

**ACHIEVEMENT IN MATHEMATICS BETWEEN INSTITUTIONAL AND
COMMUNITY SCHOOL**

A THESIS

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LETTER OF APPROVAL

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LETTER OF CERTIFICATE

This is to certify that Mr. Santosh Nepali, student of academic year 2065/66 with Exam Roll No. 281388, Campus Roll No. 1013 /065 and T.U. Registration No. 9-2-233-47-2005 has completed this thesis under my supervision, during the period prescribed by the rules and regulations of Tribhuvan University, The thesis entitled **"Achievement in Mathematics between Institutional and Community School"** embodies the results of his investigation conducted during the period of 2015 to 2016 under the Department of Mathematics Education, Tribhuvan University, University Campus, Kirtipur Kathmandu. I recommend and forward this thesis for the evaluation as the partial requirements to award the degree of Master of Education.

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ABSTRACT

This study aimed to find out the achievement in mathematics, comparing the students' achievement in mathematics' among the secondary level students of community and institutional schools and seeking out the crucial factors that play roles in achievement gap of the students between these schools.

The study is of survey design and 8 institutional and 8 community schools of Sindhuli district were selected by stratified random sampling and all together 320 students such that 20 students from each of these schools are selected as a sample. Students' studying at IX grade were considered as sample population of this research. The parents' education status, parents' occupational status, student regularity, class size, quality of teachers, tuition fees, family guidance, role of administration, extra-curricular activities 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 mathematics achievement were examined and were compared and set of closed questionnaire were filled up among 320 students. The statistical technique used in this study, were mean scores, standard deviation and two tailed z-test.

Based on the interpretation and analysis of the data, it is found that the mathematics achievement score of institutional school students is higher than the community school students and concluded that there is significant difference between community and institutional school students in their achievement in mathematics.

Also it is found that factors parents' education status, parents' occupation status, students' regularity, class size quality of teachers, tuition fees, family guidance, role of administration and extra-curricular activities play an important role for the gap in mathematics achievement of institutional and community schools.

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Chapter-I

INTRODUCTION

Background of the Study

The world is moving towards the advancements of science and technology. For the better fitness in such a world "Education" is a most essential factor like heart of human body. So it is better to say "Education" and "Human Life" have relation like a relation between nail and muscle in human body. It is the window through which we can peep into the modern age of the world of civilization. We can simply say that due to education man has reached to the present stage. According to Oxford Dictionary (p. 401) - "Education is a process of teaching, training and learning especially in schools or college to improve knowledge and develop skills."

Education is a dynamic course in the life of every individual influencing his physical, mental emotional, social and ethical development. It must be in accordance with the physical and social needs related to the needs of community. The intrinsic needs and activates of the child are closely related to the needs of community. A child is not to be educated in vacuum. He is a member of the community in which he lives and education must help him to become a useful member of that society. Therefore, education is a constructive agency for improving our society and nations.

Aryal (1970) has stated: "Education is the greatest force for building up a country economically, socially and culturally. The challenges have to be accepted by educationists who are the real builder of a nation. Unless education is properly planned and organized, it is not possible for the social welfare of all."

Mathematics and life are related to each other like a relation between nail and muscle in human body. The word mathematics is very difficult to define. The term "mathematics" has been derived from an ancient Greek word "mathematica" meaning "inclined to learn". Benjamin Pierce, one of the best of the American trained mathematician said that: "Mathematics is the science that draws necessary conclusion.

Mathematics is considered the mother of all learning in both arts and sciences. It is essential in almost every field: measurement in fashion, angles in sports, technology and economics. This perspective on Mathematics has gained more attention with the rapid advances of information and communication. Mathematics is not just computation but a tool for understanding structures, relationships and patterns to produce solutions for complex real life problems.

Mathematics is a necessity for people of all ages to be successful in life.

Thus, mathematics like a language, is a basic tool of communication. It is essential for everyday life as well as for higher study in the field of science and technology. In general, mathematics learning has to understand and interpret very important quantities aspects of living and natural phenomena. Realizing the fact to prime necessity of mathematics for human beings, its teaching from formal education is prevalent throughout the world.

In Nepal, mathematics teaching has been formally started with the establishment of Durbar High School in 1853 A.D. During the Rana period. But there was no well-planned program since the dawn of democracy in 1954 A.D. Aspiration for education and its importance was increased, commissions gave

suggestions and directions to develop and fulfill educational needs of the people and society.

National Higher Education Commission (NHEC) 1998 A.D. has given importance for the improvement of school level education curriculum, teaching method, teacher's background, teaching materials, teacher training and improvement of teachers' services for educational improvement. There should be evolved improved methods of teaching for every subject as it clearly mentioned in the national education system plan. But teacher from appropriate background can easily give appropriate teaching method according to situation and background of the students.

In Nepal, with the introduction of National Education System Plan, mathematics has been given a significant place at all level of school education. Out of the total time for instruction in the schools, 30 percent allocated to the mathematics at the primary level, 20 percent at the lower secondary level and 12 percent at the secondary level (NESP, 1990).

The main objectives of secondary level mathematic is to develop basic concepts and skills for different educational areas and prepare the foundation for further studies.

The school education system in Nepal has basically been categorized into two group viz. Institutional and Community schools. The Institutional schools were established after the dawn of democracy in 1954. There are about 10,564 Institutional school in Nepal according to the ministry of education (CBS, 2068). Community educational institutions are those schools, which are financed by the government. Institutional schools are those which are of self-dependent.

However, both kinds of schools use the same curriculum, recommended by the government. Government recommended mathematics textbooks to be used in both kinds of schools. However, Institutional schools use extra-book in mathematics apart from government recommended ones. Moreover graduate mathematics teacher are employed for the secondary level in both kind of schools.

Regarding evaluations, the government holds the SLC examination for both institutional and community and the students' achievement is measured on the same basis of the same criterion for both kinds of schools students. Recent SLC result 2070 shows that at National level out of 3,95,013 examines appeared the examination only 44.32% students got success in the examination. When the result was analyzed it revealed that only 29.76 percent students were successful in this SLC examination from the community school where as in case of institutional schools 89.06 percent students were successful. Also 56.42% of the students were success in mathematics where 93.98 percent of students of institutional schools and only 44.45 percent students of community school got success.

Also in the result of Sindhuli district of this year shows that 33.7% students got success in the examination. When the result was analyzed it revealed that only 28.8 percent students were successful in this SLC examination from the Community school where as in case of Institutional schools 97.6 percent students were successful. Also 47% of the students were success in mathematics where 99.73 percent of students of institutional schools and only 42.96 percent students

of community school got success in mathematics. In terms of the quality of the education, almost of students passed in first division from institutional schools.

Thus, the guardians/parents and students are attracted to Institutional school for better education. Although the guardians have to bear greater financial expenses, they are compelled to send their children to Institutional schools expecting brighter prosperity. Now-a-days, people are more attracted towards the Institutional schools, as a teacher and as a guardian.

Parents generally evaluate the quality of school education in terms of SLC result and students' ranking in the result. Parents are aware of the fact that the Institutional school are always better than government aided Community schools in terms of the SLC final results and output. Again the result in SLC examination plays an important role in students' life because any higher educational institution required a minimum SLC pass qualification. This causes the students and parents in favor of Institutional schools. Community schools do not follow such system for sound results because their system itself is passive, as most of the teachers are reportedly involved in politics. Similarly their public system is not properly monitored to yield a good result (Center for Educational Innovation and Research Development, 2006). In this connection, this study attempt to explore the students' achievement status of Community and Institutional schools.

Student achievement is not simply a matter of what happens in school. Although schools can and do make a dramatic difference, research (Halliman, 2006) has identified numerous factors which affects student success. The variance in academic performance between students attending Institutional and Community schools remain a topic worthy of investigation. If this variance actually

exists, are there present specific factors which can be used to measure performance variables and investigate the perceived differences in student performance?

There is often said a huge gap between Institutional and Community schools in terms of each results, student's enrollment teaching strategy and methods, and instructional materials that are put in process of classroom teaching. Institutional schools are actively utilizing their all efforts, for example, they run monthly, quarterly, semi-annually and annually examination formally and informally. These gives sound result as the students get regularly provided feedback but the case is quite different in public schools.

Since the educational system of Nepal is in a developing phenomenon, achievement of students, especially at school level is always claimed to be a hot debate. That's why the results obtained from this research help the board of both community and institutional schools to govern the students' achievement to maximum level.

Thus, the researcher aims this study to compare students' achievement in mathematics in secondary schools at Sindhuli District so as to find out if there is any significance difference among Institutional and Community school students' achievements in mathematics. Also this research investigates the factors liable for creating the gap of students' achievement between community and institutional schools, this study helps the policy planners and decision makers of MOE. If so, they can play significant role in improving the students' result with providing good information that are contributing factors of the poor result to some extent. The

obtained information might be useful for the sample and other education department of Nepal.

Statement of the Problem

Though, the same academic years, same curricula, total teaching period, prospective graduate teachers, textbooks and examination, the majority of people are in favor of Institutional schools rather than Community schools. Students from Community schools are less succeed in mathematics than that of Institutional schools. So it is the challenging issues for the people concerned to this field. This research attempts to observe the significant difference between the achievement amongst the students of community and Institutional schools.

The other basic question concerns with the crucial factors that play roles in achievement gap of the students between community and institutional schools.

The study aimed to answer the following research questions:

- What is the level of achievement in mathematics among the students of institutional and community schools?
- Is there any significant difference between the mathematics achievement among the students of institutional and community schools?
- What are the factors that play roles in achievement gap in mathematics of the students between institutional and community schools?

Significance of Study

Although, mathematics is the compulsory subject at secondary level, having same curriculum, similar examination system, same text books and evaluation system, people at large extent are found to be compared that achievements of students

of institutional school with the students of Government aided school. People prefer to send their children in institutional schools rather than community ones. Is the performance of institutional school far better than that of community ones? Most of the institutional schools claim that they are providing quality education than the community school. This type of attitude is found in the majority of people, which made the researcher to carry out an enquiry among the community and institutional school. This inquiry also tries to find out the difference in the performance and achievement of the community and institutional school students caused by the various influencing factors. The researcher also expects that the outcomes of the study is useful, mostly for the people working in the field of education viz. teachers, curriculum developers, students, experts, policy makers etc. as well as the people related with the field of education e.g. parents, social workers etc. The significance of this study are summarize as follows:

- This study is helpful to carry out an enquiry among the community and institutional school.
- It helps to find out the difference in the performance and achievement of the community and institutional school students caused by the various influencing factors.
- Outcomes of the study is useful, mostly for the people working in the field of education viz. teachers, curriculum developers, students, experts, policy makers etc. as well as the people related with the field of education e.g. parents, social workers etc.

Objectives of the Study

The objectives of the study are identified:

1. To find out the achievement in mathematics among the secondary level students of community and institutional schools.
2. To compare the students' achievement in mathematics' in community and institutional schools.
3. To seek out the crucial factors that play roles in achievement gap of the students between community and institutional schools.

Hypothesis of the Study

Research Hypothesis

1. There is significant difference between the mathematics' achievement among the students of community and Institutional schools.

Statistical Hypothesis

Statistical hypothesis of this study are as follows:

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

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

Where, μ_1 & μ_2 are corresponding parametric mean of the achievement among the students of community and institutional schools.

Delimitation of the Study

This study have the following limitations;

1. The study is limited in the Institutional and Community school of Sindhuli District.
2. The schools and the students for this research are selected randomly.
3. The study included only three hundred and twenty students of sampled schools' in academic year 2071/072.

4. This study included only the grade nine (IX)'s students. This study is limited to the compulsory mathematics students of grade nine.
5. Factors are parents' education status, family economic status, student regularity, class size, quality of teachers, tuition fees, family guidance, role of administration and extra-curricular activities.

Definition of the Operational Terms

Achievement: Achievement in this study is defined in terms of the scores obtained by the students on the test constructed by the teacher.

Community Schools: Schools that are established and sponsored by Government of Nepal.

Institutional Schools: Schools that are established and funded by individuals or by a trust with boarding facilities for students and teachers.

Teachers: Teachers who teaches mathematics in grade IX of selected schools are referred as a teacher.

Students: Students of grade IX of selected schools is referred as a student.

Scores: Mathematics scores of grade IX students in compulsory mathematics on the test administered.

Chapter-II

REVIEW OF RELATED LITERATURE

There are so many research studies about the mathematics achievement of students. Comparative study of achievement in mathematics under different variables are conducted, some of these are teachers, gender, teaching method, with and without using teaching materials, different class size, parents' income, parents' education, parents' occupation, students gender, urban and rural, ethnic groups, castes etc.

Some of the studies which are done in mathematics achievements of students are as follows:

Shrestha, (1991), has conducted the study on the topic "A study of sex difference in achievement in mathematics of ninth grade students in Gorkha district". The objective of the study was to determine the sex influence achievement in mathematics. He prepared two set of tools which are achievement test and questionnaire and administrate them to 280 students of 5 schools. The test was applied to conclude the result and with conclusion boy devote more times than girls at home study for mathematics together with all subjects and boys performed better than girls in mathematics achievements.

Pandey (1999), in his research on "A Comparative study of teaching activities and achievement in mathematics of the pupils of public and private lower secondary schools of Birendra Nagar Municipality, Surkhet." showed that the difference of activity ratios of the pupils of public and private schools was found to be significance but the mean difference of the achievement of the pupils of schools was found to be significant.

Kunwar (2000), did his research on "A comparative study on the achievement

mathematics by the proficiency certificate level passed students graduated from private public schools" with the objective to compare the achievement score in proficiency certificate level mathematics by the students of different campuses who had graduated the secondary education size six hundred students from different faculties from three different campuses of Kaski districts. Study was based on the examination of five consecutive years. The t-test was applied to conclude that average scores of public schools' students were found to be significantly better than that of private schools' students.

Khanal, B. (2000), in his research on "A comparative study of the achievement in proficiency certificate level mathematics by the students with and without optional mathematics at secondary school" aimed to compare the mathematics achievement in proficiency certificate level of the students with and without optional mathematics concluded that the students with optional mathematics had greater achievement in PCL than students without optional mathematics at secondary school.

Kharel (2001), in his research work on "A study on the topic mathematics achievement in school leaving certificate examination between public and private school students" aimed to compare mathematics achievement between public and private schools' students. Four schools from rural area and eight schools from urban area were selected randomly. Mean, standard deviation, z-value, their effect in correlation were calculated. Z-test was applied to conclude that trends in optional mathematics mean score in private schools had better consistency that

public schools and trends in compulsory mathematics mean score of students in public school had better consistency than the private school in SLC examination of four years of Kaski district. He also conclude that the mean achievement scores of students of private schools in compulsory and optional mathematics was greater than public school in compulsory and optional mathematics was greater than public school in Kaski district in SLC examination.

Thapa, D. B. (2005) did a research on "A comparative study of secondary level students' achievement in Mathematics between private and public school at Butwal municipality of Rupandehi district. In his research data were collected from 8 private and 8 public schools. The mathematics achievements were examined and were compared among 640 students (320 from each type of school i.e. private and public). The statistical techniques used in this study were mean scores, standard deviation and two tailed ttest was used to test whether there is significance 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 private school students and public school students is respectively 40.45 and 33.68. The mean score of private school students is higher than the public school students. This shows the significant difference at public and private schools students in their achievement.

Paudel, Baddri, (2006), did a research on "Achievement in Mathematics of +2 students from public and private secondary schools" and aimed to find the difference between the mathematics achievement of +2 level from public and private school on one hand and on the other, from rural and urban school's

background. The study was limited only around the vicinity of Banke district and 317 students (157 from public and 160 from private schools) were included as sample of the study. The research concluded that there was no any significant difference between the mean achievements secured by the students form public and private school background. Furthermore the research also concluded that the mean achievement of students from rural and urban school background was found to be insignificant and the achievement was found to be affected by various factors viz. management factor, factor related to examination system, policy related factors and factor related to teaching skill.

Yadav, R. S.(2007), in his study "A Comparative Study of Students Achievement of Private and Public Secondary School" aimed to compare the mathematics achievement of the students from public and private schools and concluded that the achievement of private schools' students is significantly better than that of public schools.

Parajuli, Nabaraj (2010), in his research on "A comparative study of secondary level students' achievement in mathematics between private and public school at Gulmi district" aimed to compare the achievement of public and private schools in mathematics and concluded that the mean scores of public school's students were found to be significantly better than that of private schools' students.

Giri, Y. N. (2010), in his study "Mathematics Achievement of Students of Public and Private School at Secondary Level in Parbat District" concluded that the mathematics achievement of private secondary school is higher than that of public schools.

What works in education has long been an overarching issue in School Achievement Research (SAR). The early research beginning with the Coleman Report (Coleman, 1966) claimed that teacher, school and the fiscal resources had minimal, if any effect on student achievement (Cynthia, 1998). Subsequent studies however emphasized 'school factors' as predominant in student's learning achievement (S. Heyneman, 1983). Hanushek, 1998 did not emphasize school characteristics as predominant in student achievement. Fuller (1994), on the other hand, argues that within industrialized countries the effect of school quality is eclipsed by the child's family background, whereas in the developing countries school quality and student the can be a major determinant of educational achievement. Because majority of families are below the poverty line they are mostly illiterate. Hence the familial support to children's learning at home is minimal, which forces students to rely on school factors- classroom teacher, and textbook-for learning achievements. In developing countries because learning outside schools, at least the pedagogical learning, is not fully developed therefore students have to rely on school and teachers and self. Thus, school effectiveness is mostly represented in two underlying dimensions- school factor and students self.

Researchers(Coleman, Hoffer, & Kilgore, 1982) have identified differences in academic achievement between students attending public and private schools suggesting that private schools are " associated with higher cognitive outcomes than public schools in reading vocabulary, and mathematics"(Boerema, 2009). Boerema notes that "students in their junior and senior years in high schools learn slightly more in private schools than in public schools"(p.113).

Students attending public and private schools may not be identical, one might error in accepting a generalization as noted by Bracey (Barcey, 2000) that "private schools succeed because they can pick and choose students they have more freedom to dismiss disruptive students, and their parents are more involved in their children's education"(p. 165). However, according to Maureen T. Halliman (2006) research has shown that "religion plays an important role in adolescent's lives, positively impacting their academic performance, educational aspirations, worldview and optimism about the future" (p. 73). Further, Halliman argues that adolescent religiosity has been related to a reduced likelihood of engaging in risky behaviors such as smoking, drugs, and alcohol abuse.

However, Oscar Barillas (2009), in his article Private Schools vs. Public schools - Top 5 Reasons Why Private schools Are Better than Public Schools, suggest students in private schools perform academically better than students in public schools. Among the five reasons Barillas (2009) suggests is the premise that government budget cuts do not affect private schools. His research suggests that "most public schools are making concessions to try and reduce their overall expenses, cutting down useful programs and teachers. However, schools not funded by the government are hardly making any reductions in their overall economic budget"(p. 1). Moreover, he suggests that students are motivated to perform higher in independent schools than in government funded schools "...because parents and guardians are paying for their student's education, the students are pressured to perform well and impress their parents" (p. 1).

Moreover, public schools have been found to allow students to have a choice in the course when compared to private schools as Ravitch (1996) states,

"Across the curriculum, the same pattern emerges: the public schools allow students to choose easy courses, while the Private schools have the same high expectations for all their students"(p. 81). Rense Corten and Jaap Dronkers (2006)

hypothesize that differences related to school climate or high values and expectations of teachers and students might explain differences in scholastic achievement between private and public schools(Dronkers, 2006). Similarly E. De Angelis points that the achievement gap between private and public schools has been widening for decades possibly because private schools have the flexibility to create a specialized program for students (De Angelis, 2008). As it is possible that private schools may use art or science in all classes, or take children on extended outdoor trips that blend lessons across the curriculum, private schools can create their own curriculum and assessment system (De Angelis, 2008).

Adhikari R. P. (2012), in his research "A Study on Mathematics achievement of public and private school in Nuwakot district". He prepared two set of tools which are achievement test and questionnaire and administrate them to 400 students of 10 schools of the Nuwakot district. The test was applied to conclude the result that the mean score of private school is higher than the public school and boys performed better than girls in mathematics achievements.

Khadka, M. L. (2013), in his research "Comparative Study on Achievement of Private and Public Schools Students in Pyuthan District" he aimed to compare the achievement of private and public schools' student 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 students in mathematics studying at ninth grade. All the test were tested at 0.05 level of significance. The mean score of private school students and public school students is respectively 52.36 and 43.28. The mean score of private school students is higher than the public school students. This shows the significant difference at public and private schools students in their achievement.

The above discussion shows that the major challenge facing Nepal's education today is the problem of poor quality of public education. It is also worth adding that although the nation has made impressive progress in increasing access to education, the level of access varies greatly across regions and population groups. According to the 2003 EFA National Plan of Action, for example, 1.6 million school-age children never attend school (MoEs, 2003). And 46% of students drop out before grade five. Most of these children are from public schools and disadvantaged population groups. Thus while education access at the aggregate level is no longer a major issues, quality of public education access continues to be a serious problem.

Likewise, the researcher has decided to study as a comparative study of secondary level students' achievement in mathematics at Institutional and Community schools in Sindhuli district. The review of related literature guide the researcher in his research.

Conceptual Framework

The conceptual Framework is an adaptation of a model used in previous study, with modifications to suit the inquiry. In the direction of the study, through

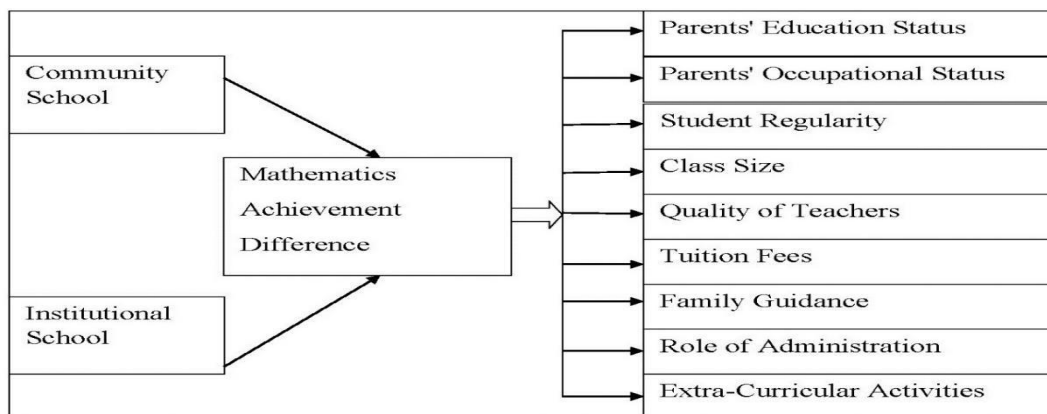
which, the researcher showed the relationships of the different construct that he wanted to investigate.

The conceptual framework of this study give 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 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 Study



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

Chapter-III

METHODS AND PROCEDURES

This chapter presents separate headings with their respective sub headings. The variables in the study will 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 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 community and Institutional school of Sindhuli 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

There are chosen 13 institutional secondary schools and 101 community secondary schools at Sindhuli district (*STATISTICS(2070)*, Ministry of Education, Office of the Controller of Examination, Sanothimi, Bhaktapur, Nepal). The target population for the achievement test will grade X completers, but due to the time factor, researcher has gone to the students of grade IX during the academic year 2071/072.

The total number of the community schools and institutional schools, total students and parents' from the selected schools at Sindhuli district are taken as the target population of this research.

Sample of the Study

The sampling of this research was as following:

1. 16 secondary schools are selected for the study.
2. 320 students are selected for the study.
3. Selection of schools are made by stratified random sampling.
4. Selection of students are made by stratified random sampling.
5. For this study, 16 secondary schools of district are taken in such a way that 8 are community and rest of 8 are institutional. Also 320 students are selected in such a way that 160 are selected from community schools and rest of 160 are selected from institutional schools. The number of students taken from each school is 10 boys and 10 girls, totaling 20 students from each schools.

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, closed survey questionnaire. The instruments used in this research are describes below.

Achievement test

Achievement tests attempt to measure what an individual has learned his or her present level of performance. Most tests used in schools are achievement tests. In this research, achievement test scores are used in evaluating the performance of

the students in mathematics. For this purpose the researcher developed an achievement test with the help of supervisor. Methods and procedures of developing test are explained as follow:

Construction of Test

The researcher constructed an achievement test with the help of supervisor consisting of 64 multiple-choice items covering the contents of grade IX mathematics and the test items is based on the GON prescribed school mathematics curriculum which is the various level of the cognitive domain which is shown in specification chart in appendix. The achievement test items are taken from different areas of mathematics i.e. sets, arithmetic, mensuration, algebra, geometry, trigonometry, statistics and probability.

Items for the achievement test were selected 5 (8%) items from sets, 13 (20%) items from arithmetic, 5(8%) items from mensuration, 13 (20%) items from Algebra, 13 (20%) items from geometry, 5(8%) items from trigonometry, 5(8%) items from statistics and 5 (8%) items from probability.

Pilot Study, Item Analysis and Discrimination Index

For the reliability of the test, the investigator has carried out a pilot study of the test prepared to ten students of, Janata Higher Secondary School, Sindhuli were participated for pilot study. 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 item in the instrument. The P-

value and D-value of each item were calculated from the 27 percent of the highest scores and 27 percent of the lowest scores of 30 students 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 ranging between 30 to 70 percent and D-value 0.20 to 0.80. 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, 14 questions were rejected and some were modified too. Thus, the refined achievement test paper contained only 50 questions. Those 50 test items are from different sections of mathematics as below.

- | | | | |
|----|--------------|---|----------------|
| 1. | Set | - | 4 (8%) items |
| 2. | Arithmetic | - | 10 (20%) items |
| 3. | Mensuration | - | 4(8%) items |
| 4. | Algebra | - | 10 (20%) items |
| 5. | Geometry | - | 10 (20%) items |
| 6. | Trigonometry | - | 4 (8%) items |
| 7. | Statistics | - | 4(8%) items |
| 8. | Probability | - | 4 (8%) items |

Total - 50 (100%) items

From the pilot study, the time required to respond the each question were calculated and provided only 90 minutes for 50 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.

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 was 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 sets. Then the researcher administered the entire instrument to a sample of students and calculate the total score for each randomly divided half and the reliability was estimated by the correlation between these two total scores.

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 and short question for the test was prepared. To improve the language used in the researcher consulted experts her colleagues.

Closed Questionnaire

Questionnaire is a predefined 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 difference between community and institutional school researcher made a closed questionnaire to know the view of the students on the level of influence in mathematics achievement difference and the factors included in the questionnaire are: parents education, parents occupation, student regularity in the class, class size, teacher's quality, tuition and tuition fees, family guidance, role of school administration, extra- curricular activities.

A set of closed questionnaire form was distributed among the 320 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 visited the sample schools of Sindhuli district at different dates and times and collect the data of institutional and community secondary schools located at Sindhuli district. Achievement tests was prepared by the researcher himself after pilot study. The test-items was based on the national curriculum prescribed by "Ministry of Education".

Thus, testitems were given to the students and the performance of the students studying institutional and community schools was tested. The test was administered among 320 students participating equally from both institutional and community secondary schools. At the same time a set of closed questionnaire-form was also distributed to those students attending in the test. The students were instructed not to copy or discuss and to fill actual information.

The time was given 90 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.

Data Analysis Procedure

The researcher analyzed and interpreted the data by statistical test, table analysis of the tabulation of data which are collected by achievement test paper and survey questionnaires.

For the statistical test mean (\bar{X}), standard deviation (σ) and z-value were used in the analysis of data. All the hypothesis are 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 z-test for this study.

Also the statistical method pie-charts, graphs, bar diagram and tables analysis are used to interpret the data collected. 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 in both community and institutional schools.

Chapter- IV

ANALYSIS AND INTERPRETATION OF DATA

The data for the study as described in chapter III were collected from secondary school students of class 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 Z-test. The data of the achievement test scores were analyzed under the following headings.

A list of the sampled schools of this study

Table 1

A 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. | Kamala Ma. Vi. | Dhungrebash | Community | 10 | 10 | 20 |
| 2. | Janajyoti Ma.Vi. | Khurkot | Community | 10 | 10 | 20 |
| 3. | Gaumati Ma.Vi. | Madi Bazzar | Community | 10 | 10 | 20 |
| 4. | Kapilakot Ma.Vi. | Chap | Community | 10 | 10 | 20 |
| 5. | Ma.Vi. Pipal vanjyang | Bhadrakali | Community | 10 | 10 | 20 |
| 6. | Chandeshori Ma.Vi. | Dandi | Community | 10 | 10 | 20 |
| 7. | Jan Jagriti Ma.Vi. | Nibuwatar | Community | 10 | 10 | 20 |
| 8. | Janajyoti Ma.Vi. | Phoshretar | Community | 10 | 10 | 20 |
| 9. | Siddhababa Eng.Boarding School | Shantinagar | institutional | 10 | 10 | 20 |
| 10 | New Eng. Boarding School | Milanchwok | institutional | 10 | 10 | 20 |
| 11 | Swiss Sindhuli Sec. Eng. Med. School | Madhutar | institutional | 10 | 10 | 20 |

| | | | | | | |
|----|---------------------------------------|-------------|---------------|----|----|----|
| 12 | New Siddhasthali Eng. Boarding School | Madi Bazzar | institutional | 10 | 10 | 20 |
| 13 | Shinningmoon Academy | Dhurabazzar | institutional | 10 | 10 | 20 |
| 14 | Bhagabati Eng. Boarding School | Madi Bazzar | institutional | 10 | 10 | 20 |
| 15 | Janata Eng. Sec. School | Ratmata | institutional | 10 | 10 | 20 |
| 16 | Vidhyashram Eng. Sec. School | Dhungrebash | institutional | 10 | 10 | 20 |

Analysis of the students' achievement on the basis of achievement test.

Level of achievement in mathematics

The first purpose of the study was to examine the level of mathematics achievement 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 50 and 10 respectively out of total 50 items. The students' performance in the mathematics achievement test was categorized into five levels. The level of students' achievement in Sindhuli district is shown in Table No. 2.

Table 2
Level of Mathematics Achievement

| Level of achievement | Test score range | No. of examine | Percent |
|-----------------------------|-------------------------|-----------------------|----------------|
| Distinction | Above 80 | 152 | 47.50 |
| First Division | 60-79 | 97 | 30.32 |
| Second Division | 45-59 | 42 | 13.13 |
| Third Division | 32-44 | 17 | 5.32 |
| Failed | Below 32 | 12 | 3.13 |
| Total | | 320 | 100.00 |

From the above classification, it has been seen that the level of mathematics achievement of 152 (47.50%) students secured distinction marks, 97 (30.32%)

students secured the marks between 60-79, 42(13.13%) students secured the marks between 45-59, 17 (5.32%) obtained the mark between 32-44 and 12 (3.13%) students received between 0-31 marks.

Comparison of institutional and community secondary school students' achievement in mathematics

The mean, standard deviation and corresponding z-value of the scores obtained by institutional and community secondary school students are presented in Table no. 3.

Table 3
Institutional and community secondary school students' achievement in mathematics

| School | No. of Students | Mean | SD | Calculated z-value | Remarks |
|---------------|------------------------|-------------|-----------|---------------------------|----------------|
| Institutional | 160 | 40.45 | 7.2 | 7.2* | 7.2>1.96 |
| Community | 160 | 33.68 | 8.87 | | |

* Significant at 0.05 level

The above table shows that the number of the students participated was 160 from both institutional and community schools. The mean scores of the institutional school students and community school students at secondary level were respectively 40.45 and 33.68. Therefore, the mean score of institutional secondary school students' achievement is higher than the mean score of community secondary school students by 6.77. The calculated standard deviation of institutional school is 7.2 and community school is 8.87. The z-value calculated is 7.5. Since the calculated z-value is greater than the tabulated value 1.96, the

difference in mean value is found to be significant at 0.05 level. It indicates that there is significant difference between the mean achievement of institutional secondary school students and community secondary schools students.

Hence, the hypothesis of significant difference between the mathematics achievement of institutional secondary school students and community secondary school students is accepted.

Comparison of mathematics achievement between institutional school boys and community school boys.

The mean scores, standard deviation and corresponding t-value of the scores obtained by institutional and community secondary school boys were tabulated below.

Table 4

Mathematics achievement between institutional school boys and community school boys.

| School | No. of Students | Mean | SD | Calculated z- value | Remarks |
|---------------|-----------------|-------|------|---------------------|----------|
| Institutional | 80 | 40.95 | 6.88 | 6.4* | 6.4>1.96 |
| Community | 80 | 33.07 | 8.64 | | |

* Significant at 0.05 level

As shown in table no. 5, the number of boys sampled from institutional school was 80 and from the community secondary school was 80. The mean scores of institutional school boys and community school boys were 40.95 and 33.07 respectively. Therefore, the mean score of institutional school's boys was higher than the community school's boy by 7.88. The standard deviation calculated by this mean was 6.88 and 8.64 respectively. The calculated z-score by the number of boys mean score and standard deviation is 6.4. Since the calculated

z-value is greater than the tabulated value 1.96, the difference in two means is found to be significant at 0.05 levels. It indicates that there is significant difference between the mean achievement of institutional and community secondary school boys.

Hence, the null hypothesis of no significant difference between mathematics achievement of institutional and community school boys is rejected and the alternative hypothesis is accepted.

Comparison of mathematics achievement between institutional school girls and community school girls.

Table 5

Mathematics achievement between institutional school girls and community school girls.

| School | No. of Students | Mean | SD | calculated z- value | Remarks |
|---------------|-----------------|-------|------|---------------------|-----------|
| Institutional | 80 | 39.96 | 7.52 | 4.28* | 4.28>1.96 |
| Community | 80 | 34.30 | 9.11 | | |

* Significant at 0.05 level

As mentioned in the table above, table number 6 explains about the comparison of mathematics achievement between institutional and community secondary school girls. The number of girl participated from institutional and community secondary school was 80 and 80 respectively. The mean score of institutional school's girls is 39.96 and the community school's girls is 34.3. Thus, the standard deviation calculated of this girls from both schools is 7.52 and 9.11 respectively. By putting the values of number of the girls, their mean achievement, and their respective standard deviation in a formula, it shows its respective z-value is 4.28. Since the calculated value of 'z' is greater than the tabulated value 1.96, the difference in the means is found to be significant at 0.05

level. It indicates that there is the difference between the mean achievement of institutional school girls and community schools girls.

Hence, the null hypothesis of no significant difference between the mathematics achievement of institutional and community school girls is rejected and the alternative hypothesis is accepted.

Comparison of mathematics of institutional school girls and community schools boys

The mean, standard deviation and the t-value of the score obtained by institutional school girls and community school boys are tabulated below.

Table 6

Mathematics of institutional school girls and community schools boys

| Group | No. of students | Mean | SD | Calculated z-value | Remarks |
|---------------------------|------------------------|-------------|-----------|---------------------------|----------------|
| Institutional Schoolgirls | 80 | 39.96 | 7.52 | 5.38* | 5.38>1.96 |
| CommunitySchool boys | 80 | 33.07 | 8.64 | | |

* Significant at 0.05 level

The comparison of mathematics achievement of institutional school girls and community schools boys has shown and calculated in table no. 6. The above table shows that the number of girls participated from institutional school was 80 and the number of boys from community school was 80. The mean score obtained by institutional school girls and community school boys are 39.96 and 33.07 respectively. Similarly, the standard deviation calculated of the institutional school girls is 7.52 and the community school boy is 8.64. The calculation of number of students, mean scores and standard deviation in a formula gives the value of z is

5.38. Since the calculated value of 'z' is greater than the tabulated value 1.96, the difference in their two mean score is found to be significant at 0.05 level. It indicates that there is significant difference between the mean achievement of institutional school girls and community school boys.

Hence, the null hypothesis of no significant difference between the mathematics achievement of institutional school girls and community school boys is rejected and the alternative hypothesis is accepted.

Comparison of mathematics achievement of institutional school boys and community school girls

The mean, standard deviation and the z-value in mathematics achievement of institutional school boys and community school girls are tabulated below and analyzed.

Table 7

Mathematics achievement of institutional school boys and community school girls

| Group | No. of students | Mean | SD | Calculated z- value | Remarks |
|---------------------------|-----------------|-------|------|---------------------|-----------|
| Institutional School boys | 80 | 40.95 | 6.88 | 5.21* | 5.21>1.96 |
| CommunitySchool girls | 80 | 34.30 | 9.11 | | |

* Significant at 0.05 level

In this analysis 80 boys from institutional and 80 girls from community school were taken. The mean score of the institutional school boys and community school girls were 40.95 and 34.30 respectively. The standard deviation of institutional school boys and community school girls was 6.88 and 9.11 respectively. The calculated z-value is 5.21. Since the calculated z-value is greater than the tabulated z = 1.96, this difference in mean value is found to be significant at 0.05 level. It

indicates that there is significant difference between the mean achievement of institutional school boys and community school girls.

Hence, the null hypothesis of no significant difference between the mathematics achievement of institutional school boys and community school girls is rejected and the alternative hypothesis is accepted.

Analysis of the Factors affecting in mathematics achievement difference

Education Status of Parents

Learning environment plays a vital role in students' cognitive development. Positive home environment and educational activities are supportive to such learning. Parents' educational status refers to the parents' level of schooling. Parents' education level was based on the highest level of education attained by their parents.

An analysis of the students' mathematics achievement on the basis of fathers' education level

Table 8

Students' mathematics achievement on the basis of fathers' education level

| Father's educational status | Level of students' achievement | | |
|-----------------------------|--------------------------------|-------------------------|-------|
| | 60 or above (in number) | below 60 (in number) | Total |
| Illiterate | 49 | 21 | 70 |
| Literate | 200 | 50 | 250 |
| Total | 249 | 71 | 320 |

The above table shows the comparative analysis of students' achievement according to fathers' educational status. The level of student's achievement with respect to their fathers' education has been measured by two factors i.e. students getting 60 marks or above and students getting below 60 marks.

The table also shows the only 49 students secured 60 or above marks and other 21 below 60 marks, whose fathers were illiterate while 200 students whose fathers were literate obtained 60 or above marks and 50, below 60 marks. This shows the significant effect of the father's education to their children's progress.

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

An analysis of the students' achievement on the basis of mothers' education level

Table 9

Students' mathematics achievement on the basis of fathers' education level

| Mothers' educational status | Level of students' achievement | | |
|------------------------------------|---------------------------------------|---------------------------------|--------------|
| | 60 or above (in number) | below 60 (in number) | Total |
| Illiterate | 83 | 27 | 110 |
| Literate | 166 | 44 | 250 |
| Total | 249 | 71 | 320 |

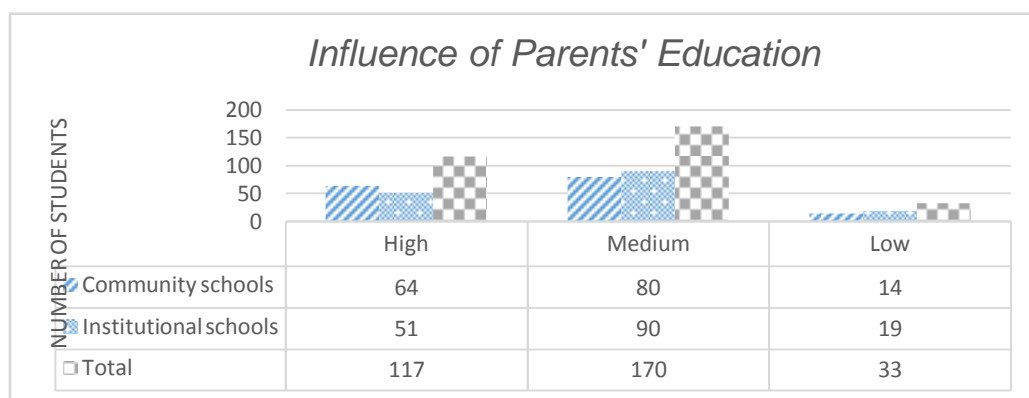
The above table shows the effect of mothers' educational status to their children's learning. Mother's educational status was categorized into two parameter i.e. illiterate and literate mothers. Similarly, the level of student's achievement with respect to their mothers' educational level was measured by two factors i.e. students getting marks 60 or above and students getting below 60 marks.

The table also shows that only 83 students secured 60 or above marks and other 27 below 60 marks, whose mothers are illiterate while 166 students whose mothers are literate obtained 60 or above marks and 44, below 60 marks. This

shows the significant effect of the mothers' education to their children's progress.

So, the education of the mother is none of the important factors in student's learning. It indicates that the literate mothers are more sensitive towards their children's learning and learning environment.

Also the researcher has asked to the students by closed questionnaire- forms" at what level the parents' education influence in mathematics achievement of their child?" and the view of the students from both type of schools are



shown in the chart below. **Figure 2: Influence of parents' education on mathematics achievement**

From the above chart it was found that among the 160 students from community school 64 students believed on the high influence of parent education on their mathematics achievement and 80 students believed on the medium level of influence. Only 14 students thought that there is low influence of parents' education on their mathematics achievement. Also from the 160 students of institutional schools only 19 are on the side of low influence of parents' education on their mathematics achievement whereas, 51 students thought on high level of influence and 90 believed on the medium level of influence. Also in totality of 320 students of both schools except 33 students all accepted parents' education as a crucial factor on the mathematics achievement difference of the students. Thus

parents' education is one of the important factors affecting on mathematics achievement difference between community and institutional schools.

Occupational Status of Parents

Parents' 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 well guide 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 on the basis of their Parents' occupation

Table 10

Students' mathematics achievement on the basis of their Parents' occupation

| Parents occupational status | Level of students' achievement | | |
|-----------------------------|--------------------------------|-----------|-------|
| | 60% and above | below 60% | Total |
| Agriculture | 39 | 21 | 60 |
| Services | 64 | 17 | 81 |
| Labour | 25 | 8 | 33 |
| Business | 91 | 10 | 101 |
| Others | 30 | 15 | 45 |
| Total | 149 | 71 | 320 |

Table No. 10 shows that the achievement of secondary students with reference to their fathers' occupation is one of the determinant factors of the students' achievement. The investment in children's education depends on their fathers' occupation. Hence, from the above table, it can be seen that the father who have services and business occupation have their children's good

achievement in mathematics. The table also shows that, the children are getting low achievement whose fathers are working as labour, have low income and cannot pay special attention in their children's study.

Also the researcher has asked to the students by closed questionnaire- forms" at what level the parents' occupation influence in mathematics achievement of their child?" and the view of the students from both type of schools are shown in the chart below.

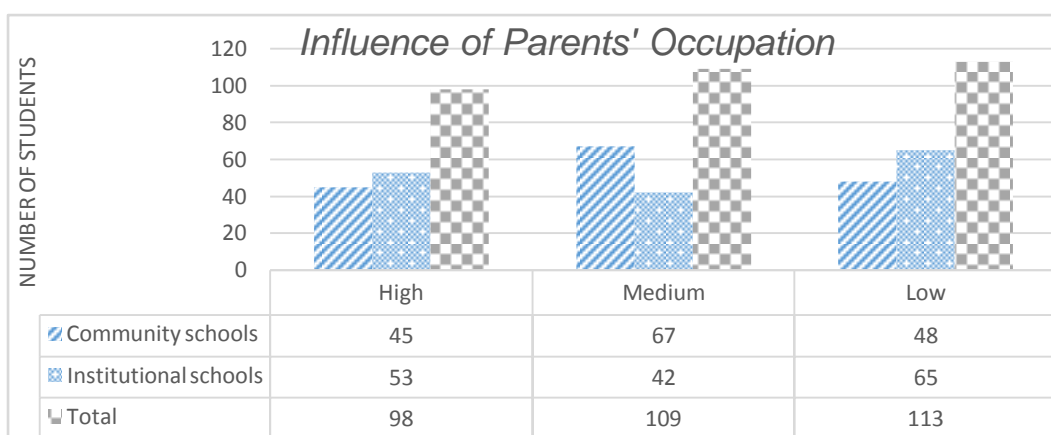


Figure 3: Influence of parents' occupation on mathematics achievement

From the above chart it was found that among the 160 students from community school 45 students believed on the high influence of parent occupation on their mathematics achievement and 67 students believed on the medium level of influence. 48 students of community school thought that there is low influence of parents' occupation on their mathematics achievement. Also from the 160 students of institutional schools, 65students are on the side of low influence of parents' occupation on their mathematics achievement whereas 53 students thought on high level of influence and 42 believed on the medium level of influence. Also in totality of 320 students of both schools 207 students' accepted that parents' occupation as a crucial factor on the mathematics achievement difference of the students where 113 thought on the low influence.

Thus parents' occupation is one of the important factors affecting on mathematics achievement difference between community and institutional schools.

Student Regularity

Mathematics is a subject which difficult for the self-study only so, the presence in the mathematics class is very important for the better achievement.

So the researcher has asked to the students by closed questionnaire-forms" at what level students' regularity on the class influence in mathematics achievement of their child?" and the view of the students from both type of schools are shown

in the chart below.

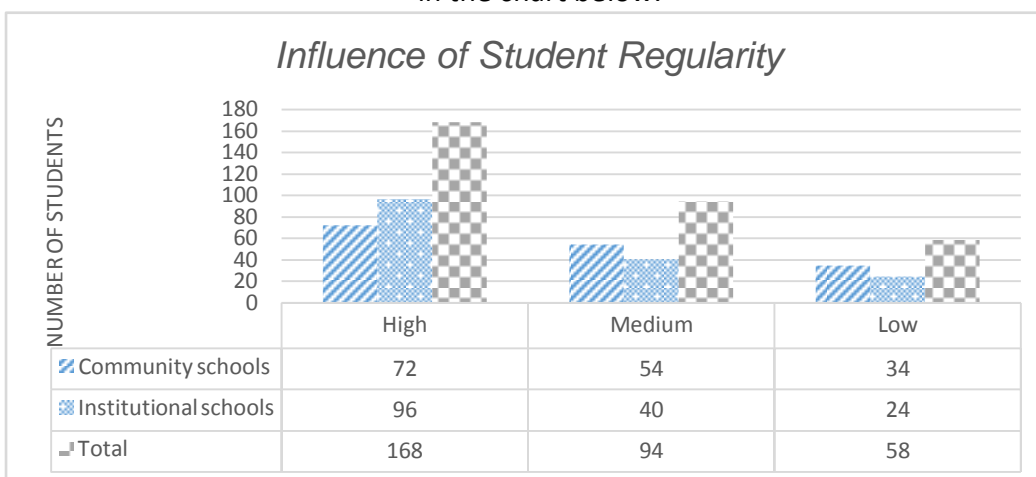


Figure 4: Influence of Student's regularity on mathematics achievement

From the above chart it was found that among the 160 students from community school 72 students believed on the high influence of students' regularity on their mathematics achievement and 54 students believed on the medium level of influence. 34 students of community school thought that there is low influence of students' regularity on their mathematics achievement. Also from the 160 students of institutional schools, only 24 students are on the side of low influence of students' regularity on their mathematics achievement whereas 96 students thought on high level of influence and 420 believed on the medium

level of influence. Also in totality of 320 students of both schools 262 students' accepted that parents' occupation as a crucial factor on the mathematics achievement difference of the students where only 58 students thought on the low level of influence. Thus student regularity is one of the important factors affecting on mathematics achievement difference between community and institutional schools.

Class Size

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. The number of students in a class of these two types of school is stated below in the bar diagram.

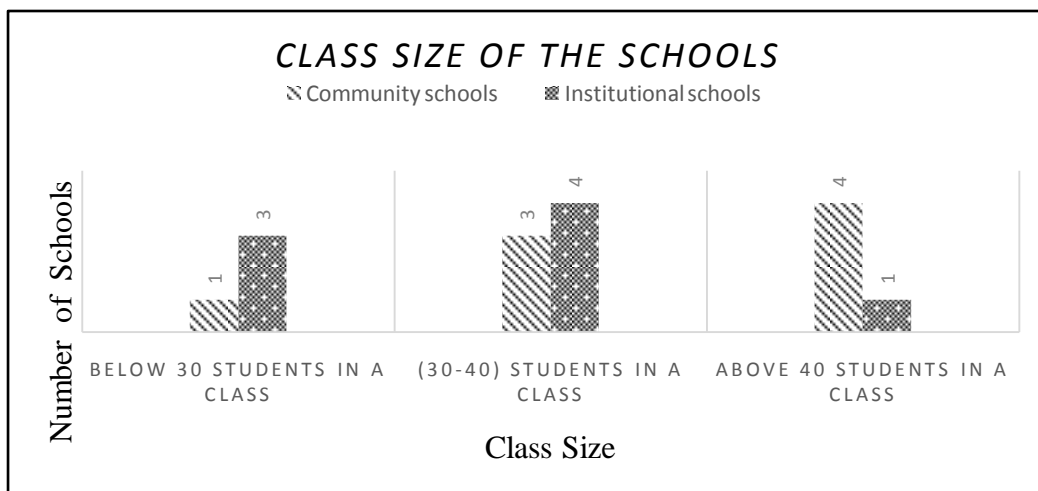


Figure 5: Class size of the schools

The above diagram shows that the class size of community schools are a much bigger than that of institutional schools. From the diagram it is seen that among the eight schools taken in this study there are only a single community school with below 30 students in a class but there are three institutional schools in this type. Also the number of institutional and community schools with (30-40) students in a class are four and three respectively. There are four community

schools with above 40 students in a single class and only one institutional school of that type. Hence from the diagram we can conclude that the class size of institutional schools is smaller than that of community schools which is one of the cause in affecting the mathematics achievement differences between institutional and community school.

Also the researcher has asked to the students by closed questionnaire- forms" at what level influence of 'class size' in mathematics achievement of their child?" and the view of the students from both type of schools are shown in the

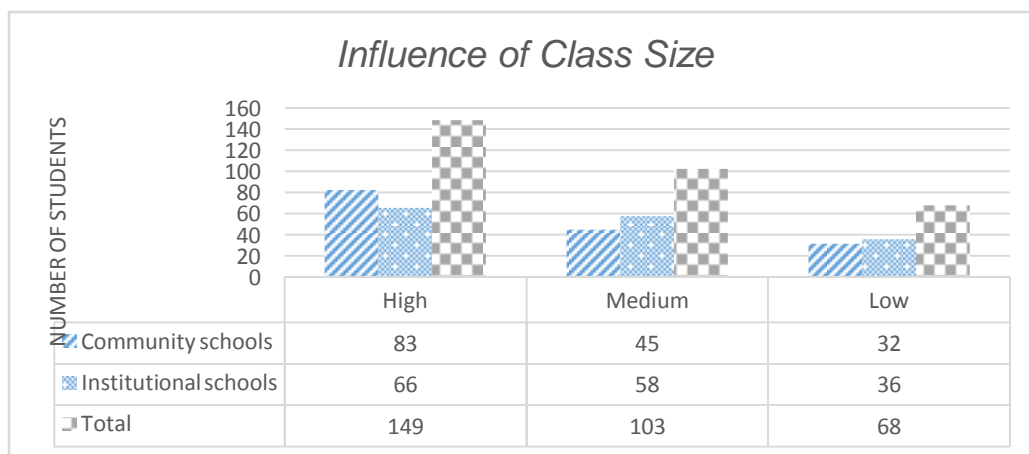


chart below.

Figure 6: Influence of Class size on mathematics achievement

From the above chart it was found that among the 160 students from community school 83 students believed on the high influence of class size on their mathematics achievement and 45 students believed on the medium level of influence. Only 32 students of community school thought that there is low influence of students' regularity on their mathematics achievement. Also from the 160 students of institutional schools, only 36 students are on the side of low influence of class size on their mathematics achievement whereas, 66 students thought on high level of influence and 58 believed on the medium level of

influence. Also in totality of 320 students of both schools 252 students' accepted that class size as a crucial factor on the mathematics achievement difference of the students where only 68 students thought on the low level of influence. Thus class size is one of the important factors affecting on mathematics achievement difference between community and institutional schools.

Quality of Teachers

Teachers play an important role on students' performance. Teaching pedagogy and their skills governs the performance and achievement of the students. Taking in consideration the influence of teacher's quality on students' achievement both schools students were asked whether the quality of teacher is sound enough to make their performance better.

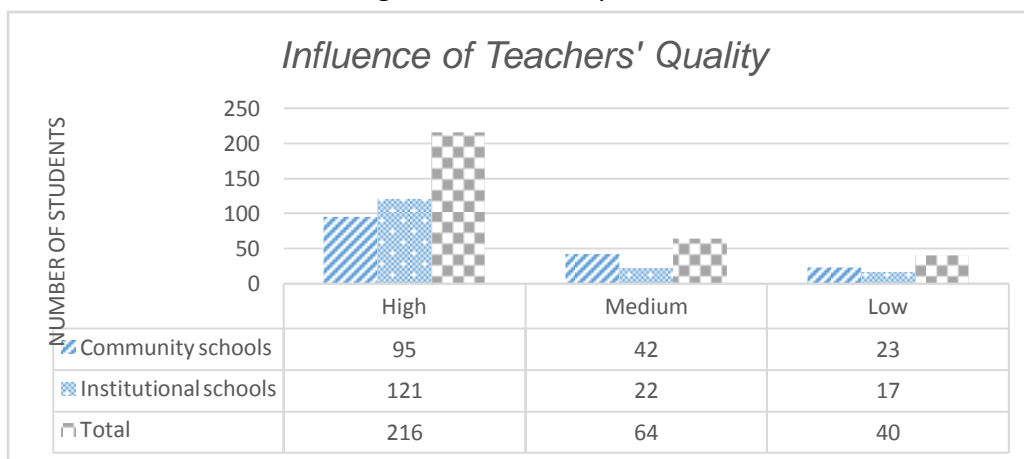


Figure 7: Influence of teacher's quality on mathematics achievement

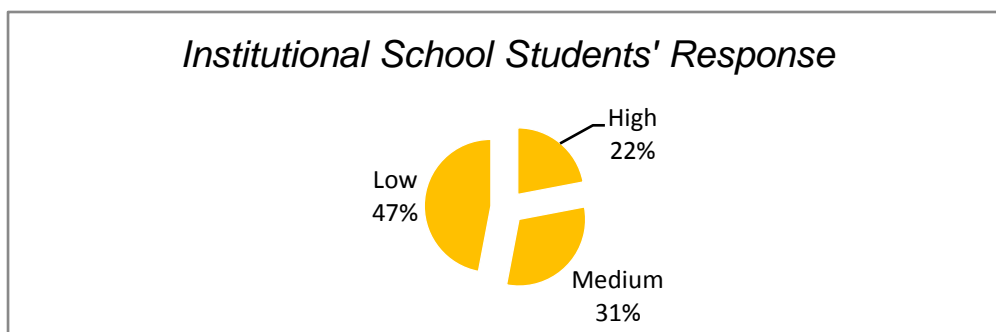
It was found that the institutional school's students are governed and taught with high quality of teachers. Out of 160 students in institutional school it was even found that 121 students i.e. more than 75% of students of them are satisfied with the teacher's pedagogy and claim they are getting quality education. Also 95 students out of 160 agreed that the teacher quality highly influence in the mathematics achievement of the students. Now we can simply predict that the

quality of teachers in community school is not directed towards the good performance of the students.

As the students in community schools point that teachers just come to take attendance and leave giving them some work to complete. Furthermore, they never check the completed assignments.

Tuition Fees

Students were asked "at what level influence of 'tuition fees' in mathematics' achievement of their child?" and the view of the students from both

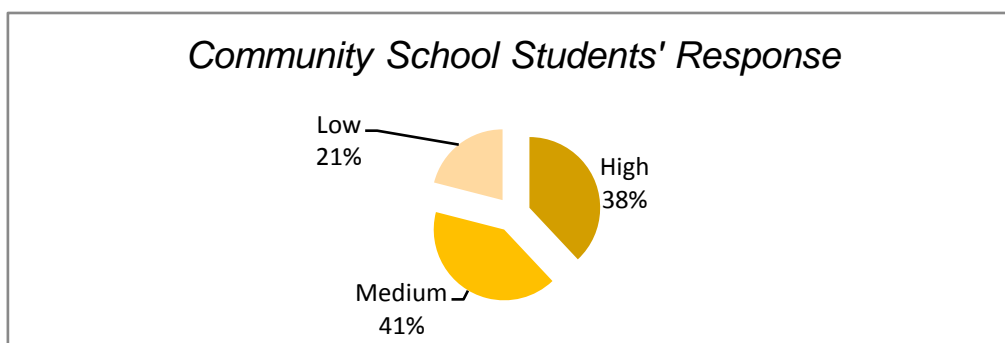


type of schools are shown in the pie-chart below.

Figure 8: Influence of Tuition Fees on Mathematics Achievement

It is seen that the influence of tuition fees on student's mathematics achievement is less active for institutional school students. It shows that around 22% of student believes that their academic achievement is also dependent on tuition fees they pay. 31% of the students believe that the level of effect of tuition fees in mathematics achievement is medium and in

47% of the students believes that the effect is low. But at the same time as the researcher got a chance to meet a group of guardians in the same school it made the research easier to predict for the variables. According to them students achieve less because of the less well-equipped teachers and lack of good supervision inside school territory. They claim that they never make the tuition



fee due for a single day and their children (students) are unknown about the fees they pay.

Figure 9: Influence of Tuition Fees on Mathematics Achievement

Students of community schools heavily believe that tuition fees they pay are responsible for degrading their educational achievement. Most of the community school students have poor economic condition. And that's the reasons why they are compelled to drop out and be irregular in schools. 38% of the students believes that there is high influence of tuition fees on students' mathematics achievement and 41% are believe that influence is medium. There are only 21% students who believes in low influence of the tuition fees in students' mathematics achievement.

From the above two diagrams it was concluded that the low achievement in mathematics of community school is influence by the tuition fees but incase institutional schools the influence is low than that of community schools.

Family guidance

The student's response towards the question "Is your family guidance enough for contributing in your academic achievement?" is presented in the chart below.

Comparing the family guidance of both schools it is found that most of the students in institutional schools are guided by their parents but in community schools only few students are under the care and guidance of their parents.As a result, institutional schools get high academic achievement over the community schools.

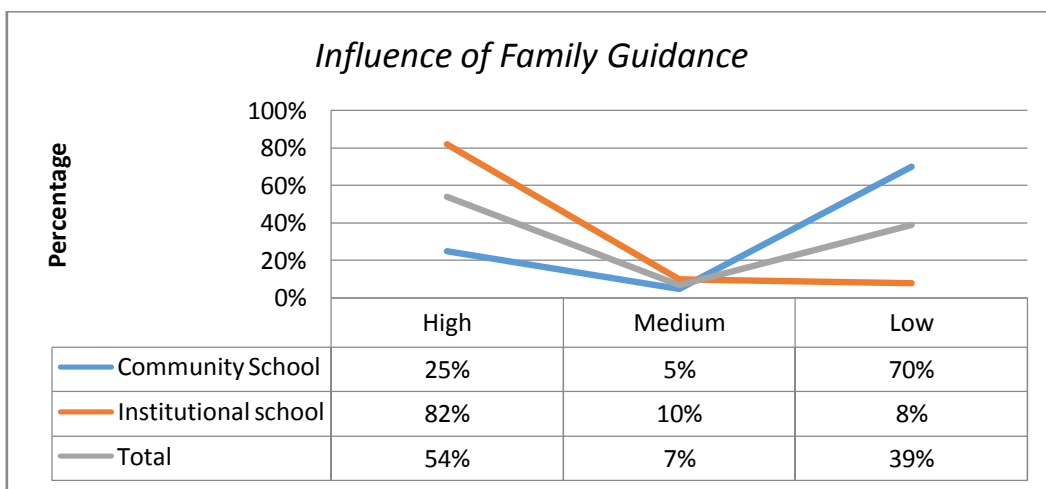


Figure 10: Influence of family guidance on mathematics achievement

As the study shows that only 25% students in community school are guided by their parents where in institutional schools nearly 82% students are under the direct supervision of parents. Differently 10% students in institutional schools and 5% students in community schools are moderately influenced by the parents.

Above diagram also shows that large number of students nearly 70% in

community schools is out of surveillance of the parents but only 8% students in institutional schools are out of guidance. This is also one of the major factors to decide the academic achievement of students. The researcher is now worth to point that family guidance also plays a vital role to influence the students' performance.

Role of Administration

Either for a particular organization or a company or even it is a school the management level of employee or the administrators are the key persons to ensure the quality of teachers, students' performance and compel the students' guardian for guidance. If the administration of the school is weak then the whole school fails. Timely interaction and suggestions from upper level is required to make the students struggle harder and achieve higher.

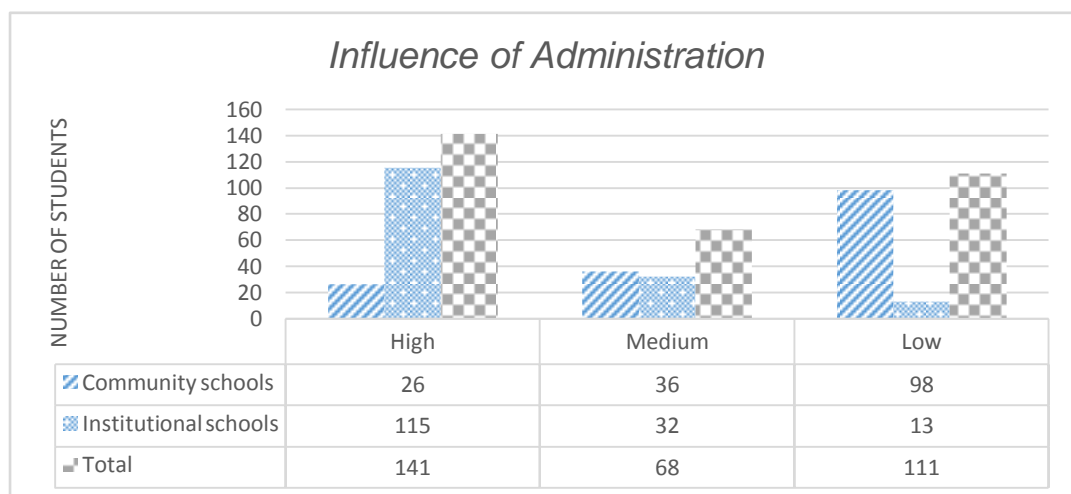


Figure 11: Influence of role of administration on mathematics achievement

The students in each school were questioned if their school administration committee plays a significant role to insure their achievement and for this question also the responses were similar. Out of 160 students of institutional school i.e. around 72% of students in private schools claimed it is sufficient for

their achievement, whereas, only 26 students i.e. around 16% students in community school claimed it to be sufficient.

Extra-curricular activities

Question relating to the extra-curricular activities was asked if it influences the academic achievement of students on the process of survey. The collected result is shown in the below pie chart.

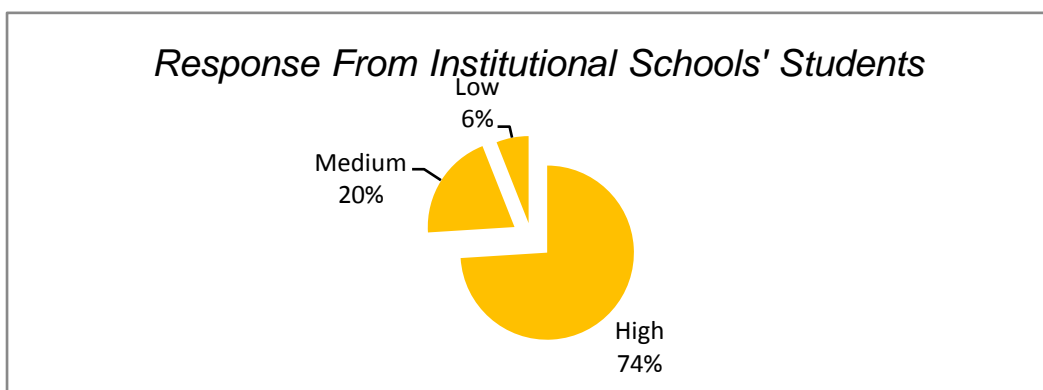


Figure 12: Influence of extra- curricular activities on mathematics achievement

It is seen that around 74% of students from institutional school are satisfied with the extra-curricular activities they are involved in their school territory. This is a quite high result that might also influence the achievement they perform in their exams. It is one of the motivational factors for the students. High opportunity of being involved in such activities makes the students feel free and fresh which automatically enhances and motivates them for their study. And this factor seems fair in institutional schools.

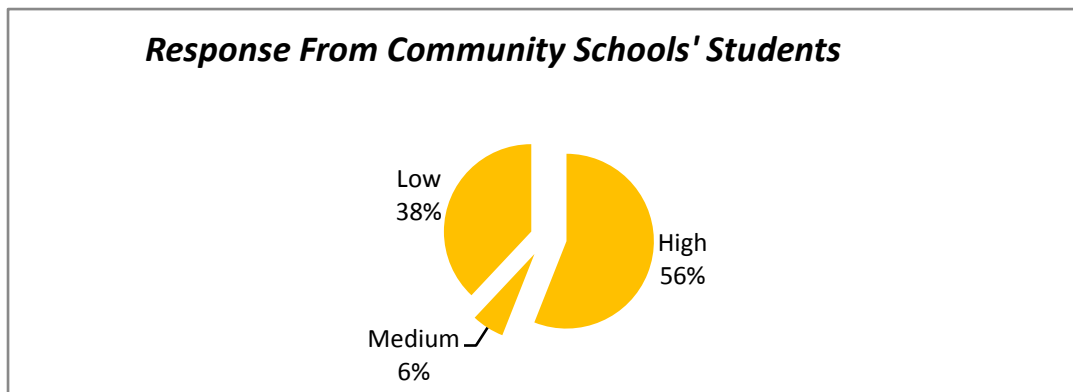


Figure 13: Influence of extra- curricular activities on mathematics achievement

In the same way the extra-curricular activities are also seen flexible in contest of community school. Students are actively involved in such activities and are claiming that these activities should be continued to influence their better performance to achieve higher. Around 56% of the students in community school are satisfied by the opportunity they catch being involved in these activities. This

is another influencing factor for the better achievement.

These difference in each factor tested are the reasons for the gap which exists in between the students achievement of community and institutional

Chapter -V

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings of the Study

The scores of 320 students were analyzed by using the mean, standard deviation and two-tailed z-test. Also the table analysis, pie-chart, 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 mathematics achievement score obtained by students in the test shows that 47.5 percent of the students scored distinction, 30.32 percent first division, 13.13 percent second division, 5.32 percent third division and only 3.13 percent failed.
- ❖ The mean scores of institutional-school students and communityschools students are 40.45 and 33.68 respectively. The mean score of institutional school students is higher than the community school students. This difference is found to be significant at 0.05 level.
- ❖ The mean score of the institutional school boys is higher than the community school boys by 7.88. The calculated z-value is greater than the tabulated z-value (i.e. cal. $z=6.4 > 1.96$). Hence, this difference in mean is significant at 0.05 level.
- ❖ The mean score of institutional school girls is higher than the community school girls by 5.66. Since the calculated z-value is greater

than the tabulated z-value i.e. ($4.28 > 1.96$), the difference in mean is significant at 0.05 level.

- ❖ The mean achievement of the institutional school girls is higher than the community school boys by 6.89 and the calculated zvalue is found to be greater than the tabulated z-value (i.e. $5.38 > 1.96$). Hence, this difference in mean achievement is significant at 0.05 levels.
- ❖ The mean achievement of institutional school boys is higher than the community school girls by 6.65. Since the calculated z-value is greater than the tabulated z-value i.e. ($5.21 > 1.96$), the difference in mean achievement is found to be 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 have good services, business and earn more.
- ❖ It is found that class size also seriously affect the upcoming exam result that is high number on students in a single classroom is adversely affected by their weak performance. And for this variable the students' performance in mathematics of community school was seen degraded.

- ❖ It is found that the student regularity is directly related with students' performance in mathematics and community schools' students were irregular than institutional schools' students.
- ❖ It is found that family guidance is directly related with students' performance and the family guidance for the students' of community school is not good enough to contribute for their academic achievement.
- ❖ Administration is important to surveillance all the above explained variables and if the administration is weak it makes all other factors weak. As a result, the student's performance deteriorates. We found that, since the role of the administration is weak in institutional school and thus the other factors are weak. This is explainable for the low performance in mathematics of community school students.
- ❖ It is found that the extra-curricular activities also related to the performance in mathematics. Most of the students believed that student participating in extra-curricular activities did better academic performance than student who did not participate and institutional schools' students' involvement in extra-curricular activities is higher than that of community schools.

Conclusions

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

mathematics. From the above findings, it can be concluded in the followings points.

- ❖ The level of mathematics achievement of the institutional school student is higher than the community school students. And there is significance difference in the achievement in mathematics between institutional and community schools.
- ❖ Nine variables were concluded to be most important for influencing the academic achievement of the students. These variables parents' education status, family economic status, student regularity, class size, quality of teachers, tuition fees, family guidance, role of administration, extra-curricular activities were very weak in community school and thus is their academic achievement
- ❖ 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' mathematics achievement. The majority of the parents in Nepal, particularly in the rural region is illiterate or possesses less-knowledge of education. The major reason of which could be that the parents is irresponsible towards their children's study. Thus efforts directed towards increasing the awareness of the parents might have a direct effect on raisin students' mathematics 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 in country 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 incommunity school. But the students in institutional` school were divided in different sections as per the need of supervision and teaching methodology. This also contributes for the achievement of the students.
- ❖ Family guidance in institutional school was strong enough to mark their achievement but this result did not even seem consistent enough in context of community schools. Lack of family guidance, unqualified teachers and weak role administration in community school is pushing the student's achievement towards dark.
- ❖ The quality of instruction particularly in mathematics in community schools is likely to remain unimproved without the provision of strict school administration and timely supervision from outside. Teachers, more or less, can be revitalized by involving them in appropriate short-term refresher training, workshops, and conferences and by providing incentives. For the better achievement, schools should also have the adequate instructional

facilities, incentives and qualified mathematics teachers to manage class properly.

Recommendations

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 Sindhuli district. Hence, the researcher has tried to generalize the findings of this study on the whole country in the context of institutional and community 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 school students is lower than that of institutional school students. Therefore, the concerned authority, educational policy makers and teachers in school management should pay special attention to the community school 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 materials provided 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 school particularly in community sector.
- ❖ Community schools should learn from the institutional schools' quality education. Thus, the rule and regulations in community school for both students and teachers should be conducted strictly particularly in their regular presence in school.

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APPENDIX:- A**Specification Chart**

| S.N. | Units | Cognitive Level | | | | | |
|------|--------------|-----------------|-------|---------------|-------------|-------|---------|
| | | Knowledge | Skill | Comprehensive | Application | Total | Percent |
| 1. | Sets | 1 | 1 | 1 | 1 | 4 | 8 |
| 2. | Arithmetic | 2 | 2 | 4 | 2 | 10 | 20 |
| 3. | Mensuration | 2 | 1 | - | 1 | 4 | 8 |
| 4. | Algebra | 2 | 1 | 4 | 3 | 10 | 20 |
| 5. | Geometry | 4 | 2 | 2 | 2 | 10 | 20 |
| 6. | Trigonometry | 1 | 1 | 1 | 1 | 4 | 8 |
| 7. | Statistic | 1 | 1 | - | 2 | 4 | 8 |
| 8. | Probability | 2 | - | 1 | 1 | 4 | 8 |
| 9. | Total | 15 | 9 | 13 | 13 | 50 | 100 |

APPENDIX:- B**Achievement Test**

Subject:- Mathematics

Full Marks:- 50

Class:- Nine

Time: 90 minutes

Students' Name:-

Roll No.:-

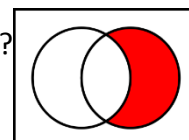
Name of School:-

Exam Date:-

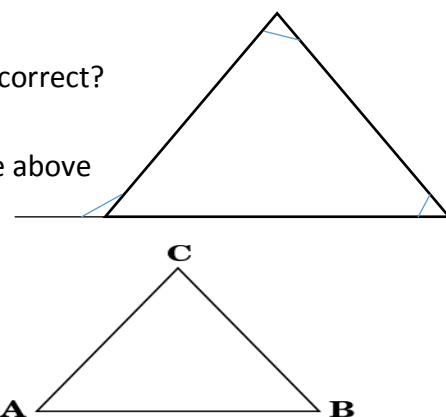
All questions are compulsory.

Tick the best answer.

- Which of the following is true?
 - The Union of two sets A and B is the set of all elements which are either in A or in B or in both A and B.
 - The intersection of two sets A and B is the set of all elements which are both in A and B.
 - The complement of a set A is the set of elements which are in the universal set U but not in the set A.
 - All of the above.
- If $n(A) = 25$, $n(B) = 35$, $n(A \cap B) = 10$, then $n(A \cup B) = ?$
 - 40
 - 45
 - 50
 - 60
- What is the shaded region denotes in the Venn-diagram alongside?
 - $(A \cup B)$
 - $(A \cap B)$
 - $A - B$
 - $B - A$
- If $n(U) = 50$, $n(A) = 30$, $n(B) = 20$, then $n(A \cap B) = 15$, the $n(A) = ?$
 - 10
 - 15
 - 20
 - 30
- In a fancy shop Ram asked the price of a shirt to the shopkeeper and he found it is Rs. 1000 as the marked price but he bought the shirt at Rs. 700 finally. How much percent did the man get discount?
 - 25%
 - 30%
 - 40%
 - 50%
- Choose the correct alternative from the followings.
 - $SI = \frac{PTR}{100}$
 - $SI = \frac{PTR}{1000}$
 - $SI = A + P$
 - $SI = A - P$
- If $P = \text{Rs. } 3000$, $T = 2$ years, $R = 10\%$, then simple interest(SI) = ?
 - 500
 - 600
 - 700
 - 800
- 20% of Rs. 600 is:
 - 60
 - 80
 - 120
 - 160
- A can do a piece of work in in 10 days, and B can do the same work in 15 days. Working together in how many days they can finished the work?
 - 5
 - 6
 - 8
 - 9

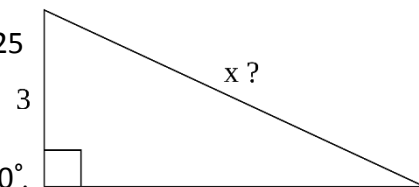


- a) 1 and -3 b) -1 and 3 c) 1 and 2 d) -2 and 3
24. If $a - b = 3$, $ab = 4$ then $a + b = ?$
 a) 2 b) 4 c) 5 d) 9
25. If $\frac{a}{b} = \frac{2}{3}$, $\frac{c}{d} = \frac{3}{5}$, then what is the value of $\frac{b}{d}$?
 a) $\frac{2}{5}$ b) $\frac{3}{5}$ c) $\frac{2}{3}$ d) $\frac{5}{3}$
26. What is the H.C.F. between $a^4 - b^4$ and $a^2 + b^2$?
 a) 1 b) $a + b$ c) $a^2 + b^2$ d) $a^4 - b^4$
27. Which of the following is not true?
 a) a, b, c and d are in proportion if, $\frac{a}{b} = \frac{c}{d}$.
 b) a, b and c are in continuous proportion if, $\frac{a}{b} = \frac{b}{c}$.
 c) If a, b and c are in continuous proportion then, $b^2 = ac$.
 d) If a, b, c and d are in proportion then $ab = cd$.
28. If $5^a = 3125$, then the value of 5^{a-3} .
 a) 25 b) 125 c) 625 d) 1625
29. Which of the following is false?
 a) A line segment has two ends.
 b) The angle is formed by the intersection of two lines.
 c) Two angles at a point is adjacent if and only if one line forming these angles is in common.
 d) The parallel line will intersect to each other at a point.
30. Which of the following statement is true.
 a) The angle less than 90 is called acute angle.
 b) The angle equals to 90 is called right angle.
 c) The angle greater than 90 is called obtuse angle.
 d) All of the above.
31. In which quadrilateral the diagonals are equal?
 a) Parallelogram b) Trapezoid c) Rhombus d) Rectangle
32. Which of the following is not true?
 a) Opposite sides of the parallelogram are equal.
 b) The diagonals of a parallelogram are bisected.
 c) Rectangle is a parallelogram.
 d) Square is a parallelogram.
33. From the adjoining figure which of the following is correct?
 a) $a = x + 40^\circ$ b) $a > x + 40^\circ$
 c) $a < x + 40^\circ$ d) None of the above
34. Which of the following is true?
 a) $AB + AC = BC$ b) $AB + AC < BC$
 c) $AB + AC > BC$ d) $AB + AC \geq BC$



35. Find the value of x (from the figure alongside).

- a) 4 b) 5 c) 7 d) 25



36. Which of the following statements is wrong?

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

37. What are the characteristics of right angled triangle?

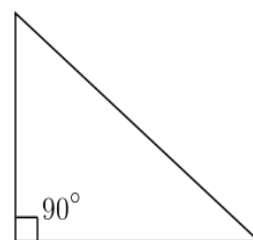
- a) An angle of a right angled triangle is 90° .
 b) Pythagoras theorem hold true on right angled triangle.
 c) The sum of two non- right angles of a right angled triangle is not greater than 90° .
 d) All of the above.

38. If two triangles ABC and XYZ are congruent such that $AB=XY$, $BC=YZ$ and $AC=XZ$. From this information which of the following is true about the interior angles of these two triangles?

- a) Angle 'A' and angle 'Y' are equal.
 b) Angle 'B' and angle 'Z' are equal.
 c) Angle 'C' and angle 'X' are equal.
 d) None of the above.

39. From the adjoining fig which of the following is true?

- a) $\tan A = \frac{AB}{AC}$ b) $\tan A = \frac{AB}{BC}$
 c) $\tan A = \frac{BC}{AB}$ d) $\tan A = \frac{BC}{AC}$



40. What is the value of $\sin 60^\circ$?

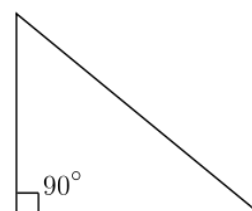
- a) 1 b) $\frac{1}{\sqrt{2}}$ c) $\frac{1}{\sqrt{3}}$ d) $\frac{1}{2}$

41. Find the value of $(\sin 60^\circ)^2 + (\cos 60^\circ)^2$.

- a) -1 b) 1 c) 0 d) None of the above.

42. From the figure alongside find the the value of x .

- a) 5 cm b) 10 cm
 c) 12 cm d) 15 cm



43. In a discrete series which of the following is true?

- a) $\text{Mean}(X) = \frac{\sum fx}{n}$
 b) Median = Value of $(n+1)^{\text{th}}$ term.
 c) Mode = Value corresponding to the greatest frequency.
 d) All of the above.

44. If the weight of 10 students is given (in kg) as: 40, 42, 45, 48, 51, 51, 52, 54, 54 then what is the average height of the students?

- a) 45 kg. b) 47 kg. c) 48 kg. d) 51 kg.
45. In a discrete series which of the following is not true?
a) Value of $Q_1 = \text{Value of } \frac{(N+1)}{4} \text{ term.}$
b) Value of $Q_3 = \text{Value of } \frac{3(N+1)}{4} \text{ term.}$
c) Value of $Q_2 = \text{Median.}$
d) Value of $Q_2 = \text{Mean.}$
46. Find the range of the following data: 6, 7, 9, 6, 12, 11, 10, 6, 9, 8, 7, 15, 9, 12, 13, 9, 15.
a) 6 b) 7 c) 9 d) 12
47. If a coin is tossed twice what is the probability of getting head both time.
a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{1}{8}$ d) 1
48. From a deck of play card if a card is drawn. What is the probability that the card be red diamond?
a) $\frac{1}{13}$ b) $\frac{1}{26}$ c) $\frac{1}{52}$ d) $\frac{2}{13}$
49. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?
a) $\frac{1}{2}$ b) $\frac{2}{5}$ c) $\frac{8}{15}$ d) $\frac{9}{20}$
50. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?
a) $\frac{10}{21}$ b) $\frac{11}{21}$ c) $\frac{2}{7}$ d) $\frac{5}{7}$

APPENDIX:- C

Achievement Test For the Students of Community school

विषय:- अनिवार्य गणित

पूर्णाङ्क:- ५०

कक्षा:- नौ

समय: ९० मिनेट

विद्यार्थीको नाम:-

रोल नं.:-

विद्यालयको नाम:-

परीक्षा मिति:-

सवै प्रश्नहरु अनिवार्य छन ।

सही उत्तरमा ठीक चिन्ह लगाउनुहोस ।

१. तलका मध्ये कुन सहि छ ?

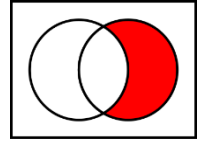
- a) $(A \cup B)$ एउटा त्यस्तो समूह हो जहाँ समूह A वा समूह B वा समूह A र B का साझा सदस्यहरु पर्दछन ।
 b) $(A \cap B)$ एउटा त्यस्तो समूह हो जहाँ समूह A र B का साझा सदस्यहरु पर्दछन ।
 c) समूह A को पूरक समूह भन्नाले त्यस्तो समूह हो जहाँ समूह A बाहेकका सर्वव्यापक समूह (U) का सवै सदस्यहरु पर्दछन ।
 d) All of the above.

२. यदि $n(A) = 25$, $n(B) = 35$, $n(A \cap B) = 10$, भए $n(A \cup B)$ को मान कति हुन्छ रु

- a) 40 b) 45 c) 50 d) 60

३. संगैको चित्रमा रंगाएको भागले केलाई जनाउछ?

- a) $(A \cup B)$ b) $(A \cap B)$ c) A-B d) B-A

४. यदि $n(U) = 50$, $n(A) = 30$, $n(B) = 20$ र $n(A \cap B) = 15$, भए $n(A \cup B)$ = ?

- a) 10 b) 15 c) 20 d) 30

५. राम एउटा कपडा पसलमा गयो । उसले एउटा सर्ट किन्ने विचारले मुल्य सोध्यो । पसलेले उक्त सर्टको मूल्य रु. १००० पर्ने बताए पनि अन्ततः रामले रु. ७०० मा सर्ट किन्यो भने उसले कति प्रतिशत छुट पायो ?

- a) 25% b) 30% c) 40% d) 50%

६. तलका मध्ये सहि उत्तर छान्नुहोस ।

- a) $SI = \frac{PTR}{100}$ b) $SI = \frac{PTR}{1000}$ c) $SI = A + P$ d) $SI = A \div P$

७. यदि $P = \text{Rs. } 3000$, $T = 2$ वर्ष, $R = 10\%$, भए साधारण व्याज (SI) = ?

- a) 500 b) 600 c) 700 d) 800

८. रु. ६०० को २० प्रतिशत कति हुन्छ ?

- a) 60 b) 80 c) 120 d) 160

९. A ले कुनै काम १० दिनमा गर्न सक्छ, B ले उक्त काम १५ दिनमा गर्न सक्छ भने दुवै मिलि काम गर्दा सो काम कति दिनमा सकिएला ?

- a) 5 b) 6 c) 8 d) 9

१०. 3 वटा पम्प दिनको 8 घन्टाका दरले खोल्दा ६ दिनमा ट्याङ्की खाली हुन्छ भने 4 वटा पम्पले 1 दिनमा उक्त ट्याङ्की खाली गर्न दिनमा कति घन्टा पम्प चलाउनु पर्ला ?

- a) 9 b) 10 c) 11 d) 12

११. यदि एक चौथाई आलुको मूल्य 60 पैसा पर्दछ भने 200 ग्रामको मूल्य कति पर्ला ?
 a) 48 पैसा b) 54 पैसा c) 56 पैसा d) 72 पैसा
१२. ९ लि. दुधमा शुद्ध दूध र पानीको अनुपात 1:2 छ। अब दूध र पानीको अनुपात पुयाउन कति लि. पानी थप्नुपर्ला?
 a) 3 लि. b) 5 लि. c) 6 लि. d) 9 लि.
१३. प्रति के. जि. रु. 15 र रु. 20 पर्ने दुई प्रकारका प्लसहरूलाई कुन अनुपातमा मिसाउदा मिश्रण पछिको मूल्य प्रति के. जि. रु. 16.50 पर्न आउछ ?
 a) 3:7 b) 5:7 c) 7:3 d) 7:5
१४. यदि विक्रय मूल्यलाई दोब्बर गर्दा नाफा तेब्बर हुन्छ भने नाफा प्रतिशत पत्ता लगाउनुहोस।
 a) $66\frac{2}{3}$ b) 100 c) $105\frac{1}{3}$ d) 120
१५. एउटा आयतकार चौरको लम्बाई 'l', चौडाई 'b' र चौरको बाहिरी बाटोको चौडाई 'd' भए बाटोको क्षेत्रफल निकाल्ने सूत्र कुन हो ?
 a) $2d(l+b) + 2d$ c) $2d(l+b+2d)$
 b) $2d(l+b) - 2d$ d) $2d(l+b-2d)$
१६. तलका मध्ये कुन सहि छैन ?
 a) cuboid को पुरा सतहको क्षेत्र = $2(lb+bh+hl)$ sq. units.
 b) cube को पुरा सतहको क्षेत्र = $6a^2$ sq. units.
 c) cuboid को आयतन = $\pi r^2 h$ cubic units.
 d) cube को आयतन = a^3 cubic units.
१७. यदि घनको भुजाको लम्बाई १० से. मि. भए घनको आयतन कति होला ?
 a) 100 cm^3 b) 400 cm^3 c) 600 cm^3 d) 1000 cm^3
१८. ४५ मि. लामो, १२ मि. चौडाई र ६ मि. गहिराई भएको कुनै ट्याङ्कीको भित्ता र भूइमा प्लास्टर गर्न प्रति व. मि. रु. ७५ का दरले जम्मा कति खर्च लाग्छ ?
 a) Rs. 465 b) Rs. 458 c) Rs. 558 d) Rs. 568
१९. तलका मध्ये कुन गलत छ?
 a) $(a+b)^2 = a^2+2ab+b^2$ b) $(a-b)^2 = a^2-2ab+b^2$
 c) $(a+b)^2 = (a-b)^2+2ab$ d) $(a-b)^2 = (a+b)^2 - 4ab$
२०. तलका मध्ये कुन सहि छ?
 a) $\frac{x^m}{y^n} = (xy)^{m-n}$ b) $x^m \cdot x^n = x^{m+n}$
 c) $x^m \cdot y^n = (xy)^{m+n}$ d) $(x+y)^m = x^m+y^m$
२१. $a^2-2ab+b^2$ र $a^2+2ab+b^2$ को L.C.M कति हुन्छ ?
 a) $(a^2-b^2)^2$ b) a^3-b^3 c) a^3+b^3 d) $(a^2+b^2)^2$
२२. यदि $3^{x+1} + 3^x = 36$, भए x ?
 a) 2 b) 3 c) 4 d) 5
२३. यदि $x^2 + 2x - 3 = 0$, भए x ?
 a) 1 and -3 b) -1 and 3 c) 1 and 2 d) -2 and 3
२४. यदि $a-b = 3$, $ab = 4$ भए $a+b = ?$
 a) 2 b) 4 c) 5 d) 9

२५. यदि $\frac{a}{b} = \frac{2}{3}$, $\frac{b}{c} = \frac{3}{5}$, भए $\frac{a}{c}$ को मान कति हुन्छ ?

- a) $\frac{2}{5}$ b) $\frac{3}{5}$ c) $\frac{2}{3}$ d) $\frac{5}{3}$

२६. H.C.F. पत्ता लगाउनुहोस् $a^4 - b^4$ and $a^2 + b^2$

- a) 1 b) $a + b$ c) $a^2 + b^2$ d) $a^4 - b^4$

२७. तलका मध्ये कुन सहि छैन ?

- a) a, b, c, d समानुपातमा भए, $\frac{a}{b} = \frac{c}{d}$ हुन्छ ।
 b) a, b, c निरन्तर समानुपातमा भए, $\frac{a}{b} = \frac{b}{c}$ हुन्छ ।
 c) a, b, c निरन्तर समानुपातमा भए, $b^2 = ac$ हुन्छ ।
 d) a, b, c, d समानुपातमा भए $ab = cd$ हुन्छ ।

२८. यदि $5^a = 3125$ भए, 5^{a-3} को मान कति हुन्छ?

- a) 25 b) 125 c) 625 d) 1625

२९. तलका मध्ये कुन सहि छैन?

- a) कुनै पनि रेखाखण्डको दुई विन्दुमा अन्त हुन्छ ।
 b) कुनै पनि दुई सिधा रेखाहरू आपसमा काटिदा काटिएको विन्दुमा कोण बन्दछ ।
 c) कुनै एक विन्दुमा बनेका कोणहरू आसन्न कोण हुन ती दुइ कोणका विचमा कुनै एक भुजा साझा हुनै पर्दछ । र कुनै एक विन्दुमा बनेका दुइ कोणहरूको विचमा कुनै एक भुजा साझा भएमा तिनिहरूलाई आसन्न कोण भनिन्छ ।
 d) समानान्तर रेखाहरू आपसमा काटिन्छन् ।

३०. तलका मध्ये कुन सहि छ ?

- a) 90° भन्दा सानो कोणलाई न्यूनकोण भनिन्छ ।
 b) 90° को कोणलाई समकोण भनिन्छ ।
 c) 90° भन्दा ठूलो कोणलाई अधिककोण भनिन्छ ।
 d) माथिका सबै ।

३१. तलका मध्ये कुन चतुर्भुजको विकर्णहरू बराबर हुन्छन् ?

- a) समानान्तर चतुर्भुज b) सबलम्ब चतुर्भुज c) समबाहु चतुर्भुज d) आयत

३२. तलका मध्ये कुन सहि छैन?

- a) समानान्तर चतुर्भुजका विपरित भुजाहरू बराबर हुन्छन् ।
 b) समानान्तर चतुर्भुजका विकर्णहरू आपसमा लम्ब समद्विभाजन भइ काटिन्छन् ।
 c) आयत एउटा समानान्तर चतुर्भुज हो ।
 d) वर्ग एउटा समानान्तर चतुर्भुज हो ।

३३. संगैको चित्रमा तलका मध्ये कुन सहि छ ?

- a) $a = x + 40^\circ$ b) $a > x + 40^\circ$
 c) $a < x + 40^\circ$ d) माथिका कुनै पनि होइन ।

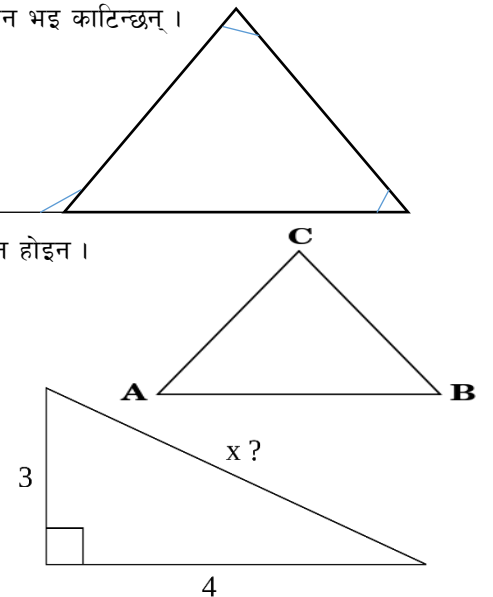
३४. तलका मध्ये कुन सहि छ?

- a) $AB + AC = BC$ b) $AB + AC < BC$
 c) $AB + AC > BC$ d) $AB + AC \geq BC$

३५. संगैको चित्रबाट 'x' को मान पत्ता लगाउनुहोस् ।

- a) 4 b) 5 c) 7 d) 25

३६. तलका मध्ये कुन भनाई गलत छ?



- a) त्रिभुजका भिन्नि कोणहरुको योगफल 180° हुन्छ ।
 b) त्रिभुजको कुनै एक भुजालाई बढाउदा बन्ने बाहिरी कोण त्यस त्रिभुजको भिन्नि अनासन्न दुई कोणको योगसंग बराबर हुन्छ ।
 c) समबाहु त्रिभुजका प्रत्येककोणहरु 60° हुन्छन् ।
 d) त्रिभुजका भिन्नि कोणहरुको योगफल 180° भन्दा बढि हुन्छ ।

३७. समकोण त्रिभुजका विशेषता तलाका मध्ये कुन हो?

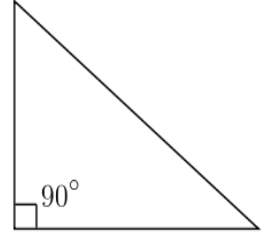
- a) कुनै एउटा कोणको मान 90° हुन्छ ।
 b) समकोण त्रिभुजमा पाइथागोरस साध्य लागु हुन्छ ।
 c) समकोण त्रिभुजमा समकोण बाहेकका दुइ कोणको योग 90° भन्दा बढि हुन सक्दैन ।
 d) माथिका सबै ।

३८. यदि दुइ त्रिभुजहरु ABC and XYZ अनुरूप छन् र भुजाहरु $AB = XY$, $BC = YZ$ and $AC = XZ$ भएतलका मध्ये कुन सहि छ ?

- a) $\angle A = \angle Y$ b) $\angle B = \angle Z$ c) $\angle C = \angle X$ d) कुनै पनि होइन ।

३९. संगैको चित्रमा तलका मध्ये कुन सहि छ ?

- a) $\tan A = \frac{AB}{AC}$ b) $\tan A = \frac{AB}{BC}$
 c) $\tan A = \frac{BC}{AB}$ d) $\tan A = \frac{BC}{AC}$



४०. $\sin 60^\circ$ को मान कति हुन्छ ?

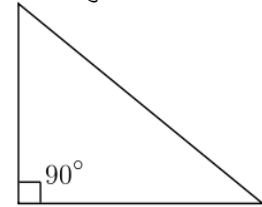
- a) 1 b) $\frac{1}{\sqrt{2}}$ c) $\frac{1}{\sqrt{3}}$ d) $\frac{\sqrt{3}}{2}$

४१. $(\sin 60^\circ)^2 + (\cos 60^\circ)^2$ को मान पत्ता लगाउनुहोस् ।

- a) -1 b) 1 c) 0 d) माथिका कुनै पनि होइन ।

४२. संगैको चित्रबाट 'x' को मान पत्ता लगाउनुहोस् ।

- a) 5 cm b) 10 cm
 c) 12 cm d) 15 cm



४३. खण्डित श्रेणीका सम्बन्धमा तलका मध्ये कुन सहि छ?

- a) मध्यक $(X) = \frac{\sum fx}{n}$
 b) मध्यिका = $(n+1)^{th}$ पदको मान
 c) रीत = सबैभन्दा बढि वारम्बारता भएको श्रेणीको पद
 d) माथिका सबै

४४. १० जना विद्यार्थीहरुको तौल (kg) मा दिइएको छ: 40, 42, 45, 45, 48, 51, 51, 52, 52, 54 विद्यार्थीको औषत तौल कति होला?

- a) 45 kg. b) 47 kg. c) 48 kg. d) 51 kg.

४५. खण्डित श्रेणीका सम्बन्धमा तलका मध्ये कुन गलत छ?

- a) $Q_1 = \frac{(N+1)}{4}$ औँ पदको मान
 b) $Q_3 = \frac{3(N+1)}{4}$ औँ पदको मान
 c) $Q_2 =$ मध्यिका
 d) $Q_2 =$ मध्यक

४६. दिइएको तथ्याङ्कका आधारमा रीत पत्ता लगाउनुहोस् । 6, 7, 9, 6, 12, 11, 10, 6, 9, 8, 7, 15, 9, 12, 13, 9, 15.
- a) 6 b) 7 c) 9 d) 12
४७. कुनै सिक्कालाइ दुइपटक toss गर्दा दुवैपटक पर्ने head सम्भाव्यता कति हुन्छ?
- a) $\frac{1}{2}$ b) $\frac{1}{4}$ c) $\frac{1}{8}$ d) 1
४८. कुनै तासको बुकबाट एक पत्ता तास थुत्दा रातो बादशाह पर्ने सम्भाव्यता कति?
- a) $\frac{1}{13}$ b) $\frac{1}{26}$ c) $\frac{1}{52}$ d) $\frac{2}{13}$
४९. १ देखि २० अंकित टिकेटहरूलाई राम्ररी मिसाएर कुनै एउटा टिकेट निकाल्दा उक्त टिकेट ३ वा ५ को गुणाङ्क पर्ने सम्भाव्यता कति हुन्छ?
- a) $\frac{1}{2}$ b) $\frac{2}{5}$ c) $\frac{8}{15}$ d) $\frac{9}{20}$
५०. एउटा व्यागमा २ वटा राता, ३ वटा हरिया र २ वटा निला बलहरू छन् । व्यागबाट दुइवटा बल एकैपटक निकाल्दा दुवै बल निलो नपर्ने सम्भाव्यता कति हुन्छ?
- a) $\frac{10}{21}$ b) $\frac{11}{21}$ c) $\frac{2}{7}$ d) $\frac{5}{7}$

APPENDIX:- F

Date and time of visited different sample sites

| S.N. | Name of the schools | Examination Date | Examination Time |
|------|--|------------------|------------------|
| 1. | Kamala Ma. Vi. | 2072/11/13 | 8:45 am |
| 2. | Janajyoti Ma.Vi. | 2072/11/13 | 1:30 pm |
| 3. | Gaumati Ma.Vi. | 2072/11/05 | 2:15 pm |
| 4. | Kapilakot Ma.Vi. | 2072/11/08 | 11:30 am |
| 5. | Ma.Vi. Pipal vanjyang | 2072/11/10 | 1:30 pm |
| 6. | Chandeshori Ma.Vi.. | 2072/11/11 | 10:45 am |
| 7. | Jan Jagriti Ma.Vi. | 2072/11/10 | 8:30 am |
| 8. | Janajyoti Ma.Vi. | 2072/11/04 | 1:30 pm |
| 9. | Siddhababa Eng.Boarding School | 2072/11/07 | 11:30 am |
| 10 | . New Eng. Boarding School | 2072/11/04 | 10:45 am |
| 11 | . Swiss Sindhuli Sec. Eng. Med. School | 2072/11/12 | 1:30 pm |
| 12 | . New Siddhasthali Eng. Boarding School | 2072/11/07 | 2:15 pm |
| 13 | . Shinningmoon Academy | 2072/11/12 | 11:30 am |
| 14 | . Bhagabati Eng. Boarding School | 2072/11/05 | 11:30 am |
| 15 | . Janata Eng. Sec. School | 2072/11/06 | 11:30 am |
| 16 | . Vidhyashram Eng. Sec. School | 2072/11/06 | 2:15 pm |

APPENDIX:- G

The Marks obtained by the student on achievement test administered among them

| S.N. | Name of the student | Name of school | Boy/ Girl | Marks obtained |
|------|---------------------|-------------------------------|--------------|-------------------|
| 1. | Utpal Khadka | Janajyoti Ma. Vi., Phoshretar | Boy | 44 |
| 2. | Sirjana Baral | Janajyoti Ma. Vi., Phoshretar | Girl | 32 |
| 3. | Uttara Budhathoki | Janajyoti Ma. Vi., Phoshretar | Girl | 37 |
| 4. | Sanjeeb karki | Janajyoti Ma. Vi., Phoshretar | Boy | 41 |
| 5. | Niraj Shrestha | Janajyoti Ma. Vi., Phoshretar | Boy | 23 |
| 6. | Basantaa Pariyar | Janajyoti Ma. Vi., Phoshretar | Girl | 26 |
| 7. | Lalita Dhungana | Janajyoti Ma. Vi., Phoshretar | Girl | 25 |
| 8. | Sirjana Shrestha | Janajyoti Ma. Vi., Phoshretar | Girl | 22 |
| 9. | Jaya Bahadur B.K. | Janajyoti Ma. Vi., Phoshretar | Boy | 29 |
| 10. | Sita Ramtel | Janajyoti Ma. Vi., Phoshretar | Girl | 38 |
| 11. | Sabin Lama | Janajyoti Ma. Vi., Phoshretar | Boy | 20 |
| 12. | Kamal Gautam | Janajyoti Ma. Vi., Phoshretar | Boy | 40 |
| 13. | Alisha Pradhan | Janajyoti Ma. Vi., Phoshretar | Girl | 36 |
| 14. | Manju Pariyar | Janajyoti Ma. Vi., Phoshretar | Girl | 11 |
| 15. | Bibash Tamang | Janajyoti Ma. Vi., Phoshretar | Boy | 50 |
| 16. | Prabin Majhi | Janajyoti Ma. Vi., Phoshretar | Boy | 42 |
| 17. | Rita Danuwar | Janajyoti Ma. Vi., Phoshretar | Girl | 19 |
| 18. | Kabita Pariyar | Janajyoti Ma. Vi., Phoshretar | Girl | 29 |
| 19. | Kumar Karki | Janajyoti Ma. Vi., Phoshretar | Boy | 33 |
| 20. | Sarmila Jarga | Janajyoti Ma. Vi., Phoshretar | Girl | 32 |
| 21. | Rites Thokar | New English Boarding School | Boy | 43 |
| 22. | Pramila K.C. | New English Boarding School | Girl | 48 |
| 23. | Laxman khatri | New English Boarding School | Boy | 39 |
| 24. | Bina Adhikari | New English Boarding School | Girl | 37 |
| 25. | Himlal Subedi | New English Boarding School | Boy | 41 |
| 26. | Uma Koirala | New English Boarding School | Girl | 44 |
| 27. | Ram Pariyar | New English Boarding School | Boy | 41 |
| 28. | Hari pokherel | New English Boarding School | Boy | 36 |
| 29. | Yubaraj Pariyar | New English Boarding School | Boy | 40 |
| 30. | Sabina Tamang | New English Boarding School | Girl | 28 |
| 31. | Sapana Shrestha | New English Boarding School | Girl | 49 |
| 32. | Pitambar Khanal | New English Boarding School | Boy | 46 |
| 33. | Uttam Tamang | New English Boarding School | Boy | 31 |
| 34. | Sita Nepal | New English Boarding School | Girl | 49 |
| 35. | Hari Bhakta Pun | New English Boarding School | Boy | 41 |
| 36. | Jasbir Majhi | New English Boarding School | Boy | 36 |
| 37. | Rebika Syngtan | New English Boarding School | Girl | 44 |

| | | | | |
|-----|--------------------|-----------------------------|------|----|
| 38. | Sarita Saha | New English Boarding School | Girl | 45 |
| 39. | Sanu Pulai | New English Boarding School | Girl | 28 |
| 40. | Mira Nepali | New English Boarding School | Girl | 34 |
| 41. | Nabina Lama | Gaumati Ma. Vi. | Girl | 32 |
| 42. | Kabita Tamang | Gaumati Ma. Vi. | Girl | 42 |
| 43. | Bimal Sunuwar | Gaumati Ma. Vi. | Boy | 40 |
| 44. | Jaya Majhi | Gaumati Ma. Vi. | Boy | 30 |
| 45. | Basanta Koirala | Gaumati Ma. Vi. | Boy | 22 |
| 46. | Udbir Khadka | Gaumati Ma. Vi. | Boy | 13 |
| 47. | Kamala Nepali | Gaumati Ma. Vi. | Girl | 36 |
| 48. | Sunita Thatal | Gaumati Ma. Vi. | Girl | 41 |
| 49. | Shanta Poudel | Gaumati Ma. Vi. | Girl | 45 |
| 50. | Puja Ramtel | Gaumati Ma. Vi. | Girl | 30 |
| 51. | Homnath Pahadi | Gaumati Ma. Vi. | Boy | 17 |
| 52. | Ramesh Pradhan | Gaumati Ma. Vi. | Boy | 44 |
| 53. | Goma B.K. | Gaumati Ma. Vi. | Girl | 44 |
| 54. | Bharat Lama | Gaumati Ma. Vi. | Boy | 48 |
| 55. | Sabina B.K. | Gaumati Ma. Vi. | Girl | 40 |
| 56. | Sabita Chaulagain | Gaumati Ma. Vi. | Girl | 28 |
| 57. | Purushotam Nepal | Gaumati Ma. Vi. | Boy | 25 |
| 58. | Arati Thapamagar | Gaumati Ma. Vi. | Girl | 45 |
| 59. | Amar pariyar | Gaumati Ma. Vi. | Boy | 41 |
| 60. | Pramod Raut | Gaumati Ma. Vi. | Boy | 38 |
| 61. | Bhabana Pahadi | Bhagawati Eng. B. School | Girl | 47 |
| 62. | Ram Prashad Aryal | Bhagawati Eng. B. School | Boy | 42 |
| 63. | Sujata Thapa | Bhagawati Eng. B. School | Girl | 27 |
| 64. | Menuka Sarki | Bhagawati Eng. B. School | Girl | 41 |
| 65. | Dil B. K. | Bhagawati Eng. B. School | Boy | 32 |
| 66. | Lila Basnet | Bhagawati Eng. B. School | Girl | 45 |
| 67. | Sapana Basnet | Bhagawati Eng. B. School | Girl | 44 |
| 68. | Ganga Bahadur Lama | Bhagawati Eng. B. School | Boy | 44 |
| 69. | Bhupendra Koirala | Bhagawati Eng. B. School | Boy | 36 |
| 70. | Rajeev Acharya | Bhagawati Eng. B. School | Boy | 50 |
| 71. | Rupa Magar | Bhagawati Eng. B. School | Girl | 31 |
| 72. | Hari Tamang | Bhagawati Eng. B. School | Boy | 27 |
| 73. | Lokhari Aacharya | Bhagawati Eng. B. School | Boy | 43 |
| 74. | Ram Kuwar | Bhagawati Eng. B. School | Boy | 42 |
| 75. | Kumari Khatiwada | Bhagawati Eng. B. School | Girl | 39 |
| 76. | Sangita Puri | Bhagawati Eng. B. School | Girl | 36 |
| 77. | Prasamsa Pradhan | Bhagawati Eng. B. School | Girl | 45 |
| 78. | Junu Nepali | Bhagawati Eng. B. School | Girl | 27 |
| 79. | Binod Shrestha | Bhagawati Eng. B. School | Boy | 40 |

| | | | | |
|------|--------------------|------------------------------|------|----|
| 80. | Rupesh Sah | Bhagawati Eng. B. School | Boy | 41 |
| 81. | Urmila Niraula | Janata Eng. Sec. School | Girl | 42 |
| 82. | Sumeet Karki | Janata Eng. Sec. School | Boy | 48 |
| 83. | Punam Basyal | Janata Eng. Sec. School | Girl | 46 |
| 84. | Bikas Sunndas | Janata Eng. Sec. School | Boy | 40 |
| 85. | Lila Shrestha | Janata Eng. Sec. School | Girl | 40 |
| 86. | Mina Karki | Janata Eng. Sec. School | Girl | 38 |
| 87. | Hari Prashad Nepal | Janata Eng. Sec. School | Boy | 40 |
| 88. | Rupa Niraula | Janata Eng. Sec. School | Girl | 41 |
| 89. | Chandra Nepali | Janata Eng. Sec. School | Boy | 25 |
| 90. | Sumitra Aale | Janata Eng. Sec. School | Girl | 45 |
| 91. | Umanga Upreti | Janata Eng. Sec. School | Boy | 41 |
| 92. | Jasbir Rokka | Janata Eng. Sec. School | Boy | 32 |
| 93. | Rasmi Dhimal | Janata Eng. Sec. School | Girl | 35 |
| 94. | Prem Darnal | Janata Eng. Sec. School | Boy | 39 |
| 95. | Kalpana Hayu | Janata Eng. Sec. School | Girl | 41 |
| 96. | Jeeban Shrestha | Janata Eng. Sec. School | Boy | 41 |
| 97. | Kamal Thapa | Janata Eng. Sec. School | Boy | 44 |
| 98. | Pramod Rasaili | Janata Eng. Sec. School | Boy | 35 |
| 99. | Parbati Lamichhane | Janata Eng. Sec. School | Girl | 37 |
| 100. | Aasika Sundas | Janata Eng. Sec. School | Girl | 28 |
| 101. | Lalkaji Subedi | Vidhyashram Eng. Sec. School | Boy | 39 |
| 102. | Santosh Karki | Vidhyashram Eng. Sec. School | Boy | 40 |
| 103. | Sudip Chaulagain | Vidhyashram Eng. Sec. School | Boy | 47 |
| 104. | Puspa Kayastha | Vidhyashram Eng. Sec. School | Boy | 44 |
| 105. | Pramila Sunam | Vidhyashram Eng. Sec. School | Girl | 43 |
| 106. | Ujwal Chaulagain | Vidhyashram Eng. Sec. School | Boy | 43 |
| 107. | Sudha Kaki | Vidhyashram Eng. Sec. School | Girl | 35 |
| 108. | Pawan Aryal | Vidhyashram Eng. Sec. School | Boy | 39 |
| 109. | Yasodha Sarki | Vidhyashram Eng. Sec. School | Girl | 46 |
| 110. | Pratik K.C. | Vidhyashram Eng. Sec. School | Boy | 45 |
| 111. | Binita Karki | Vidhyashram Eng. Sec. School | Girl | 49 |
| 112. | Suman Shrestha | Vidhyashram Eng. Sec. School | Boy | 32 |
| 113. | Tika Darnal | Vidhyashram Eng. Sec. School | Boy | 28 |
| 114. | Laxmi Waiba | Vidhyashram Eng. Sec. School | Girl | 41 |
| 115. | Punam Nepal | Vidhyashram Eng. Sec. School | Girl | 37 |
| 116. | Umesh Mahato | Vidhyashram Eng. Sec. School | Boy | 44 |
| 117. | Prakriti Phuyal | Vidhyashram Eng. Sec. School | Girl | 44 |
| 118. | Mamata Pariyar | Vidhyashram Eng. Sec. School | Girl | 39 |
| 119. | Sabina Lama | Vidhyashram Eng. Sec. School | Girl | 34 |
| 120. | Monika Thing | Vidhyashram Eng. Sec. School | Girl | 43 |
| 121. | Vishmaraj Aryal | Siddhababa Eng. B. School | Boy | 26 |

| | | | | |
|------|---------------------------|---------------------------|------|----|
| 122. | Urmila Niraula | Siddhababa Eng. B. School | Girl | 38 |
| 123. | Tara Kadel | Siddhababa Eng. B. School | Girl | 46 |
| 124. | Raju Subedi | Siddhababa Eng. B. School | Boy | 29 |
| 125. | Puspa Joshi | Siddhababa Eng. B. School | Girl | 49 |
| 126. | Purna Bahadur Waiba | Siddhababa Eng. B. School | Boy | 50 |
| 127. | Laxman Pandey | Siddhababa Eng. B. School | Boy | 48 |
| 128. | Lila Koirala | Siddhababa Eng. B. School | Girl | 50 |
| 129. | Santosh Ale | Siddhababa Eng. B. School | Boy | 36 |
| 130. | Sabin Khanal | Siddhababa Eng. B. School | Girl | 38 |
| 131. | Harka Sarki | Siddhababa Eng. B. School | Boy | 46 |
| 132. | Susma B.K. | Siddhababa Eng. B. School | Girl | 36 |
| 133. | Jeeban Khatri | Siddhababa Eng. B. School | Boy | 42 |
| 134. | Mera Darnal | Siddhababa Eng. B. School | Girl | 42 |
| 135. | Man Bahadur Thapamagar | Siddhababa Eng. B. School | Boy | 45 |
| 136. | Sita Basnet | Siddhababa Eng. B. School | Girl | 40 |
| 137. | Yasodha Lama | Siddhababa Eng. B. School | Girl | 35 |
| 138. | Binod Shrestha | Siddhababa Eng. B. School | Boy | 38 |
| 139. | Sristi Thapa | Siddhababa Eng. B. School | Girl | 36 |
| 140. | Januka Pariyar | Siddhababa Eng. B. School | Girl | 41 |
| 141. | Somprashad Kafle | New Siddhasthali E. B.S. | Boy | 29 |
| 142. | Ajaya Pradhan | New Siddhasthali E. B.S. | Boy | 50 |
| 143. | Lila Karki | New Siddhasthali E. B.S. | Girl | 49 |
| 144. | Rabindra Rijal | New Siddhasthali E. B.S. | Boy | 48 |
| 145. | Rupa Karki | New Siddhasthali E. B.S. | Girl | 49 |
| 146. | Pradip Nepal | New Siddhasthali E. B.S. | Boy | 27 |
| 147. | Kiran Lama | New Siddhasthali E. B.S. | Boy | 50 |
| 148. | Urmila Sunam | New Siddhasthali E. B.S. | Girl | 47 |
| 149. | Santosh Vitrikoti | New Siddhasthali E. B.S. | Boy | 39 |
| 150. | Kamala Waiba | New Siddhasthali E. B.S. | Girl | 42 |
| 151. | Bharat Rupakheti | New Siddhasthali E. B.S. | Boy | 29 |
| 152. | Debika Rai | New Siddhasthali E. B.S. | Girl | 32 |
| 153. | Ramesh Gautam | New Siddhasthali E. B.S. | Boy | 38 |
| 154. | Sumitra Alemagar | New Siddhasthali E. B.S. | Girl | 44 |
| 155. | Anita Thatal | New Siddhasthali E. B.S. | Girl | 44 |
| 156. | Jit Bahadur Shrestha | New Siddhasthali E. B.S. | Boy | 41 |
| 157. | Manoj Kumar B.K. | New Siddhasthali E. B.S. | Boy | 36 |
| 158. | Niru Phuyal | New Siddhasthali E. B.S. | Girl | 32 |
| 159. | Rita Danuwar | New Siddhasthali E. B.S. | Girl | 38 |
| 160. | Salina Shrestha | New Siddhasthali E. B.S. | Girl | 38 |
| 161. | Santosh Majhi | Kapilakot Ma. Vi. | Boy | 17 |

| | | | | |
|------|-------------------|------------------------|------|----|
| 162. | Janak Majhi | Kapilakot Ma. Vi. | Boy | 14 |
| 163. | Purnima Khatiwada | Kapilakot Ma. Vi. | Girl | 40 |
| 164. | Sujan Tamang | Kapilakot Ma. Vi. | Boy | 26 |
| 165. | Janaki Vattarai | Kapilakot Ma. Vi. | Girl | 44 |
| 166. | Barun Thapa | Kapilakot Ma. Vi. | Boy | 23 |
| 167. | Lila Sarki | Kapilakot Ma. Vi. | Girl | 36 |
| 168. | Jyoti Adhikari | Kapilakot Ma. Vi. | Girl | 36 |
| 169. | Om Pariyar | Kapilakot Ma. Vi. | Boy | 40 |
| 170. | Himal Sharma | Kapilakot Ma. Vi. | Boy | 24 |
| 171. | Samiksha Baral | Kapilakot Ma. Vi. | Girl | 43 |
| 172. | Janak Waiba | Kapilakot Ma. Vi. | Boy | 46 |
| 173. | Ritik Majhi | Kapilakot Ma. Vi. | Boy | 26 |
| 174. | Sashikala Majhi | Kapilakot Ma. Vi. | Girl | 25 |
| 175. | Ritu Basyal | Kapilakot Ma. Vi. | Girl | 12 |
| 176. | Naramaya Dhama | Kapilakot Ma. Vi. | Girl | 22 |
| 177. | Arjun Sapkokta | Kapilakot Ma. Vi. | Boy | 25 |
| 178. | Gita Majhi | Kapilakot Ma. Vi. | Girl | 31 |
| 179. | Rammaya Pariyar | Kapilakot Ma. Vi. | Girl | 26 |
| 180. | Gopal Siwakoti | Kapilakot Ma. Vi. | Boy | 38 |
| 181. | Rupesh Koirala | Jana Jagriti Ma. VI. | Boy | 46 |
| 182. | Januka Ramtel | Jana Jagriti Ma. VI. | Girl | 34 |
| 183. | Prajwol Kafle | Jana Jagriti Ma. VI. | Boy | 26 |
| 184. | Kapil Khatri | Jana Jagriti Ma. VI. | Boy | 23 |
| 185. | Sita Basnet | Jana Jagriti Ma. VI. | Girl | 40 |
| 186. | Shekhar Mishra | Jana Jagriti Ma. VI. | Boy | 32 |
| 187. | Kalpana Nepali | Jana Jagriti Ma. VI. | Girl | 42 |
| 188. | Sumitra Lama | Jana Jagriti Ma. VI. | Girl | 29 |
| 189. | Tika Thapa | Jana Jagriti Ma. VI. | Boy | 46 |
| 190. | Kabita Acharya | Jana Jagriti Ma. VI. | Girl | 41 |
| 191. | Muna Bishwokarma | Jana Jagriti Ma. VI. | Girl | 42 |
| 192. | Sujan Bardewa | Jana Jagriti Ma. VI. | Boy | 40 |
| 193. | Susmita Khanal | Jana Jagriti Ma. VI. | Girl | 36 |
| 194. | Rama Kattel | Jana Jagriti Ma. VI. | Girl | 41 |
| 195. | Hari Rokka | Jana Jagriti Ma. VI. | Boy | 12 |
| 196. | Sima Kumari B.K. | Jana Jagriti Ma. VI. | Girl | 18 |
| 197. | Rakesh Sah | Jana Jagriti Ma. VI. | Boy | 34 |
| 198. | Sita Waiba | Jana Jagriti Ma. VI. | Girl | 35 |
| 199. | Nabin Khadka | Jana Jagriti Ma. VI. | Boy | 40 |
| 200. | Prem Bohora | Jana Jagriti Ma. VI. | Boy | 21 |
| 201. | Kul Bahadur Lama | Ma. Vi. Pipal Vanjyang | Boy | 25 |
| 202. | Sita Khadka | Ma. Vi. Pipal Vanjyang | Girl | 39 |
| 203. | Sanokaji Tamang | Ma. Vi. Pipal Vanjyang | Boy | 22 |

| | | | | |
|------|--------------------|------------------------|------|----|
| 204. | Jayanta Koirala | Ma. Vi. Pipal Vanjyang | Boy | 45 |
| 205. | Sabina Lama | Ma. Vi. Pipal Vanjyang | Girl | 32 |
| 206. | Ananta Waiba | Ma. Vi. Pipal Vanjyang | Boy | 24 |
| 207. | Asmita yonjan | Ma. Vi. Pipal Vanjyang | Girl | 19 |
| 208. | Uttam Adhikari | Ma. Vi. Pipal Vanjyang | Boy | 46 |
| 209. | Deepak Bishwokarma | Ma. Vi. Pipal Vanjyang | Boy | 21 |
| 210. | Indra Basnet | Ma. Vi. Pipal Vanjyang | Boy | 41 |
| 211. | Dila Pun | Ma. Vi. Pipal Vanjyang | Girl | 16 |
| 212. | Chiranjibi Poudel | Ma. Vi. Pipal Vanjyang | Boy | 43 |
| 213. | Chameli Tamang | Ma. Vi. Pipal Vanjyang | Girl | 12 |
| 214. | Sirjana Pahadi | Ma. Vi. Pipal Vanjyang | Girl | 42 |
| 215. | Raju Syngtan | Ma. Vi. Pipal Vanjyang | Boy | 10 |
| 216. | Esmita Timilsina | Ma. Vi. Pipal Vanjyang | Girl | 40 |
| 217. | Kumari Lama | Ma. Vi. Pipal Vanjyang | Girl | 32 |
| 218. | Santosh Koirala | Ma. Vi. Pipal Vanjyang | Boy | 23 |
| 219. | Nita Sunuwar | Ma. Vi. Pipal Vanjyang | Girl | 28 |
| 220. | Radhika Bamjan | Ma. Vi. Pipal Vanjyang | Girl | 17 |
| 221. | Khubiram Poudel | Chandeshory Ma. Vi. | Boy | 38 |
| 222. | Santosh Pun | Chandeshory Ma. Vi. | Boy | 23 |
| 223. | Lalbabu Aryal | Chandeshory Ma. Vi. | Boy | 33 |
| 224. | Sima Ramtel | Chandeshory Ma. Vi. | Girl | 43 |
| 225. | Khadka Khatri | Chandeshory Ma. Vi. | Boy | 45 |
| 226. | Priyanka K.C. | Chandeshory Ma. Vi. | Girl | 40 |
| 227. | Tulasa Ghimire | Chandeshory Ma. Vi. | Girl | 35 |
| 228. | Januka Darlami | Chandeshory Ma. Vi. | Girl | 31 |
| 229. | Suman Majhi | Chandeshory Ma. Vi. | Boy | 36 |
| 230. | Uttara Sundas | Chandeshory Ma. Vi. | Girl | 23 |
| 231. | Hridaya Basnet | Chandeshory Ma. Vi. | Boy | 41 |
| 232. | Aarati Lama | Chandeshory Ma. Vi. | Girl | 39 |
| 233. | Laxmi Waiba | Chandeshory Ma. Vi. | Girl | 37 |
| 234. | Deepkumar Danuwar | Chandeshory Ma. Vi. | Boy | 25 |
| 235. | Prakash Pokhrel | Chandeshory Ma. Vi. | Boy | 45 |
| 236. | Lila Koirala | Chandeshory Ma. Vi. | Girl | 49 |
| 237. | Sunil Achchhame | Chandeshory Ma. Vi. | Boy | 46 |
| 238. | Uma Shrestha | Chandeshory Ma. Vi. | Girl | 10 |
| 239. | Pratiksha Joshi | Chandeshory Ma. Vi. | Girl | 22 |
| 240. | Netra Karki | Chandeshory Ma. Vi. | Boy | 39 |
| 241. | Rebika Nepali | Shinningmoon Academy | Girl | 45 |
| 242. | Babita Timilsina | Shinningmoon Academy | Girl | 47 |
| 243. | Jagadis Koirala | Shinningmoon Academy | Boy | 50 |
| 244. | Pramod Dahal | Shinningmoon Academy | Boy | 38 |
| 245. | Sanjya Dahal | Shinningmoon Academy | Boy | 43 |

| | | | | |
|------|----------------------|------------------------------------|------|----|
| 246. | Punam B.K. | Shinningmoon Academy | Girl | 50 |
| 247. | Gopal Lama | Shinningmoon Academy | Boy | 49 |
| 248. | Vhismaraj Shrestha | Shinningmoon Academy | Boy | 50 |
| 249. | Manju Koirala | Shinningmoon Academy | Girl | 46 |
| 250. | Abarodh Koirala | Shinningmoon Academy | Boy | 48 |
| 251. | Rasmi Dhimal | Shinningmoon Academy | Girl | 40 |
| 252. | Urmila Shrestha | Shinningmoon Academy | Girl | 42 |
| 253. | Arbin Phuyal | Shinningmoon Academy | Boy | 45 |
| 254. | Deepika Phuyal | Shinningmoon Academy | Girl | 34 |
| 255. | Ramesh Mijar | Shinningmoon Academy | Boy | 36 |
| 256. | Lalita Dhungana | Shinningmoon Academy | Girl | 44 |
| 257. | Sirjana Khatri | Shinningmoon Academy | Girl | 32 |
| 258. | Krishnahari Acharya | Shinningmoon Academy | Boy | 28 |
| 259. | Uttam Jha | Shinningmoon Academy | Boy | 45 |
| 260. | Anju Sunar | Shinningmoon Academy | Girl | 29 |
| 261. | Esmita Sharma | Swiss Sindhuli Sec. E. Med. School | Girl | 48 |
| 262. | Jagya Prasad Koirala | Swiss Sindhuli Sec. E. Med. School | Boy | 46 |
| 263. | Prakash Pariyar | Swiss Sindhuli Sec. E. Med. School | Boy | 50 |
| 264. | Nabaraj Pariyar | Swiss Sindhuli Sec. E. Med. School | Boy | 45 |
| 265. | Tilak Moktan | Swiss Sindhuli Sec. E. Med. School | Boy | 39 |
| 266. | Apsara Adhikari | Swiss Sindhuli Sec. E. Med. School | Girl | 49 |
| 267. | Jyoti Thapa | Swiss Sindhuli Sec. E. Med. School | Girl | 49 |
| 268. | Prabin Katuwal | Swiss Sindhuli Sec. E. Med. School | Boy | 46 |
| 269. | Sarmila Tamang | Swiss Sindhuli Sec. E. Med. School | Girl | 37 |
| 270. | Sanjya Shrestha | Swiss Sindhuli Sec. E. Med. School | Boy | 50 |
| 271. | Debitra Nepal | Swiss Sindhuli Sec. E. Med. School | Girl | 44 |
| 272. | Harihar pokhrel | Swiss Sindhuli Sec. E. Med. School | Boy | 49 |
| 273. | Ajaya Nepali | Swiss Sindhuli Sec. E. Med. School | Boy | 34 |
| 274. | Liladevi Gadtaula | Swiss Sindhuli Sec. E. Med. School | Girl | 44 |
| 275. | Bibash Sundas | Swiss Sindhuli Sec. E. Med. School | Boy | 36 |
| 276. | Anita Pariyar | Swiss Sindhuli Sec. E. Med. School | Girl | 27 |
| 277. | Manoj Burlakoti | Swiss Sindhuli Sec. E. Med. School | Boy | 34 |
| 278. | Goma Kuwar | Swiss Sindhuli Sec. E. Med. School | Girl | 40 |
| 279. | Trishna Mishra | Swiss Sindhuli Sec. E. Med. School | Girl | 40 |
| 280. | Sunita Majhi | Swiss Sindhuli Sec. E. Med. School | Girl | 38 |
| 281. | Sanjib Rasaili | Kamala Ma. Vi. | Boy | 14 |
| 282. | Aaditya Pradhan | Kamala Ma. Vi. | Boy | 34 |
| 283. | Shanta Mainali | Kamala Ma. Vi. | Girl | 43 |
| 284. | Sushant Shrestha | Kamala Ma. Vi. | Boy | 41 |
| 285. | Suprava Lama | Kamala Ma. Vi. | Girl | 43 |
| 286. | Bikash Lamsal | Kamala Ma. Vi. | Boy | 24 |
| 287. | Junu Khatiwada | Kamala Ma. Vi. | Girl | 46 |

| | | | | |
|------|---------------------------|-------------------|------|----|
| 288. | Rupesh Bhandari | Kamala Ma. Vi. | Boy | 44 |
| 289. | Mina Sapkota | Kamala Ma. Vi. | Girl | 48 |
| 290. | Dipika Waiba | Kamala Ma. Vi. | Girl | 20 |
| 291. | Sujan Kadel | Kamala Ma. Vi. | Boy | 36 |
| 292. | Tara Sunar | Kamala Ma. Vi. | Girl | 40 |
| 293. | Manjita Karkidoli | Kamala Ma. Vi. | Girl | 28 |
| 294. | Kumar Prasad Timilsina | Kamala Ma. Vi. | Boy | 31 |
| 295. | Sujata Karkidoli | Kamala Ma. Vi. | Girl | 41 |
| 296. | Radheshyam Karki | Kamala Ma. Vi. | Boy | 25 |
| 297. | Yamuna Pradhan | Kamala Ma. Vi. | Girl | 28 |
| 298. | Kriparam Magar | Kamala Ma. Vi. | Boy | 19 |
| 299. | Babita Mishra | Kamala Ma. Vi. | Girl | 24 |
| 300. | Sriram Thapamagar | Kamala Ma. Vi. | Boy | 16 |
| 301. | Rekha Upadhyaya | Janajyoti Ma. Vi. | Girl | 48 |
| 302. | Renuka Subedi | Janajyoti Ma. Vi. | Girl | 32 |
| 303. | Sujata Thapa | Janajyoti Ma. Vi. | Girl | 40 |
| 304. | Hari Pokhrel | Janajyoti Ma. Vi. | Boy | 33 |
| 305. | Kesab Joshi | Janajyoti Ma. Vi. | Boy | 25 |
| 306. | Lila Raut | Janajyoti Ma. Vi. | Girl | 40 |
| 307. | Prem Dangol | Janajyoti Ma. Vi. | Boy | 19 |
| 308. | Bina Sundas | Janajyoti Ma. Vi. | Girl | 40 |
| 309. | Surendra Raut | Janajyoti Ma. Vi. | Boy | 15 |
| 310. | Pooja Nepal | Janajyoti Ma. Vi. | Girl | 44 |
| 311. | Jaya Bahadur Nepali | Janajyoti Ma. Vi. | Boy | 27 |
| 312. | Asmita Thing | Janajyoti Ma. Vi. | Girl | 29 |
| 313. | Min Bahadur Thapa | Janajyoti Ma. Vi. | Boy | 38 |
| 314. | Gayatri Sharma | Janajyoti Ma. Vi. | Girl | 40 |
| 315. | Lokdarsan Baral | Janajyoti Ma. Vi. | Boy | 41 |
| 316. | Sita Bamjan | Janajyoti Ma. Vi. | Girl | 24 |
| 317. | Prativa Khatri | Janajyoti Ma. Vi. | Girl | 40 |
| 318. | Aakas Majhi | Janajyoti Ma. Vi. | Boy | 38 |
| 319. | Lal Bahadur Chauhan | Janajyoti Ma. Vi. | Boy | 38 |
| 320. | Suman Bhulon | Janajyoti Ma. Vi. | Boy | 23 |

APPENDIX:- H

Mean and Standard deviation calculated from the data obtained from achievement test

| S.N. | Schools | No. of students | Mean | SD |
|------|-----------------------------|-----------------|-------|------|
| 1. | Community schools total | 160 | 33.68 | 8.87 |
| 2. | Community schools boys | 80 | 33.07 | 8.64 |
| 3. | Community schools girls | 80 | 34.30 | 9.11 |
| 4. | Institutional schools Total | 160 | 40.45 | 7.2 |
| 5. | Institutional schools Boys | 80 | 40.95 | 6.88 |
| 6. | Institutional schools Girls | 80 | 39.96 | 7.52 |

APPENDIX:- I

Response obtained from the students by closed survey questionnaire

| Factors | Response from Community schools | | | Response from Institutional schools | | | Total | | |
|-------------------------------|---------------------------------|----------|-----------|-------------------------------------|----------|----------|-----------|-----------|-----------|
| | High | Medium | Low | High | Medium | Low | High | Medium | Low |
| Parents education | 66 (41%) | 80 (50%) | 14 (9%) | 51 (32%) | 90 (56%) | 19 (12%) | 117 (37%) | 170 (53%) | 33 (10%) |
| Parents occupation | 45 (28%) | 67 (42%) | 48 (30%) | 53 (33%) | 42 (26%) | 65 (41%) | 98 (31%) | 109 (34%) | 113 (35%) |
| Student regularity in class | 72 (45%) | 54 (34%) | 34 (21%) | 96 (60%) | 40 (25%) | 24 (15%) | 168 (53%) | 94 (29%) | 58 (18%) |
| Class size | 83 (52%) | 45 (28%) | 32 (20%) | 66 (41%) | 58 (36%) | 36 (22%) | 149 (47%) | 103 (32%) | 68 (21%) |
| Teachers' quality | 95 (60%) | 42 (26%) | 23 (14%) | 121 (75%) | 22 (14%) | 17 (11%) | 216 (68%) | 64 (20%) | 40 (12%) |
| Tuition and tuition fees | 61 (38%) | 66 (41%) | 33 (21%) | 35 (22%) | 50 (31%) | 75 (47%) | 96 (30%) | 116 (36%) | 108 (34%) |
| Family guidance | 40 (25%) | 8 (5%) | 112 (70%) | 132 (82%) | 16 (10%) | 12 (8%) | 172 (54%) | 24 (7%) | 124 (39%) |
| Role of school administration | 26 (16%) | 36 (23%) | 98 (61%) | 115 (72%) | 32 (20%) | 13 (8%) | 141 (44%) | 68 (21%) | 111 (35%) |
| Extra-curricular activities | 90 (56%) | 10 (6%) | 60 (38%) | 118 (74%) | 32 (20%) | 10 (6%) | 208 (65%) | 42 (13%) | 70 (22%) |

APPENDIX:- J

Statistical Formula used for Data Analysis

1. Mena $(\bar{X}) = \frac{\sum Fx}{N}$
2. Standard Deviation $(\sigma) = \frac{\sqrt{((x-\bar{x})^2)}}{N}$
3. z-score $(z) = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{(\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2})}}$

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

4. Degree of freedom for uncorrelated mean is $d/f = N_1 + N_2 - 2$.