

**CAUSES OF LOW ACHIEVEMENT OF GIRLS IN  
MATHEMATICS  
AT SECONDARY LEVEL**

**THESIS  
BY  
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**FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS  
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**LETTER OF APPROVAL**

**A**

**THESIS**

**BY**

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The thesis entitled "**Causes of Low Achievement of Girls in Mathematics at Secondary Level**" has been approved for the partial fulfillment of the requirements for the Degree of Master of Education.

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This is certify that Mr. PradipBhattarai a student of academic year 2067/2068 with Roll No. 281495/2068, Campus Roll No. 2300, Thesis No. 861 and T.URegistration No. 9-2-214-463-2005 has completed this thesis under my supervision during the period prescribed by the rule and regulation of Tribhuvan University. The thesis entitled "**Causes of Low Achievement of Girls in Mathematics at Secondary Level**"embodies the result of his investigation conducted on 2014/2015 at the Department of Mathematics education, University campus, Tribhuvan University, Kirtipur, Kathmandu. I recommend and forward that this thesis be submitted for the evaluation for awarding the Degree of Master of Education.

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## ABSTRACT

Mathematics takes important place in human life. We use it directly or indirectly on the every moment of the life. And it is used in different ways of human life. The main concern of this study was to compare the achievement level of Girls and Boys students and to find out the major factors affecting the achievement of Girls students in mathematics in SankhuwaSabha district. Seventy Girls students of five rural and five urban schools are chosen for the study. Research design was survey design. Achievement test and questionnaire were the main tools for the data collection.

The study found that mean achievement of Rural Girl students was 19.77 and mean achievement of Urban Girl students was 21.17. The mean difference of two groups was 1.4. It was found that the achievement of Urban Girl students were higher than Rural Girls students. School environment, Teachers behavior, Effective classroom, Peer`s behavior, Interest of the learners, family background, and Time variable were the major factors affecting the mathematics achievement of Girl students.

The study concluded that the achievement of Urban Girl students were higher than Rural Girls students. Similarly, there were many causal factors for their low achievement which included school related and out of school related.

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## Chapter- I

### INTRODUCTION

#### Background of the Study

Mathematics is essential part of school curriculum. So it is taught at compulsory subject at level of the school curriculum. Most of the students feel mathematics as difficult subject and majority of the students fail in mathematics. By this problem the great of time, money effort and manpower of the nation has been wasted. So the educationists as well as the state are facing the challenge with problem of academic failure in mathematics. Also the girls' students are more affected by than boy students. It seems that girls' learning is affected by various factors like home and school environment, physical facilities, attitudes towards the subject, peer groups, teaching learning process etc. We cannot achieve the expected goal without improving appropriately on management of above mentioned factors to facilitate the students learning.

At the world conference on "Education for All" in (1990-2000) "Jomtein and Dakar" declared vision of inclusive concept in national government and founding agencies. Education must provide to each and every citizen of a country for the betterment of the individual as well as the development of the society. The overall development of the nation is impossible without the equal participation of all the individual of each community whether they are men or women, poor or rich, advantaged or disadvantaged. Education is a way of development of desirable skill and attitude which makes an individual a good citizen. In the process of education we try to shape the behavior of the individual for adequate adjustment in the society. The reality of Nepal is that Nepali people are fighting against poverty, hunger, illness and illiteracy. More than 38 percent of people are below the marginal poverty line and survive hardly. According to most recent Nepal Living Standards Survey (NLSS- III 2010-2011), Nepal has an adult literacy rate of 56.6% with a huge disparity between males and females literacy rate in Nepal is 71.6% and 44.5% respectively with a Gender Parity Index (GPI) at 0.62. The effect of gender difference in education is visible in literacy rate of our society. Subsequently, the question of gender equality in mathematics education is a complex issue. Although boys and girls take the same



course and read the same text books in mathematics in school, there is significant difference in the achievement pattern, gender parity, informal education can be sensed in terms of literacy rate of male and female. The kind's differences shows one instance of unequal areas to educational opportunities to male and female in the country. Lack of equity in education has been a serious problem developing countries like Nepal (Upadhaya, 2004; 231).

### **Educational Status of Sankhuwa Sabha District**

The district has good education record comparing to other mountain districts. Literacy rate is 61% of which women literacy rate is 58% and male is 64%. There are 4 campuses operating by the community of which 3 campuses conducting up to bachelor and one has Master`s degree program. There are 291 primary schools, 55 lower secondary, 41 secondary and 20 higher secondary schools operating to impart education to the people. Total 1, 08,542 students (Boys 54,574 and Girls 53,968) are studying in these 407 schools. The most of the educational institutions are located in southern belt of the district and only primary and lower secondary schools are in the northern belt. Hence, the education office is focusing to improve access and equity as well as improve quality of primary education, institutional strengthening extending outreach to all VDC`s of the district. There are 4,820 Dalit students and 53,777 students (Boys 16,863 and Girls 36,943) are Janajati. Around 1,820 teachers are involving in the teaching profession in the school of which just 20% are female teachers. Teacher student ratio is 1:60. (Flash Report of Sankhuwa Sabha 2070)

### **Factors Affecting Girl`s Education**

The barriers to girl`s participation in education are a maze of socio-cultural, economic and other realities that vary by community and even by family. When family choose which children will or will not be educated or which will have better educational opportunity, sons are preferred. Educating a son is investing in his ability to look after his aging parents while educating a daughter is considered a no-return investment.

According to "Hindu Dharma Sastra": "Be a girl or a young women or a women advanced in years, nothing must be done even in her own dwelling place

merely to please her. A female must be dependent on her father in her childhood, in youth in her husband and on her son later in life. A woman never seeks independence". The society truly runs under these dictums as women are never ever allowed to seek freedom. Boys are sent to school earlier, but as a rule girls spent their time at homes learning the household chores (Pandey, 2003). While talking about the obstacles of girl`s education, the low participation, persistence and achievement in the reason are many and complex and many differ across a within countries. Research from many development countries suggested that constraints to girl`s education are related to: Delayed rate return of government, legal restriction, family cost including opportunity cost, socio-cultural barriers, early marriage, gender bias in classroom practice and textbooks, cultural perception of boys` superior abilities, poor performance of girls in examination and lack of employment opportunities for educated girls.

Research in the past indicates that mathematics achievement in boy student is higher than that of girl student. Similarly many of the research have conducted that most girl student have less involvement in mathematics. There must be a strong reason behind this fact which is not explained yet. However very few studies have low been under taken to find out why girls students have low achievement in mathematics. So the objectives if the study is to find out the factors that causes low achievement of girls. In the study area the girl`s achievement is lower than boys. The affecting factors are school environment, teacher`s behavior, effective classroom, peer`s behavior, interest of the learner, family background, time variable. Having equal rights of education girls can play vital role for the society. Thus we cannot ignore their educational condition in this era.

### **Statement of the Problem**

Almost all studies have found that boys performed better in mathematics achievements than girls because of the limited opportunities, many obstacles and relevance. Poverty, social aspects, school related factors and peer group are the certain constraints which are common across cultures. The achievement of girls in mathematics is low. So it is necessary to understand the role of gender in family, community as well as school learning environment in the mathematics. It is quite interesting to investigate why girls are achieved low in mathematics. So the study is

mainly concerned with the factors causing low achievement of the girls in the mathematics in grade X. Hence, the study sought to answer the following question:

- What are the causes that affect the mathematics achievement of girl students?
- Do schools related & out school related factors affect the mathematics achievement of girl students?

### **Objective of the Study**

The objectives of the study are as follows:

- To find factors which affect the mathematics achievement of girl students.
- To find the correlation between affecting factors and mathematics achievement.

### **Significance of the Study**

Mathematics is a very useful subject in our life. It has been a key subject in school curriculum through the world. In the context of Nepal, it has been taught from primary to secondary level as compulsory subject. In higher study, mathematics is being taught as optional subject. Mathematics learning helps the students to understand and interpret the important quantitative aspect of the living. This is possible only when the attitude of the students towards mathematics is favorable.

Each and every research work has some significance. Likewise, this research has some of significance are as follows:

- It provides important information about the causes that affect the mathematics achievement of girl students.
- It provides hints to the administrators and mathematics teachers of Sankhuwa Sava district improving the achievement and competency level of girl students in mathematics.
- This study signifies a necessity of rethinking on the mode of instruction of mathematics education to promote and enhance the achievement level of girl students.

## **Definitions of the Related Terms**

**School related factors:** School related factors are associated with school environment, effective classroom teaching, teacher's behaviours, peers behaviours etc.

**School Environment:** It is related to the internal and external surroundings of the school which affects the students mind and attitudes. It conclude the school location, number of students in classroom, classroom environment and regularity of the teacher, physical facility like library, math lab, reference book related to mathematics.

**Teachers` Behavior:** Teachers` behavior is related to encourage the learners to study the mathematics, individual suggestion and gender equity in classroom.

**Effective Classroom Teaching:** Effective classroom teaching is one of the most important factors. Pleasing environment, initiation of lesson (lesson based on previous knowledge), use of instructional and material appropriateness to teaching student`s participation on discussion, teacher activities are considered as the effective classroom teaching in this study.

**Peer`s Behavior:** It is related to peer`s help on study the mathematics.

**Out of school related factors:** Out of the school related factors are associated with the family background, interest on the learner toward mathematics etc.

**Achievement:** It is defined in terms of the score obtained by the student on achievement test prepared by the researcher.

**Students:** Those pupils who passed grade IX and are studying at Grade X.

**Rural School:** The school which lies beyond the region of municipality in Sankhuwa Sabha district.

**Urban School:** The school which lies inside the region of municipality in Sankhuwa Sabha district.

## **Delimitations of the Study**

Each study is not rigorous, perfect and free of limitation. There are some sorts of limitation and on other they are not overcome the problems of every field. Thus this study has some limitations which are pointed as follows

- This study is limited to 10 schools of Sankhuwa Sabha district only.
- The sample of this study included the students of Grade X.
- This study is conducted only for the subject of mathematics.
  
- This study is carried out within the certain particular area of Sankhuwa Sabha district and so its findings cannot be more generalized.
- The study only the public schools of Sankhuwa Sabha district.

## Chapter– II

### REVIEW OF RELATED LITERATURES

A critical review of the literature helps the researcher to develop the thought, understanding and insight into previous research works that relates to the present study. This chapter attempts to review studies and literature in the domain of the course of achievement in mathematics with special references. The purpose of literature review is thus to find out what research studies have been conducted in one's chosen field of study and what remains to be done, to identify similar work done within the area, to identify potential areas of research, to identify the knowledge gaps that demand further investigation, to critique existing findings and suggest further studies. It provides the foundation for developing comprehensive theoretical framework from which hypothesis can be developed for testing. The literature review also minimizes the risk of pursuing the dead ends in research.

**Neupane (1985)** did his research entitled “Achievement in Mathematics by location and sex” and he conclude that

- The students in urban schools achieved better in mathematics then students in rural schools.
- Boys did better than girls in each level of the cognitive domain knowledge, skill, comprehension and application.

Boys achieved better than girls in mathematics.

**Shrestha (1991)** Study on " A study of sex in achievement mathematics of ninth grade student in Gorkha district" and has reported that boys devote more time than girls at home study hours for mathematics together with all subjects and boys favored mathematics more and felt less difficult than girls. Superiority of the boys over the girls was established with respect to achievement in mathematics by area and also cognitive levels.

**Ghimire (1997)** did his research entitled “A study on factors affecting teaching learning mathematics at secondary school” with the objective to study the factors affecting learning of schools in term of the following: school environment,

family background, motivational factors, physical facilities interest of the learners, instructional materials. The tools for the study were administrated to the sample of 90 students and t-test applied to conclude the following results.

- Environment of the school in both rural and urban areas affecting equally but the boys are more affected then girls.
- Home environment affects more to the subjects of rural areas and girls were affected more than boys.
- The students of urban areas were more interested in the study of mathematics and the girls paid more attention for the study.

**Gurung (1997)** did an experimental research on “A comparative study of achievement of pupils of Lamjung district on set concepts” classifying as urban and rural public and private school, he found that the pupils of urban area have higher achievement then rural area on set concepts and the private schools pupils have higher achievement then public school pupils on set concept.

**Adhikari (2001)** has conducted a study on the topic “A comparative study of achievement in mathematics of primary level students related to parents income”. The objective of this study was to determinant the effect of parent income as the achievement of grade five students. He made an achievement test & questionnaire for parents & administrated among eighty nine students & on their parents using purposing samples.

**Tiwari (2002)** "A study of attitudes of farmer and non-farmer parents towards the school mathematics" has reported that both farmer and non-farmer parents had positive attitude towards the school mathematics, farmer and non-farmer parents had positive attitude towards their male and female child about the school mathematics. However, educated parents had positive towards daughter`s education rather then non-educated parents.

**Gotame (2005)** conducted a research on “The Impact of Parent`s Beliefs on Mathematics learning and Achievement of secondary level Students” from the statistical analysis of the collected data of the field survey, it was found that there was moderate correlation between the children and parents expectations in mathematics

but it varied according to their social and cultural background and educational status. Mathematical thinking and doing was depending on the parents' status and beliefs. The upper caste students have high expectations.

**Dhakal (2006)** did a research in "The factor affecting the girls students attitude towards selecting optional mathematics at secondary level." 100 students were selected from Syangia district who had offered the optional mathematics course in secondary level. This study concludes that eight variables: which are teachers' behavior, prior achievement level and job taking mission, plans of further study, parental support, social influences, peer influences, self-confidence and girls' interest come out to be true in the context of Nepal influencing the girls to make positive attitude mathematics learning.

**Janwali (2007)** studied on topic "Causes that affect mathematics achievement of girl's students" determine the correlation between affecting factors and mathematical achievement. The researcher adopted the survey method in this study. The sample of the study was determined by convenience sampling from Rupandehi district. Researcher selected 25 sample students from different school of district situated in rural and urban area. In this study one set of questionnaire was developed and three point likert scale for the convinces of the respondent were developed for the collection of needed information which was used for students. The conclusion of this research work was effective classroom teaching such as planning environment, less use of instructional materials, appropriateness to teaching participation on discussion, activity have strongly positive effect on mathematics achievements of girl students. It conclude that the effective classroom teaching is very essential for increasing the mathematics achievement of girl's students so it should be improved. The teacher behavior and family background are also have positive effect so that the teacher and parents have equally responsible for the girls' students learning activities in school and create good environment at home for learning and improve the mathematics achievement of girl students.

**Pandey (2007)** conducted a research on topic "Factor influencing mathematics achievement (A case studies of ineffective secondary school of Kailai district)". This case study was done in one of the secondary school of Kailali district only 20 students each from effective and ineffective school were chosen as sample. Interview schedule,



observation, survey from and school documents were used as tools to collect data and information. This case study was focused on multiple factors and its influence on mathematics results. Personal and environmental factors such as gender, age, prior knowledge, attendance, motivation, study at home, parental support, quality of teacher, class size, student teacher interaction, physical and environment condition and school leadership were in consideration.

**Saritas & Akdemir (2009)** made an article on the topic "Identifying Factor Affecting the Mathematics Achievement of Students for Better Instructional Design". This study was conducted to identify the factors affecting the mathematics achievement of students through collecting the opinions of mathematics department students. Results revealed that instructional strategies and methods, teacher competency in mathematics education, and motivation or concentration were three most influential factors. Here the writer taken junior and senior students in the mathematics department were compared in this study. Here the writers classified the affecting factor in three sectors: Demographic Factors: (gender, socio-economic statues, and parents' educational level) Instructional Factors: (curriculum, instructional strategies and methods, teacher competency in mathematics education, school context and facilities) and Individual Factors: (self- directed learning, arithmetic ability, motivation or concentration, method).

**Mohd & et.al. (2011)** had conducted an article on the topic "Factor that Influence Students in Mathematics Achievement". The purpose of this study was to explore the level of attitude towards problem solving and mathematics achievement among students from Malaysia Institute of information technology, University Kuala Lumpur. This study also observes the relationship between the level of patience, confidence and willingness towards problem solving and mathematics achievement.

This research was survey study that is conducted on 153 semester one students at diploma program. This research uses a one set of questionnaire to gather data. The researcher findings reveal that the level of patience, confidence and willingness towards problem solving are medium. It is shows that there is a significance relationship between the level of patience towards problem solving and mathematics achievement. There is no significant relationship between the level of confidence and willingness towards problem solving and mathematics achievement. Finally, the

researcher draws conclusion and recommendation based on students' attitude towards problem solving and the ways to improve students' achievement in mathematics.

**Sapkota (2011)** studies on "Causes of failures in mathematics at school" of public school in Lalitpur district with the objective to find the cause of failure in mathematics at secondary level to identify the strategies taken by the school in improvement of mathematics achievement. This research design was qualitative as well as descriptive in nature. The respondents of the case study were students, corresponding parents, teacher and head teacher. From the case school six low achiever students including three boys and three girls were selected according to different family background and performance in mathematics examination. To collect the primary and secondary data school documents, observation note and interview guideline were used. The result of this research was classroom practice and the curriculum was closely linked. Achievements of students is always affected by different variables such as schools learning environment, facilities at home, classroom environment, school policies, mathematics instruction, assessment at classroom.

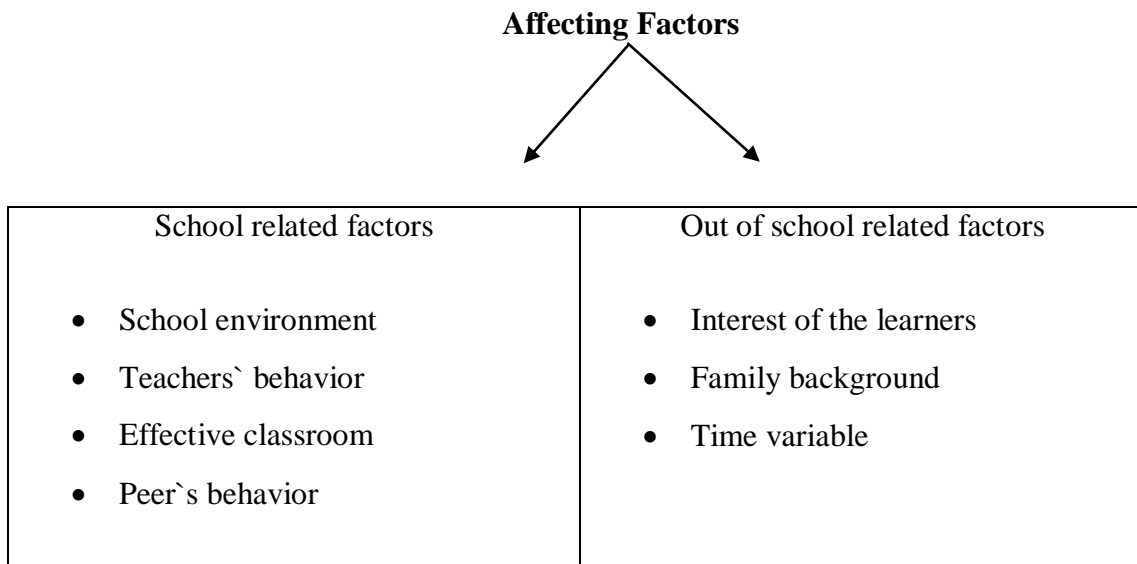
Teachers' expectation from students can have a direct influence on their learning and achievement. Teachers generally are expecting less academically from girls than from boys and treat girls quite differently from the way of boys are treated. Boys are praised for their ability when they do well, and criticized for not working hard when they don't, whereas girls are complimented on their hard work and neat performance when they succeed in mathematics; they are told they not bright when they fail. Boys also are attended to teacher more than girls, they receive more help from teacher on area which they have problems academically and are called on more often to give answer in class. If expectations of future successes are low, or if these successes are discounted, students will withhold effort and will avoid contact with the subject in the future. The small difference found between boys and girl's performance nearly disappears when the students have taken the same courses (Chipman & Wilson, 1985).

From above discussion of the related literature achievement level of boy students is higher than the girls' students, So many issues among these were related to the achievement differences of girls and boys in mathematics. The researcher wants to know why girls' achievement is lower than the boys in mathematics.

## Conceptual Understandings

A conceptual framework is made to find out the causes of low achievement of girls` students in mathematics at secondary school in Sankhuwa Sabha district, which deals directly or indirectly to school related and out of school related factors. Low achievement of girl students in mathematics may depend under different variables. Those variables are shown the following framework.

### Conceptual Framework



Sources: Bhattarai, A. (2010) & Pant, G. (2014)

### School Related Factors

From the above conceptual framework, these affecting factors were as follows

#### School Environment

In Nepalese context school environment is not suitable for girls as it should be. Physical facilities like toilet is not separable for girls that lead hesitate to girls. Also the concept that girls can't study mathematics decreases their performance in mathematics. It makes them weak in their proper achievement.

### **Teacher's Behavior**

Teacher behavior is another factor that affects the learning of students. In most of the schools mathematics teachers are male and they give priority to talent students most of them were boys. Therefore girls' performance becomes low in mathematics.

### **Effective Classroom**

Effective classroom includes teaching materials, students' participation in discussion and pleasing environment. If the classroom teaching is not affective, it decreases the performance of all students in mathematics.

### **Peer's Behavior**

If the peer's behavior is co- operative then its brings improvement in the performance of mathematics. But if the peer's behavior is not co-operative it decreases the performance in mathematics. Generally boys tease girls in school and girls feel fear from such behave and therefore their performance in mathematics become low.

### **Out of School Related Factors**

There are some student related factors which directly or indirectly influenced the achievement of Girls students in mathematics. They were Interest of learner, family background, and time variable.

#### **Interest of the learners**

Mathematics is one of the important subject in school curriculum. It is very difficult subject then other subject. So students are afraid from mathematics. Most of the students are interested to study Nepali and other subjects without mathematics. Among them girls students are less interested than boys' student in mathematics.

#### **Family Background**

Family background is one of the affecting factors contains in out of school related factors. It helps to make low achievement of girls in mathematics. In uneducated family the parents think what to do by sending their daughter in the

school. They send their son at private boarding school but not to daughters. So it is a also main factor to girl for learning in school. So it makes low achievement of girls in mathematics.

### **Time variable**

Most of the girls busy in their household work as: cooking rice, cleaning house, washes clothes of family members. They have many workloads in house. In this situation girls have no few of time for study in home. So they can't do their homework daily. On the other hand, mathematics is one practice subject. So lack of time and work load at house is main reasons of low mathematics achievement for girls.

This research tries to test the above model by questionnaire and interview to find the causes of low achievement of girl students in mathematics. School environment, effective classroom and teacher`s behavior are strongly correlated with achievement. If school environment is suitable for teaching learning activities, then students achievement also high. On the other side interest of learner, family background, peer`s behavior also directly proportional to the achievement of students.

## **Chapter – III**

### **METHODS AND PROCEDURES**

This chapter explains the design of the study population of the study, sample of the study, the instrument used to collect the data, procedure of the data analysis, analytical design of the study and data analysis procedures used in analysis and interpretation of data.

#### **Research Design**

The researcher adopted the survey method in this study. The survey method gathers data from a relatively large number of cases at a particular time. The survey is an important type of study. It must not be confused with the mere clerical routine of gathering and tabulating figures. It involves a clearly defined problem and defines objectives. It requires expert and imaginative planning, careful analysis and interpretation of the data gathered, and logical and skillful reporting of the findings. (Research in education, Best & Kahn, P. 121)

#### **Population of the study**

There were 41 public schools and 5 private secondary schools in Sankhuwa Sabha district. The population of the study was consisting of all the students of Grade X of Sankhuwa Sabha district of Nepal.

#### **Sample of the study**

The sample of the study was determined by convenience sampling method from Sankhuwa Sabha district. A convenience sample consists of those people available for the study. Educational researchers, because of administrative limitations in randomly selecting and assigning individuals to experimental and control groups, often use convenience samples. (Research in education, Best & Kahn, P. 18) Convenience sampling is statistical method of drawing representative data by selecting people because of the ease of their volunteering or selecting units and their

availability or easy access. Out of 41 public schools researcher was select 5 schools situated in rural and 5 schools situated in urban areas of Sankhuwa Sabha district. Seven students were selected in each school then there were 70 students as sample.

**Table No. 1**

**Number of Schools and Students in the Sample**

Area	No. of School	No. of Students
Rural	5	35
Urban	5	35
Total	10	70

**Tools and Instruments**

A set of questionnaire was developed for the collection of needed information was used for the students. The following were the factors that were included in this study.

- School related factors: School environment, Teachers behavior, Effective classroom, Peer`s behavior.
- Out of school related factors: Interest of the learners, family background, and Time variable.
- The researcher takes achievement test of all sample school's girl students.

The researcher prepared 34 questionnaire related to the above factors. The Three Point Likert Scale for the convenience of the respondents was developing starting with a particular point of view all Agree, Undecided and Disagree.

Option	Value
Agree	3
Undecided	2
Disagree	1

### **Instruments for Reliability and Validity**

Reliability and validity of the research instruments are the necessary qualities of the instrument. For the purpose of reliability two schools were selected from Kathmandu valley to implement the procedure of testing reliability and validity. Fifteen students were participated in the pilot study.

There were 34 questionnaire with three alternatives Agree, Undecided and Disagree with ratings 3, 2, 1 respectively in each statement. From the pilot study those statements in which all the students had responded in same scale were discarded and hence, the final scale was prepared. This set of statements were set as questionnaire and distributed to the exports for checking the validity.

### **Procedures of Data Collection**

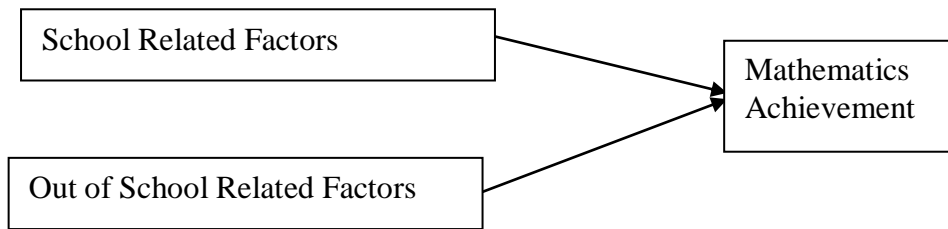
The researcher visited each of the sample schools. Before administration of the tools, investigators met the authorities, explained in detail the purpose of the study and get the obtained mark in mathematics during the process of grade promotion from 9 to the 10 grade of sample students. After then researcher administrated the questionnaire on the students during the regular class time with permission of Head teacher of the schools. After convincing the students, the researcher gave the questionnaires to the students. After getting response of the students, the questionnaire was taken back with thanks.

### **Analytical Design of the Study**

This study was intended to make detail analysis of the factors that affect the mathematics achievement of girl students. The multiple linear regression technique was used for analytical purpose. The analytical design was included regression equation pertaining to the effect of school related factors and out of school related factors. It was hypothesized that mathematics achievement is a function of school related and out of school related factors, i.e.



**Independent Variable    Dependent Variable**



From the above conceptual framework, there are two main affecting factors such as school related and out of school related factors. School related a factor contains: school environment, effective classroom teaching, teacher's behavior and peer's behavior. And out of school related affecting factors are as follows: family background, interest of learner and time variable.

Here the researcher tried to show the relationship of school related factors and out of school related factors to mathematics achievement. So the researcher denoted these factors which contain in school related factors and out of school related factors as:

$y =$  Mathematics Achievement

$x_1 =$  School Environment

$x_2 =$  Teacher`s Beheaviors

$x_3 =$  Effective Classroom Teaching

$x_4 =$  Peer`s Behaviours

$x_5 =$  Family Background

$x_6 =$  Interest of Learner

$x_7 =$  Time Variable

$x_0 =$  Intercept

$b_i$ 's = Regression Co-efficient

E = Error Term

After then the researcher get a mathematical relationship of school related factors and out of schoolrelated factors as:

$$y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \dots + b_7x_7 + E$$

### **Data Analysis Procedure**

The mean, standard deviation, Correlation Coefficient and Multiple Regression was use for the analysis of data. The Mean was used to find the level of mathematics achievement of girl students and it was also used for the student responses in each statement. Correlation Coefficient was used to determine the relationship of dependent and independent variables. Multiple Regressions was used to find the effect of independent variable on dependent variable.

The following points are the accepted guidelines for interpreting the correlation coefficient: value 0 indicates no linear relationship, value +1 (-1) indicates a perfect positive (negative) linear relationship, values between 0 and 0.3 (0 and -0.3) indicate a weak positive (negative) linear relationship, values between 0.3 and 0.7 (-0.3 and -0.7) indicate a moderate positive (negative) linear relationship, values between 0.7 and 1.0 (-0.7 and -1.0) indicate strong positive (negative) linear relationship between dependent and independent variables.

The correlation coefficient is effective when value of r lies between 0.7 and 1.0 (-0.7 and -1.0). The correlation and regression were determined by using computer made excel and statistical package for the social science (SPSS) program.

## Chapter – IV

### ANALYSIS AND INTERPRETATION OF DATA

The data collected from the informants were analyzed and interpreted to identify the effect of school related factors and out of school related factors which affect the mathematics achievement of girl students and to determine the correlation between affecting factors and mathematics achievement. It has already mentioned that there was one set of questionnaire written in statement form with three alternatives: Agree, Undecided and disagree with rating 3, 2 and 1 respectively in each statement. The collected data were tabulated and analyzed for attainment of objectives.

This chapter deals with the statistical analysis and interpretation of data obtained from questionnaire form and mathematics achievement score of girls students in grade promotion from ninth to the tenth grade. These data were tabulated and analyzed by using mean, standard deviation, correlation coefficient and multiple regressions. Analysis and interpretation of data was done differently into the following sections.

- Mean and standard deviation of mathematics achievement of girl students according to location of school.
- Distribution of Percentage responses of students on the three major categories for each individual statement under Urban Schools.
- Distribution of Percentage responses of students on the three major categories for each individual statement under Rural Schools.
- Correlation between dependent and independent variables.
- Mean of independent variable.
- Regression analysis between dependent and independent variables.

#### **Mean and Standard Deviation of Mathematics Achievement of Girls Students according to location of school**

The mean and standard deviation of the mathematics achievement score in grade promotion form ninth to tenth grade obtained by the girl students is given to the following table:

**Table No. 2**  
**Mean and Standard deviation of Mathematics achievement of Girl Students to location of school**

Location	No. of Students	Mean	Standard Deviation
Rural	35	19.77	5.642
Urban	35	21.17	6.994
Total	70	20.47	6.347

The result in table No. 2 shows that the mean score of girl students of rural schools is 19.77 and that of urban schools is 21.17. Similarly, the standard deviations of rural and urban schools girl students are 5.642 and 6.994. The mean and standard deviation of girl students of urban school is higher than that of girl students of rural schools.

**Distribution of Percentage responses of students on the three major categories for each individual statements under Urban Schools**

The appendix - B has shown that among twenty statements under School related factors the most three agreed statements were 2, 9 and 16 and the least three agreed statements were 3, 5 and 10. Such figure indicated that comparatively students were found in favour of the statements "The Math teacher teaches regularly in the class.", "The teacher runs the course giving focus on the problems of good students." and "It is easy to understand as teacher use teaching materials in teaching mathematics." And less in favour in the statements "The teacher pays the same attention to the students' problems as there are less students in the class.", "The school conducts unit test at the end of each unit.", and " The teacher partially behaves between the boys and girls students." The appendix - B has shown that among fourteen statements under Out of School related factors the most three agreed statements were 2, 6 and 11 and the least three agreed statements were 1, 8 and 13. Such figure indicated that comparatively students were found in favour of the

statements “My parents manage all required materials for the study math.”, " I wanted to learn math since my childhood." and “I always do homework given by teacher.”. And less in favour in the statements “As my family is educated, I am taught math at home.”," I like to study math so that better opportunity can be got by study of math.”, and “Sufficient time can be got for study at home.”

### **Distribution of Percentage Responses of Students on the three Major Categories for Each Individual Statements under Rural Schools**

The appendix - C has shown that among twenty statements under School related factors the most three agreed statements were 2, 7 and 12 and the least three agreed statements were 3, 11 and 19. Such figure indicated that comparatively students were found in favour of the statements “The Math teacher teaches regularly in the class.”, "Teacher teaches focusing the boys more than the girls.", and "Pre concept related to the exercise is discussed before the beginning of the exercise." And less in favour in the statements “The teacher pays the same attention to the students’ problems as there are less students in the class.”," It is wished to learn new thing after entering the mathematics class.” and “Friends help me for the lesson; if I am absent from school.”

The appendix - C has shown that among fourteen statements under Out of School related factors the most two agreed statements were 5 and 8 and the least three agreed statements were 3, 7 and 10. Such figure indicated that comparatively students were found in favour of the statements “My parents discuss about my learning progress report with teacher.”, "I like to study math so that better opportunity can be got by study of math." and “I do not notice time while solving mathematical problems.” And less in favour in the statements “I only study at home.” And " I like to solve mathematical problems with my friends".

### **Correlation between Dependent and Independent Variable**

In this section, the correlation between dependent variable i.e. mathematics achievement and independent variable i.e. school related Factors and out of school related factors is tested. This is shown in the following table:

**Table No. 3**  
**Correlation Coefficient of Dependent and independent Variable**

		Mathematics Achievement
	Mathematics Achievement	Pearson Correlation Significance (2 - tailed) 1
School related factors	School Environment	Pearson Correlation Significance (2 - tailed) 0.069 0.571
	Teacher`s Behavior	Pearson Correlation Significance (2 - tailed) -0.040 0.745
	Effective Classroom Teaching	Pearson Correlation Significance (2 - tailed) 0.722 0.314
	Peer`s Behavior	Pearson Correlation Significance (2 - tailed) 0.811 0.360
Out of School Related factors	Family Background	Pearson Correlation Significance (2 - tailed) 0.721 0.317
	Interest of Learner	Pearson Correlation Significance (2 - tailed) -0.084 0.489
	Time Variable	Pearson Correlation Significance (2 - tailed) 0.052 0.669

The results in table no. 3 shows that the mathematics achievement of girl students` are found to be strongly associated with the effective classroom teaching, peer`s behavior and family background.

It indicates that there is high correlation between mathematics achievement with effective classroom teaching, peer`s behavior and family background.

The time variable and school environment have low positive correlated with mathematics achievement of girl students.

Also, the teacher behaviour and interest of learner are negatively correlated with the mathematics achievement of girl students.

Having analyzed overall the above table, mathematics achievement of girls students are correlated with school related factors i.e. peer's behavior and effective classroom teaching than the out of school related factors i.e. family background.

### Mean of Independent Variable

This section explain the girls students opinions towards school environment, teachers' behaviour, effective classroom teaching, peers; behaviour, interest of learner, family background and time variable.

All the items with mean value are shown in the Table 4.

**Table No. 4**

### Mean of the Independent Variable

S.N.	School Related Factors	Mean
	<b>Statements</b>	
1	Due to the situation of the school has helped the study.	1.97
2	The Math teacher teaches regularly in the class.	2.11
3	The teacher pays the same attention to the students' problems as there are less students in the class.	2.00
4	A course of mathematics is completed in time.	1.99
5	The school conducts unit test at the end of each unit.	2.00
6	Teaching materials and reference book can be used in school.	2.04
7	Teacher teaches focusing the boys more than the girls.	2.06
8	It is difficult to ask the things which have not been understood.	2.06
9	The teacher runs the course giving focus on the problems of good students.	2.09
10	The teacher partially behaves between the boys and girls students.	1.90

11	It is wished to learn new thing after entering the mathematics class.	2.10
12	Pre concept related to the exercise is discussed before the beginning of the exercise.	1.97
13	Mathematics teacher makes the students practice more while teaching the question.	1.97
14	Teacher involves boys than girls in practice.	1.99
15	Mathematics teacher gives class-work and homework, and checks.	2.09
16	It is easy to understand as teacher use teaching materials in teaching mathematics.	2.09
17	Teacher inspires to ask the difficult question.	2.03
18	Mathematics learning has been easy because of the class mates' helpfulness.	2.13
19	Friends help me for the lesson; if I am absent from school.	1.99
20	I teach friends which I know and learn from them which I don't know.	2.07
<b>Out of School Related Factors</b>		
<b>S.N.</b>	<b>Statements</b>	<b>Mean</b>
1	As my family is educated, I am taught math at home.	2.09
2	My parents manage all required materials for the study math.	2.01
3	I only study at home.	2.10
4	Tuition and coaching are managed if necessary.	1.94
5	My parents discuss about my learning progress report with teacher.	2.11
6	I wanted to learn math since my childhood.	1.94
7	I like to solve mathematical problems with my friends.	2.01
8	I like to study math so that better opportunity can be got by study of math.	1.91
9	I like deep study of math from right now as knowledge of math is compulsory for the study of good subjects like Doctor, Engineering, and Science.	2.13
10	I read math whenever I am free.	1.96
11	I always do homework given by teacher.	1.99
12	I do not notice time while solving mathematical problems.	1.99
13	Sufficient time can be got for study at home.	2.07
14	I keep on practice of already taught mathematical problems.	2.13

The result in above table shows that the mean value of the item no. 3 is 2 which girl students disagreed.

They pointed out the problem that the teacher cannot give time for student's individual problems because of the large number of the students in the same classroom.



The mean value of the item no. 4 and 5 of school related factors are 1.99 and 2 respectively, which are disagreed responses of girl students. They argued that the course of mathematics is not completed in time and the unit test is not conducted after unit is completed. The mean value of the item no.8 of school related factors is 2.06, which is disagreed response of girl students. It indicates that their mathematics teacher is students friendly, he is never angry with the students when they asked question in classroom.

The mean value of the item no. 1 of out of school related factor is 2.09, which is disagreed response of the students. It indicates that the girl students do not get any help from their family member because they are ignorant of the subjects.

The mean value of item no. 3 and 5 of out school related factors are 2.10 and 2.11, which are disagreed response of the girl students. From, their response, they argued that they are engaged at home or cooking, cleaning and farm working more than reading. Students also said that their parents are uneducated and not aware to education of their children so that they do not discuss with about their learning progress.

The mean value of item no. 13 of out of school related factor is 2.07, which is disagreed response of the girl students. They argued that they lack learning time at home.

Analysis of the above responses revealed that girl students' achievement is affected in large extent by school environment, effective classroom teaching, family background, teacher behaviour and time variable.

### **Regression Analysis between Dependent and Independent Variable**

In this section, the effect of school related factors and out of school related factors on mathematics achievement is examined.

Four schools related factors and three out of school related factors were used as explanatory variable in the multiple regression model, i.e. seven explanatory variable and dependent variable (mathematics achievement) were used in the multiple

liner regression model. The result of regression analysis and standardized regression coefficient ( $\beta$ ) of explanatory variables are shown in table 5.

**Table No. 5**

**Regression Coefficient and Standardized Coefficient of Explanatory**

	Explanatory variable	Regression Coefficient	Standardized Coefficient	Significance
		B	$\beta$	
School Related Factors	School Environment	-0.095	-0.011	0.954
	Teacher`s Behavior	-9.775	-0.423	0.228
	Effective Classroom Teaching	2.862	0.104	0.773
	Peer`s Behavior	1.333	0.086	0.598
Out of School Related Factors	Family Background	2.828	0.147	0.521
	Interest of Learner	-1.563	-0.094	0.682
	Time Variable	6.853	0.339	0.293

- Predictors: school environment, teacher’s behaviour, effective classroom teaching, peer’s behavior, family background, interest of learner and time variable.
- Dependent Variable: mathematics achievement

The result of above table shows that effective classroom teaching and time variable are found to be most strongly associated with mathematics achievement of girl students.

It indicates that the effective classroom teaching and time variable have strongly positive effect on the mathematics achievement of girl students which are significance.

Family background has mid positive effect on the mathematics achievement of girl students. And the peer's behavior has low positive effect on the mathematics achievement of girl students. Also, the school environment, teacher's behaviour and interest of learner have negative effect on the mathematics achievement of girl students. From the above table the effective classroom teaching and time variable have more effect on the mathematics achievement.

It indicates that the effects of out of school related variables are more than school related variable on the mathematics achievement of girl students.

## **Chapter –V**

### **SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATION**

This study has revealed the facts on low achievement in general. Summary, finding, conclusions and recommendation of this research are presented in this chapter.

#### **Summary of the Study**

Mathematics is taught at every level of our formal education which takes an important place in our curriculum. But most of the students fail in this subject. The girl students fail more than boy students in it.

It is not known that which factors impede girl student's progress in this subject. So, the researcher tried to study by taking the purpose to determine the factors which affect mathematics achievement of the girl students.

For this study, 70 girl students were chosen from 10 public schools situated in rural and urban area of the Sankhuwa Sabhadistrict. The data of sampled students were obtained through the students' questionnaire form, which was the main the help of previous studies and thesis supervisor. Also the researcher visited each of the sampled schools and meets the authorities, explained in detail the purpose of the visit and requested to provide the name and obtained marks of girl students in mathematics in the grade promotion from ninth to tenth grade in the academic year 070/071.

The student`s questionnaire form consists 34 items having 20 school related factors and 14 out of school related factors. The questionnaire was developed in three point Likert scale; Agree, Undecided and Disagree responses with 3, 2 and 1 mark respectively. Various statistical methods such as Mean, Standard Deviation, Correlation Coefficient and regression analysis were used to analyze the collected data.

After analysis and interpretation of the obtained data investigator found that achievement score of girl students of urban area is higher than that of girl's students of rural area. Mathematics achievement of girl students was found to be strongly associated with time variables and effective classroom teaching.

The variable peer`s behavior has low positive effects on achievement whereas teacher`s behavior, school environment and interest of learner have negative effects on mathematics achievement of girl students. At last the researcher found that the school related factors and out of school related factors equal effects on mathematics achievement of students.

## **Findings**

The findings of study on the basis of analysis of the collected data are follows:

- The mean score of mathematics achievements of girl urban area schools is better than that of rural area schools.
- Mathematics achievements of girl students are strongly positively correlated with the peer`s behavior, effective classroom teaching and family background which are significant.
- The school environment and time variable have low positive correlated with mathematics achievements and girl students.
- The teacher`s behavior and interest of learner have negatively correlated with mathematics achievements of girl students.
- The effective classroom teaching and time variable have strongly positive affect on the mathematics achievement of girl's students.
- The family background has a mid-positive effect of mathematics achievement of girls` students.
- The variables peer`s behavior has low positive effects on mathematics achievements of girl student.

- The variable school environment, teacher`s behavior and interest of learner have negative effect on mathematics achievement of girl students.

## **Conclusions**

The following conclusions have been made by this research work:

- Effective classroom teaching such as pleasing environment, less use of instructional material appropriateness to teaching, participation to discussion n, activity have strongly positive effect of mathematics achievement of students. It concludes that the effective classroom teaching is very essential for increasing the mathematics achievement of girl students, So, It should improve.
- Peer`s behavior i.e. peers help in learning mathematics; discussion with peers for their mathematical problem had strongly positive effect on mathematics of girl students.
- Time variable i.e. amount of time students spent out on school activities such as leisure reading, homework, discussion with peers has strongly positive effect on mathematics achievement. It concludes that the time variable is very essential for increasing the mathematics achievement of girl students. Therefore, if the students are encouraged to above works, the achievement will increase.
- The teacher`s behavior and family background are also have some positive effects on mathematics achievement of girl students. So that teacher and parents be have equally for the girl students learning activities in school and create good environment at home for learning can improved the mathematics achievement of girl students.

It concludes that the above factors are very essentials for increasing the mathematics achievements of girl's students so these factors should be improved.

## **Recommendations and Implication for further Study**

The conclusion of study cannot be generalized to all level of schooling due to limitation in this study. Considering the limitations, analyzing the conclusion and

basing the tools and technique used within study the following recommendation suggestion are listed:

- This study was conducted in Sankhuwa Sabha district. To get more valid and reliable result it would extend to nationwide.
- A similar study can be done for primary, lower secondary and higher secondary levels.
- A similar study can be extended in other subjects as well.
- Since it is found that the mathematics achievement of girl students are more affected by school environment, effective classroom teaching, family background and low affected by school environment and interest of learner and teacher`s behavior negatively affected by school environment. So it suggested to improve the effective classroom teaching, teacher`s behavior, peer`s behavior, time variable and interest of learner to get better achievement in mathematics of girl students.
- It is suggested to involve the teachers, parents, headmaster and educational planners to identify the factors which affect the mathematics achievement of girl students and their minimization or elimination technique as far as possible.

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## Appendix - A

### Questionnaire for students

Dear girl students,

I am a student like you. I am going to carry out a small study on the topic “Cases of Low Achievement of Girls in Mathematics at Secondary Level”.

This questionnaire is addressed to you. There are 34 statements concerning with attitude. There is no right or wrong answer. The right answer is your own opinion. Please, read the statement carefully and give your own response by putting tick (✓) on any one of the given three rating of each statement. The reliability and validity of this study is based on your responses.

Name:

Roll No.:

Address:

School Name:

A. School Related Factors				
S.N.	Statements	Response		
		Agree	Undecided	Disagree
1	Due to the situation of the school has helped the study.			
2	The Math teacher teaches regularly in the class.			
3	The teacher pays the same attention to the students' problems as there are less students in the class.			

4	A course of mathematics is completed in time.			
5	The school conducts unit test at the end of each unit.			
6	Teaching materials and reference book can be used in school.			
7	Teacher teaches focusing the boys more than the girls.			
8	It is difficult to ask the things which have not been understood.			
9	The teacher runs the course giving focus on the problems of good students.			
10	The teacher partially behaves between the boys and girls students.			
11	It is wished to learn new thing after entering the mathematics class.			
12	Pre concept related to the exercise is discussed before the beginning of the exercise.			
13	Mathematics teacher makes the students practice more while teaching the question.			
14	Teacher involves boys than girls in practice.			
15	Mathematics teacher gives class-work and homework, and checks.			
16	It is easy to understand as teacher use teaching materials in teaching mathematics.			
17	Teacher inspires to ask the difficult question.			
18	Mathematics learning has been easy because of the class mates' helpfulness.			
19	Friends help me for the lesson; if I am absent from school.			
20	I teach friends which I know and learn from them which I don't know.			

<b>B. Out of School Related Factors</b>				
S.N.	Statements	Response		
		Agree	Undecided	Disagree
1	As my family is educated, I am taught math at home.			
2	My parents manage all required materials for the study math.			
3	I only study at home.			
4	Tuition and coaching are managed if necessary.			
5	My parents discuss about my learning progress report with teacher.			
6	I wanted to learn math since my childhood.			
7	I like to solve mathematical problems with my friends.			
8	I like to study math so that better opportunity can be got by study of math.			
9	I like deep study of math from right now as knowledge of math is compulsory for the study of good subjects like Doctor, Engineering, and Science.			
10	I read math whenever I am free.			
11	I always do homework given by teacher.			
12	I do not notice time while solving mathematical problems.			
13	Sufficient time can be got for study at home.			
14	I keep on practice of already taught mathematical problems.			

## Appendix- B

### Distribution of Percentage responses of students on the three major categories for each individual statements under Urban Schools

<b>A. School Related Factors</b>				
S.N.	Statements	Response		
		Agree (%)	Undecided (%)	Disagree (%)
1	Due to the situation of the school has helped the study.	43	14	43
2	The Math teacher teaches regularly in the class.	51	14	35
3	The teacher pays the same attention to the students' problems as there are less students in the class.	23	20	57
4	A course of mathematics is completed in time.	34	23	43
5	The school conducts unit test at the end of each unit.	20	20	60
6	Teaching materials and reference book can be used in school.	34	29	37
7	Teacher teaches focusing the boys more than the girls.	26	29	45
8	It is difficult to ask the things which have not been understood.	37	37	26
9	The teacher runs the course giving focus on the problems of good students.	43	29	28
10	The teacher partially behaves between the boys and girls students.	20	29	51
11	It is wished to learn new thing after entering the mathematics class.	34	46	20
12	Pre concept related to the exercise is discussed before the beginning of the exercise.	26	43	31
13	Mathematics teacher makes the students practice more while teaching the question.	29	28	43
14	Teacher involves boys than girls in practice.	23	20	57
15	Mathematics teacher gives class-work and homework, and checks.	43	14	43
16	It is easy to understand as teacher use teaching materials in teaching mathematics.	57	14	29
17	Teacher inspires to ask the difficult question.	49	23	28
18	Mathematics learning has been easy because of the class mates' helpfulness.	29	43	28
19	Friends help me for the lesson; if I am absent from school.	37	20	43
20	I teach friends which I know and learn from them which I don't know.	26	17	57

<b>B. Out of School Related Factors</b>				
S.N.	Statements	Response		
		Agree (%)	Undecided (%)	Disagree (%)
1	As my family is educated, I am taught math at home.	20	23	57
2	My parents manage all required materials for the study math.	40	31	29
3	I only study at home.	23	20	57
4	Tuition and coaching are managed if necessary.	34	29	37
5	My parents discuss about my learning progress report with teacher.	29	14	57
6	I wanted to learn math since my childhood.	46	26	28
7	I like to solve mathematical problems with my friends.	34	29	37
8	I like to study math so that better opportunity can be got by study of math.	20	37	43
9	I like deep study of math from right now as knowledge of math is compulsory for the study of good subjects like Doctor, Engineering, and Science.	40	14	46
10	I read math whenever I am free.	37	31	32
11	I always do homework given by teacher.	43	23	34
12	I do not notice time while solving mathematical problems.	31	29	40
13	Sufficient time can be got for study at home.	20	23	57
14	I keep on practice of already taught mathematical problems.	34	34	32

## Appendix – C

### Distribution of Percentage responses of students on the three major categories for each individual statements under Rural Schools

<b>A. School Related Factors</b>				
S.N.	Statements	Response		
		Agree (%)	Undecided (%)	Disagree (%)
1	Due to the situation of the school has helped the study.	29	20	51
2	The Math teacher teaches regularly in the class.	49	17	34
3	The teacher pays the same attention to the students' problems as there are less students in the class.	20	23	57
4	A course of mathematics is completed in time.	29	29	42
5	The school conducts unit test at the end of each unit.	26	26	48
6	Teaching materials and reference book can be used in school.	29	34	37
7	Teacher teaches focusing the boys more than the girls.	43	29	28
8	It is difficult to ask the things which have not been understood.	34	29	37
9	The teacher runs the course giving focus on the problems of good students.	29	29	42
10	The teacher partially behaves between the boys and girls students.	23	26	51
11	It is wished to learn new thing after entering the mathematics class.	20	34	46
12	Pre concept related to the exercise is discussed before the beginning of the exercise.	43	26	31
13	Mathematics teacher makes the students practice more while teaching the question.	29	29	42
14	Teacher involves boys than girls in practice.	26	17	57
15	Mathematics teacher gives class-work and homework, and checks.	29	29	42
16	It is easy to understand as teacher use teaching materials in teaching mathematics.	43	14	43
17	Teacher inspires to ask the difficult question.	34	23	43
18	Mathematics learning has been easy because of the class mates' helpfulness.	37	34	29
19	Friends help me for the lesson; if I am absent from school.	20	37	43
20	I teach friends which I know and learn from them which I don't know.	29	29	42

<b>B. Out of School Related Factors</b>				
S.N.	Statements	Response		
		Agree (%)	Undecided (%)	Disagree (%)
1	As my family is educated, I am taught math at home.	26	23	51
2	My parents manage all required materials for the study math.	29	14	57
3	I only study at home.	20	29	51
4	Tuition and coaching are managed if necessary.	29	34	37
5	My parents discuss about my learning progress report with teacher.	43	14	43
6	I wanted to learn math since my childhood.	34	23	43
7	I like to solve mathematical problems with my friends.	23	34	43
8	I like to study math so that better opportunity can be got by study of math.	43	29	28
9	I like deep study of math from right now as knowledge of math is compulsory for the study of good subjects like Doctor, Engineering, and Science.	37	43	20
10	I read math whenever I am free.	23	20	57
11	I always do homework given by teacher.	26	23	51
12	I do not notice time while solving mathematical problems.	43	11	46
13	Sufficient time can be got for study at home.	23	20	57
14	I keep on practice of already taught mathematical problems.	29	23	48

## Appendix - D

### Girls Achievement in Mathematics

#### 1. Rural School's Girl's Achievement

S.N.	Marks	No. of Students
1	8	1
2	9	1
3	13	1
4	14	3
5	15	3
6	17	4
7	18	5
8	20	2
9	22	4
10	23	2
11	25	5
12	27	1
13	29	1
14	31	2

#### 2. Urban School's Girl's Achievement

S.N.	Marks	No. of Students
1	7	2
2	13	2



3	14	2
4	15	3
5	16	1
6	17	3
7	18	1
8	19	2
9	21	1
10	22	3
11	23	3
12	25	1
13	28	6
14	30	1
15	31	2
16	32	2

### **Appendix –E**

#### **Names &Address of Sample Schools of SankhuwaSabha District**

##### **A. Rural Area:**

1. Jana Jyoti H Sec School, Dhupoo- 3
2. Treweni H sec School, Savapokhari -3
3. Jaljala Sec School, Bihibare -3
4. Amaruwa H Sec School, Aakhibhuin-7
5. Janata H sec School, Sittalpati

##### **B. Urban Area:**

1. Himalaya H Sec School, Khandbari – 1
2. Mahendra H sec School, Manebhanjyanj
3. Saraswati H Sec School, Chainpur
4. Himalayaa H Sec School, Pathibhara
5. Sarada Sec School, Pokhari

## **Appendix-F**

### **STUDY OF ACHIEVEMENT TEST**

Name of student : Class : Ten

Name of school : Roll no :

Subject : Full Marks :

Time : 45 min Pass Marks :

Tick ( $\checkmark$ ) the best answer.

1)  $P = \{\text{prime number } < 15\}$ ,  $Q = \{2.4.6.8.10\}$  & then find  $P \cap Q$ ?

a) {1,2,3,5,7,11,13}    b){2,3,5,7,11,13}    c) {2,4,6,8,10}    d){2}

(2) If  $U = \{1,2,3,4,\dots,10\}$ ,  $P = \{2,3,5,6,8\}$ ,  $Q = \{1,2,3,5,9,10\}$  find  $P-Q$  ?

a) {2,3,5,6,8}                      b) {6,8}  
c) {1,9,10}                          d) {1,2,3,5,9,10}

(3) If  $n(U) = 200$ ,  $n(M) = 138$ ,  $n(E) = 115$ ,  $n(M \cap E) = 91$  then what is the value of  $n_0(E)$ ?

a) 9                      b) 15                      c) 24                      d) 47

(4) If the cost of 4kg of tea is Rs 720, what is the cost of 7kg of tea?

a) Rs 1260            b) Rs 1200            c) Rs 1300            d) Rs 1360

(5) If the cost of 25 books is Rs 1250, how many books are bought for Rs 1500?

a) 20                      b) 25                      c) 30                      d) 35

(6) What percent of 340 is Rs 85?

a) 10%                      b) 25%                      c) 30%                      d) 50%

(7) What is the value of 80% of 2250?

a) Rs 1500            b) Rs 700            c) Rs 1800            d) Rs 200

(8) What is the area of parallelogram whose base 5.2cm, height = 3.5cm?

a)  $18.2\text{cm}^2$             b)  $18.0\text{cm}^2$             c)  $9.1\text{cm}^2$             d)  $36.4\text{cm}^2$

(9) The area of 4 walls of a room of length 2, breadth  $b$  & height  $h$  is

a)  $l \times b$                       b)  $l \times b \times h$                       c)  $h(l \times b)$                       d)  $2h(l+b)$

- (10) Ujwal earns Rs 72000 in a year. His total allowances are Rs 50000. What is annual income tax at 15% tax?
- a) Rs 3000      b) 3300      c) 3600      d) 4000
- (11) At what rate per year will Rs 2575 amount to Rs 4120 in 2 years?
- a) 12%      b) 16%      c) 24%      d) 32%
- (12) If  $l$  length,  $b$  breadth,  $d$  be the width of the path. Then which of the following is area of path running inside a rectangle?
- a)  $4d(l+d)$       b)  $4d(l-d)$       c)  $2d(l+b-2d)$       d)  $2d(l+b+2d)$
- (13) If the area of path is  $360\text{m}^2$  and what is total paving the path at the rate of Rs 45 per  $\text{m}^2$
- a) Rs 16000      b) Rs 16200      c) Rs 18000      d) Rs 20000
- (14) What is the formula of area of the circle?
- a)  $\pi r$       b)  $\pi r^2$       c)  $\pi^2 r$       d)  $(\pi r^2)^2$
- (15) In how years will the interest on Rs 600 be Rs 360 at 12% per year?
- a) 2      b) 3      c) 5      d) 6
- (16) If  $x - \frac{1}{x} = 3$  then what is the value of  $(x + \frac{1}{x})^2$ ?
- a) 4      b) 7      c) 9      d) 13
- (17) If  $64^x = 4^{x+6}$ , What is the value of  $x$ ?
- a) 2      b) 3      c) 4      d) 5
- (18) If sum of two numbers which are in the ratio of 5:7 is 168. What are the numbers?
- a) 40, 56      b) 45, 63      c) 50, 70      d) 70, 98

(19) What is the value of x if x, 6 and 4 are continued proportion?

- a) 6                      b) 9                      c) 12                      d) 15

(20) If  $x+y = 9$  and  $x-y = 1$  then what are the values of x and y respectively?

- a) 5, 4                      b) 4, 6                      c) 7, 2                      d) 6, 3

(21) How many roots are there in  $5x^2+4x+3 = 0$ ?

- a) 1                      b) 2                      c) 3                      d) 4

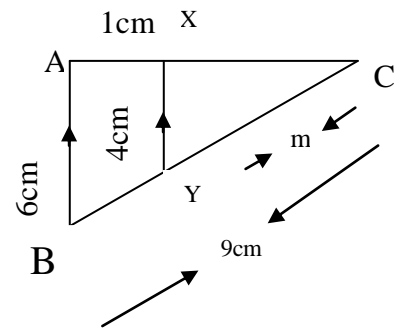
(22) What are the factors of  $3x^2-7xy+4y^2$ ?

- a)  $(x+y)(3x+4y)$     b)  $(x-y)(3x-4y)$     c)  $(x-y)(3x+4y)$     d)  $(x+y)(3x+4y)$

(23) In the adjoin figure, if  $\triangle ABC \sim \triangle XYZ$ ,

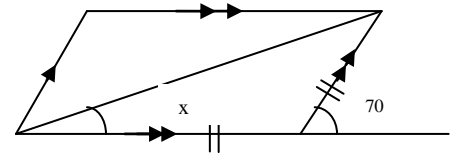
$AB = 6\text{cm}$ ,  $AX = 1\text{cm}$ ,  $XY = 4.5\text{cm}$  &  
 $BC = 7\text{cm}$  then what is the value of m.

- a) 4                      b) 6                      c) 7                      d) 8



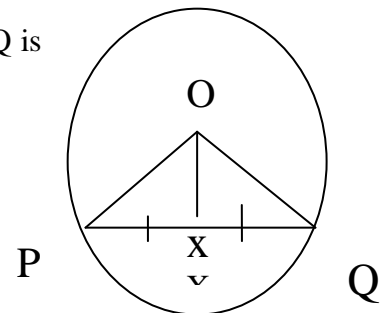
(24) What is the value x in the adjoining figure

- a)  $30^\circ$                       b)  $35^\circ$                       c)  $50^\circ$                       d)  $70^\circ$



(25) In the adjoining figure,  $PQ = 6\text{cm}$   $OX = 4\text{cm}$  then length of OQ is

- a) 2cm                      b) 4cm                      c) 5cm                      d) 6cm



(26) What is the numerical value of  $\sin 30^\circ + \cos 60^\circ$

- a) 1                      b) 2                      c) 3                      d) 4

(27) What is the arithmetic mean of 60, 69, 87, 93, 84, 76, 91.

- a) 70                      b) 75                      c) 80                      d) 93

(28) What is the median value of 21, 17, 13, 25, 9, 19, 10

- a) 10                      b) 13                      c) 17                      d) 25

(29) What is the probability of getting a spade from the shuffled pack of 52 cards?

- a)  $1/13$                       b)  $2/13$                       c)  $1/4$                       d)  $1/2$

(30) If  $l = 6\text{cm}$ ,  $b = 4\text{cm}$ ,  $h = 3\text{cm}$  then what is the TSA of cuboid?

- a)  $30\text{cm}^2$    b)  $72\text{cm}^2$                       c)  $144\text{cm}^2$                       d)  $108\text{cm}^2$

(31) What is the median value of 21, 17, 13, 25, 9, 19, 10

- a) 10                      b) 13                      c) 17                      d) 25

(32) What is the value of  $Q_1$  in the data 50, 52, 68, 65, 70, 62, 72

- a) 52                      b) 65                      c) 62                      d) 70

(33) What is the probability of getting a spade from the shuffled pack of 52 cards?

- a)  $1/13$                       b)  $2/13$                       c)  $1/4$                       d)  $1/2$

(34) Two numbers are in the ratio of 2: 3. If 17 be added to each, the ratio becomes 3:4, find the numbers.

- a) 30, 40                      b) 34, 51                      c) 40, 60                      d) 45, 60

(35) The HCF of the expression  $x^2-x-6$  and  $2x-6$  is

- a) 0                      b) 1                      c)  $x+3$                       d)  $x-3$

The End