CHAPTER I

INTRODUCTION

1.1 Background of the study

Mathematics has been derived from the ancient Greek word “Manthencian” which means to learn whereas in Nepali, it is called "Ganit" which means "the science of calculation". Now a day it is defined as "the science of numbers, quantity, space and change.” Arithmetic, algebra, trigonometry, geometry etc are the branches of mathematics." Mathematics, a well established and an exciting discipline have been initiated its development since ancient human civilization. At the primitive time, mathematics was originated from counting stones and cutting notches in a piece of stick or by tying knots in string. In course of solving the social problems, ancient people gradually built the mathematical structures and rules. It is also originated with practical experiences and various phenomena in space and spatial.

According to Sidhu (1990),"Mathematics is the numerical calculation related to human life and knowledge. It enables us to solve mathematical problems in our daily life, developmental discipline through cultivates the habits of concentration and self-reliance, prepare for technical job such as accounts, math teaching, auditing, engineering etc. and develops the power of thinking and reasoning. So we take mathematics as a way of thinking, means of communications and tools of reflexive thinking."

Goff and Futterman (1982) stated, "Knowledge of mathematics is indispensable to our daily life. Counting objects, reading and writing numerals, performing arithmetic calculation as well as reasoning with numbers are tasks most people perform in their daily life. A strong background in mathematics is necessary for almost all technical careers in society competence in mathematics have been identified as a critical skill directly related to educational and occupational choice." Locke said that Mathematics is the way to settle in mind a habit of reasoning.

"Mathematics is nothing but a system of conclusions drawn from definitions and postulates that must be consistent but otherwise may be created by the free will of the mathematicians" Courant and Robbins (1996). Benjamin Pierce, one of the best of the

American trained mathematician said, mathematics is the science that draws necessary conclusions.

Importances of mathematics are perceived in different ways. For many it is seen in terms of arithmetic skills that are needed for the use at home or in the office or workshop. As the basis of scientific development and modern technology some emphasize the increasing use of mathematical techniques as a management tool in the area of commerce and industry. Mathematics is a vital part of the basic learning needs of both children and adults. Mathematics has a great potential value. So that it is most welcome part of education and an essential part of school curriculum as well. Developed and developing countries alike should provide mathematics education for people of all ages, in school and out of school, including adult literacy programs. Mathematics can provide pupils with powerful ways of exploring, investigation and understanding the world. Mathematics is the vital in everyday life as it encourages logical reasoning and the ability to think in abstract ways.

1.1.1 The World History of Mathematics Education

The subject mathematics is taught in all level of education in every country all over the world. In ancient civilization period, the written curriculum was not available but arithmetic and geometry were used in practice. In Stone Age people made the weapons of different shape and size and using fingers of hands and legs for counting. In the changing time, they entered in agriculture age to make life standard and started to keep domestic animals with them. They used those animals for transportation supplying food materials and ploughing fields. They count domestic animals with the help of one to one correspondence with the stick or small stone. Similarly, time was calculated as morning, afternoon, evening and night. Also length was measured by hand.

An ancient Greece was recognized to be the first state for the development of ancient education system (Sharma, 2028 B.S., p. 317). The educational system was set up in two cities Sparta and Athens. A greater attention was given to education in Sparta which consisted activities like games exercise, gymnastics, running, household. But in Athens all aspects like emotional, intellectual and

physical exercise were given importance. Liberal arts, Liberal education, dialectic method were developed in Athens. Only mathematics was not included as a discipline in early period in Sparta and Athens. However, mathematical concepts were introduced in military academics. Sophist school at 480 B.C. played most important role for mathematic education. Sophist school aroused as a demand of teacher. These teachers were called "Sophist" or "Wiseman". They taught geometry, astronomy, philosophy and language. The school during the seventh-century B.C. (The Ionic School, the school of Pythagoreans, the sophist school, the platonic school etc.) informally played vital role for development of early Greek mathematics education.

The trend of mathematics curriculum development process was limited up to simply addition, subtraction, multiplication and fraction. One of the earlier evidence of man's first wondering in mathematics was a bone dug up in the 1950's at Ishango in Zaire (Congo). The bone was what looks a tally mark engraved on it. There had been various interpretations of these marks. One archeologist believes that the tally marks depict numbers which are deliberately planned to represent a mathematical name of some short discussed by people who had a number system based on then and knowledge of duplication and prime numbers. Another thinks the marks where some kinds of lunar count, perhaps time reckoning from a new moon to the next new moon (Eves, 1983, p. 2).

Roman emphasis on the ideal of service to society and the state brought about another extension of formal education known as the school of rhetoric. Some of the Plato's suggestion for the training of philosophers, arithmetic, geometry, astronomy and music were incorporated in grammar school.

During Greek and Roman time the major controversy concerning education was related to whether emphasis should be given to education for the welfare of the individual or state. But the Church rejected both of these educations. This movement developed the curriculum known as the "Seven liberal arts" which formed the foundation of education throughout the middle ages and greatly

influenced the curriculum of school until today. Arithmetic, astronomy, geometry, music, grammar, rhetoric and dialectic were included in seven liberal arts. In that time, arithmetic curriculum included calendar calculation and geometry curriculum included the work of Euclid.

Rhind (or Ahmes) papyrus is a mathematical text on the form of a practical handbook which contain 79 problems and the another famous Moscow papyrus contains only 25 problems which are written by Ahmes about 1700 B.C. The Papyrus was acquired by the British Museum. Evidently the document had originally been a roll nearly 18ft. long and 13 inches height but it was broken into two parts with certain portion missing. The problems in these documents consist of the use of fraction, the solution of the simple equation and progression, the measurement of areas and volume (Eves, 1983, p. 34).

In **Golden Age** of Greek mathematics (from 600 B.C. to 200 B.C.) there were several progress in mathematics. Mathematician at that time, i.e. Ahmes, Thales, Pythagoras, Zeno, Hippocrates, Plato, Euclid, Archimedes, Apollanius, Ptolemy etc. were played very important role for development of mathematics.

At the time of **Darkage** from 450 B.C. to 11th century, civilization was very slow. Schooling was almost non-existence. Although the mathematician at that time i.e. Alcuin, Bede, Boethius, Churchman Gerbert etc. played significant role for development of mathematics.

12th century is the **period of transformation** in the context of mathematics. In that time several book of one language translate to another language. In 13th, 14th century, there were not done important tasks in mathematics.

In 15th century (**the period of Renaissance**) the projective Geometry was developed. In that time many-many old creation of mathematics were read. Mathematician of that time i.e. Nicholas Cusa, Georg Von Peurbach, Johann Muller, Nicolas Chaquel, Luca Pacioli, Johann Widman etc. played very

important role for development of mathematics. At that time mathematician Luca Pacioli wrote arithmetic "Suma".

Mathematician of 17th century, Napior developed Logarithm, Descards developed modern analytic Geometry. Huygens contributes to the theory of probability. Newton and Leibniz contributed many investigations on calculus etc.

Mathematician at 18th century (Euler, Lagrange, Laplace, Cauchy....) witnessed considerable further development in such subjects as trigonometry, analytic geometry, calculus, theory of numbers, theory of equation, probability, differential equations and Analytic mechanics etc. Liberation of geometry (i.e. rising of non-Euclidean Geometry) and liberation of algebra deep concern with the foundation of mathematics took place in 19th century great mathematician of 19th century and after (i.e. Gauss, W.R. Hamilton, peacock, Riemann, David Hilbert, Russet etc.) forced for development of mathematics.

Curriculum development activities of 1950's and after in the world have been concerned with three issues 1. What mathematics should be taught in school? (The content issue) 2. How do people learn mathematics? (The learning psychology issue) 3. How should teachers teach mathematics? (The instructional strategies issue). These issues forced the revision and improvement of mathematics curriculum work (Bell, 1978, p. 37).

In 1951 the University of Illinois established the university of Illinois committee on school mathematics (UICSM) for the purpose of studying mathematics curriculum (VICSM). UICSM was the first large scale curriculum project to develop and distribute a modern (new) mathematics curriculum for secondary school mathematics; its director the late Max Beberman, is sometimes referred to as the father of new math. The project set out to produce, a curriculum emphasizing basic mathematical concepts containing a minimum of manipulative activities and emphasizing student discovery and understanding of mathematical concept and principles. UICSM, SMSG (School Mathematics Study Groups), and SSMCIS (Secondary School Mathematics Curriculum Improvement Study) are

only a few of the many mathematic curriculum improvement projects which have been initiated since 1950. After the successful sputnik in 1957, New mathematics movement forced to change the mathematics curriculum. New mathematics included the several new discoveries made since 17th century i.e. set theory, transformation, etc. New mathematics movement greater emphasize on student thinking and discovery method. In 1972, there were 33 mathematics curriculum development projects in the United States, which affected the world's mathematics curriculum.

By 1990 and after academic committees were established for the study and recommendation of school curriculum. It was to provide a life relevant practical education. One of the more important trends of John Dewey propounded the concept of "Education as life" rather than just "preparation of life" which also affected development for math curriculum.

The more rapidly changing world of the 20th century especially after the 1st world war brought more and more demands for a change in school curriculum practices. Urbanization, highest growth of population, mobility, transportation, industrialization, universal compulsory elementary education, the technological changes and the other symptoms of a changing social and economic milieu mode it necessary for education to change.

After Second World War a movement raised known as "Education for life adjustment". The current developing science and technology has encouraged each country to complete in education. On the middle of the 20th century, most of the countries of the word arithmetic, general mathematics, plane geometry, algebra, solid geometry and plane trigonometry were included in secondary school mathematics program.

In the current age mathematics has the high speed in its movement. It has changed its nature as the societies and learner's need are modified. To run the mathematical movement properly, different mathematical congresses and conferences have

clarified the ways of learning and developing the mathematics education either psychologically or sociologically or philosophically or technologically. All the congress has also emphasized the development of curriculum of mathematics education. UNESCO helped many developing countries in introducing modern mathematics in their curricula of their educational system. Most of the countries introduced New mathematics or modern mathematics in their curricula.

The mathematics curriculum should be needing base. It is only possible when it follows on speed of the development science and technology, Learner's interest, society's need and so on. The mathematics curriculum is being needed on the real life.

1.1.2 Different Mathematical Movement and Their Impact to the Development of Mathematics Curriculum

Different mathematical movement during 1900 A.D. to now guided to make the mathematic curriculum. At the time of drill movement (1900-1930 A.D.), Mathematics curriculum was based on content. Student learned this content by drill and repetition. Mathematics curriculum based on knowledge for knowledge's sake. At the time of social movement (1930-1940 A.D.) mathematics curriculum was only based on social needs which neglected the need of students. Meaningful movements (1940-1960), mathematics curriculum was based on that content which were based on real life problem. Before 1960's A.D., mathematic curriculum emphasized calculation and computation of numbers. The major focus was on arithmetic and less on other areas of mathematics. Basically it was a common notion that school mathematics meant arithmetic, algebra, geometry, trigonometry, and mechanics.

After 1960's there arouse a new mathematics movement which was broader, emphasized on the other area of mathematics such as chance (probability), set, statistics, measurement, space, geometry, algebra, calculus. The proponents of the movement were the mathematician. This movement was called "New Math"

movement. It was initiated when Soviet Russia projected 'Sputnik' in the space in 1957 A.D. U.S.A. introduced changes in mathematics curriculum of school education with a major shift in the mathematical structure. Mathematic logic and set theory with no due attention on what students can learn and how they could learn mathematics.

New mathematics or Modern Mathematics can be defined only as mathematics with a new content, new language, new approach and new structure (Sidhu, 1997, p. 238). It is important here to know how all these aspects are new as compared to the old. They are being discussed below:

New Contents: - Modern mathematics constitutes of new contents. It carries in it several new discoveries made since 17^{th} century. Set theory, topology, functional analysis, geometrical transformation linear programming, measure theory, quality control, computer mathematics etc.

New Language: - Modern Mathematics utilizes a language different from its predecessor. It is known as set notation and set language. Modern Mathematics has presented set theory as a unifying branch for the entire subject. It is possible to adopt set theory as the base for all of mathematics from arithmetic to the most advanced topics.

New Approach:- It can claim newness of approach also. It introduces a change in the methodology of the subject. It places greater emphasize on student's thinking and discovery and less reliance on teacher's instruction and pupil's memorization. The use of discovery method is the most important feature of modern mathematics programme. Discovering or figuring takes precedence over remembering or repeating. There is greater stress on problem analysis.

New Structure:- Structure of algebra i.e. commutative, associative, distributive and other law of Algebra, which describing the properties of group, rings, fields .... Geometrical structure is definition, axiom, postulates which describing

Euclidean geometry, topology etc. Arithmetical structure (i.e. +, –, ×, ÷) describing properties of natural, rational, real and complex numbers.

The supporter of Modern Mathematics are said, Modern Mathematics has made the subject more meaningful, more enjoyable, more systematic, more up to date and more logical. Through its standard terminology, common symbols, sound structure and logical approaches, it helps the students to learn more mathematics in less time. The "new math" movement got priority in school mathematics for the development of the technology and economic progress in western world.

Although, the person opposite group of Modern Mathematics are believed that the target group were not found satisfied in this new math movement. There was weakness in the secondary graduate in simple arithmetical calculation which was the most essential skills in everyday life. The other issue was the lower achievement scores in students and dislike of mathematics by the students. 'New' mathematics has provided neither easy nor interesting for many pupils. New math neglected physical reality as a source of mathematical ideas etc. These issued made people rethink over the new math movement. Then during 1970's to 1980's there came a Back-to-Basics movement. It was a criticism and a critical look over new math. Emphasis was given on the basics of mathematics and meaningful understanding and meaningful learning of the basics ideas of mathematics. After 1980's there has been a continuous reform in the field of mathematics education in the world. Problem solving movement (1980-1990 A.D. E. Jeorge Polya), problem investigation movement (1990-2000 A.D.) and ethnomathematic movement (2000 A.D. to till) reformed mathematics curriculum as to make relevance to life and society. Now, the present day mathematics curriculum wants to contain that subject matter which are relevance to students' life and fulfill the need of society.

1.1.3 Historical Development of School Level Mathematics Education in Nepal

Mathematics education specifies the place of mathematics in education. According to mathematician James Light "A mathematics education must view mathematics within the

content of total education of the individuals". By the analysis of different definition of different mathematicians we can say mathematics Education is a science that analyzes the mathematics in educational point of view.

Formally, mathematics education as a discipline got recognition from first International Conference of Mathematics held at Lyons in August 1969. Mathematics education takes place in different environmental factors such as student's background and his\her surroundings influences including scientific attitudes. Finally, mathematics education concerned about curriculum training, teaching and evaluation of mathematical learning.

The history of mathematics education in Nepal begins from the Vedic period (earlier than 3000 B.C.). One of the Vedas called Rig-Veda treats mathematics. Some Sanskrit scholars used to open Sanskrit school in the more populated areas to teach Sanskrit and Astronomy (as mathematics). The formal school system, Buddha Pathsala at Gantaghar in Kathmandu which was in existence even up to 2002 B.S., had included arithmetic in its content.

The English system education started with the establishment of Durbar School in 27th Ashwin 1910 B.S. by Prime Minister Janga Bahadur Rana after returning from England. Since, the democracy in 2007 B.S. aspiration for education and its importance was increased considerably. After then different planning commissions gave suggestions and directions to develop and full fill educational needs of the people and society. The major planning commissions were Nepal National Education Planning Commission (NNEPC 2011 B.S.) National Education System Plan (NESP 2028 B.S.) and National Education Commission (NEC 2049) with the event of the NESP (2028 B.S.) mathematics was given a significant place as well as a second language at all levels of school curriculum. According to NEC (2049 B.S.) mathematics is taught as a basic subject and allotted 150 marks out of 600 full marks and eight period out of 34 in a week in class one, two and three and in class four and five 100 marks is allotted out of 700 full marks and six periods out of 39 in a week.

Since 2049 B.S. a revised school curriculum was proposed from primary to secondary level in Nepal. All the changes are said to have been made as and according to the recommendations made by National Education Commission of 2049 B.S. and Higher Level National Education Commission of 2055 B.S. to bring about contemporary reforms

in the school level education to meet the public desire and the changed context of the nation.

1.2 Meaning of Attitude

Attitude is defined as a mental predisposition to act is expressed by evaluating a particular entity with some degree of favor or disfavor. Attitudes are also attached to mental categories. Mental orientations towards concepts are generally referred to as values. Furthermore, an attitude is a point of view about a situation. It is made up of what we think, what we do and what we feel. The attitude is an intellectual predisposition to contemplate, speculate and weight data, which we perceive or formulate within ourselves. Our attitude reflects the internal concepts we hold. Thus our attitude affects both our inner and outer world. The attitude is answer of 'why' to ourselves when we express a particular idea. We formulate idea within ourselves to take on the philosophical bent consist with our attitude. Therefore attitude is that what we perceive.

An attitude is a hypothetical construct that represents an individual's degree of like or dislike for an item. Attitudes are generally positive or negative views of a person on place, things or event. Attitudes are judgments. They develop on the affect, behavior, cognition model. The affective response is an emotional response that expresses an individual's degree of preference for an entity. The behavioral intention is a verbal indication or typical behavioral tendency of an individual. The cognitive response is a cognitive evaluation of the entity that constitutes an individual's beliefs about the object. Most attitudes are the result of either direct experience or observational learning from environment. Attitude is one of Jung's 57 definitions in Chapter XI of Psychological Types. Jung's definition of attitude is a "readiness of the psyche to act or react in a certain way" (Jung,[1921] 1071:par. 687).

1.3 The Role of parents' job in Learning Mathematics

The home is child's first school and parents are the child's first teacher and the most influential teacher because a child spends more time at home than in school. Not only they spend more time at home but also learn all the discipline, habits and manners with in family environment. So the home environment yields a very strong influence over the learning behaviors of the children. That is why the home environment should be clean,

healthy and supportive. Parents and elders should always care and love to their children so that the child feels confident and happy to engage himself/herself in the learning activity.

There are several factors which affect student's mathematical achievement. These factors may be related to the school environment or home environment or even individual differences. The home is considered as the first school for children. They learn preliminary social requisites and acquire primary education foundations in their home before they go to school. The home environment plays a decent role in social and educational development of a child.

The educational development of a child depends not only on part played by teachers but also on the home environment like family structure, facilities provided at home, parents' awareness, interest, expectations and knowledge about handling and guiding their children. In other words, a great deal of children's total development, including their academic achievement level, is the combined product of home environment and school inputs. Supporting this view Malakar (1989) adds;

> "The best way that the parents can contribute towards the continued progress in study of their children is to provide them with a secure and happy home and make them feel that they are loved and well taken care of. And at the same time they must make available almost unlimited facilities for free reading from well graded children's books and magazines and provide opportunities for a great variety of games and plays in which they can exercise their physical and cognitive powers and get a balanced sense of emotional satisfaction. Time to study, encouragement to study and material to study are necessary conditions that can accelerate progress of the learning for the children".

The quality of education that a student receives depends not only upon the relevance and appropriateness of the curriculum, text books and school activities but is also affected by attitudes and behaviors of his parents towards his education. Parents' positive attitude towards various aspects of education and their capacity to provide necessary facilities for the children's learning are in fact, two very important factors in ensuring quality education (CERID, 1985). So, the responsibility of parents is to make necessary facilities available for their children to study at home.

In this extent, Detjen and Detjen expressed, “Parents should be impressed with the necessity of showing an interest in what the child is doing and treating his efforts with respect they should provide the child with a proper place to study where he is free from interruption. They should arrange a schedule for study with each child help him stick to it by not making conflicting demands on his time and check to see that he gets his work done. Parents at home always should participate with the child in locality materials, making experiments, sharing knowledge and discussing ideas but they should never do the work for the child.”

1.4 Statement of problem

This study was mainly concern with the mathematical attitude of secondary level students of different occupational parents. It was also include the comparison of attitude between girls and boys towards mathematics. Every child spends more time at home than at school. The children can learn more at home than at school. So it is natural to think about the support of the home environment for the children’s learning outcomes. The home environment plays an important role in children’s mental as well as physical development. From studies carried out elsewhere in the world, the researchers and scholars have pointed out that the home environment has effects on children’s achievement. In case of our country (Nepal), the research is not done yet about the relationship between home environment and children’s mathematics attitude. So research should be done on home environment and the behavior of parents and occupation of parents. Students may help their parents’ occupation which may affect the attitude of students towards mathematics. The researcher will seek to get the answer of following question:

1. What are the mathematical attitudes of secondary level students with respect to their parents’ occupation?

2. What are the gender wise mathematical attitudes of secondary level students with respect to their parents’ occupation?

3. Is there gender wise different attitude of secondary level students toward mathematics with respect to their parents’ occupation?

1.5 Objectives of the study

The students reflect the family's nature, culture, civilization and its status. So the effects of a good family environment can be seen in their learning behaviors too. Children are generally guided by the home environment and parents in their education and socialization. Different beliefs and environment of a family may ultimately influence the children's way of learning and doing mathematics. Of course, a home environment is comprised of parents' beliefs towards education and towards their children and through this study the researcher tried to compare the expectations of the parents towards their children's mathematics learning and the children's mathematics achievement. If a student aims to get the first position in his class he will probably stand in top five positions in his class but if he only wishes to pass the class then he may fail too. It means if the expectation is higher than the motivation will be higher which will lead to the higher achievement. Similarly, if the parents expect their children to achieve higher academic results they will be provided with higher facilities, good counseling, caring and so on. The objectives of this study are as follows:

i. To determine the attitude of secondary level students of different occupational parents towards mathematics.
ii. To find the gender wise attitude of students of different occupational parents towards mathematics.
iii. To compare gender wise attitudes of students of different occupational parents towards mathematics.

1.6 Statement of Hypothesis

1.6.1 Research Hypothesis

The research hypotheses formulated for this study is as follows:

i. There is no significant difference of mean attitude score of students of secondary level of different occupational parents towards mathematics.

1.6.2 Statistical Hypothesis

H_0: $\mu_1 = \mu_2 = \mu_3 = \mu_4$ (Null hypothesis)

Where μ_1, μ_2, μ_3, and μ_4 represents the mean attitude scores of students of farmers, businessman, government job holder and other occupation respectively.

$H_1 : \mu_1 \neq \mu_2$ or $\mu_2 \neq \mu_3$ or $\mu_3 \neq \mu_4$ or $\mu_1 \neq \mu_3$ or $\mu_1 \neq \mu_4$ or $\mu_2 \neq \mu_4$
(Alternate hypothesis)

There is at least two mean attitude scores of students of different occupational parents are not equal.

1.7 Significance of study

Mathematics is an inseparable part of human civilization. It is taught at all level of school education. Most of the educated parents in Nepal wish that their children should study mathematics up to higher level education also. But many of them may not know about attitude, aptitude and intelligence of their children. They may not be enough capable to find out whether their child has got a favorable attitude for the study of particular subject or not. The result of which comes to us in mass failure which cause to increase the number of students drop out from the class. However, mathematics has been given a significant place on school curriculum. So it has become essential to investigate the attitude of students before giving admission to the students in any particular subject. So, the present study aims at finding out the attitudes of secondary level students towards mathematics curriculum. Mathematics is essential part of human life. With the help of mathematics man can understand and interpret quantitative aspect of life. This is possible only when altitude of students towards mathematics is positive. Therefore this study will be significant for following reasons:

1. It will provide valuable information to the people involved on teaching / learning activities in mathematics.
2. It will provide the guideline to educators, researchers and curriculum developers.
3. This study will provide hints to the administrators and mathematics teachers.
4. The result of this study will help the national policy maker to design vocational curriculum according to their different occupational group.

5. This study will help the mathematics teacher to teach the students to their percents occupation.
6. It will provide the awareness to the parents to maintain the mathematics achievements.

1.8 Delimitation of the study

Due to the certain time expenses and other related factors the researcher will not overcome the entire fielded it has some limitations which are as follows:

a) This study was limited only in Tanahun district.

b) The population of this study was limited to secondary level students of Tanahun district studying in 2067 B.S.

c) The variables like classroom situation, age of students, academic qualification of teachers, students I.Q. etc were not controlled.

d) The result of this study was generalized through an attitude scale used by the researcher which was recently developed by Fennema and Sherman entitled, "A Modified Fennema and Sherman Mathematics Attitude scale."

1.9 Definition of the terms

The various terms used in the present study operationally defined as follows:

Attitude: Attitude refers to ones view towards instructional process, planning and organization of content and evaluation techniques of mathematics.

Attitude scale: Information that attempts to measure the attitude or belief of an individual is known as attitude scale.

Scale: The mathematical attitude scale constructed by Elizabeth Fennema and Julia A. Sherman is termed as scale.

Home Environment: Environment means the conditions that affect the behavior and development of somebody or something. Here, environment refers to the conditions of different homes (families) with extra books, different possessions (facilities), availability of regular meals, social economic status of the family, size of the family, parental education, parental expectations towards their children that effect children's learning behaviors and ultimately the achievement in mathematics.

Family structure: It comprises the number of members in the family (small, medium or large) or simply the nature of the family like single or nuclear; joint or united family.

Facilities: Availability of textbooks, additional books, daily newspaper, weekly or monthly magazines, play and geometrical instruments, computer and video games, radio-television, electricity, separate study room, time table to play, use of leisure and holiday, study and eat, etc are the factors considered within facilities provided at home which supposed to be very important in helping children for better achievement.

Parents: Parents means father or mother or member of family with whom student depends economically on.

Parent's Occupation: The work done by the parents to run their livelihood.

Farmer: One who follows only the occupation of the farming, who manages a farm of any kind.

Businessman: The person who is working only in an institution investing his own expenses.

Job holders: The person working on private or government sector on monthly salary basis under the rules and regulations of the office.

Other Occupation: All the professions except farming, business and job holder.

CHAPTER II

REVIEW OF RELATED LITERATURE

To get better understanding about the subject matter of the study, it is essential helpful to get and study the relevant literature. The related studies provide the researcher in making his problems more realistic, precise, researchable and meaningful. Having these advantages in mind the researcher will review the relevant literature in the field of attitude towards mathematics and parents occupation. The review of the literature of this study will take in and outside of Nepal. The reviews of related literature help to make the concept clear for the study and also direct to analyses and interpret the data. With this assumption some related literatures have been reviewed as follows:

Haan (1961) writes that the teachers' attitudes as well as the understanding of mathematics influence the pupil's achievement. He further added that the large number of teacher who dislike or fear mathematics has become factor in children's attitude towards mathematics. The effects of teachers' attitudes are widespread. Like other attitudes, dislike of mathematics is readily communicated to children either directly or unconsciously.

Skypek (1990) states that sex differences are not existent in the early grades in letter years, however girls frequently underestimate their abilities while boys overestimate their ability in learning mathematics boys just try harder whereas girls find it possible to believe they are not supported to be smart in mathematics.

Ghimire (1997) did his research entitled "A study on factors affecting teaching learning mathematics at secondary level" with the objective to study the factors affecting learning of schools in terms of the following: school environment, family background, motivational factors, physical facilities, interest of the learners, instructional materials. The tools for the study were administered to the sample of ninety students and t-test was applied to conclude the following results.

i) Environment of school in both rural and urban areas affects equally but the boys are more affected than girls.

ii) Home environment affects more to the subjects of rural areas and girls were affected more than boys.

iii) The students of urban areas were more interested in the study of mathematics and the girls paid more attention for the study.

Pandit(1999) on his master thesis “A study of attitude of secondary students and teachers towards geometry” concluded that the students studying in secondary level had a positive attitude towards geometry but the teachers have negative attitudes towards geometry. The boys had better attitude than those of girls. The mean attitude score of students towards geometry was significantly greater than that of their teachers.

Neupane (1999) did a research on "A study on the effectiveness of homework on mathematics achievement of lower secondary schools students" with the objectives to explore the comparison of and achievements of two groups of students when one is given homework without feedback. Pre-test, post-test, equivalent group design was adopted. Two schools of Dhading district were sampled. Teachers taught both in group, experimental group and control group. The topics were the equation and inequality. Both groups got homework. Experimental group got corrected homework with some feedback but control group students did not corrected homework with some feedback but control group students did not get such treatment. After six weeks, a post-test was given. The t-test was applied to conclude that the homework assigned with feedback caused better achievement that the homework assigned without feedback.

Chaudhary (2000) on his research “A Comparative Study of Achievements in Mathematics of Primary Level Student Related to Parents’ Educational status” concluded that the mathematics achievement of literate parents’ children was found to be higher than illiterate parents’ children”. It might be because the parents who are literate simply try to make their home environment favorable for their children’s study and their expectations towards them might be higher than illiterate parents’ towards their children.

Kafle (2001) studied on “A study on attitude of secondary level students and teachers towards compulsory mathematics curriculum.” He selected fifteen teacher and one hundred and sixty students from the Kavre district and concluded that the secondary level students had a positive attitude where as teachers has negative attitude towards mathematics curriculum.

Adhikari, (2001) did a survey type research on "A study of attitude of lower secondary level students and teachers toward arithmetic" and found that "no gender difference in attitude towards arithmetic was detected and the students studying in lower secondary level and their mathematics teachers had positive attitude towards arithmetic."

Neupane (2001) did a research entitled, "Mathematics achievement of primary children of various ethnic groups in Nepal." To collect data, the investigator developed the pre-test (oral test) with the help of class teacher of grade one. Post-test was developed and tested the reliability before the administration. Pre-test and post-test consisted 10 and 16 items on the chapter of addition and subtraction of the one digit and two digit numbers respectively, without carrying over the curriculum prescribed textbook of grade one. The reliability coefficient of post-test was found to be 0.855. A pre-test, post-test equivalent groups design was adopted for the purpose of this study. Two equivalent groups were established on the basis of pre-test result and randomization. The researcher himself taught both groups on the same selected units by using both approach. The instruction period was a weeks. A post-test was administered to both groups providing necessary instruction for usual periods on the same units. Along the other statistical measures, t-test was applied in order to assertion the difference between two groups. The data was analyzed and interpreted statistically to find the conclusion. Finally, he concluded that the achievement of students taught by play-way method was significantly different-than the achievement of the students taught by traditional method.

Neupane (2001) did a research on "comparative study of the achievement of students of grade 9 on the function of secondary school on Kathmandu district". He conclude that the mean achievement of the students of private school was found to be significant than the mean achievement of public schools. He also concluded that the achievement of boys was greater than that of girls.

Adhikari (2001), on his research, "A Comparative Study of Achievement in Mathematics of Primary Level Students Related to Parents Income" concluded that the achievement of high-income group is higher than middle–income and low-income group. But the achievement of middle-income group was not found significantly higher than low-income group.

Ghimire (2001) did his thesis for masters degree on "A study on the relationship between students' attitudes and achievement in the topic set" and found that the students studying in both types of schools (public and private) had similar attitudes and there was no gender different in attitudes towards the unit of the set. Study also revealed that no significant correlation existed between students' attitude scores and achievement scores of ninth grade on the set.

Dhakal (2002) completed his masters degree thesis on "A study on the attitude of the students towards mathematics education as a major subject at PCL and 10+2 level at Kathmandu valley" and found that "All the students have negative attitude towards their mathematics classroom. Their attitude remains positive to the well-organized mathematics classroom and they have positive attitude towards mathematics textbooks and reference books."

Tiwari (2002) studied on “A study of attitude of farmer and non-farmer parents towards the school mathematics”. He used probability sampling method, data were collected by questionnaire and concluded that both the farmer and non-farmer parents had positive attitude towards the school mathematics.

Tiwari (2002) cited that “Seventy percent of the children reported that they helped their parents in everyday aspect of household activities. More girls than boys were involved in any types of economic activities of the household of their family”. Now the question is that how a child can give enough time for his/her study if he/she has to participate in household activities. In such a case the home environment is not definitely favoring children’s learning and one cannot expect more for their achievements. Mostly, in the subjects like mathematics and science that need more time for practicing them, the children normally cannot progress. Then we can easily imagine that why the failure in mathematics is higher in our country. It is because the home environment is not supportive enough whatsoever may be the reasons. If the child does not have allocated timetable for studies and other facilities then the achievement cannot be expected better.

CERID (2004) presented on a study report of "Gender Experiences in Public Schools of Nepal: Review of Primary School Curriculum and Textbooks in Nepal" shows gender issues have been raised also in the textbooks of social studies of other grades.

The Social Studies curricula of grades II and IV do not include gender issues but the corresponding textbooks do. There is gender equality in the pictures of the textbooks Primary Level Nepali Language. In the Grade I textbook, boys and girls are shown playing together. The Grade II textbook depicts both Men and Women participating in tree plantation. Similarly there is gender sensitization in a picture in which boys and girls are shown together in the classroom. However, female-dominant pictures are fewer in the textbooks. In the textbooks, gender aspects are depicted through language and pictures. Gender issues are looked at from both the positive and negative sides.

Rai (2004) in his study, "Attitude of teachers and students towards mathematics and students achievement in Dhankuta district,'' he concluded the following facts:

i. Secondary level trained mathematics teacher had positive attitude than untrained mathematics teacher.

ii. The students taught by trained and untrained teacher had similar attitude towards mathematics

iii. Trained teachers have positive attitude than their students and so have the untrained teachers.

iv. The student of urban area had positive attitude than the students of rural areas.

Panta (2004) studied on, "Attitude of secondary level students and teacher towards geometric transformation at Chitwan District. He used survey typed research design in his study. His tools were questionnaire and opinionative and concluded that secondary level students had positive attitude toward geometric transformation. The teachers of secondary level had positive attitude toward geometric transformation and the secondary level boys and girls had similar attitude towards this topics.

Tharu (2004) did his research entitled "Impact of socio-Economic status on mathematics achievement" with the objective to find the level of mathematics achievement of students with respect to their socio-economic status and to determine the correlation between socio-economic status and mathematics achievement and to determine the correlation between socio-economic status and mathematics achievement by gender. The tools for the study

were administered to the sample of 140 students of Bardia district and multiple regressions were applied to conclude the following results:

i. Mathematics achievement of students were found to be strongly associated with the father education and father's occupation where as family income variable had the low relationship that positively affect the children's mathematics achievement.

ii. Mathematics achievement status of boys and girls were found consistently positive associated with three variable father's education, father's occupation and family income that positively affected on boys and girls mathematics achievement and family size and birth order of child had negatively correlated that adversely affected boys and girls achievement in mathematics.

Poudel (2005) studied on "Attitude of grade IX girls towards mathematics and their achievement at Syanja district'' and concluded that there was a positive attitude of grade IX girls towards mathematics. The grade IX girls of rural and urban schools had similar attitude towards mathematics. The achievement of girls having positive attitude is somewhat better than the achievement of girls having negative attitude and the achievement and attitudes are somewhat related.

Pokhrel, K.P. (2005) studied on "Teachers' attitude towards problem solving approach in mathematics classroom" using teachers' attitude scale of H.F. Bell applied on 48 teachers. The collected data was analyzed with χ^2-test at 0.05 level of significance, t-test and ANOVA were used at 0.05 and 0.01 level of significance. After the analysis of data he found that there was positive attitude of teachers towards problem solving approach.

Regmi S.R. (2005) studied on, "effect of parents' involvement in academic learning and resulting mathematics achievement of their child." He studied on one hundred and twenty students and their parents. The marks obtained by the students and opinionnaire were analyzed using chi-square test, t-test and correlation coefficient. In the basis of analysis and interpretation of the data major findings were:

i. There was favorable opinion of parents in academic learning.

ii. There was moderate correlation between involved parents and their child in academic learning.

iii. There was significantly difference between the achievements of the children in mathematics of involved and non involved parents in academic learning.

Sah D.N. (2006), studied on "Effect of occupations on mathematics achievement within Rai community" using achievement test then analyzing with mean, standard deviation and t-test at 0.05 level of significance. On the basis of analysis and interpretation it was found that there was no significant difference between the achievements of different occupation but the private school students had higher achievement than that of government school students.

Pandit U. (2007) studied with objectives to find out the attitude of secondary level students towards optional mathematics curriculum. He studied with a set of opinionnaire consisting 25 statements. Using χ^2-test and t-test he found that no gender wise difference in attitude but comparatively boys had better attitude than girls. Urban students had more positive attitude than that of rural students.

Belbase, R.M. (2007) studied on "Attitude of primary level teachers towards radio teacher training programme". Objective of the study was to identify the attitude of teachers toward radio training programme. A set of opinionnaire consisting thirty statements applied on 24 teachers. The data was analyzed using χ^2-test and t-test at 0.05 level of significance. After analyzing and interpretation, he concluded that teachers had positive attitude towards radio teacher training programme.

CHAPTER III

METHODOLOGY

Methodology is a useful bridge to solve the research problem in systematic way. It describes the method and process applied to the entire aspect of the study. It is a way to gather information. Different tools and techniques are used in different phases of the study. Thus the frame work of the methodology contains population, sample, tools, data collection procedure and data analysis procedure.

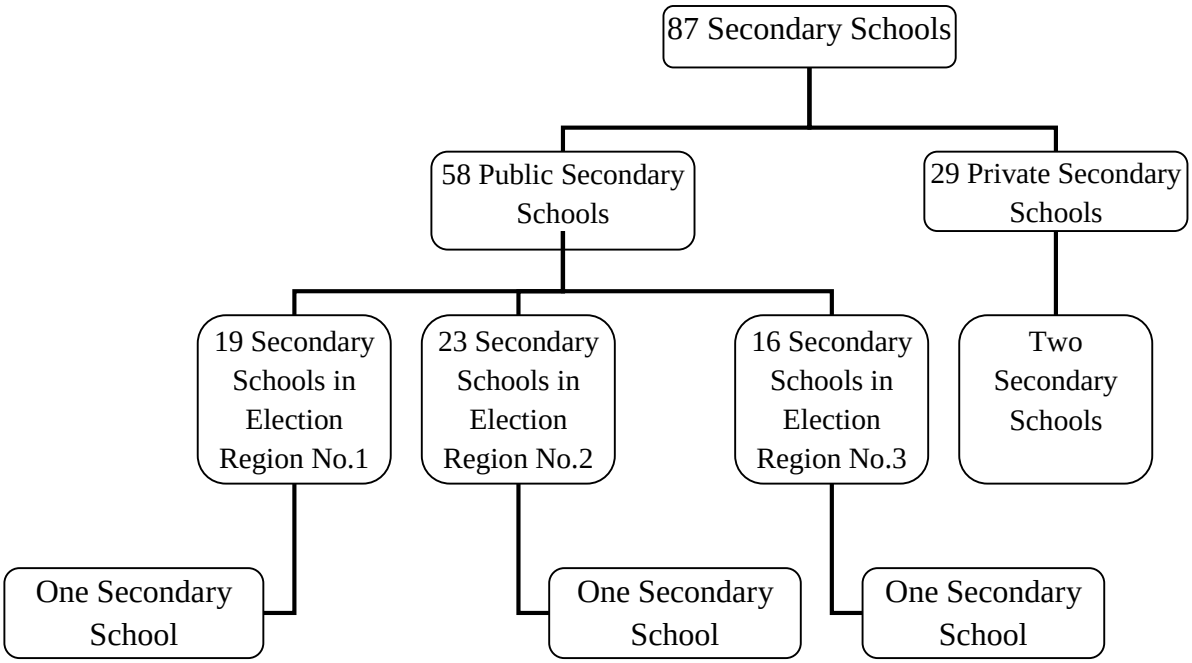
This study is designed as survey type authenticated by qualitative phenomena. Survey research design is probably best adapted to obtaining personal and social facts, believes and attitude.

3.1 Population of the study

The population of this study was all the secondary level students of Tanahun district studying in the academic year 2067 B.S.

3.2 Sample of the study

The list of secondary school was prepared from the database maintained by district education office Tanahun. The list of secondary school was grouped into public school and private school. There were 87 secondary schools among them 58 were public and 29 were private. From the list of private schools two private schools were selected by random sampling method. But three public schools were selected by the method of stratified random sampling method. For this, three strata were made according as election region of Tanahun district. There were 19 secondary schools in election region no.1, 23 secondary in election no.2 and 16 secondary schools in election no.3. One school from each region was selected by random sampling method. The selected schools were Ram Shah Higher Secondary School Aanbu Khaireni from election region no.1, Satyawati Higher Secondary School Damauli from election region no.2, Khaireni Higher Secondary School, Khairenitar from election region no.3. Similarly two private schools were Vyas Divy Jyoti Secondary Boarding School Damauli and Barahi Higher Secondary School. The selected schools are shown below:

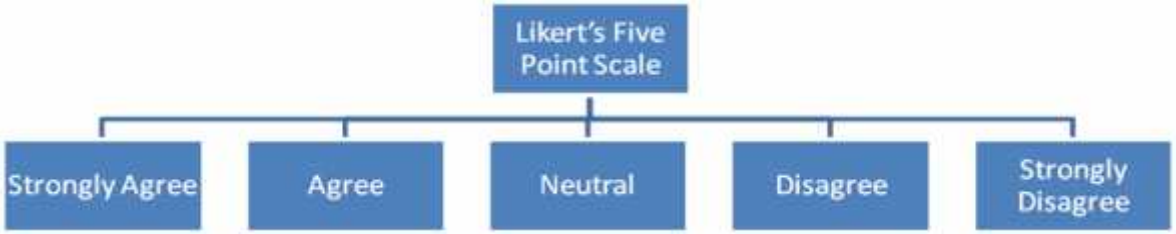


The researcher visited the selected schools. Then took permission from headmaster and requested mathematics subject teacher to help in selection of students and administering the opinionnaire. There were 181 boys and 230 girls in Ram Shah Higher Secondary School Aanbu Khaireni. Similarly there were 183 boys and 212 girls in Satyawati Higher Secondary School, Damauli. There were 63 boys and 89 girls in Vyas Divy Jyoti Secondary Boarding School Damauli. There were 61 boys and 76 girls in Barahi Higher Secondary School. The total number of selected boys was 108 and that of girls were 137. In each school, boys and girls were divided in four strata according to professions of their parents (farmer, businessman, jobholder and other occupation). Each student of each school was selected by lottery method. The selected number of students according to their parents occupation is shown in appendix A.

3.3 Research Instrument

In the decade of 1970's, Elizabeth Fennema and Julia A. Sherman constructed the attitude scale to study students' attitude towards mathematics. There are four scales namely confidence scale, usefulness scale, scales that measures mathematics as male domain, teacher perception scale. Each of above scale consists of twelve items. Six of them measures positive attitude and six of them measure negative attitude. Fennema and Sherman (1977) using this scale, found several gender differences in secondary level students' attitude. The scale could give a teacher and individual student useful information

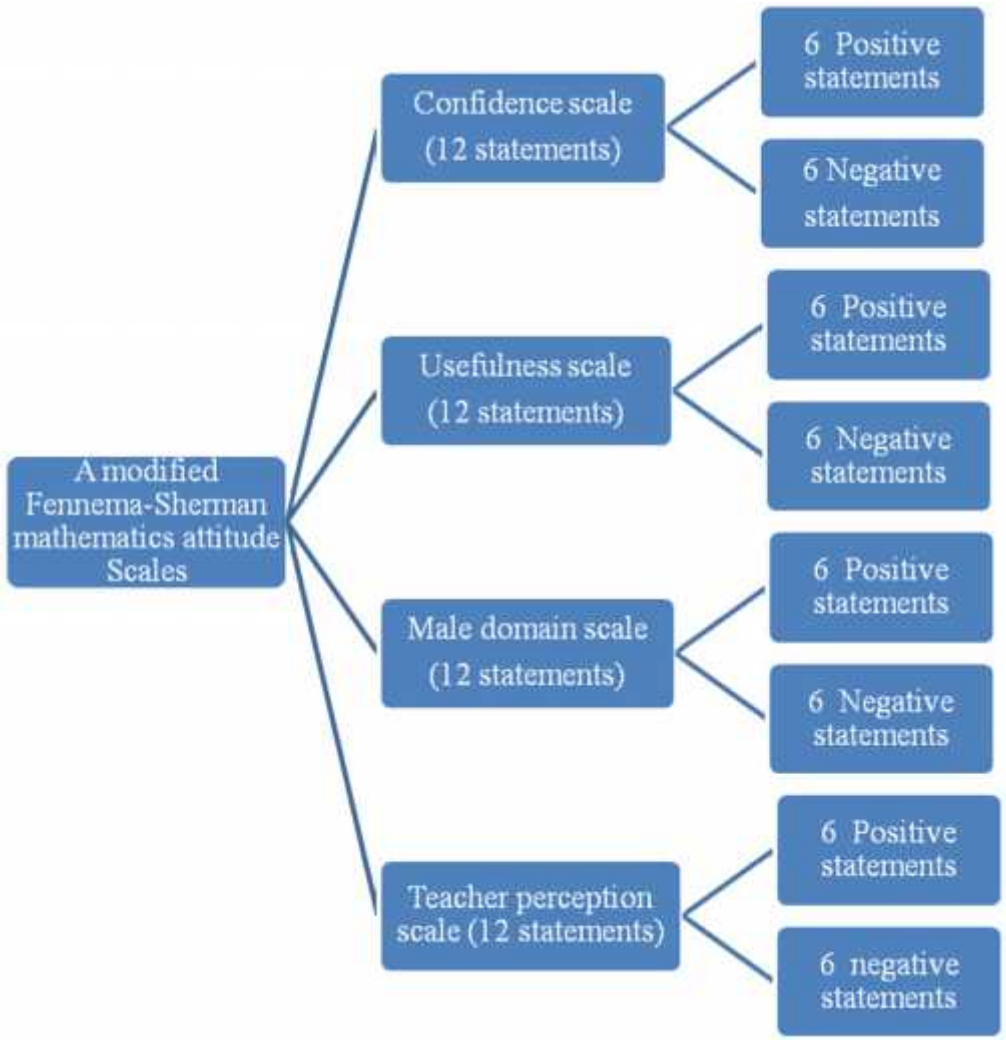
about the particular student's attitudes towards mathematics. We can also adapt the scale to examine students' attitudes towards mathematics as well as other subjects. Using this scale it was found how secondary level students' feel about mathematics according to their parents' occupation. A list of questions entitled, "A modified Fennema-Sherman mathematics attitude scale" was applied as an instrument for collection of data. And the Likert's five point scale was used for scoring the students' attitude.



The collection of data for the study was done with the help of a list of opinionnaire entitled "A modified Fennema-Sherman mathematics attitude scale." The scale consists of four sub-scales. Each of these four sub scales consists of twelve statements. Six of them measures positive attitudes towards mathematics and six of them measures negative attitude. Thus the scale contains forty eight statements. For each item, five options strongly agree, agree, neutral, disagree and strongly disagree were used. The forty eight statements are presented below by showing positive or negative measure. The opinionnaire was translated in to Nepali with the help of subject expert. The final opinionnaire is presented in appendix B.

Confidence Scale:

S.N.	Statements	Attitude
1	I am sure that I can learn maths.	positive
4	I don't think I could do advanced maths.	negative
8	Maths is hard for me.	negative
12	I am sure of myself when I do maths.	positive
19	I'm not the type to do well in maths.	negative
23	Maths has been my worst subject.	negative
25	I think I could handle more difficult maths.	positive
32	Most subjects I can handle OK, but I just can't do a good job with maths.	negative
33	I can get good grades in maths.	Positive
37	I know I can do well in maths.	Positive
41	I am sure I could do advanced work in maths.	Positive
43	I'm no good in maths.	negative



Usefulness Scale:

S.N.	Statements	Attitude
3	Knowing mathematics will help me earn a living.	Positive
5	Maths will not be important to me in my life's work.	negative
10	I'll need mathematics for my future work.	Positive
13	I don't expect to use much maths when I get out of school.	negative
17	Maths is a worthwhile, necessary subject.	Positive
21	Taking maths is a waste of time.	negative
27	I will use mathematics in many ways as an adult.	Positive
29	I see mathematics as something I won't use very often when I get out of high school.	negative
34	I'll need a good understanding of maths for my future work.	Positive
39	Doing well in maths is not important for my future.	negative
42	Maths is not important for my life.	negative
44	I study maths because I know how useful it is.	Positive

Male Domain Scale:

S.N.	Statements	Attitude
6	Males are not naturally better than females in maths.	Positive
9	It's hard to believe a female could be a genius in mathematics.	negative
11	When a woman has to solve a maths problem, she should ask a man for help.	negative
15	Women can do just as well as men in maths.	Positive
18	I would have more faith in the answer for a maths problem solved by a man than a woman.	negative
24	Women who enjoy studying maths are a little strange.	negative
28	Females are as good as males in geometry.	Positive
31	Women certainly are smart enough to do well in maths.	Positive
36	I would expect a woman mathematician to be a forceful type of person.	negative
38	Studying maths is just as good for women as for men.	Positive
46	I would trust a female just as much as I would trust a male to solve important maths problems.	Positive
48	I feel boring in the class of female mathematics teacher.	negative

Teacher Perception Scale:

S.N.	Statements	Attitude
2	My teachers have been interested in my progress in math.	Positive
7	Getting a teacher to take me seriously in math is a problem.	negative
14	I would talk to my math teachers about a career that uses math.	Positive
16	It's hard to get math teachers to respect me.	negative
20	My teachers have encouraged me to study more maths.	Positive
22	I have a hard time getting teachers to talk seriously with me about math.	negative
26	My teachers think advanced math will be a waste of time for me.	negative
30	I feel that math teachers ignore me when I try to talk about something serious.	negative
35	My teachers want me to take the entire math I can.	Positive
40	My teachers would not take me seriously if I told them I was interested in a career in science and mathematics.	negative
45	Math teachers have made me feel I have the ability to go on in mathematics.	Positive
47	My teachers think I'm the kind of person who could do well in math.	Positive

3.4 Data Collection Procedures

The investigator visited the selected schools and met the principal and mathematics subject teacher of the respective schools. Researcher took permission to administrate the scale on students during their mathematics period with the help of math subject teacher. The researcher entered in each section of class 9 and 10. The students were informed about the research work and were requested to express their view or feelings. The researcher asked students to raise their hand whose parents were farmer, businessman, jobholder and other occupation respectively. According to number of students in each occupation the sample number was determined. The researcher listed the roll no of each grouped boy students and girl students. From the list, the determined numbers of students were selected by lottery method. The researcher talked informally with the selected students about the opinionnaires. The opinionnaires were distributed to the selected students to express their view. After completion, the opinionnaires were collected. Thus the scales were administrated in sampled students of grade nine and ten during their regular mathematics period in the presence of researcher and their mathematics teacher. By this process boys and girls were selected from each group (farmer, businessman, jobholder and other occupation).The data collected number of students from different school according to their parents' occupation is shown in appendix A.

3.4 Scoring Procedure

On the basis of Likert's five points scale the collected data was scored. For each positive statement five point was given for strongly agree, four point for agree, three point for neutral, two point for disagree and one point for strongly disagree. Similarly, the scoring procedure for each negative statement was reversed.

3.5 Data Analysis Process

All information was collected from primary sources. The collected data was scored with Likert's five point scale. Each positive statement was scored 5,4,3,2 and 1 according as strongly agree, agree, neutral, disagree and strongly disagree. Each negative statement was scored 1, 2, 3, 4 and 5 according as strongly agree, agree, neutral, disagree and strongly disagree. The score were tabulated according to their parent's occupation and gender wise. The tabulated score according to the parent's occupation is shown in appendix C. The

score of each statement is converted in to percentage which is shown in the table no.1. The higher score determines the attitude of students towards mathematics. The average score of students of each occupational parent was calculated. The average score of different students according to their parent's occupation was compared. Similarly, the attitude of boys and girls were tabulated which is shown in table no. 2. The gender wise score was converted into percentage. The gender wise average score was calculated. In this way the average score and percentage score were used to determine the attitude of students of different occupational parents towards mathematics.

ANOVA table was used to compare attitude score of boy students of different occupational parents towards mathematics. The score obtained by boy students of different occupational parents is shown in appendix D. Similarly, ANOVA table was used to compare attitude score of girl students of different occupational parents towards mathematics. The score obtained by girl students of different occupational parents are shown in appendix E. Researcher used t-test to compare gender wise attitude mean score at 0.05 level of significance.

Following formulae were applied to analyze the data:

1. Score percentage of each statement = $\frac{\text{score obtained in each statement}}{\text{total possible score of the statement}} \times 100\%$

2. Mean score of the boy students = $\frac{\text{total score obtained by boy students}}{\text{total number of boys}}$

3. Mean score of the girl students = $\frac{\text{total score obtained by girl students}}{\text{total number of girls}}$

4. t-value = $$\frac{\overline{X_1} - \overline{X_2}}{S_p\sqrt{\frac{1}{N_1}+\frac{1}{N_2}}}$$

d.f. $= N_1 + N_2 - 2$

Where,

N_1= Number of boy students

N_2 = Number of girl students.

$S_p^2 = \frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_1 + N_2 - 2}$

$\overline{X_1}$ = Mean of boy students

$\overline{X_2}$ = Mean of girl students

S_1^2 = Variance of boy students

S_2^2 = Variance of girl students

CHAPTER IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of attitude of students of different occupational parents. It includes descriptive analysis of attitude of students. As already discussed and defined about the occupational categorize the students whose parent follow the occupation of farming only i.e. whose parents manage a farm of any kind was put in farmer occupational group. The students whose parents was working in an institution investing his own expense was put in business occupational group. The students whose parents were working in private or government sector in monthly salary basis were put in jobholder occupational group. The students whose parents were not farmer, businessman, and jobholder were put in other occupational group.

The data collection from the students of different school was analyzed and interpreted to find out the attitude of students towards mathematics. It has been already mentioned that there were used a set of opinionnaire with five alternatives strongly agree, agree, neutral, disagree and strongly disagree. The rating scale for each positive statement was 5, 4, 3, 2 and 1 respectively. The rating scale for each negative statement was 1, 2, 3, 4 and 5 respectively. Total score of each statement was calculated. The data was analyzed using percentage, mean, standard deviation, ANOVA and t-test.

The collected data has been analyzed under the following headlines, which correspond to the objectives of the study.

1. To determine the attitude of secondary level students of different occupational parents towards mathematics.

2. To find the gender wise attitude of students of different occupational parents towards mathematics.

3. To compare gender wise attitudes of students of different occupational parents towards mathematics.

4.1 Attitude of secondary level students of different occupational parents towards mathematics

Two hundred forty five students were selected for the study. Fifty students of farmers, thirty six students of businessman, sixty six students of jobholder and ninety three students of other occupation were selected for data collection. The score of each statement was calculated according to the occupation of parents of the sample students. The average score of students of farmer, businessman, jobholder and other occupation are 176.56, 189.72, 191.87 and 191.21 respectively. The score is shown in appendix C. Following table – 1(i) represents the attitude score in percentage according to statements, of all students of different occupational parents taken under study with forty eight statements.

Table 1(i)

Attitude score in percentage of each statement of students of different occupational parents towards mathematics

S. N.	Statements	Farmer	Businessman	Job holder	Other occupation
1	I am sure that I can learn math.	84.4	87.22	92.12	87.31
2	My teachers have been interested in my progress in math.	78	78.89	79.39	80.43
3	Knowing mathematics will help me earn a living.	82.4	86.67	90	86.88
4	I don't think I could do advanced math.	73.2	73.89	80.61	74.62
5	Math will not be important to me in my life's work.	80.8	90	83.94	88.6
6	Males are not naturally better than females in math.	39.2	38.89	42.42	43.23
7	Getting a teacher to take me seriously in math is a problem.	60	67.22	70	71.18
8	Math is hard for me.	60	62.78	80.61	67.74

9	It's hard to believe a female could be a genius in mathematics.	65.2	80.56	73.03	76.99
10	I'll need mathematics for my future work.	84.4	91.11	90.91	90.32
11	When a woman has to solve a math problem, she should ask a man for help.	56.4	71.11	73.94	70.54
12	I am sure of myself when I do math.	74.4	75	79.39	80
13	I don't expect to use much math when I get out of school.	67.6	72.78	71.52	71.4
14	I would talk to my math teachers about a career that uses math.	69.2	65.56	75.76	73.33
15	Women can do just as well as men in math.	88	97.78	93.33	94.19
16	It's hard to get math teachers to respect me.	62	58.33	73.33	63.01
17	Math is a worthwhile, necessary subject.	88.4	96.11	92.73	94.62
18	I would have more faith in the answer for a math problem solved by a man than a woman.	70.4	80.56	77.27	76.77
19	I'm not the type to do well in math.	75.2	76.11	84.85	80.86
20	My teachers have encouraged me to study more math.	81.6	88.33	81.82	87.31
21	Taking math is a waste of time.	85.2	88.33	93.33	93.76
22	I have a hard time getting teachers to talk seriously with me about math.	59.2	61.67	65.15	65.16
23	Math has been my worst subject.	80.8	86.67	89.7	87.74

24	Women who enjoy studying math are a little strange.	62.8	66.11	68.48	71.18
25	I think I could handle more difficult math.	69.6	65	77.88	73.76
26	My teachers think advanced math will be a waste of time for me.	76.8	88.89	84.55	84.3
27	I will use mathematics in many ways as an adult.	67.2	76.11	75.15	73.55
28	Females are as good as males in geometry.	81.2	83.33	82.42	85.16
29	I see mathematics as something I won't use very often when I get out of high school.	71.2	75	76.97	77.85
30	I feel that math teachers ignore me when I try to talk about something serious.	66	77.78	71.52	76.34
31	Women certainly are smart enough to do well in math.	82.4	90	85.15	86.02
32	Most subjects I can handle OK, but I just can't do a good job with math.	62	65	74.85	66.02
33	I can get good grades in math.	72.8	72.22	79.7	79.35
34	I'll need a good understanding of math for my future work.	83.6	90.56	85.76	91.4
35	My teachers want me to take all the math I can.	84	89.44	80.91	86.88
36	I would expect a woman mathematician to be a forceful type of person.	59.2	63.33	61.52	64.73
37	I know I can do well in math.	78.8	85	86.67	85.38
38	Studying math is just as good for women as for men.	90.4	96.67	88.79	95.7

39	Doing well in math is not important for my future.	81.6	92.78	91.82	92.04
40	My teachers would not take me seriously if I told them I was interested in a career in science and mathematics.	68	82.78	78.18	81.51
41	I am sure I could do advanced work in math.	71.2	68.33	72.73	69.68
42	Math is not important for my life.	84	90.56	88.79	73.98
43	I'm no good in math.	73.2	70.56	78.79	78.06
44	I study math because I know how useful it is.	83.6	87.78	90	92.26
45	Math teachers have made me feel I have the ability to go on in mathematics.	64.4	83.33	71.21	78.49
46	I would trust a female just as much as I would trust a male to solve important math problems.	84	94.44	87.88	91.4
47	My teachers think I'm the kind of person who could do well in math.	67.6	75	73.03	72.9
48	I feel boring in the class of female mathematics teacher.	79.6	88.89	89.7	90.32

The result of table-1(i) shows that students of different occupational parents have positive attitude towards mathematics. This shows that the students of jobholder have highest average and students of farmer have least average attitude score. The statement " Studying math is just as good for women as for men." is highest scored statement of students of farmer and other occupation and the statement " Women can do just as well as men in math." is highest scored statement of students of businessman and jobholder. The statement 'Males are not naturally better than females in math." is least scored statement of all students of different occupational parents. The three statements with highest scored and three statements with least scored are as shown below:

Table 1 (ii)

Comparison of Attitude score of statements of administered to students of different occupational parents towards mathematics (In percentage)

	Farmer	Businessman	Jobholder	Other occupation
Highest scored Statements	- Studying math is just as good for women as for men. (90.4%) - Math is a worthwhile, necessary subject.(88.4%) - Women can do just as well as men in math. (88%)	-Women can do just as well as men in math. (97.78%) - Studying math is just as good for women as for men. (96.67%) - Math is a worthwhile, necessary subject. (96.11%)	- Women can do just as well as men in math. (93.33%) - Taking math is a waste of time. (93.33%) - Math is a worthwhile, necessary subject. (92.73%)	- Studying math is just as good for women as for men. (95.7%) - Math is a worthwhile, necessary subject. (94.62%) - Women can do just as well as men in math. (94.19%)
Least scored Statements	- Males are not naturally better than females in math.39.2% - When a woman has to solve a math problem, she should ask a man for help.56.4% - I would expect a woman mathematician to be a forceful type of person.(59.2%)	- Males are not naturally better than females in math. (38.89%) - It's hard to get math teachers to respect me. (58.33%) - I have a hard time getting teachers to talk seriously with me about math. (61.67%)	- Males are not naturally better than females in math. (42.42%) - I would expect a woman mathematician to be a forceful type of person. (61.52%) - I have a hard time getting teachers to talk seriously with me about math. (65.15%)	- Males are not naturally better than females in math. (39.63%) - I would expect a woman mathematician to be a forceful type of person. (62.8%) - Doing well in math is not important for my future. (63.55%)

4.2 Gender wise attitude score of students of different occupational parents towards mathematics

One hundred eight boys and one hundred thirty seven girls were selected for the study. Following table-2 represents the gender wise attitude score of students of different occupational parents taken under study with forty eight statements. The result of table - 2 shows that average score percentage of boys 184.33 and that of girls is 184.06. This shows there is no gender wise different attitude towards mathematics.

The statement “Studying math is just as good for women as for men.” has highest score in percentage (94.95%) of boy student and the statement “Women can do just as well as men in math.” has highest score in percentage (95.62%) of girl students. The statement “Males are not naturally better than females in math.” is least scored statement of both boy and girl students.

Table 2

Gender wise attitude score of statements of administered to students of different occupational parents towards mathematics

		Boys		Girls	
S. N.	Statements	Total	Percent	Total	Percent
1	I am sure that I can learn math.	506	94.58	572	83.5
2	My teachers have been interested in my progress in math.	451	84.3	524	76.5
3	Knowing mathematics will help me earn a living.	475	88.79	589	85.99
4	I don't think I could do advanced math.	389	72.71	490	71.53
5	Math will not be important to me in my life's work.	361	67.48	572	83.5
6	Males are not naturally better than females in math.	212	39.63	310	45.26
7	Getting a teacher to take me seriously in math is a problem.	383	71.59	453	66.13

8	Math is hard for me.	435	81.31	426	62.19
9	It's hard to believe a female could be a genius in mathematics.	438	81.87	506	73.87
10	I'll need mathematics for my future work.	493	92.15	604	88.18
11	When a woman has to solve a math problem, she should ask a man for help.	340	63.55	483	70.51
12	I am sure of myself when I do math.	432	80.75	522	76.2
13	I don't expect to use much math when I get out of school.	413	77.2	455	66.42
14	I would talk to my math teachers about a career that uses math.	415	77.57	473	69.05
15	Women can do just as well as men in math.	490	91.59	655	95.62
16	It's hard to get math teachers to respect me.	371	69.35	427	62.34
17	Math is a worthwhile, necessary subject.	507	94.77	633	92.41
18	I would have more faith in the answer for a math problem solved by a man than a woman.	353	65.98	547	79.85
19	I'm not the type to do well in math.	382	71.4	524	76.5
20	My teachers have encouraged me to study more math.	460	85.98	578	84.38
21	Taking math is a waste of time.	360	67.29	607	88.61
22	I have a hard time getting teachers to talk seriously with me about math.	360	67.29	427	62.34

23	Math has been my worst subject.	396	74.02	587	85.69
24	Women who enjoy studying math are a little strange.	361	67.48	460	67.15
25	I think I could handle more difficult math.	426	79.63	471	68.76
26	My teachers think advanced math will be a waste of time for me.	388	72.52	542	79.12
27	I will use mathematics in many ways as an adult.	416	77.76	478	69.78
28	Females are as good as males in geometry.	455	85.05	567	82.77
29	I see mathematics as something I won't use very often when I get out of high school.	412	77.01	508	74.16
30	I feel that math teachers ignore me when I try to talk about something serious.	385	71.96	509	74.31
31	Women certainly are smart enough to do well in math.	449	83.93	599	87.45
32	Most subjects I can handle OK, but I just can't do a good job with math.	411	76.82	411	60
33	I can get good grades in math.	459	85.79	486	70.95
34	I'll need a good understanding of math for my future work.	487	91.03	592	86.42
35	My teachers want me to take all the math I can.	468	87.48	574	83.8
36	I would expect a woman mathematician to be a forceful type of person.	336	62.8	425	62.04
37	I know I can do well in math.	472	88.22	560	81.75

38	Studying math is just as good for women as for men.	508	94.95	632	92.26
39	Doing well in math is not important for my future.	340	63.55	610	89.05
40	My teachers would not take me seriously if I told them I was interested in a career in science and mathematics.	363	67.85	533	77.81
41	I am sure I could do advanced work in math.	417	77.94	449	65.55
42	Math is not important for my life.	362	67.66	575	83.94
43	I'm no good in math.	390	72.9	496	72.41
44	I study math because I know how useful it is.	496	92.71	599	87.45
45	Math teachers have made me feel I have the ability to go on in mathematics.	425	79.44	488	71.24
46	I would trust a female just as much as I would trust a male to solve important math problems.	483	90.28	611	89.2
47	My teachers think I'm the kind of person who could do well in math.	397	74.21	487	71.09
48	I feel boring in the class of female mathematics teacher.	380	71.03	591	86.28
	Total	19908		25217	
	Gender wise Average score	184.33		184.06	

4.3 Gender wise comparison of attitude of students towards mathematics

The third objective of the study was to compare gender wise attitude of students towards mathematics. The attitude score of boy students according to their parents' occupation and four sub-scales was tabulated. The tabulated score is shown in appendix D. The mean score of boy students of different occupational parents was compared by following ANOVA table–3(i).

4.3.1 Comparison of attitude score of boy students of different occupational parents towards mathematics

The observation of following ANNOVA table -3(i) shows that the calculated f-value is 0.0023. But the tabulated value is 3.49at 0.05 level of significant with 3, 12 degree of freedom. Therefore the attitude score of boy students of different occupational parents towards mathematics have no significant different. So null hypothesis is accepted, alternate hypothesis is rejected i.e. the attitude score of boy students of different occupational parents have similar attitude towards mathematics. The tabulated score is shown in appendix D. The ANNOVA table is shown below:

Table 3(i)

Comparison of attitude score of boy students of different occupational parents towards mathematics.

Sources of Variation	Sum of squares	d.f.	Mean square	f-value	Critical region
Between groups	2549538.5	3	849846.17	0.0023	F > 3.49
Within groups	4456809165	12	371400764		
Total	4459358703	15			

4.3.2 Comparison of attitude score of girl students of different occupational parents towards mathematics

The attitude score of girl students according to their parents' occupation and four sub-scales was tabulated. The tabulated score is shown in appendix E. The mean score of girl students of different occupational parents was compared by following ANOVA table – 3 (ii). The ANNOVA table is shown below:

Table 3(ii)

Comparison of attitude score of girl students of different occupational parents towards mathematics

Sources of Variation	Sum of squares	D.F.	Mean square	f-value	Critical region
Between groups	1738168.25	3	579389.42	0.055	F > 3.49
Within groups	126345488	12	10528791		
Total	128083656	15			

The observation of following ANNOVA table -3 (ii) shows that the calculated f-value is 0.055. But the tabulated value is 3.49 at 0.05 level of significant with 3, 12 degree of freedom. Therefore the attitude score of girl students of different occupational parents towards mathematics have no significant different. So null hypothesis is accepted, alternate hypothesis is rejected i.e. the attitude score of girl students of different occupational parents have similar attitude towards mathematics.

4.3.3 Comparison of attitude score of boy and girl students towards mathematics.

Here, table – 3(iii) presents the average scores of boys and girls. The mean score of one hundred eight students was 184.33 and that of one hundred thirty seven is 184.07. The standard deviation of boy students and girl students were 17.18 and 14.86 respectively. The calculated t-value was 2.1. This t-value is greater than the tabulated value 1.96 at 0.05 level of significance.

Table 3(iii)

Comparison of attitude score of boy and girl students towards mathematics.

Group Compared	N	Mean	D.F.	S.D.	t-values	Critical Region
Boys	108	184.33	243	17.18	2.1	T < - 1.96 T > 1.96
Girls	137	184.07		14.86		

N = Sample size, S.D.= Standard Deviation, D.F. = Degree of Freedom

From above table-3(iii) the calculated t-value lies in critical region. Therefore null hypothesis was rejected and alternate hypothesis was accepted. The mean attitude score of boy students were not significantly equal to the mean attitude score of girl students at 0.05 level of significance.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The investigator has studied the attitude of students of different occupational parents. The study was survey type. The population of the study consisted of all the students of secondary level of Tanahun district studying in 2067 B.S. All the secondary schools were stratified into four strata: Private schools, Schools lying in election region No. 1, 2 and 3. Two private schools and three public schools were selected by stratified random sampling method. Each student from each school was selected according to their parent's occupation by lottery method. Boy and girl students of each school were grouped according to their parents' occupation from which they were selected by lottery method.

For the achievement of the objectives of chapter I the researcher collected a set of opinionnaire prepared by Fennema – Sherman which consist of forty eight statements consisting four domains: personal confidence about mathematics, usefulness of mathematics, mathematics is perceived as male domain, perception of teacher's attitude. In each domain six were positive and six were negative attitude. Likert's five point scale was adopted with the value 5, 4, 3, 2 and 1 assigned for strongly agree, agree, neutral, disagree and strongly disagree respectively in each positive statement and 1, 2, 3, 4 and 5 for negative statement.

To obtain the objectives of the study following statistical tool have been applied:

1. Mean and percentage was applied to determine the attitude of boys, girls and all students towards mathematics.

2. ANNOVA table was used to analyze the mean score attitude score of the boy students of different occupational parents.

3. T-test was used to compare the attitude of boys and girls towards mathematics.

5.2 Findings

Statistical analysis of the collected data adopted the following major findings of the study:

1. The attitude score of students of farmer, businessman, jobholder and other occupation were 176.56, 189.72, 191.87 and 191.21 respectively.

2. The statement "studying mathematics is as good for women as men" had highest attitude score percentage of students of other occupational parents.

3. The statement "men are not naturally better than females in math" had least attitude score percentage.

4. The mean attitude score of all boy students and girl students were 184.33 and 184.06 respectively.

5. F-value of boy students of different occupational parents was 0.0023, which is less than the tabulated f-value.

6. F-value of girl students of different occupational parents was 0.055, which is less than the tabulated value.

7. T-value of boys and girls was 2.1, which lies in critical region.

5.3 Conclusions

This study found that mathematical attitude of students of farmer, businessman, jobholder and other occupational parents had no significant different. Although the jobholders' students' mean attitude score is to found highest and that of students of farmer is found to be least. On the basis of findings some very significant conclusions can be drawn about the attitude of secondary level students towards mathematics. The conclusions are as follows:

i. The secondary level students of different occupational parents had positive attitude towards mathematics.

ii. There was no gender wise difference in attitude between boys and girls towards mathematics.

iii. The occupation of parent does not affect the attitude of their students.

iv. The gender does not affect the attitude of students towards mathematics. Female are also capable to study mathematics as well as male.

5.4 Recommendations

Due to the delimitations of this study, the result may not be generalized to all area and all levels. On the basis of these findings, the researcher would like to suggest some suggestions:

1. This type of survey should be conducted to region wise, national wise to generalize the attitude of students towards mathematics.
2. This study was conducted to find out the students attitude towards mathematics, further such studies can be conducted on parents and teachers attitude towards mathematics.
3. It should be studied the relationship of attitude of teacher and students towards mathematics.
4. This study examined only the students' attitudes according to the opinionnaire developed by Fennema and Sherman but also using other tools.
5. This study is limited only in the four occupations; it can be studied on other different occupation.
6. This study can be conducted in different community also.

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Appendix A

List of Selected Schools Selected Number of Students

		Boys					Girls				
S.N.	Name of Schools	F	B	J	O	**Tot**	F	B	J	O	**Tot**
1	Ramshah Higher secondary School	4	3	7	11	**25**	8	4	8	11	**31**
2	Satyawati Higher Secondary School	4	3	7	12	**26**	7	4	8	10	**29**
3	Khaireni Higher Secondary School	4	3	7	10	**24**	7	3	8	12	**30**
4	Barahi Higher Secondary School	4	4	6	3	**17**	4	4	5	11	**24**
5	Vyas Divy Jyoti Secondary School	4	4	5	3	**16**	4	4	5	10	**23**
	Total	**20**	**17**	**32**	**39**	**108**	**30**	**19**	**34**	**54**	**137**

Notes: F = Number of students of Farmers

B = Number of students of Businessman

J = Number of students of Jobholder

O = Number of students of other occupation

Appendix – B

(A Modified Fennema-Sherman Mathematics Attitude Scale)

प्यारा विद्यार्थी भाई वहिनीहरु, मैले Attitude Of Students of Different Occupational Parents' Towards Mathematics भन्ने शीर्षकमा एउटा लघु अनुसन्धान कार्य गर्न लागेको छु । यसका लागि यहाँ ४८ ओटा कथनहरु छन् । उक्त कथनहरुको ठीक वा वेठीक उत्तर हुँदैनन् । त्यो त तिमीहरुको धारणा र अनुभवमा आधारित हुन्छ । प्रत्येक कथनको ५ ओटा सम्भाव्य विकल्पहरु : पूर्ण सहमत, सहमत, अनिश्चित, असहमत, पूर्ण असहमत निर्धारण गरिएका छन् । त्यसैले कथनहरु सावधानीपूर्वक अध्ययन गरी प्रत्येक कथन पछिको ५ ओटा कोठाहरु मध्ये पूर्ण सहमत भए पहिलो कोठामा, सहमत भए दोस्रो कोठामा, अनिश्चित भए तेस्रो कोठामा, असहमत भए चौथो कोठामा र पूर्ण असहमत भए पाँचौ कोठामा (√) चिन्ह लगाउनुहोस । नवुझेको ठाउँमा सोधकर्तालाई सोधेर मात्र ठीक चिन्ह लगाउनुहोस् ।

विद्यार्थी सम्वन्धी सामान्य जानकारी

१. विद्यालयको नाम र ठेगाना : .....

२. विद्यार्थीको नाम, थर :.....

३. कक्षा : ..... ४. सेक्सन ..... ५.रोल्नं..... ६. लिंग : केटा ( ) / केटी ( )

७. अभिभावकको नाम, थर : .....

८. अभिभावकको पेशा : ☐ Farmer ☐ Business ☐ Government jobholder ☐ Other occupation

S.N.	Statements	SA	A	N	D	SD
1.	I am sure that I can learn math. (म विश्वस्त छु कि म गणित पढ्न/सिक्न सक्छु)					
2.	My teachers have been interested in my progress in math. (मेरा गुरुहरु गणितमा मेरो प्रगति प्रति चासो लिनु भएको छ ।)					
3.	Knowing mathematics will help me earn a living. (गणित जान्नाले मेरो जीवनमा कमाई गर्न सहयोग गर्छ ।)					
4.	I don't think I could do advanced math. (मैले उच्च तहको गणित पढ्न सक्छु जस्तो लाग्दैन)					
5.	Math will not be important to me in my life's work. (मेरो जीवनमा मेरा लागि गणित महत्वपूर्ण हुने छैन ।)					
6.	Males are not naturally better than females in math. (पुरुषहरु स्वभावैले गणित पढ्न महिलाहरु भन्दा सिपालु हुदैनन्)					
7.	Getting a teacher to take me seriously in math is a problem. (मेरा लागि गणितलाई गम्भीर रुपमा लिने शिक्षक पाउन समस्याको विषय बनेको छ)					
8.	Math is hard for me. (मेरा लागि गणित कठिन विषय हो ।)					
9.	It's hard to believe a female could be a genius in mathematics. (महिलाहरु गणितमा पोख्त हुन सक्छन् भन्नेकुरामा विश्वास गर्न गाह्रो छ)					

10.	I'll need mathematics for my future work. (भविष्यमा काम गर्नका लागि मलाई गणित आवश्यक पर्छ)					
11.	When a woman has to solve a math problem, she should ask a man for help. (गणितका कुनै समस्या समाधान गर्न महिलाहरुले पुरुषको सहयोग लिनु पर्छ)					
12.	I am sure of myself when I do math. (गणितका समस्याहरु समाधान गर्न सक्छु भन्ने कुरामा म विश्वस्त छु)					
13.	I don't expect to use much math when I get out of school. (जब म विद्यालयबाट बाहिर निस्कन्छु गणितको खासै प्रयोग हुँदैन)					
14.	I would talk to my math teachers about a career that uses math. (गणितका उपयोगिताका बारेमा मेरा गणित शिक्षकसँग कुरा गर्ने गर्दछु)					
15.	Women can do just as well as men in math. (महिलाले पनि पुरुषले जत्तिकै गणित सिक्न सक्छन्)					
16.	It's hard to get math teachers to respect me. (गणित शिक्षकबाट सम्मान पाउनु मेरा लागि मुस्किलको विषय हो)					
17	Math is a worthwhile, necessary subject. (गणित अत्यावश्यक र महत्वपूर्ण विषय हो)					
18.	I would have more faith in the answer for a math problem solved by a man than a woman. (मलाई कुनै गणितीय समस्या महिलाले समाधान गरेको भन्दा पुरुषले गरेका समाधानहरुमा विश्वास लाग्दछ)					
19	I'm not the type to do well in math. (म गणितमा राम्रो गर्न सक्ने खालको मान्छे होइन ।)					
20.	My teachers have encouraged me to study more math. (मेरा गुरुले गणित सिक्न प्रात्साहन गर्नुहुन्छ ।)					
21	Taking math is a waste of time. (गणित विषय लिएर पढ्नु समयको बर्बादी मात्र हो ।)					
22.	I have a hard time getting teachers to talk seriously with me about math. (मेरा लागि गणितलाई गम्भीर रुपमा लिने शिक्षकको समय पाउनु मुस्किलको विषय हो)					
23	Math has been my worst subject. (मेरो लागि गणित सब भन्दा खत्तम विषय भएको छ)					
24.	Women who enjoy studying math are a little strange. (गणित अध्ययन गरेर आनन्द लिने महिलाहरुलाई अचम्म मान्नु पर्छ)					
25.	I think I could handle more difficult math.(मलाई लाग्छ कि मैले अझ कठिन गणित पनि अध्यायन गर्न सक्छु)					
26.	My teachers think advanced math will be a waste of time for me.(मेरा गणित शिक्षकले मान्नु हुन्छ कि मैले जटिल गणित पढ्नु समयको बर्बादी मात्र हो)					
27.	I will use mathematics in many ways as an adult. (वयस्कहरुले झै म पनि गणितलाई विभिन्न तरिकाले प्रयोग गर्नेछु)					
28.	Females are as good as males in geometry. (महिलाहरु पनि पुरुषहरु झै ज्यामितिमा पोख्त हुन्छन्)					
29.	I see mathematics as something I won't use very often when I get out of high school. (मैले देखिरहेको छु कि म माध्यमिक तह पार गरे पछि मैले गणितको खासै प्रयोग गर्दिन)					
30.	I feel that math teachers ignore me when I try to talk about something serious. (जब म गणित शिक्षकसँग ध्यानपूर्वक केहीकुराहरु गर्न खाज्छु मलाई बेवास्ता गरेको महसुस हुन्छ)					
31.	Women certainly are smart enough to do well in math. (महिलाहरु अवस्य नै गणितमा राम्रो गर्न सक्षम हुन्छन्)					

32.	Most subjects I can handle OK, but I just can't do a good job with math. (सबै जसो विषयमा मैले राम्रो गर्न सक्छु तर गणितमा मात्र मैले राम्रो गर्न सक्दिन)					
33.	I can get good grades in math. (मैले गणितमा राम्रो अंक प्राप्त गर्न सक्छु)					
34.	I'll need a good understanding of math for my future work. (मेरो भविश्यको कामको लागि गणितमा राम्रो बुझाइको आवश्यकता पर्छ)					
35.	My teachers want me to take all the math I can. (मेरा गुरु चाहनुहुन्छ की मैले जती सक्यो धेरै गणित पढोस्)					
36.	I would expect a woman mathematician to be a forceful type of person. (महिला गणितज्ञ वढी जवरजस्त खालका हुन्छन् भन्ने मलाई लाग्दथ्यो)					
37.	I know I can do well in math. (मलाई थाहा छ की मैले गणितमा राम्रो गर्न सक्छु)					
38.	Studying math is just as good for women as for men. (गणितको अध्ययन गर्नु महिलाहरुका लागि पनि पुरुषहरुलाई जत्तीकै राम्रो छ)					
39.	Doing well in math is not important for my future. (गणितमा राम्रो गर्नु मेरो भविष्य का लागि महत्वपूर्ण छैन)					
40.	My teachers would not take me seriously if I told them I was interested in a career in science and mathematics. (यदि मैले आफु गणित तथा विज्ञानमा चाख लागेको कुरा बताएँ भने पनि मेरा गुरुहरुले महत्वका साथ लिनु हुन्न)					
41.	I am sure I could do advanced work in math. (मैले गणितमा जटिल कार्य पनि गर्न सक्छु भन्ने कुरामा म ढुक्क छु)					
42.	Math is not important for my life. (मेरो जीवनका लागि गणित महत्वपूर्ण छैन)					
43.	I'm no good in math. (म गणित पढ्नमा राम्रो छुइन)					
44.	I study math because I know how useful it is. (म गणित पढ्छु किनकी यो कति उपयोगी छ भन्ने कुरा मलाई थाहा छ)					
45.	Math teachers have made me feel I have the ability to go on in mathematics. (गणित शिक्षकले म सँग गणित पढ्न सक्छु भन्ने अनुभुति दिनु भएको छ)					
46.	I would trust a female just as much as I would trust a male to solve important math problems.(गणितका महत्वपूर्ण समस्याहरु समाधान गर्नमा पुरुषलाई जत्तिकै महिलालाई पनि विश्वास लाग्छ)					
47.	My teachers think I'm the kind of person who could do well in math. (मेरा गुरुले ठान्नुहुन्छ कि म गणितमा राम्रो गर्न सक्ने व्यक्ती हुँ)					
48	I feel boring in the class of female mathematics teacher. (महिला गणित शिक्षकको पिरियडमा अल्छि लाग्छ।)					

Appendix C
Attitude score of students of different occupational parents

S. N.	Statements	Farmer	Business man	Jobholder	Other occu
1	I am sure that I can learn math.	211	157	304	406
2	My teachers have been interested in my progress in math.	195	142	262	374
3	Knowing mathematics will help me earn a living.	206	156	297	404
4	I don't think I could do advanced math.	183	133	266	347
5	Math will not be important to me in my life's work.	202	162	277	412
6	Males are not naturally better than females in math.	98	70	140	201
7	Getting a teacher to take me seriously in math is a problem.	150	121	231	331
8	Math is hard for me.	150	113	266	315
9	It's hard to believe a female could be a genius in mathematics.	163	145	241	358
10	I'll need mathematics for my future work.	211	164	300	420
11	When a woman has to solve a math problem, she should ask a man for help.	141	128	244	328
12	I am sure of myself when I do math.	186	135	262	372
13	I don't expect to use much math when I get out of school.	169	131	236	332
14	I would talk to my math teachers about a career that uses math.	173	118	250	341
15	Women can do just as well as men in math.	220	176	308	438
16	It's hard to get math teachers to respect me.	155	105	242	293
17	Math is a worthwhile, necessary subject.	221	173	306	440
18	I would have more faith in the answer for a math problem solved by a man than a woman.	176	145	255	357
19	I'm not the type to do well in math.	188	137	280	376
20	My teachers have encouraged me to study more math.	204	159	270	406
21	Taking math is a waste of time.	213	159	308	436
22	I have a hard time getting teachers to talk seriously with me about math.	148	111	215	303
23	Math has been my worst subject.	202	156	296	408
24	Women who enjoy studying math are a little strange.	157	119	226	331

25	I think I could handle more difficult math.	174	117	257	343
26	My teachers think advanced math will be a waste of time for me.	192	160	279	392
27	I will use mathematics in many ways as an adult.	168	137	248	342
28	Females are as good as males in geometry.	203	150	272	396
29	I see mathematics as something I won't use very often when I get out of high school.	178	135	254	362
30	I feel that math teachers ignore me when I try to talk about something serious.	165	140	236	355
31	Women certainly are smart enough to do well in math.	206	162	281	400
32	Most subjects I can handle OK, but I just can't do a good job with math.	155	117	247	307
33	I can get good grades in math.	182	130	263	369
34	I'll need a good understanding of math for my future work.	209	163	283	425
35	My teachers want me to take all the math I can.	210	161	267	404
36	I would expect a woman mathematician to be a forceful type of person.	148	114	203	301
37	I know I can do well in math.	197	153	286	397
38	Studying math is just as good for women as for men.	226	174	293	445
39	Doing well in math is not important for my future.	204	167	303	428
40	My teachers would not take me seriously if I told them I was interested in a career in science and mathematics.	170	149	258	379
41	I am sure I could do advanced work in math.	178	123	240	324
42	Math is not important for my life.	210	163	293	344
43	I'm no good in math.	183	127	260	363
44	I study math because I know how useful it is.	209	158	297	429
45	Math teachers have made me feel I have the ability to go on in mathematics.	161	150	235	365
46	I would trust a female just as much as I would trust a male to solve important math problems.	210	170	290	425
47	My teachers think I'm the kind of person who could do well in math.	169	135	241	339
48	I feel boring in the class of mathematics.	199	160	296	420
	Total	8828	6830	12664	17783
	Average	176.56	189.72	191.87	191.21

Appendix D

Comparison of attitude score of boy students of different occupational parents towards mathematics

	farmer	Business man	Job holder	Other Occupation	Grand Total
Confidence Scale	1023	786	1613	1925	
Usefulness Scale	1098	897	1641	1986	
Male Domain Scale	948	797	1400	1778	
Teacher Perception Scale	785	625	1204	1446	
Total	3854	3105	5858	7135	19952

Appendix E

Comparison of attitude score of girl students of different occupational parents towards mathematics

	farmer	businessman	jobholder	Other occupation	Grand Total
Confidence Scale	1166	812	1614	2402	
Usefulness Scale	1302	971	1761	2788	
Male Domain Scale	1199	916	1649	2622	
Teacher Perception Scale	887	704	1248	2028	
Total	4554	3403	6272	9840	24069

Appendix F

Statistical Formulae Used For Data Analysis

1. Score percentage of each statement = $\frac{\text{score obtained in each statement}}{\text{total possible score of the statement}} \times 100\%$

2. Mean score of the boy students = $\frac{\text{total score obtained by boy students}}{\text{total number of boys}}$

3. Mean score of the girl students = $\frac{\text{total score obtained by girl students}}{\text{total number of girls}}$

4. T-value = $\frac{\bar{X}_1 - \bar{X}_2}{S_p\sqrt{\frac{1}{N_1}+\frac{1}{N_2}}}$ d.f. = $N_1 + N_2 - 2$

Where N_1 = Number of boy students

N_2 = Number of girl students.

$S_p^2 = \frac{(N_1 - 1)S_1^2 + (N_2 - 1)S_2^2}{N_1 + N_2 - 2}$

$\bar{X}_1$ = Mean of boy students

$\bar{X}_2$ = Mean of girl students

S_1^2 = Variance of boy students

S_2^2 = Variance of girl students