.

Higgins (2005) states that the impact of learning environments on student's achievement, engagement, affecting state, attendance and well-being. It draws on a body of literature that is mainly based in the USA and the UK. The analysis of the range of evidence shows that the existing research that exists on the impacts of environment on teaching and learning tends to focus much more upon some elements (e.g. noise) and fail to synthesize understandings (e.g. the implication of noise and temperature research tend to conflict). Cultural and geographical differences also highlight the importance of sensitivity to context. For these reason it is very difficult to make judgment about which areas are 'worth' focusing on. There is clear evidence that extremes of environmental elements (e.g. poor ventilation or excessive noise) have negative effects on students and teachers and that improving these elements has significant benefits. However once school environments come up to minimum standards, the evidence is less clear-cut. Our evaluation suggests that the nature of the improvement made in schools may have less to do with the specific element chose for change than with how the process of change is managed. There also appears to be a strong link between effective engagement with staff, students and other users of school buildings and the success of environmental change in having an impact on behavior, well-being or attainment. Overall, this review outlines the research literature in four areas: systems and processes, physical environment, products and services, communication. It then concludes with a number of recommendations for future research to fill gaps in existing knowledge.

Blatchford (2004) examines the effect of class size on pupil attainment and classroom processes in English schools in Years 4 to 6. These findings are drawn from a large scale study of class size and pupil adult ratio differences, which followed up pupil throughout Key Stage 2 in the range of class size

found to occur in schools, as well as systematic observation and case studies of selected schools with large and small classes. Amongst the key finding of this study are:

No Evidence was found that children in smaller classes made more progress in mathematics, English or science, even after allowing for the characteristics of pupils in small and large classes.

Pupil eligible for free school meals were found to make less progress than those not eligible in both literacy and mathematics during KS2. These people were also behind in KS1, and fell still further behind during KS2. Pupils with special educational needs were found to make less progress in both mathematics and literacy. Girls were found to make more progress in attainment in literacy, whilst conversely boys were found to make more progress in mathematics. There was no evidence that any of the characteristics of teachers, such as their age, level of experience, length of time in the current school had any influence upon pupil attainment in any discipline during Years 4-6. Results for KS2 were similar to those for reception and KS1. Class size effects on classroom processes are not singular but multiple. As the size increase, size and or number of groups, increases and the management of groups, both in terms of size and number, becomes ever more crucial. Perhaps the clearest effects of class size were on teaching. Pupils in smaller classes were more likely to be the focus of a teacher's attention and experience more teaching overall in mathematics, while in larger classes' pupils was more likely to be one of the crowds. Many teachers worry that in large classes they cannot meet the crowds .Many teachers worry that in large classes they con not meet the needs of all the

children in their class. There were a number of suggestions, from the questionnaires and case studies, concerning ways in which class size could affect the quality and effectiveness of teaching .Space and equipment become less available as the number of pupils increases and threaten effective teaching. Pupils in larger classes inKS2 were found to the have a more passive role in contact with the teachers. Conversely, in smaller classes, pupils are more likely to interact in an active way with teachers, initiating contacts, responding to the teacher and sustaining interaction with them. In order to understand the effects of the number of children in a classroom, differences between mixed ability classes and the increasingly common practice of setting classes by ability need to be taken into account. Results showed no differences between classes and sets in terms of academic attainment, and few differences in teacher and pupil behavior.

Spielhofer examined the impact of school size and single-sex education on pupil performance and opportunities using national value-added datasets, which contained individual pupil data across 979 primary and 2,954 secondary schools. The impact on performance on secondary schools was measured with reference to GCSE results, including GCSE average point score and English, mathematics and total science score. The analyses also investigated the impact on opportunities available to students in secondary schools, in terms of entry to higher key stage 3 tires and GCSE subjects. Almost all primary schools were mixed but an analysis of key stage 2 results was undertaken to investigate the possible impact of primary school size was not found to have any significant impact on performance when other factors were taken into account .Key findings from this research include:

1) Pupils in larger schools have access to a wider range of GCSE options

2) Medium-sized schools obtain better results than very large or very small schools.
3) Girls' schools help to counter traditional sex-stereotyping in subject choices.
4) Girls in single-sex comprehensive schools perform better than girls in mixed comprehensives.
5) Boys with low prior attainment achieve slightly better results at GCSE in boys' schools than unmixed comprehensives.
6) Boy in single-six grammar schools performs better than those in mixed grammar schools.

Rao and Latha studied the achievement of mathematics of intermediate students from residential and non-residential colleges of Guntur district of Andra Pradesh and they concluded that the mathematics achieve-ment of the students studying in residential colleges was higher than that of the students studying in non-residential colleges. They also found that the achievement of boys was higher than that of girls. (Bhaskar Rao and Puspa Latha), Achievements in mathematics (New Delhi Discovery Publishing House 1995).

An international research report about achievement differences between types of school and groups of school concluded that pupils in urban areas perform on average better than their counterparts in rural areas. The reasons generally given include the fact that big cities and to a lesson extent, mid-sized urban areas have relatively large proportions of high social-economic status families. Schools in such areas often have better facilities and are in a

favorable position to attract good teachers. (UNSCO status and trends-2000)

Maskey reported in his master thesis entitled "A comparative study of mathematics achievement of primary school students under different class size" concluded that students studying in small size classes achievement higher than the students studying in the large size classes. (Santosh Man Maskey, "A comparative study as mathematics achievement of primary school students under different class size. (TU. 1975).

In another study entitled "A comparative study of boys' and girls' attitude towards mathematics", Tiwari found that the attitude of boys was more positive than the attitude of girls towards mathematics. (Sukdev Tiwari "A comparative study of boys and girls attitude towards mathematics, Kathmandu Unpublished Master Thesis, Department of Mathematics Education .T.U 1984).

Shrestha, in his study, "A study of sex difference achievement in mathematics of grade nine students in Gorkha district" concluded that boys performed better than girls. (Min Bahadur shrestha.) A study of sex difference achievement in mathematics of nine grade students in Gorkha district, Kathmandu unpublished master's thesis Department of Mathematics Education T.U 1991.

Shah in his study "A Comparative Study of Mathematics Achievement of Lower Secondary Level School of Different Ethnic Groups" including 150 students as sample in Saptary district showed that.

i. Brahmin students achieved higher than Shah student and Chaudhary students in eight grades.
ii. Shah students achieved higher than Chaudhary students in eight grades.
iii. Poor students of each caste achieved higher than rich students in eight grades.

(Bauwalal Shah "A Comparative Study of Mathematics Achievement of Different Ethnic Groups" Kathmandu unpublished Master Thesis, Department of Mathematics Education; T.U 2000)

Sharma in her study, "A Comparative Study of the Achievement of Students of Grade Nine in the Topic Vectors of Secondary School Mathematics Curriculum", concluded that students of both gender equally favoured to study the topic 'Vector'; and their performance were better and nearly equal. She has also concluded that most of the students found the topic 'Vector' interesting to study and expressed that the vector concepts need for higher study in mathematics and science. She also added that most of the teachers were interested to teach vectors. At last, she found that both teachers and students disagreed to remove the topic from the mathematics curriculum, (Kamala Devi Sharma). "A Comparative Study of the Achievements of Students of Grade Nine in the Topic Vectors of Secondary School Mathematics Curriculum" (Kathmandu unpublished Master Thesis Department of Mathematics Education T.U 2000).

In another comparative study, Panthi concluded that the students studying in urban area perform better in geometry than students from rural area. He also

found that boys performed better than girls in geometry. (Ram Krishna Panthi; "A Comparative Study of Achievement in Geometry of Eight- grade in Lamjung District." Kathmandu Unpublished Master's Thesis Department of Mathematics Education T.U 2000).

In a study title, " A Comparative Study of Achievement in Mathematics", Mahato concluded that :

i. Urban students achieved more than rural students in mathematics.
ii. Boys were superior to girls in mean achievement in all areas of school mathematics-arithmetic, algebra and geometry.
iii. Boys and girls both performed better in the area of arithmetic, than in the area of geometry. (Kishori Mahato, "A Comparative Study of Achievement in Mathematics" Kathmandu Unpublished Master Thesis, Department of Mathematics Education T.U 1985).

Chaudhary, in his master thesis, "A Comparative Study of Achievement in Mathematics of Primary level Students Related to Parental Education Status" concluded that mathematics achievement of educated parents' children were found higher than literate and illiterate parents' children. He also showed that mathematics achievement of literate parents' children were found to be higher than those of illiterate parents' children. At last, he concluded that parents' educational status played vital role in achievement in mathematics. (Ram Narayan Chaudhary "A Comparative Study of Mathematics Achievement of Primary Level Students Due to Teacher Gender Teaching." Kathmandu Unpublished Master's Thesis, Department of Mathematics Education T.U 2000).

In the contest of studying mathematics achievement of students according to the school established in different region including three schools. One from urban, one from rural and one from private in Lumjung district showed that the students studying in the schools of urban region had higher achievement than the student studying in the schools of remote region.

Pandit (1999) made a study on "A Study of Attitude of Secondary Level Students and Teachers towards Geometry" with the aim to find out the attitude of SLC level students towards Geometry and determine the teachers' attitude towards Geometry. He concludes that a positive attitude of secondary students was found towards Geometry. He further concludes that teachers have negative attitude towards Secondary level Geometry.

Kafle, Bhojraj (1998) studied on "Trends in Mathematical Achievement of the Lower Secondary Students in District Level Examination of Katmandu District." He found that there is a significant different in the mean score between public and private schools. Students of private Schools are superior in learning mathematics in term of mean score of district level examination to that of public schools in Kthamandu district. Pokharal Maheshwor (2001) made his research entitled "Mathematics Achievement in SLC Examination between Public and Private School Students in Kaski District" and found that the students of private schools have greater achievement in Mathematics than public school. The correlation between compulsory and optional mathematics score in public and private schools students was sustainably positive.

CHAPTER III

METHODOLOGY

The main purpose of this study was being to compare mathematics achievement of the student of Kaski and Parbat districts. This chapter present several heading such as population, sample, data collection procedure and the statistical method used to analyse the data and to test the hypothesis. The variable in this study was the achievement of students and their back ground i.e. gander and area. (rural and urban).

3.1 Population of Study

Those students who have appeared the District Level Examination of grade 8 from all public schools of Kaski and Parbat have been taken as population here.

3.2 Sample of the Study

The samples of study were selected by purposive sampling from Kaski and Parbat districts. Schools were selected on the basis of rural and urban area. In this study the researcher selected from only 8 public schools from Kaski and Parbat districts. In the case of Kaski district, there are municipality and Village Development Committee area. So the researcher selected two schools from V.D.C area, which of them are Dhurva Secondary School, Tarkang and Birethanti Secondary School Dangsing. Similarly the researcher selected two schools from municipality area which are Navin

Higher Secondary School, Gairapatan and Vindhyabasini Secondary School Barpatan Pokhara. So that in Kaski district, Birethati Secondary School and Dhurva Secondary School are rural schools and Navin Higher Secondary School and Vindhyabisini Secondary School are urban schools.

But in the case of Parbat district, there is no municipality area so the researcher supposes the schools which are lies in Parbat's head quarter are urban schools and all the other schools are rural schools. So from Parbat district, the researcher selected Shivalaya Higher Secondary School and Narayan Higher Secondary School Which are urban schools and Pashupati Higher Secondary School Ramja Thati Parbat and Nuwara Secondary School Pang Parbat are rural schools.

The selection of schools for the sample was targeted as 4-4 schools from each district (See appendix A) were selected purposively from different strata: rural and urban. From Kaski 211 students and Parbat 268 students were included in this study.

The sample of 479 students who had taken their district level examination of grade 8 in 2064 were selected from each male and female also from rural and urban areas.

3.3 Data Collection Procedure

The researcher consulted with the district education office and selected school to obtain the necessary information for the study. The researcher

collected the students' score of compulsory mathematics in district level examination of grade 8 of 2064 of the sampled school.

3.4 Data Analysis Procedures

The sets of collected data of students' scores (see in Appendix B) were subjected to statistical analysis and interpretation. The data were categorized and presented into necessary tables. The Score of 479(public school from Kaski and Parbat) students of 8 sample schools were analyzed. For that purpose the researcher calculated over all mean score and standard deviation and z-score, the mean, standard deviation and z-score were used for analyzing data. The entire hypotheses were tested for their significance at 0.05 level. The Z- test was applied at 0.05 level of significance, to find whether the difference of mean achievement was statistically significant, by using the formula as given in appendix-c.

CHAPTER IV

ANALYSIS AND INTERPRETATION

This chapter deals on analysis and interpretation of the data (scores) obtained from the four hundred and seventy nine students in the Districts Level Examination of grade eight. This chapter is divided into several sections in order to make the presentation systematic and understandable. The assembled data were organized, tabulated and subjected to statistical analysis in order to come out with an answer posed by the hypothesis statement in chapter one. So the section headings are according to the variables stated in the hypothesis. The comparison of the achievements in mathematics of the students of grade eight of Kaski and Parbat districts was the main focus of the present study. The study has made answers on the effect of variables such as gender and area in the achievement of mathematics at grade eight. This is a comparative study between regions on the bases of the variable such as gender and area of the settlement.

So district wise comparison of the achievement is done in separate sections.

4.1 Comparison of Mathematics Achievement Scores of the Students from Kaski and Parbat Districts

The hypothesis is to be tested is that there is a significant difference between the achievements in Mathematics of students from Kaski & Parbat districts.

Table 1

Achievement Score of Students from Kaski and Parbat Districts

	District	N	Mean	Std. Deviation	Std. Error Mean
Marks Obtained	Kaski	211	59.428	31.98	2.20
	Parbat	268	66.82	22.21	1.36

Table 2

Description of Significance Test of Mean Score of the Students from Kaski and Parbat

	District	N	Mean	Std. Deviation	Mean Difference	Z-Value	Conclusion
Marks obtained	Kaski	211	59.428	31.98	7.392	2.85	Significant
	Parbat	268	66.82	22.21			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 1 shows that mean score of students from Kaski & Parbat district are 59.428 & 66.82 respectively. Therefore the mean scores of the students of Parbat district is higher than Kaski district.

Table 2 shows that the calculated Z – value is 2.85 and tabulated Z-value is 1.96 from standard normal table. Since calculated Z-value is grater than tabulated value. This difference in mean score is significant at 0.05 level of significance. Thus the null hypothesis has no significance difference in mean scores of students of Kaski & Parbat is rejected and alternative hypothesis is accepted. So there is a difference in mean achievement score of students

from Kaski & Parbat district by using Z-test. Hence the researcher concluded that the mean difference of 2.85 is statistically significant.

4.2 Comparison of Students' Achievement in Mathematics in Grade Eight Examinations According to Gender and Area in Kaski District

Comparison of students' achievement in mathematics is done according to gender and area in Kaski district in the following section.

4.2.1 Comparison of Mathematics Achievement Scores of the Male and Female Students in Kaski District

There were all together two hundred and eleven students, who had taken district level examination of grade eight from different schools in Kaski were the participants/respondents for this study. The table 3 and 4 present mean score, standard deviation, std. error mean, mean difference and computed Z- value at 0.05 level of significance.

Table 3

Achievement Score of Students by Gender

Male and Female Students of Kaski District

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Marks Obtained	male	99	31.42	16.26	1.634
	Female	112	28.008	15.72	1.435

Table 4

Description of Significance Test of Mean Score of the Students by Gender in Kaski District

Gender	N	Mean	Std. Deviation	Mean Difference	Z-Value	Conclusion
Male	99	31.42	16.26	3.412	1.55	Not Significant
Female	112	28.008	15.72			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 3 Shows that the mean scores of male students and female students in Kaski District are 31.42 and 28.008 respectively. Therefore, the mean achievement score of the male students of Kaski is higher than that of female students of Kaski district.

Table 4 Shows that the calculated Z- value is 1.55 and tabulated Z- value is 1.96 from standard normal table. Since calculated Z- value is less than tabulated value. This difference in mean score is not significant at o.05 level of significance. Thus, the null hypothesis has no significant difference in mean achievement of male and female students in mathematics and so this hypothesis is accepted and alternative hypothesis is rejected. There is no difference in mean achievement score of male and female students of Kaski district by using Z-test. Hence, researcher concluded that the mean difference of 3.412 is not statistically significant.

4.2.2 Comparison of Mathematics Achievement Scores of the Students of Rural and Urban Area in Kaski District

Comparison of urban and rural area's students achievement in Kaski is made. There were 211 Students from urban and rural areas, where 77 students from rural area and 134 students from urban area. Table 3 presents the achievement mean score of the rural and urban area's students of Kaski distinct.

Table 5

Achievement Score of Students from Urban and Rural Areas in Kaski District

	Area	N	Mean	Std Deviation	Std Error Mean
Marks Obtained	Urban	134	30.49	16.64	1.437
	Rural	77	28.07	16.90	1.925

Table 6

Description of Significance Test of Mean Score of the Students from Urban and Rural Areas in Kaski District

	Area	N	Mean	Std. deviation	Mean Difference	Z-value	Conclusion
Marks Obtained	Urban	134	30.49	16.64	2.42	1.007	Not Significant
	Rural	77	28.07	16.90			

Region of Rejection (R): $Z \leq -1.96$ or $Z \geq 1.96$ at 0.05 levels.

Table 5 shows that the mean score of the students of rural and urban area are 28.07 and 30.49 respectively. Therefore, the mean score of the students of urban area are higher than the students of rural area.

Table 6 shows that the calculated Z- value is 1. 007 and tabulated Z- value is 1.96 from the Standard normal table. Since calculated z-Value is less than tabulated Z- value is less than tabulated Z- value. This difference in mean score is not significant at o.05 level of significance. Thus the null hypothesis has no significant difference in mean achievement of urban and rural area students in mathematics are accepted and alternative hypothesis is rejected. So, There is no difference in mean achievement score of rural and urban areas students of Kaski district by using Z-test. Hence researcher concluded that the mean difference of 2.42 is not statistically significant.

4.3 Comparison of Students Achievement in Mathematics in Grade Eight Examinations According to Gender and Area in Parbat District

Comparison of student's achievement in Mathematics is made according to gender and area in Parbat district in the following sections.

4.3.1 Comparison of Mathematics Achievement Scores of the Male and Female Students in Parbat District

There were 268 students taken from the different schools of Parbat district. They had taken district level examination of class 8 in 2064. Table five

shows the mean score achievement of the male and female students of Parbat district.

Table 7

Achievement Score of Students by
Male and Female of Parbat district

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Marks Obtained	Male	122	37.02	15.90	1.439
	Female	146	29.80	6.31	0.522

Table 8

Description of Significance Test of Mean Score of the
Students by Male and Female in Parbat District

Gender	N	Mean	Std Deviation	Mean difference	Z-value	Conclusion
Male	122	37.02	15.90	7.22	4.71	Significant
Female	146	29.80	6.31			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 7 shows that the mean score of male students and female students in Parbat district are 37.02 and 29.80 respectively. Therefore it can be said that the mean score of the boys is higher than the girls.

Similarly table 8 shows that the calculated Z- value is 4.71 and tabulated Z-value is 1.96 from standard normal table. Since calculated Z-value is greater than tabulated value. This difference in mean score is significant at 0.05 level of significance. Thus, the null hypothesis has no significant difference

in mean achievement of male and female students in mathematics is rejected and alternative hypothesis is accepted. So, there is a difference in mean achievement score of male and female students of Parbat district by using Z-test. Hence, researcher concluded that the mean difference of 7.22 is statistically significant.

4.3.2 Comparison of Mathematics Achievement Scores of the Students of Rural and Urban Area in Parbat District

To make comparison of rural and urban areas student's achievement in mathematics, the researcher took 2 schools from rural and 2 schools from urban area in Parbat district. But there is not municipality area in Parbat district. So that the researcher supposed only headquarter's schools as urban and other schools as rural. So that urban areas' school are Narayan Higher Secondary School and Shivalaya Higher secondary School from Kusma Bazaar Parbat. Similarly the researcher takes two schools from rural area which are Shree Nuwara Subedi Secondary School from pang V.D.C and Shree Pashupati Higher Secondary School from Ramja Deurali V.D.C. There were two hundred sixty eight students who had given their District level Examination of class 8 were concerned for this study. They were divided into two groups based on area. Table 9 presents the mean score achievement in mathematics of the students of urban and rural area.

Table 9

Achievement Score of Students from Urban and Rural Areas in Parbat District

	Area	N	Mean	Std. Deviation	Std. Error Mean
Marks Obtained	Urban	170	32.94	12.76	0.978
	Rural	98	33.33	9.80	0. 989

Table 10

Description of Significance Test of Mean Score of the Student from Urban and Rural Areas in Parbat District

	Area	N	Mean	Std. Deviation	Mean Difference	Z-Value	Conclusion
Marks Obtained	Urban	170	32.94	12.76	0.39	0.280	Not Significant
	Rural	98	33.33	9.80			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 9 shows that the mean score of the students of rural and urban area are 33.3 and 32.94 respectively. Therefore the mean score of the students of rural area are higher than the students of urban area.

Similarly table 10 shows that the calculated Z-value is 0.280 and tabulated Z-value is 1.96 from the standard normal table. Since calculated Z-value is less than tabulated Z-value. This difference in mean score is not significant at 0.05 level of significance. Thus the null hypothesis has no significant difference in mean achievement of urban and rural area student's in mathematics was accepted and alternative hypothesis is rejected. So, there is no difference in mean achievement score of the students from rural and

urban areas in Parbat District by using Z-test. Hence researcher concluded that the mean difference of 0.39 is not statistically significant.

4.4 Companion of Students Achievement in Mathematics in Grade Eight Examinations According to Gender and Area in Kaski and Parbat Districts

The aim of this study was to compare the achievement of the students from two districts which of them are Kaski and Parbat. So the researcher compared students' achievement in mathematics done according to gender and area in the following sections.

4.4.1 Comparison of Mathematics Achievement Scores of the Male Students of Kaski and Parbat Districts

The hypothesis to be tested there is a significant difference between the achievements in mathematics of male students of Kaski and Parbat districts. The tables below show the achievement of students of Kaski and Parbat district by gender.

Table 11

Achievement Score of Male Students from

Kaski and Parbat District

	Male	N	Mean	Std. Deviation	Std. Error Mean
Marks Obtained	Kaski	99	31.42	16.26	1.634
	Parbat	122	37.02	15.90	1.439

Table 12

Description of Significance Test of Mean Score of the Male Student from Kaski and Parbat Districts

	Male	N	Mean	Std. Deviation	Mean Difference	Z-value	Conclusion
Marks Obtained	Kaski	99	31.92	16.26	6	2.756	Significant
	Parbat	122	37.02	15.90			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 11 shows the sizes, means and standard deviations of the achievement scores of male students of Kaski and Parbat districts. It shows that the mean achievement scores of the male students of Kaski and Parbat are 16.26 and 15.90 respectively. Therefore, it can be said that the mean score of male students of Parbat district is higher than that of the male students of Kaski district.

Table 12 shows that the calculated Z-value is 2.756 and tabulated Z-value is 1.96 from the standard normal table. Since calculated Z-value is greater than tabulated value. This difference in mean score is significant at 0.05 level of significance. Thus the null hypothesis is has no significant difference in mean achievement of male students of Kaski and Parbat district is rejected and alternative hypothesis accepted. So, there is a difference in mean achievement score of male students from Kaski and Parbat districts by using Z-test. Hence the researcher concluded that the mean difference of 6 is statistically significant.

4.4.2 Comparison of Mathematics Achievement Scores of Female Students of Kaski and Parbat Districts

The hypothesis to be tested is that there is a significant difference between the achievement in mathematics of female students of Kaski and Parbat district.

Table 13

Achievement Score of Female Student from Kaski and Parbat District

	Female	N	Mean	Std. Deviation	Std. Error Mean
Marks Obtained	Kaski	112	28.008	15.27	1.485
	Parbat	146	29.80	6.31	0.522

Table 14

Description of Significance Test of Mean Score of the Female Student from Kaski and Parbat District

Female	N	Mean	Std. Deviation	Mean Difference	Z-value	Conclusion
Kaski	112	28.008	15.27	1.792	1.16	Not Significant
Parbat	146	29.80	6.31			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 13 shows the size, means and standard deviation of the achievement score of female student of Kaski and Parbat districts. It shows that mean score achievement of Kaski and Parbat districts are 28.008 and 29.80

respectively. The achievement of mean score of female student of Parbat is higher than the female student of Kaski district.

Table 14 shows that the calculated Z- value is 1.16 and tabulated Z value is 1.96 from standard normal table. Since calculated Z value is less than tabulated Z- value. This difference in mean score is not significant at 0.05 level of significance. Thus the null hypothesis has no significant difference in mean achievement of female student of Kaski and Parbat in mathematics is accepted and the alternative hypothesis is rejected. So, there is no difference in mean achievement score of the female students from Kaski and Parbat districts by using Z-test. Hence the researcher concluded that the mean difference of 1.792 is not statistically significant.

4.4.3 Comparison of Mathematics Achievement Scores of the Students of Rural Area of Kaski and Parbat Districts

To make comparison of rural and urban area's student's achievement in mathematics from Kaski and Parbat districts, the researcher took 2 schools from rural area and 2 schools from urban area in Kaski districts. . There is a municipality area in Kaski district. So that the researcher supposed schools which lie in municipality as urban schools and schools which lie in the VDC area as rural schools in Kaski District. So that the researcher took Navin Higher Secondary School, Gairapatan Pokhara and Vinadhyabaisini Higher Secondary School, Barpatan Pokhara as uraban area. Also Birethanti Secondary School, Dangsing and Dhurva Secondary Shool, Tarkang are taken as rural schools.

There is not municipality area in Parbat district. So that the researcher Supposed only headquarters schools as urban and other schools rural schools. So that the researcher took Shivalaya Higher Secondary School and Narayan Higher Secondary School Kusma Bazaar Parbat as Urban area. Then also Pashupati Higher Secondary School, Ramjathanti Parbat and Nuwara Subedi Secondary School, Pang Parbat are selected as rural area in Parbat district. The hypothesis to be tested is that there is a significant difference between the achievement in mathematics of the students of rural area of Kaski and Parbat districts.

Table 15

Achievement Score of Students from Rural Area of Kaski and Parbat Districts

Rural	N	Mean	Std. deviation	Std. Error Mean
Kaski	77	28.07	16.90	1.925
Parbat	98	33.33	9.80	0.98

Table 16

Description of Significance Test of Mean Scores of the Students from Rural Area of Kaski and Parbat Districts

Rural	N	Mean	Std. Deviation	Mean Difference	Z-Value	Conclusion
Kaski	77	28.07	16.90	5.26	2.42	Significant
Parbat	98	33.33	9.80			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 15 shows that the mean achievement score of the rural area students of Kaski and Parbat districts are 28.07 and 33.33 respectively. Therefore, the mean achievement score of the rural area students of Parbat is higher than that of rural area's students of Kaski district.

Table 16 shows that the calculated Z-value is 2.42 and tabulated Z-value is 1.96 from the standard normal table. Since calculated Z- value is grater than tabulated value. This difference in mean score is significant at 0.05 level of significance. Thus the null hypothesis must be rejected and alternative hypothesis is accepted. So, there is a difference in mean achievement score of the students of urban area of Kaski and Parbat districts by using Z-test. Hence the researcher concluded that the mean difference of 5.26 is statistically significant.

4.4.4 Comparison of Mathematics Achievement Scores of the Students of Urban Area of Kaski and Parbat Districts

The hypothesis to be tested is that there is a significant difference between the achievement in mathematics of the students of urban area of Kaski and Parbat districts.

Table 17

Achievement Score of Urban Students from Kaski and Parbat Districts

Urban	N	Mean	Std. Deviation	Std. Error Mean
Kaski	134	30.49	16.64	1.437
Parbat	170	32.94	12.76	0.978

Table 18

Description of Significance Test of Mean Score of

Urban Area Student from Kaski and Parbat Districts

Urban	N	Mean	Std. Deviation	Mean Difference	Z-Value	Conclusion
Kaski	134	30.49	16.64	2.45	1.409	Not significant
Parbat	170	32.94	12.76			

Region of rejection (R): $z \leq -1.96$ or $z \geq 1.96$ at 0.05 levels.

Table 17 shows that the mean score achievement of the urban area student's of Kaski and Parbat district are 30.49 and 32.94 respectively. Therefore, the mean score achievement of the urban students of Parbat is higher than that of Kaski.

Table 18 shows that the calculated Z- value is 1.409 and tabulated Z-value is 1.96 from standard normal table. Since calculated Z-value is less than tabulated Z- value. This difference in mean score is not significant at 0.05 level of significance. Thus the null hypothesis has no significant difference in the mean achievement of the urban area's student of Kaski and Parbat in mathematics is accepted and the alternative hypothesis there is a significant difference in the mean achievement of urban area's students of Kaski and Parbat in mathematics is rejected. So, there is no difference in mean achievement score of urban area students from Kaski and Parbat districts by using Z-test. Hence the researcher concluded that the mean difference of 2.45 is not statistically significant.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter deals with summary, findings of the study, conclusion drawn from the findings and recommendations for further study.

5.1 Summary with Findings

Mathematics plays the vital role in individual's daily life and equally in school level to university level education. Realizing it's importance it is considered as core subject in secondary school curriculum. There are two types of secondary schools, public and private existing in Nepalese education system. At the end of lower secondary education, district level examination is held in class eight. Parents who are aware of the importance of education, prefer sending their children to private schools if they can afford, rather than sending them to public schools. Public schools therefore abound with children of poor families and socially deprived communities.

The present study was concerned with the study of mathematics achievement of the students of class eight who had already taken district level examination 2064 in Kaski and Parbat districts. So the study was intended in mathematics achievement between the students of these two districts in categorical variables such as gender and area.

In this Scenario of the social Context the researcher concluded the Comparative study in Mathematics achievements between Public School of Kaski and Parbat district of grade 8. The Secondary data used for the study was taken from District Education Office and sample selected schools from Kaski and Parbat. For this research, the researcher selected 4 public schools from Parbat whereas 2 schools from rural and 2 schools from urban area. Similarly the researcher Selected 4 public school from Kaski district where as 2 schools from rural and 2 schools from urban area. So that the researcher selected total eight public schools as sample from Kaski and Parbat districts.

Mean and standard deviation was calculated from both public schools. Student's score for analyzing the trend in mathematics achievement at class 8 in 2064 B.S. Tables were used to represent data. For the comparative study of mathematics achievement of students in class eight between public school from Kaski and Parbat, the Z-value was calculated. The Z- test was applied at 0.05 level of significance.

The major findings of this study in several issues are presented as follows:

i. There is a significant difference between the achievement in mathematics of students from Kaski and Parbat districts.
ii. There is not a significant difference between the achievement in mathematics of male and female students of grade eight in Kaski district.
iii. There is a significant difference between the achievement in mathematics of male and female students of grade eight in Parbat district.

iv. There is a significant difference between the achievement in mathematics of male students of Kaski and Parbat district.
v. There is not a significant difference between the achievements in mathematics of female students of Kaski and Parbat district.
vi. There is not a significant difference between the achievements in mathematics of the students of rural and urban area of Kaski district.
vii. There is not a significant difference between the achievements in mathematics of the students of rural and urban areas of Parbat district.
viii. There is a significant difference between the achievements in mathematics of the students of rural area of Kaski and Parbat districts.
ix. There is not a significant difference between the achievements in mathematics of the students of urban area of Kaski and Parbat districts.

5.2 Conclusion

On the basis of district level examination (grade 8) scores, after analysis and interpretation the above findings were made. Based on the above findings the researcher had made the following conclusions.

(i) Only the gender variable came out significant difference in the case of Parbat districts for the achievement of students in district level examination of class eight in mathematics. But the other variables could not give significant difference in the achievement.

(ii) Comparing the achievement between the two districts students, it was found that the differences were significant between male students achievement. It was found that the difference was significant between rural areas student's achievement form Kaski and Parbat districts. Also it was found that there is significant difference between the achievement in mathematics of students from Kaski and Parbat districts. Mean score of the students of Parbat district is higher than Kaski district.

5.3 Recommendation for Further Study

Since this study was limited in some schools within Kaski and Parbat districts. So, the findings of this study can be generalized for same district, but can not be generalized to all level and nationwide. So considering these limitations the following suggestions and recommendations had been made.

(i) This study shows that there is a significant difference between the achievement in mathematics of the male and female students of Parbat district. Also there is a significant difference between male students of Kaski and Parbat and rural and urban area's students of Kaski and Parbat district. Furthermore mean scores of the students of Parbat district is higher than Kaski district. So it is recommended that many researches should be made to find out the reason behind such differences.

(ii) This study was limited only four-four schools of Parbat and Kaski district. To get a more valid and generalized conclusions, it is recommended that this type of study should be carried on an extensive scale.

(iii) A similar study can be done for primary, Secondary and higher Secondary level as well as other subjects.

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APPENDICES

APPENDIX-A

Names and addresses of school of Kaski and Parbat

District Selected for Sample Study

Parbat District	
Rural Schools (Public)	Urban Schools(Public)
1. Pashupati Higher Secondary School, Ramja Thati Parbat.	1. Shivalaya Higher Secondary School, Kusma Bazar Parbat.
2. Nuwara Subedi Secondary School, Chaudilla Pang Parbat.	2. Narayan Higher Secondary School, Kusma Bazar Parbat.

Kaski District	
Rural Schools (Public)	Urban Schools(Public)
1. Dhurva Secondary School Tarkang, Kaski.	1. Navin Higher Secondary School Gairapatan Pokhar .
2. Birethati Secondary School, Dangsing Kaski	2. Vindhyabasini Higher Secondary School, Barpatan Pokhara.

APPENDIX-B

Mathematics Score of Students in District Level

Examination of Class 8 in 2064 B.S.

Pashupati Higher Secondary School Ramja, Thati Parbat				Nuwara Subedi Secondary School, Chaudilla Pang Parbat.			
Roll	Mark	Roll	Marks	Roll	Marks	Roll	Marks
1	56	35	32	1	86	35	32
2	48	36	32	2	89	36	53
3	37	37	32	3	44	37	38
4	32	38	32	4	32	38	32
5	32	39	32	5	32		
6	32	40	32	6	36		
7	32	41	32	7	32		
8	Absent	42	32	8	32		
9	32	43	32	9	32		
10	32	44	32	10	32		
11	32	45	32	11	32		
12	32	46	32	12	32		
13	32	47	34	13	32		
14	32	48	32	14	32		
15	32	49	32	15	32		
16	32	50	18	16	32		
17	32	51	9	17	32		
18	32	52	17	18	32		
19	36	53	32	19	32		
20	33	54	32	20	32		

21	35	55	32	21	32		
23	32	56	32	23	32		
24	32	57	15	24	32		
25	32	58	Absent	25	32		
26	32	59	16	26	32		
27	32	60	32	27	32		
28	55	61	16	28	32		
29	32	62	32	29	32		
30	32			30	32		
31	32			31	32		
32	32			32	32		
33	32			33	32		
34	32			34	32		

Shivalaya Higher Secondary School, Kusma Bazaar Parbat.				Narayan Higher Secondary School, Kusma Bazar Parbat.			
Roll	Mark	Roll	Marks	Roll	Marks	Roll	Marks
1	92	41	32	1	72	51	32
2	87	42	32	2	55	52	32
3	37	43	32	3	87	53	32
4	47	44	32	4	32	54	32
5	73	45	32	5	45	55	7
6	32	46	32	6	81	56	32
7	32	47	32	7	33	57	8
8	65	47	32	8	32	58	32
9	32	49	32	9	32	59	6

10	32	50	32	10	32	60	32
11	35	51	32	11	38	61	32
12	32	52	32	12	36	62	10
13	32	53	32	13	32	63	32
14	32	54	32	14	48	64	32
15	32	55	32	15	33	65	8
16	32	56	32	16	32	66	1
17	32	57	32	17	32	67	32
18	32	58	32	18	32	68	32
19	32	59	32	19	40	69	32
20	32	60	32	20	38	70	32
21	32	61	32	21	32	71	32
22	32	62	32	23	32	72	32
23	35	63	32	24	45	73	32
24	32	64	32	25	32	74	32
25	32	65	32	26	32	75	32
26	32	66	32	27	32	76	32
27	32	67	32	28	32	77	32
28	32	68	32	29	32	78	32
29	32	69	32	30	32	79	32
30	32	70	32	31	32	80	32
31	32	71	32	32	13	81	32
32	32	72	32	33	32	82	32
33	32	73	32	34	32	83	32
34	36	74	54	35	32	84	32
35	32	75	32	36	4	85	32

36	32	76	32	37	4	86	32
37	32	77	32	38	34	87	32
38	32	78	33	39	38	88	32
39	32	79	32	40	32	89	4
40	32	80	32	41	1	90	47
				42	7		
				43	33		
				44	15		
				45	33		
				46	32		
				47	10		
				49	32		
				50	32		

Vindhyabasini Higher Secondary School, Barpatan Pokhara.				Navin Higher Secondary School Gaira Patan Pokhar ..			
Roll	Mark	Roll	Marks	Roll	Marks	Roll	Marks
1	84	38	6	1	72	35	32
2	46	39	9	2	88	36	1
3	45	40	17	3	66	37	A
4	62	41	10	4	44	38	32
5	75	42	32	5	51	39	32
6	32	43	3	6	32	40	34
7	47	44	A	7	56	41	32
8	58	45	2	8	32	42	32

9	32	46	2	9	32	43	32
10	32	47	8	10	32	44	10
11	42	48	2	11	47	45	32
12	32	49	35	12	39	46	32
13	32	50	54	13	49	47	32
14	14	51	35	14	46	48	32
15	32	52	32	15	32	49	33
16	23	53	13	16	32	50	33
17	36	54	16	17	34	51	32
18	14	55	32	18	32	52	32
19	32	56	32	19	32	53	32
20	22	57	16	20	32	54	1
21	8	58	32	21	32	55	32
22	10	59	6	22	32	56	32
23	32	60	55	23	45	57	10
24	44	61	10	24	49	58	32
25	46	62	49	25	46	59	13
26	37	63	52	26	32	60	32
27	32	64	32	27	14	61	13
28	21	65	32	28	32	62	32
39	32	66	32	29	32	63	32
30	8	67	32	30	11	64	32
31	8	68	19	31	32	65	48
32	9	69	17	32	32	66	45
33	10			33	14	67	47
34	9			34	10	68	A

35	8						
36	3						
37	32						

Birethanti Secondary School, Dangsing Kaski.				Dhurva Secondary School Tarkang, Kaski			
Roll	Mark	Roll	Marks	Roll	Marks	Roll	Marks
1	13	34	39	1	63		
2	32	35	32	2	50		
3	23	36	32	3	52		
4	10	37	32	4	41		
5	32	38	8	5	46		
6	32	49	17	6	32		
7	12	40	32	7	32		
8	8	41	32	8	32		
9	13	42	45	9	32		
10	32	43	60	10	32		
11	12	44	32	11	32		
12	15	45	32	12	32		
13	13	46	18	13	32		
14	6	47	12	14	49		
15	4	48	15	15	32		
16	32	49	6	16	32		
17	32	50	10	17	32		
18	32			18	38		

19	32			19	12		
20	10			20	32		
21	5			21	13		
22	32			22	6		
23	33			23	12		
24	74			24	A		
25	78			25	32		
26	9			26	32		
27	10			27	10		
28	10			28	82		
39	5						
30	32						
31	32						
32	39						
33	32						

APPENDIX-C

1. Mean ($\overline{X}$) $= \frac{\sum X}{N}$

2. Standard Deviation of Statistics (s) $= \sqrt{\frac{\sum (x - \bar{x})^2}{N-1}}$

3 Standard Error Mean $= \frac{s}{\sqrt{N}}$

4. Variance of Statistics $S^2 = \frac{\sum (x - \bar{x})^2}{N-1}$

5. Z-test for large Sample, Unknown and unequal variance.

$$Z = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{{s_1}^2}{N_1} + \frac{{s_2}^2}{N_2}}}$$

Where,

$\overline{X_1}$ and $\overline{X_2}$ are mean of students Scores.

${S_1}^2$ and ${S_2}^2$ are Variance of students Scores.

N_1 and N_2 are Number of students.