

**ATTITUDEE OF SECONDARY LEVEL STUDENTS
AND TEACHERS TOWARDS ARITHMETIC**

A

THESIS

BY

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Entitled

"Attitudes of Secondary Level Students and Teachers towards Arithmetic" has been approved for a partial fulfillment of the requirement for the degree of Master's of Education.

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.....

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ABSTRACT

The study entitled Attitudes of Secondary Level Students and Mathematics Teachers towards Arithmetic was aimed at compare the attitudes of gender difference in students towards arithmetic. The vision of secondary level mathematics teachers and students towards arithmetic also viewed in this thesis. According to the objectives of the study, corresponding hypothesis were formulated.

The study adopted survey design. A set of statements i.e. questionnaire with 31 statements for teachers and 30 statements for students and open oral type interview schedule were the tool for collecting data. According to the theoretical framework the questionnaire were categorized into four categories as teaching methods/ behavior, positive attitude, negative attitude, application of arithmetic's. Open interview was constructed upon the five different points as achievement, persistence, engagement, relevance activities and feedback. The questionnaire forms were distributed to three hundred students of twenty sampled schools in which fifteen students were taken from each and other questionnaire form was also distributed to twenty mathematics teachers of sampled school. The open types interview was constructed by the interaction with two math teachers and five/ five boys and girls students. The data were collected, tabulated, ordered, compared, calculated and analyzed by using different techniques. Also chi-square test and t-test were performed at 0.05 levels. To analyze the attitude of secondary level mathematics teachers and students towards arithmetic and comparison of boys and girls student's attitudes, descriptive method was applied. From the analysis and interpretation of collected data, the following findings were drawn.

- There is positive attitude of students towards arithmetic.
- There is somewhere positive attitude of secondary math teachers towards arithmetic
- There is gender difference in the student's attitude towards arithmetic.
- There is similar attitude of students and teachers towards arithmetic.

This thesis studied about the attitude of secondary level students and teachers towards arithmetic, comparing the attitudes of students and teachers as well as boy students and girl students, of survey design involving questionnaire and interview schedule.

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LETTER OF RECOMMENDATION

LETTER OF CERTIFICATE

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Chapter-I

INTRODUCTION

Background of the Study

Mathematics as an expression of human mind, results from the discovering the formulation, the systematic development and the application of inductive and deductive thinking. Mathematics is an essential part of human life. It is originated along with the different human civilizations. The word 'mathematics' is derived from the mother language word "mathancian" which means to learn. Its basic elements are logic and intuition, analysis and construction, generality and individuality. It is discipline for historical civilization. It is continuously been developed and changed with the changing needs of contemporary society. Our life would be dark and lame without mathematics. Human beings are most curious and sensible creatures to which mathematics is necessary in every moment.

The critical emphasis of mathematics was on practical arithmetic and menstruation. At the early time mathematics is originated to count by different things like stones, pieces of sticks etc. for answers of many questions like how long ?, How big ?, How much ? Men entered on mathematics. Algebra was developed by simplify the arithmetical computation. Geometry for trigonometry and measurement was invented to find the position the sun, the stars and the planets. The early people used mathematics to count their number of family, number of cattle and so on. The continuous development of the mathematics from the early period till now basically depends upon the development of human civilization.

About mathematics Douglas and Robert states:

"Mathematics arose from the needs of organized societies of people, imagine of primitive tribe living by hunting and collecting the natural harvest of forest important to the tribe. This may be the number of animals in her or numbers of people in a hostile tribe. Also needed are measures of size, strength, distance and time however crudely formulated may be. A certain primitive awareness of similarities of shapes must be present in effort to duplicate arrowhead and implements. It is also important to have some means of describing location involving both distance and direction. Thus, even in a primitive society, certain intuitive concepts which later develop into mathematics are necessary. and field. Rudimentary forms of counting are needed to communicate numbers

Moreover, this primitive tribe need something of the virtually all the great branches of specialized mathematics."

In similar manner, Bell states:

"In all historic times all civilized people have striven towards mathematics. The prehistoric origins are as irrecoverable as those of language and art and even the civilized beginning can only be conjectured from the behaviors' of primitive people today. Whatever its source? Mathematics has come down to the present by the two main streams of number and form. The first carried along arithmetic and algebra, the second geometry. In the seventeenth century these two united forming the ever broadening river of mathematical analysis. "

Even also the following view of traverse et al. support the school curriculum as: "Ever since the school of ancient Greeks over 2000 years ago mathematics has been a key subject in the curriculum. The four liberal arts consisting of arithmetic, geometry, astronomy and music where basically mathematics studies. "

Before going to study about this topic the researcher analyzed about the condition of secondary level students towards mathematics in particular to arithmetic's Baitadi district. He had found that in secondary level students and teacher's attitude towards arithmetic is better to study.

The arithmetic knowledge is so beneficial for home environment. Hence, arithmetical knowledge is useful for every common people. Then the researcher convinced that this is recent problem of secondary level students and math teachers as well as contemporary society also. Because of those reasons the researcher selects this topic to study.

Statement of the Problem

The researcher convinced to study about this topic by the experiences of teaching as secondary level math teachers. On the basis of related experiences when then the researcher as students of secondary level the researcher declare the research topic. Also the researcher studies the result of mathematics subject of class IX. On the basis of this result large numbers of students were failed in mathematics rather than other subjects. Because of above reasons the researcher convinced to study about this topic.

The study is mainly concerned with the study of the secondary level students and teachers' attitude towards arithmetic at grade ix.

It was intended to the answer of the following research questions:

- What is the attitude of grade IX students towards arithmetic?

- What is the attitude of secondary level mathematics teacher towards arithmetic?
- Are their gender differences towards attitude in arithmetic?
- Are their differences between attitude of secondary math teachers and students towards arithmetic?

Significance of the Study

The findings of the students to understand and interpret the important quantitative aspects of learning were concerned to determine the secondary level students and teachers attitude towards arithmetic's. Arithmetic's also helps to compute the ideas of other field of mathematics.

The main significance of the study is given below:

- This study helps to improve teaching learning situation of arithmetic's because the study reveals the attitudes of the major aspects of education, i.e. students and teachers. This information may help in planning, the remedial educational strategies for them to correct the wrong impression about the study of arithmetic. Knowledge of the aspiration of the concerned person is enough to maintain positive impression in studying arithmetic.
- It helps to improve the arithmetic section of the secondary level curriculum. A curriculum is planned for students or learners. It should be related to the capability, interests and attitudes of the students. Therefore, attitudes of secondary level students have to be considered by the teachers, curriculum planners, educationists, while framing the curriculum.
- It also helps to obtain the goal of education. Both the level-wise and national objectives could be achieved when teaching learning situation turns to be favorable. There should be positive attitude towards the subjects which creates the motivational factor to learn mathematics.
- It also helpful for further research in the area of arithmetic's towards school subjects.

Objectives of the Study

The following were the major objectives of the study:

- To find out the attitudes of secondary level students towards arithmetic.
- To find out the attitudes of secondary level teachers towards arithmetic.
- To compare the attitudes of boys and girls students.
- To compare the attitudes of secondary level students and mathematics teachers.

Statement of the Hypothesis

Research Hypothesis

The following sets of hypothesis for the study were subjected to empirical verification.

- There is negative attitude of grade IX students towards arithmetic. There is negative attitude of secondary math teachers towards arithmetic.
- There is gender difference towards the attitudes of arithmetic.
- There is difference between the attitudes of secondary students and math teachers towards arithmetic.

Statistical Hypothesis

1. Null Hypothesis- $H_0: \mu_1 \neq \mu_2$

Alternative hypothesis- $H_0: \mu_1 = \mu_2$

Where μ_1 and μ_2 are corresponding parametric means of two hypothetical populations i.e. the mean attitude scores of boys and girls respectively.

2. Null hypothesis- $H_0: \mu_3 \neq \mu_4$

Alternative hypothesis- $H_0: \mu_3 = \mu_4$

Where μ_3 and μ_4 are corresponding parametric means of two hypothetical populations i.e. the mean attitude scores of students and teachers respectively.

Delimitations of the Study

The determination of the study describe about the area of given study.

- This study was limited on the public and private secondary schools of Baitadi districts.
- This study was limited to the classroom activity, teaching approach, content and textbook of arithmetic's.
- In this study only the co-educational schools were included.
- The variable such as academic qualification, age level, experience of teachers, and rank of the students for class etc. of the sample affecting the attitudes were not controlled.

Definitions of the Terms

Arithmetic

Arithmetic is the science of number and art of reaching the result by their use. In this chapter involving; Unitary Method, Percentage, Profit and Loss, Interest and Home Arithmetic.

Attitude

Attitude is a mental set or disposition, readiness to respond and psychological basis of attitude, their permanence, their learning nature and their evaluative character expressed into the mathematic classroom at grade IX.

Attitude Scale

It is an inquiry or scale used to obtain the measure of an attitude or belief of an individual towards some phenomenon. Fore e.g. positive and negative attitude.

Public School

School that are established and sponsored by the government of Nepal.

Private School

School that are established and sponsored by single person of groups of peoples but not by the government of Nepal.

Chapter-II

REVIEW OF RELATED LITERATURE

Review of related literature is an essential part of research for the researcher because literature helps and guide research to meet theoretical way for the study. Literature provides authentic and strong knowledge. Mainly the literatures are previous thesis, books and journals; different sources use to site literature. In this regard the following are the related literature in this study.

During the period (last six decades), there were many studies about the attitudes of teaching profession; studies on the attitudes of the students and teachers towards different level and classes. There are some different dissertation and published articles which related to the attitude towards students and teachers and achievements of students.

Empirical Literature

Haan (1961) states about "The influence of teacher on student's attitude towards mathematics." He expressed that the large numbers of teachers who dislike or fear mathematics has become a factor in children's attitudes, towards the subject. The effects of teacher's attitudes are widespread.

Like all other attitudes, dislike of mathematics is readily communicated to children either directly or unconsciously.

Awasthi (1979) was study to find out the attitudes of different groups of people, students, teachers, head masters, secondary school supervisor and member of District education committee, with the assumptions that they had negative attitudes towards the English languages. Six sets of three points Likert type questionnaires were adopted for the field study to be undertaken in Kathmandu district. The questionnaires were administered to the different selected samples. The data thus collected were tabulated and the statistical device of chi-square was applied to test the significance of the items. The findings were that all the groups had positive attitudes the subjects.

Pandit (1980) study about, "The attitudes of the secondary school students and their parents towards mathematics and other subjects of instruction" and focused that the students demonstrated positive attitudes mathematics as subject of study at school level. Furthermore, the mean measure of boy's attitudes towards mathematics as a school subject was greater than that of the girls.

Tiwari (1984) study about, "He student's attitudes towards mathematics." The attitude scale for the students developed by George Levine used to gather necessary data. A three point Likert type scale was used. The study found the both boys and girls held positive attitudes towards the place of mathematics in society. Since the correlation between students and their parent's attitude was statistically significant, it was concluded that they were closely related.

Luitel (1996) "The attitude of secondary school students towards the various aspects of mathematics curriculum and the relationship between these attitudes and their academic achievement in mathematics." Academic achievement in mathematics was obtained from the final examination scores from school register. An attitude scale for measuring attitude towards mathematics constructed and standardized by the investigator. The tools thus developed were administered on a sample of 140 students in the randomly selected schools. Attitudes of secondary school students towards mathematics was computed and compared using 't-test'. All the differences were stated at 0.05 levels. The study found that the students studying in different type of schools have similar attitudes towards mathematics. When various attitudes characteristics were considered, boys have better attitudes towards study habit in mathematics and in doing their homework than those of girls. But both boys and girls had similar interest in the study of mathematics. All the co-efficient of correlation between attitude and achievement of the student's measures of attitudes towards mathematics were significant.

Pandit (1999) was study about "A study of attitude of secondary level students and teachers towards geometry." The attitude scales included statement related to the classroom activities, textbooks and curriculum. Two sets of questionnaires were

developed and administered. The analysis of collected data disclosed that the student studying in secondary level has positive attitudes geometry but their teachers had negative attitude towards this subject.

Secondary education development project undertook a study to find out the attitude of the concerned people towards the new syllabus and its final report (2000).

Xin Ma and Juanyimin (2004) conducted a study to determine the casual ordering between attitudes towards mathematics and achievement in mathematics of secondary level students. Result showed the achievement demonstrated casual predominance over attitudes across the entire secondary school. Gender difference in this casual relationship was not found but elite status in mathematics moderated this casual relationship.

Thomas (2006) conduct a study to determine the attitude towards mathematics and achievements by combining co-operative learning strategies with the instruction delivered using an integrated learning system (ILS). Sixty five fifth grade students randomly divided in two groups, co-operative and individual. Result revealed that students using on ILS for mathematics instruction performed better on standardized tests and were more positive towards and they worked in.

Moldavan (2007) conducted a study "Attitude towards mathematics of pre-calculus students". He had used the four factor solution found by Tapia and Marsh (2004) and the items were classified into four categories (self confidence, value, enjoyment and motivation). Using one way analysis of variance he found that there were no significant differences when the data were grouped by gender. Also he found that students in pre-calculus scored significantly lower than students in calculus on self-confidence, enjoyment and motivation. No significant differences were found in the scores for value.

Yara (2009) conduct a study entitled "Relationship between teachers attitudes and students academic achievement in mathematics in some selected senior secondary schools in south western Nigeria." The study was an ex-post factor type, which adopted descriptive survey design. The findings related that there was good and positive attitude

of teachers towards the teaching of mathematics in secondary schools spite of the short comings that has bedeviled the teaching profession and particularly in the teaching of mathematics. It is very important that teachers of mathematics should be adequately remunerated and well equipped and be psychologically prepared to teach the subject in the secondary schools.

Jadzewski (2011) compared the attitudes about mathematic for boys and girls in grade III through VIII from high and low Socio-economic Status. The attitudes studied were confined in learning mathematic, perceived usefulness of mathematics, perception of teachers' attitudes towards the student as a learner of mathematics and stereotype of mathematics as a male domain. The only attitude that was found statistically significant was stereotype was mathematics as a male domain. For this attitude, it was found that gender and Socio-economic Status did play a role. Girls were much less linkly to stereotype math as a male domain then boys at grade levels. High Socio-economic Status students were less linkly to stereotype math as a male domain then less Socio-economic Status students at all grade levels, with the exception of grs4de VIII. Gender and Socio-economic Status do not seem to play a role in the other attitude about mathematics.

A brief review of literature in the field of attitude revealed that the attitudes of different groups of people towards different school subjects was studied, but except a few researches about the teachers, students and parents attitude towards mathematics as planned by the existing curriculum have been conducted the attitude of teachers and students towards the arithmetic's in secondary level was not adequately explored. So this study will be made as an attempt to fill up that necessity or gap.

Conceptual Understanding

After the review of above literatures the theory related this research topic is expressed as following. To continue this research was guided by the following theoretical

framework which is taken from the thesis on "Early Year teachers attitudes towards arithmetic" completed by the Fylie Sweeting thesis. This is given below:

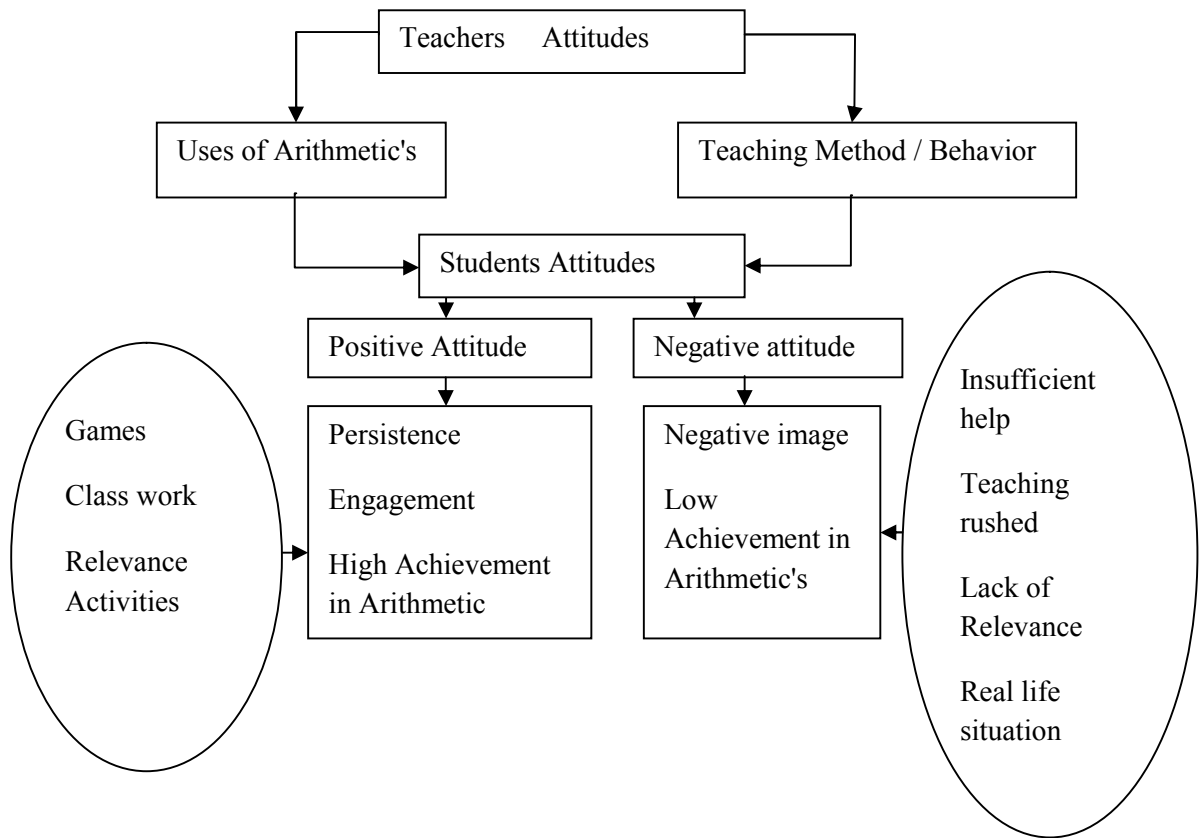


Fig: Conceptual Framework of Attitude of Secondary Level Math Teachers and Students towards Arithmetic's

In the above understanding there are positive and negative attitude involving in the attitude. The attitude of teachers must be affected by the attitude of the students. Also the attitudes of teachers and teachers were also affected by uses of arithmetic as well as Teaching methods/behavior. The positive attitude involves the persistence, Engagement, High achievement in Arithmetic. Those elements were described in the topics; Games, Class work, Relevance Activities. The Negative Attitude involved the Negative Image, Low Achievement in Arithmetic. In these elements determined by the insufficient help, teaching rushed lack of relevance and real life situation.

Chapter-III

METHODS AND PROCEDURES

This chapter deals with the research design, population of the study, sampling and sample size, data collection procedure and interpretation. So the research methodology is the important aspect of the study. This was qualitative and quantitative type in nature. In descriptive method the information, opinion and attitude are collected by the use of questionnaire and interview schedule.

Design of the Study

This chapter described about the design of the study which were carried out to achieve the objectives of this study. The present study is essentially an enumeration of the opinions, problems and suggestions of secondary level students and teachers. In another view, the study can considered as survey study of students and mathematics teachers of attitudes of secondary level. It is the mixed type model. By collecting data from the survey the researcher found the appropriate data to decide the attitude of secondary level students and math teachers towards arithmetic.

Survey research is probably best adapted to obtaining personal and social facts, beliefs and attitudes. So, survey is appropriate for this research. It is included an outline of what the investigator were form writing and the hypothesis and their operational implications to the final analysis of data.

Population of the Study

Population of the study was constituted as, all the grade IX students of Baitadi district study in the academic year 2012-2013 and all the secondary level mathematics teachers of Baitadi district in the academic year 2012-2013.

Sampling Procedure and Sample Size

There were 150 secondary schools in Baitadi district, out of which 3 private and 147 public schools. Among them choose 19 public and 1 private schools by randomly selecting 50% boys and 50% girl's students. From each school 15 students were selected

by random sampling and all secondary level mathematics teachers were including in our sample. For this purpose, of getting information by the administration of the students questionnaire form. Also respected mathematics teachers were respondents for information with providing teachers questionnaire form. To declare the attitude the researcher completed the interview schedule on the different topics related to the attitudes of students and teachers whose are based upon the oral question. The interview schedule is open type.

Which is shown in following table;

Number of school	Boy students	Girl students	Total students
19 government	143	142	2854
1 private	7	8	15

Instrument of the Study

To fulfill the objectives, questionnaire and the interview schedule was the instruments of this study.

Questionnaire

Two forms of questionnaire were developed while one was given to students and the other one given to the teachers. The researcher construct the questionnaire with the help of previous thesis on the basis of above theoretical understanding. The researcher structured that closed format, open format and rating scale type of questions by the help of supervisor and with referenced from the previous thesis.

Interview schedule

Interview is a kind of widely used data collection method of educational research. It is also a kind of oral questionnaire, which helps us to understand participant's perception, reactions, views and his/her facial expression about the particular real situation. Researcher constructed an interview schedule with mathematics teachers and

students including such elements as achievement of students, persistence, engagement, relevant activities and feed back of students and teachers.

Reliability and Validity of Tools

To predict reliability of questionnaire researcher used the parallel form method. For validity the researcher determine questionnaire in which each questions were completely related to objectives of the research. The research questionnaire is valid it is based upon the previous thesis as: "The Study of Lower Secondary Level Students and Math Teachers towards Mathematics" by Dhakal, S.P. (2011) and about "Attitude of Higher Secondary Level Students towards Mathematics" by Saini, A.K. (2013). The questionnaire was totally based upon the theoretical understanding and objectives of the study also. The questionnaire was prepared according to the guideline of supervisor and it should be tested by pilot test of secondary school allocated on median type's community of Baitadi district before going to collecting data.

The researcher determined the reliability and validity on interview schedule by the help of subject expert.

Data Collection Procedure

This is the qualitative research, so researchers collect data through only primary sources. For the collection of data the researcher visited each sampled school himself one by one and mate responsible administrative staff, head teachers and mathematics teachers of the school and asked permission for the administration of questionnaire and interview schedule of the Grade IX students as well as corresponding mathematics teachers.

In second phase the researcher collect the sampled students and provides students questionnaire form and get information about pre-knowledge of students related to arithmetic's. Similarly, researcher provided the teachers questionnaire form to get information about students understanding level interest related to arithmetic's. After than class observation was done by the help of observation checklist for classroom. And finally researcher administrative interview for teachers in different basis by the help of interview schedule.

Also this is the quantitative research, so the teachers and students were filled up attitudes scale and the researcher collects these scales. The collected data were tabulated by using the Likert five point scales. There were positive and negative types of statements in the questionnaire. According to Likert five point's scale for positive statement marked to descending order as 5,4,3,2 and 1; for negative statements marked to ascending order as 1,2,3,4 and 5 respectively. This is given in the table of Appendix A.

On other hand the researcher had completed the interview schedule with two secondary math teachers; and five boys and five girl's students of grade ix on the basis of following statements. On the basis of data about the results of grade ix final examination, the researcher analyzes the achievement of students. The interview with students and teachers the researcher declared that the persistence about students learning and teachers teach arithmetic. How the students and teachers had been engage on arithmetic? , What are the relevance activities? And the researcher study about the feedback of students?

Data Analysis and Interpretation

Analysis of data means studying the vision and experience about the teaching learning arithmetic's. These data were studied from as many angles as possible. These data were used to descriptive and interpretative form; triangular through teachers view, students view and researcher observation which was obtained from the questionnaire and interview schedule was used to analyze the attitudes of students and teachers about arithmetic's.

The χ^2 -test applied to find the attitude of students and teachers on arithmetic. For calculation of χ^2 -test the following computational formula was used:

$$\chi^2 = \sum \frac{(f_0 - f_e)^2}{(f_0 - f_e)}$$

Where, f_0 = Observed Frequency

f_e = Expected Frequency

Also, the researcher analyze the data by using t-test to investigate significant difference between mean score attitude of boys and girls as well as students and teachers towards arithmetic. The researcher analyze by comparing the calculated t- value of boys and girls students as well as students and math teachers with respect to the tabulated t- value at 0.05 level and math teachers with case of two normal populations with unknown variance for independent sample the t-statistics was used to compare the attitude of boy's students, girls students and math teachers as:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Where, \overline{X}_1 = mean score of first variable

\overline{X}_2 = mean score of second variable

S_1^2 = variance of first variable

S_2^2 = variance of second variance

N_1 = no. of first variable

N_2 = no. of second variable

On the basis of results of last two year final examination of grade ix the researcher concluded about the achievement of the students. The researcher analyzed about the persistence, engagement, relevance activities and feedback by the responses of oral and open conversation with sampled students and teachers. In this manner the researcher fulfill the objectives of this research.

Chapter-IV

ANALYSIS AND INTERPRETATION

The analysis and interpretation is the main part of the research. This chapter presents the result of statistical analysis of collective data. The interested people can know the real finding of research from the analysis part. Analysis part gives the real vision of the research. So the analysis and interpretation is very important in this study.

This chapter deals with the statistical and qualitative analysis and interpretation of the with the help of two set of instruments.

The researcher had tabulated, organized, analyzed and interpreted the row data conclusions and valid generalizations.

The data for the study as described in chapter III were collected from the secondary level grade IX and mathematics teacher of Baitadi district of the academic year 2013/2014. The collected data were tabulated, organized, analyzed and interpreted by appropriate statistical techniques for the attainment of the objectives and verification of the hypothesis as stated in chapter-I.

The result of analysis done together with their interpretation. The analysis of the study was carried out under the following major headings which correspond to the objectives of the study.

- Secondary level student's attitude towards arithmetic.
- Mathematics teachers' attitude towards arithmetic.
- Comparison of secondary level students and teachers attitude towards arithmetic's.
- Gender difference between attitudes of secondary level students.

Secondary Level Attitude towards Arithmetic

There were altogether 300 students from grade IX considered for the study. The Table of Appendix C presents the χ^2 -value of 30 statements, at 0.05 level of significance

in the attitude scale for the students to determine their attitude towards arithmetic. Shown in the table appendix B.

This chapter presents the result of analysis done together with their interpretation. The data of the table appendix B have been presented according to teaching method and use of arithmetic. Where the degree of freedom= $(r-1)(c-1)$, $r=1$ (no. of row) in this case the value of $r=1$, so the degree of freedom $(c-1)1$ and $c=5$ (no. of column) the data of the table: 1 have been presented in descending order of χ^2 - values.

The result in Table of Appendix C shows that χ^2 - values of 28 statements out of 29 statements are significant at 0.05 because the χ^2 - value of 29 statements is greater than the critical value. This implies that there was positive attitude of students towards arithmetic.

It is also exposed from the table of appendix B variation in the χ^2 - values of significant statements. In order to investigate the degree of student's attitude, the researcher re-arranged the statistically significant statements in terms of the magnitude of the computed χ^2 -values.

The researcher now interprets first highly significant seven statements and last least significant eight statements.

Table of Appendix C shows that the chi-square value 584.267 at 0.05 level of significance, of the statement "Group work as a teaching/learning activity is not necessary for the caliber of students in our school since it is time consuming" is highly significant. This indicates that 80% of students were agreed to this statement. It means that the students were so careful about the time consuming as a group work. Likewise, second highly significant [261.900] statement "it's no good to allot more time only for arithmetic" at 0.05 level indicates that the students were careful about the time limitation for arithmetic. This also implies that 67.67% of students were rejecting this statement.

Hence, shows that for solving arithmetical problems there was more time to be consuming.

The third and fourth highly significant statements are, "the knowledge of arithmetic is essential for all persons" and "Teachers have encouraged me to study more arithmetic" have chi-square values 249.573 and 232.533 respectively. This indicates that 62% of the sampled students were favor awareness about the uses of arithmetical knowledge. This implies that the uses of arithmetic's were fundamental for home and other field work successfully. 61 percent of sampled students were convinced about the necessity and encouragement of the arithmetic teacher. This also implies that the guideline given from teacher about arithmetic's were so beneficial and co-operative for our daily life.

The number sixteenth statement "The class of arithmetic is more interesting rather than the other areas of mathematics" have chi-square value of 205.900 at 0.05 level implies that 53.66 percent sampled student were agreed with this statement. This generalized that the students were accepted the class of arithmetic is much interesting than the other areas of mathematics. But also 43% of students disagree about this statement. This implies that some students were poor in arithmetic's and so they were feeling uneasy to study arithmetic's.

The sixth and seventh significant statements were "Fast speed of teaching arithmetic makes the students so lazy" and "Leisure time is used to solve arithmetical problems than algebraic and geometric problems" with chi-square values 202.767 and 103.300 at 0.05 level respectively. The sampled students were favored the necessity of step by step teaching arithmetic and leisure time is mostly favorable to solve arithmetical problem than geometric and algebraic. Also implies that the speed of teaching learning arithmetic's has decided by learner. So attractively learning arithmetic has decided only by co-operative classroom activities. Also seventh statement describes that the

arithmetical problem solving were so interesting and entertainment. The eight highly significant statements was "Arithmetic cannot be learnt without the use of calculators" with chi-square values 154.967 at 0.05 levels. Among those 52% of students were agreed about this statement and 44% were disagree. This implies that there were mixed response about the use of calculator. This implies that the students are curious and careful about the use of technical tools in learning arithmetic.

Only one statement is insignificant in the researcher questionnaire i.e. "There are many applications of arithmetic in daily life so it should be continue as a compulsory subject" with chi-square value 2.267 at 0.05 level of significant. 40 percent of sampled students were agreed, 38 percent disagree and 22 percent were non-decided with this statement. This implies that the students were confused about the applications of arithmetic.

The least significant statement "The homework of arithmetic is done in time" and "I am sure of myself when I solve arithmetical problems" are significant with chi-square value 46.83 and 70.40 respectively at 0.05 levels. 31 and 33 percent of the sampled students were agreed and 40 and 52 percent of sampled students were disagreed with these statements respectively. From this researcher concluded that the students were not in favored of first and the students were favored of the second. The students were unclear about this statement.

The fourth least significant statement "Learning arithmetic will enable me to numerate and orderly in thought" is significant with chi-square value 73.367 at 0.05 levels. 25 % of sampled students were favored and 37.66 % of sampled students were not in favored.

In this manner fifth least significant statement "arithmetic should be allotted more time in school" is significant with chi-square value 78.367 at 0.05 levels. It

indicated that 39.33 percent of sampled students were favored and 51 percent of sampled student were not favored. Implies that the students were not accepting this statement.

The twenty-ninth statement "Understanding arithmetic does not necessary require practice" and number of nineteenth statement "Besides decimal number, binary and quinary number system are also useful in our daily life" are significant with chi-square value 87.86 and 82.20 respectively at 0.05 levels. This implies that 43.33 percent and 39.39 percent of the sampled students were favored respectively. Also 50.33 and 37.66 percent of sampled students were not favored of both statements. This implies that for understanding arithmetic practice was necessary. Because first statement was rejected from the students. But the students were not clear about the second statement.

On the basis of interview schedule the achievement of the students on mathematics is not satisfactory. The result of last two year final examination of grade ix; 25 percent of student were passed in mathematics. Out of them 5 percent were in first division, 10 percent in second division and 10 percent in third division.

The student was totally convinced about the persistence in arithmetic's. The students were on the side of engagement in classroom as well as out of classroom to study the arithmetic's. There were attractions in students about the related arithmetical activities. If there were some relevance activities to be done in learning arithmetic the learning process must be successful on the vision of the students. To do improve the weakness of student; feedback must be included in learning process.

On the basis of above opinion of students about arithmetic and the result which is analyzed by the statement of questionnaire, the researcher concluded that the attitude of secondary level students towards arithmetic is positive. Which was concluded by the triangulation of interview schedule as well as questionnaire.

Hence, the attitude of secondary level students towards arithmetic is completely positive.

Secondary Level Mathematics Teachers Attitude towards Arithmetic's

Altogether, there were 20 mathematics teachers from the 20 secondary school of Baitadi districts for the present study. Their chi-square value corresponds to each statements are given in the table of Appendix E.

The result in Table of Appendix E shows that the χ^2 -values of 18 statements out of 31 statements are significant at 0.05 levels because the χ^2 - values of 18 statements are greater than the critical value. This implies that there were positive attitudes of teachers towards arithmetic.

The researcher now interprets the first eight highly significant statements and the last eight non-significant statements.

The Table of Appendix E shows that the χ^2 -value of 32.70 at 0.05 level of significance of the statement "I agree that the content of the arithmetic should be continuing as it is" as highly significant. The 80% of math teachers disagree. It shows that the course of arithmetic's was not appropriate which we were teaching learning in present. The 80% of teachers were on the side of the changing the content of secondary level arithmetic.

The second highly significance statement is "Arithmetic should be taken as a useful subject" with χ^2 - value 26 at 0.05 level of significance. By the reading of the percentage of agreed or disagreed of the teachers the great numbers are not clear about the use of the arithmetic.

Analyzing the third highly significance statement, "I feel that present topic in the arithmetic should be changed in relation to the need of society at time" with χ^2 -value

25.50 at 0.05 level of significance, the researcher found that the field of arithmetic not the need of society in present situation.

The next highly significant statement "Fast speed of teaching arithmetic makes the students so lazy", with χ^2 -values 24 at 0.05 levels. In other words 90 percent of the teachers agreed to this statement. It indicates that controlled speed is appropriate for teaching arithmetic.

The fifth highly significant statement, "Arithmetic is greatest nightmare for students in our school" with χ^2 -value 21.500 at 0.05 levels. In other word 701% of the teachers were disagreed to this statement. It indicates that they were against to arithmetic is nightmare to students.

Next highly significant statement, "The arithmetic problems are difficult rather than the problem of algebraic and geometric areas of mathematics" with χ^2 -value 19 at 0.05 levels. The 50% of teachers were agreed and 45% of the teachers were no decided whether arithmetic difficult or easy than the algebra and geometry.

Next highly significant statement, "The class of arithmetic is more interesting rather than the other areas of mathematic" with χ^2 -value at 0.05 levels. The 70% teachers were agreed to this statement. In other words most of the teachers were so interested to take the arithmetic class.

The eight highly significant statement, "If there is not appropriate feedback than it makes arithmetic complicated" with χ^2 -value 17 at 0.05 levels. Most of the mathematics teachers have realized to this statement because the 75% of the teachers were agreed. This implies that the appropriate feedback is necessary for the learning arithmetic easily.

The highly significant statement, "Some of the topics of arithmetic should not be taught because they are not applicable anywhere after leaving schools" with χ^2 -value 2 at

0.05 levels. This implies that 75% of the teachers were agreed to this statement. It shows that the topics are to be taught are usable after leaving school.

The second highly insignificant statement, "continuous assessment tests should continue forward to the student's final grade" with χ^2 -value 3.600 at 0.05 level of significance. It also shows that 55% of teachers were agreed to this statement and 25% of the students were disagreed. It implies that continuous assessment is helpful for learning arithmetic.

Other significant statement "The non-contextual examples are not appropriate on teaching arithmetic" with χ^2 -value 4.40 at 0.05 levels. In other words the 65% of teachers were agreed to this statement. This implies that the contextual examples are compulsory for the learning of arithmetic.

The fourth insignificant statement "Emphasis on examination should not be done at expense of students understanding of content of arithmetic" with χ^2 -value 4.400 at 0.05 levels. This reveals that the understanding of content most emphasis on the examinations so content understanding is most important. This implies that 65% of teachers were disagreed to this statement.

The next insignificant statement "There are many applications of arithmetic in daily life so it should be continue as a compulsory subject" with χ^2 -value 5.200 at 0.05 levels. It also shows that 70% of the teachers were not decided to this statement.

The next insignificant statement "Sometimes the arithmetic teacher invites a guest teacher to handle some of the topics, when students do not understand" with χ^2 -value 6 at 0.05 levels. It shows that the 60% of the teachers were agreed and 35% of the teachers were no decided to this statement. This reveals that the inviting guest teacher is no better to teaching arithmetic.

The eight insignificant statement "Besides decimal number system, binary and quinary number system are also useful in our daily life" with χ^2 -value 6.800 at 0.05 levels. The agreement and disagreement of teachers to this statement is equal (50%). It reveals that the use of binary and quinary number system in our daily life is not so beautiful and appropriate.

On the interview schedule the teachers were irritated about the achievement of students by condition of math on the result of final examination of last two year. The persistence of learning arithmetic is common and fundamental; the teachers were expressing their view. The teacher had suggested that the engagement of the students is important in classroom as well as outside of the class and their profession for teacher. They also argue that the extra class or relevance activities were mile stone to obtaining the arithmetical knowledge for students and transforming arithmetical knowledge for teachers. The feedback is most fundamental for improving weaknesses of students and molding their students for teachers.

Analyzing by joining the triangular relationship in-between the conclusion of questionnaire and interview schedule the researcher concluded that the attitude of teachers were somewhere positive.

Comparison between Secondary Level Boys and Girls Students towards Arithmetic's

To achieve the third objective to compare the boys and girls attitudes towards arithmetic, the following hypothesis was formulated.

- There is not significance difference between boys and girls attitudes towards arithmetic.

To verify this hypothesis, the attitude score of boys and girls students are given in the table of Appendix F and table of Appendix G respectively.

The mean attitude score of boys are compared with those of girls by applying t-test. The results of this analysis are presented in the table 3 with reference of table of Appendix F and table of Appendix G.

Table 1

Comparison between Boys and Girls Attitude towards Arithmetic

S.N.	Group Compared	Sample Size	Average Mean Score	S.D.	Variance	t-value	Conclusion
1.	Boys	150	3.1300	0.34	0.11956	5.0132	S
2..	Girls	150	2.923	0.33	0.11372		

Critical region: $t_{0.05,298}=1.65/1.960$ for two tailed test with degree of freedom

$$V=n_1+n_2=150+150-2=298.$$

The cal. Value of 't' is 5.032 with mean difference 0.1977 is greater than the tabulated value i.e. critical value 1.654/1.960. It is indicated that the t-test value is significant because tabulated value is less than the calculated value. This implies that the attitudes of boys students and girls students were not similar i.e. boys students and girls students have different attitude towards arithmetic. Hence the null hypothesis is accepted.

On the basis of interview schedule reading the results of last two year examination of grade ix out of 25 percent passed students; 16 percent of boys students and 9 percent of girl students. This gives that there were high achievement of boys then girl students. According to the oral and open conversation about engagement; there were girl students are poor then the boys students inside and outside of classroom. The vision about persistence and relevance activities the girl students are weaker then the boy students in arithmetic's. The feedback is greater important for girl students then the boy students in the basis of their weakness.

Hence concluded that the attitude of boys and girls students were not similar which upon the result of questionnaire as well as interview schedule.

Comparison between Secondary Level Mathematics Teachers and Students towards Arithmetic's

To achieve fourth objective to compare the students and teachers attitude towards arithmetic's the following hypothesis was formulated.

- There is no significance difference between students and teachers attitudes towards arithmetic.

To verify the hypothesis, the attitude score of teachers and students is given in the table of Appendix H and table of Appendix I respectively.

The mean attitude score of students are compared with those of teachers by applying t-test. The results of this analysis are presented in the table 4 with reference to table of Appendix H and table of Appendix I.

Comparison between Boys and Girls Attitude towards Arithmetic

S.N.	Group Compared	Sample Size	Average Mean Score	S.D.	Variance	t-value	Conclusion
1.	Students	300	3.080	0.35	0.1260	5.0132	Ns
2..	Teachers	20	2.76	0.25	0.11372		

Critical region: $t_{0.05,298}=1.65/1.960$ for two tailed test with degree of freedom

$$V=n_1+n_2=150+150-2=298.$$

The cal. Value of 't' is 5.032 with mean difference 0.1977 is less than the tabulated value i.e. critical value 1.654/1.960.

The cal. Value of 't' is 0.202 with mean difference 0.375 is greater than the tabulated value i.e. critical value is 1.654. It is indicated that the t-value is insignificant because the tabulated value is greater than the calculated value. This implies that the attitudes of students and teacher have same attitude towards arithmetic. Hence, the null hypothesis is rejected.

The students and teachers were convinced about the strong labor in the teaching learning activities greater than other branch of mathematics. Teachers were suggested about the persistence of arithmetic. The teachers were agreed about the engagement of students in classroom as well as out of class time and engagement him to other than class time also. Students were also agreeing about the engagement of him to study the

arithmetic. The teachers and students on the same side of relevance activities. The teachers were suggested that the students centered, material oriented, students level oriented teaching learning activities. Also active participation of students included in the teaching learning activities. Teachers referred that the feedback is strong tool of developing positive attitude of students towards arithmetic's.

According to script of interview schedule and questionnaire the researcher concluded that the attitudes of students and teachers were in same side. There were not declarable different about the attitudes of students and teachers towards arithmetic's.

Chapter-V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This section includes a brief re-statement of the problems, description of the procedure used and deals with the summary of the findings of the study, conclusions drawn from the findings and recommendations for the further study.

Summary

This study was undertaken for the purpose of acquiring basic information about the attitude of secondary level students and mathematics teachers towards arithmetic's. The objectives of the study were to find out the attitudes of secondary level students and their teachers towards arithmetic and compare the attitudes of student by gender and between teachers and students.

In order to fulfillment of the objectives the researcher followed the survey design. The population of the study was all the students and mathematics teachers of Baitadi district during the academic session of 2013-2014.

The students were selected from 20 secondary schools of Baitadi district by random sampling. 15 students of class ninth were selected from each sampled schools in which 50% of sampled were boys and 50% were girls. 20 mathematics teachers were selected from 20 sampled school of Baitadi districts. One set of questionnaires was used to obtain the attitude of student towards the arithmetic and one set of questionnaire was developed to accomplish the teacher's attitude towards arithmetic.

The data were collected by using the above two attitude scale. These attitudes scales were developed by taking students variables and teacher's variables from critical variables inn mathematics education. The researcher described the variables for testing of students and teachers attitudes in this thesis. The reliability and validity of tools of data

collection were tested by pilot test and finalized it. Male students and female students were also the variables in this study. There were two types of statements included in researcher's data collecting tools. Those were positive and negative statements. The statements were decided on the bases of teaching method/behavior, positive attitude, negative attitude and uses of arithmetic's. The marking scheme was decided according to Likert five point scales on the basis of positive and negative statements. The scores of 1,2,3,4 and 5 were allocated to the scale in favor of strongly agree, agree, undecided and strongly disagree for negative statements respectively and 5,4,3,2 and 1 were allocated to the scale in statements respectively for the opinion of respondent on each statement. The attitude according to the instruction given for each part of instruments.

The test was used to determine the significance of attitude of students and teachers towards arithmetic's. t-test was used to test the significance difference between mean attitude scores of boys and girls as well as students and girls towards arithmetic's. All tests were tested at 0.05 level of significance.

Findings

On the basis of the analysis and interpretation of data, the study resulted the flowing major findings:

- The attitudes of the secondary level students were positive and mathematics teachers were somewhere positive towards arithmetic's.
- There were gender differences in attitude towards arithmetic's.
- The mean attitude score of boys towards arithmetic slightly greater than that of girls.
- The mean attitude score of students towards arithmetic is similar of the attitude of their teachers.

Conclusion

On the basis of above mentioned findings, some significant conclusion had been drawn by this study. The conclusions are as follows:

- Both the secondary level students and mathematics teachers showed positive attitude towards arithmetic's.
- There was gender difference in attitude towards arithmetic of secondary level students.
- There was no significant difference in the attitude of secondary level students and mathematics teachers towards arithmetic's.

Recommendation

In this study, the researcher the measures would be valuable for promoting the quality of instruction in arithmetic and research on mathematics instruction. On the basis of the study the following recommendations have been made.

- This study examined the students and teachers attitude towards arithmetic. It does not tell anything about student's achievements, knowledge and competences in this subject due to attitude variables. So, further research is needed in these aspects.
- This study is based on the sample of only twenty secondary schools of Baitadi district. Its findings may not be generalized to the wider population of the students. So similar study should be done region-wise as well as nation-wise in order to establish a generalized the findings of the study.
- It should also be studied in primary and lower secondary level for the same aspects.
- Besides the teachers there are other groups of people such as parents, head master, school supervision etc whose attitudes are also the important factor influencing the attitudes of the students towards this subject. So, a study on identifying the influences of other persons in farming of students and teachers.

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APPENDIX - I

STATEMENTS OF THE QUESTIONNAIRE FOR STUDENTS

Dear Students,

I have come before you to acquire your warm co-operation for all my small study on the topic "Attitude of Secondary Level Students and Teachers towards arithmetic". Please study the given statements carefully and your opinions according to your experience and feelings, by putting tick marks (\checkmark) on any of the five rooms contained the right side of the statements. Please bearing mind that there are no right or wrong answers.

Name.....Class.....Age.....

School.....

Address: Zone.....District.....Town/Village.....

S.N.	Statements of the Problems	S.A.	A.	N.	D.	S.D.	X ²
Teachers Method/ Behavior							
1.	I am motivated to solve problem in arithmetic class.						
2.	Group work as a teaching. Learning activity is not necessary for the caliber of students in our school since it is time consuming.						
3.	We have all the learning materials and equipments we need in arithmetic lesson.						
4.	Arithmetic cannot be learnt without the use of calculators.						
5.	Too many projects are given to us in arithmetic.						
6.	Teachers have encouraged me to study more arithmetic.						
7.	The Knowledge of arithmetic is essential for all persons.						
8.	Arithmetic may help you to all types of problems.						

9.	I am sure of myself when I solve arithmetical problems.						
10.	I will use arithmetic in many ways as an adult.						
11.	Leisure time is used to solve arithmetical problems.						
12.	I study arithmetic because many people say that this subject has great importance.						
13.	Arithmetical exercises are easy after computing by the use of games.						
14.	Arithmetical problems are easily solved by activities.						
15.	Arithmetical problems must be usable and contextual.						
16.	The class of arithmetic is more interesting rather than the other areas of mathematics.						
Negative Attitude							
17.	It is no good to allot more time only for arithmetic.						
18.	The arithmetic problems are difficult rather than the problem of algebraic and geometric areas of mathematics.						
19.	Arithmetic should be allotted more time in school.						
20.	I hate arithmetic because their problems are long and outer teacher never creates a favorable situation for learning this subject.						
21.	Arithmetic is hard and complex subject.						
22.	Fast speed of teaching arithmetic makes the students so lazy.						
23.	The content of arithmetic of grade IX is not appropriate.						
24.	The non-contextual examples are not appropriate on teaching arithmetic.						
25.	It not good to allot more time only for arithmetic.						

Application of Arithmetic's						
26.	Besides decimal number system, binary and quinary number system are also useful in our daily life.					
27.	The homework of arithmetic is done in time.					
28.	There are many applications of arithmetic in daily life so it should be continue as a compulsory subject.					
29.	Learning arithmetic will enable me to numerate and orderly in thought.					
30.	Understanding arithmetic does not necessary require practice.					

Suggestions

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Thanks for your Co-operation

APPENDIX -II

STATEMENTS OF THE QUESTIONNAIRE FOR TEACHERS

Respected Sir/Madam,

As a students in Masters degree in mathematics education, the investigator going to conduct a study on the topic "Attitude of Secondary Level Students and Teachers Towards Arithmetic". The attitude scale is presented to you under the assumption that your practical experience on the related field could become the best clues on working in my research. You are requested to study the statements carefully and give you position by putting tick marks any one of the fib rating or each statements. Please bear in mind that there are no right or wrong answers. Only your feelings or opinion is sought for the sake of the study.

Name.....Age.....Sex.....

School.....Position.....Qualification.....

Teaching Experiences.....Teaching training.....

Address.....District.....Town/Village.....

S.N.	Statements of the Problems	S.A.	A.	N.	D.	S.D.
Teachers Method/ Behavior						
1.	poor teaching only help the bright students					
2.	It does not make any difference to the students whether they are taught arithmetic or not.					
3.	Sometimes the arithmetic teacher invites a guest teacher to handle some of the topics, when students do not understand.					
4.	The teacher gives hint to all types of problem.					
5.	Use of activity methods as well as project work makes arithmetic enjoyable.					
6.	It is not possible to teach all topics in arithmetic using					

	same method.					
7.	Improving of teaching aids in arithmetic cannot be done because the teachers have lots of work.					
8.	The teacher gives overall comments after checking homework of arithmetic.					
9.	Emphasis on examination should not be done at expense of students understandings of content of arithmetic.					
10.	Continuous assessment tests should count forward to the student's grade.					
Positive Attitude						
11.	The knowledge of arithmetic is essential for all persons.					
12.	Arithmetic is greatest nightmare for students in our school.					
13.	Leisure time is used to solve arithmetic problems than the algebraic geometric problem.					
14.	The helpful teacher is so beneficial for arithmetic.					
15.	Arithmetical problems must be usable and contextual.					
16.	The teacher must be relevance example in teaching arithmetic.					
17.	The class of arithmetic is more interesting rather than other areas of mathematics.					
Negative Attitude						
18.	It's no good to allot more time only for arithmetic.					
19.	The arithmetic problems are difficult rather than the problems of algebraic and geometric areas of mathematics.					
20.	Fast speed of teaching arithmetic makes the students so lazy.					

21.	The non-contextual examples are not appropriate on teaching arithmetic.					
22.	If there is not appropriate feedback then it makes arithmetic complicated.					
Uses of Arithmetic's						
23.	Besides decimal number system, binary and quinary number system are also useful in our daily life.					
24.	There are many application of arithmetic in daily life so it should be continue as compulsory subject.					
25.	Some of the topics of arithmetic should not be taught because they are not applicable anywhere after leaving school.					
26.	Arithmetic should not be taken as a useful subject.					
27.	i agree that the content of the arithmetic should be continuing as it is.					
28.	I feel that present topic in arithmetic should be changed in relation to the need of society at time.					
29.	The topic 'set' is necessary to include in the content of arithmetic.					
30.	All the topic of secondary arithmetic should be removed which is not continuity in higher secondary level.					
31.	The first priority should be given to arithmetic for study of mathematics.					

Suggestions

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Thanks for your Co-operation

APPENDIX- A

The Marketing Scheme According to Likert Five-Point Scale

Measure of Rating	Rating scale value of positive statements	Rating scale of negative statements
Strongly agree	5	1
Agree	4	2
No Decided	3	3
Disagree	2	4
Strongly Disagree	1	5

APPENDIX B

χ^2 -values of Statements in Administered Attitude Scale to Students

S.N.	Statement of the Problem	Total score	χ^2	Conclusion
1.	I am motivated to solve problem in arithmetic class.	1139	106.907	S
2.	Work as group a teaching/learning activity is not necessary for the caliber of students in our school since it is time consuming.	479	584.267	S
3.	We have all the learning materials and equipments we need in arithmetic lesson.	661	140.033	S
4.	Arithmetic cannot be learn without the use of calculators	854	154.967	S
5.	Too many projects are given to us in arithmetic.	685	150.600	S
6.	Teachers have encouraged me to study arithmetic.	1036	232.533	S
7.	The knowledge of arithmetic is essential for all persons.	1133	249.573	S
8.	Arithmetic may help you to all types of problems.	828	137.600	S
9.	I am sure of myself when i solve arithmetical problems.	858	70.400	S
10.	I will use arithmetic in many ways as an adult.	794	137.033	S
11.	Leisure time is used to solve arithmetical problems then	103	183.300	S

	algebraic and geometric problems.			
12.	I study arithmetic because many people say that this subject has great importance.	1024	96.200	S
13.	Arithmetical exercises are easy after computing by the use of games.	1009	104.700	S
14.	Arithmetical problems are easily solved by activities.	1111	137.367	S
15.	Arithmetical problems must be usable and contextual.	935	130.600	S
16.	The class of arithmetic is more interesting rather than the other areas of mathematics	929	205.900	S
17.	Its no good to allot more time only for arithmetic.	1097	261.900	S
18.	The arithmetic problems are difficult rather than the problem of algebraic and geometric areas of mathematics.	1042	115.333	S
19.	Arithmetic should be allotted more time in school.	951	78.367	S
20.	i hate arithmetic because their problems are long and outer teacher never creates favorable situation for ;earning this subject.	1089	202.676	S
21.	Arithmetic is heard and complex subject.	1043	132.720	S
22.	Fast speed of teaching arithmetic makes the students so lazy.	839	132.827	S
23.	The content of arithmetic of grade ix is not appropriate on teaching arithmetic.	1040	137.267	S
24.	The non-contextual examples are not appropriate on teaching arithmetic.	1079	103.400	S
25.	Besides decimal number system, binary and quinary number system are also useful in our daily life.	881	82.200	S
26.	The homework of arithmetic is done in time.	847	46.833	S
27.	There are many application of arithmetic in daily life so it should continue as a compulsory subject.	920	2.267	Ns
28.	Learning arithmetic will enable me to numerate and orderly in thought.	844	73.633	S
29.	Understanding arithmetic does not necessary require practice.	922	87.867	S

APPENDIX C

χ^2 -Value of Statements in administrated Attitude Scale to Students

S.N.	Statements of the Problems	χ^2 - Value	Significance	Agree %	DA%
2.	Group work as a teaching/learning activity is not necessary for the caliber of students in our school since it is time consuming	584.267	S	81	9
17.	It's not good to allot more time only for arithmetic	261.900	S	29.33	67.67
7.	The knowledge of arithmetic is essential for all persons.	249.573	S	63.33	33.33
6.	Teachers have encouraged me to study more arithmetic	232.533	S	61	36
16.	The class of arithmetic is more interesting rather than the other areas of mathematics.	205.900	S	53.66	43.33
20.	Fast speed of teaching arithmetic makes the students so lazy	202.267	S	27.33	54.66
11.	Leisure time is used to solve arithmetical problems then algebraic and geometric problems.	183.30	S	43.33	45.33
4.	arithmetic cannot be learnt without the use of calculators	154.967	S	52.33	44.33
5.	too many projects are given to us in arithmetic	150.600	S	27.33	68
3.	We have all the learning materials and equipments we need in arithmetic lesson.	140.033	S	17	65
8.	Arithmetic may help you to all types of problems.	137.600	S	45.33	51.33
14.	Arithmetical problems are easily solved by activities.	137.367	S	66	29
23.	The content of arithmetic of grade IX is not appropriate.	137.267	S	30.60	51.66
10.	I will use arithmetic in many ways as an adult.	137.033	S	33.33	61.66

22.	Fast speed of teaching arithmetic makes the students so lazy.	132.827	S	48	42
21.	Arithmetic is hard and complex subject.	132.720	S	29.33	56.33
15.	Arithmetical problems must be usable and contextual.	130.600	S	51.33	45.66
18.	The arithmetical problems are difficult rather than the problem of algebraic and geometric areas of mathematics.	115.333	S	27.33	55
1.	I am really motivated to solve problem in arithmetic class.	106.907	S	67	19
13.	Arithmetical exercises are easy after computing by the use of games.	104.700	S	59.33	34.66
24.	The non-contextual examples are not computing by the use of games.	103.400	S	26.66	64.33
12.	I study arithmetic because many people say that this subject has great importance.	96.200	S	58.33	61.66
29.	Understanding arithmetic does not necessary require practice.	87.867	S	43.33	50.33
25.	Besides decimal number system, binary and quinary number system	82.200	S	39.39	37.66
19.	Arithmetic should be allotted more time in school.	78.367	S	39.33	51
28.	Learning arithmetic will enable me to numerate and orderly in thought.	73.633	S	25	37.66
9.	I am sure of myself when I solve arithmetical problems.	70.400	S	30.66	52.66
26.	The homework of arithmetic is done in time.	46.833	S	33.33	40
27.	There are many applications of arithmetic in daily life so it should be continue as a compulsory subject.	2.267	Ns	40.66	28.66

APPENDIX D

χ^2 -values of Statements in Administered Attitude Scale to Teachers

S.N.	Statement of the Problem	Total score	χ^2	Conclusion
1.	Poor teaching only help the bright students	91	16.300	S
2.	It does not make any difference to the students whether they are taught arithmetic or not.	10	12.400	S
3.	Sometimes the arithmetic teacher invites a guest teacher to handle some of the topics, when students do not understand.	5	6.000	Ns
4.	The teacher gives hint to all types of problem.	9	9.500	S
5.	Use of activity methods as well as project work makes arithmetic enjoyable.	8	11.700	S
6.	It is not possible to teach all topics in arithmetic using same method.	5	7.300	S
7.	Improving of teaching aids in arithmetic cannot be done because the teachers have lots of work.	5	8.000	Ns
8.	The teacher gives overall comments after checking homework of arithmetic.	6	8.500	Ns
9.	Emphasis on examination should not be done at expense of students understandings of content of arithmetic.	20	4.400	Ns
10.	Continuous assessment tests should count forward to the student's grade.	6	3.600	Ns
11.	The knowledge of arithmetic is essential for all persons.	12	13.300	S
12.	Arithmetic is greatest nightmare for students in our school.	12	21.500	S
13.	Leisure time is used to solve arithmetic problems than the algebraic geometric problem.	55	16.600	S

14.	The helpful teacher is so beneficial for arithmetic.	40	6.000	Ns
15.	Arithmetical problems must be usable and contextual.	70	13.000	S
16.	The teacher must be relevance example in teaching arithmetic.	30	16.000	S
17.	The class of arithmetic is more interesting rather than other areas of mathematics.	45	6.000	Ns
18.	It's no good to allot more time only for arithmetic.	15	17.000	S
19.	The arithmetic problems are difficult rather than the problems of algebraic and geometric areas of mathematics.	5	19.000	S
20.	Fast speed of teaching arithmetic makes the students so lazy.	10	24.000	S
21.	The non-contextual examples are not appropriate on teaching arithmetic.	0	4.400	Ns
22.	If there is not appropriate feedback then it makes arithmetic complicated.	5	17.000	S
23.	Besides decimal number system, binary and quinary number system are also useful in our daily life.	30	6.800	Ns
24.	There are many application of arithmetic in daily life so it should be continue as compulsory subject.	25	5.200	Ns
25.	Some of the topics of arithmetic should not be taught because they are not applicable anywhere after leaving school.	15	2.000	Ns
26.	Arithmetic should not be taken as a useful subject.	15	26.000	S
27.	i agree that the content of the arithmetic should be continuing as it is.	10	32.400	S
28.	I feel that present topic in arithmetic should be changed in relation to the need of society at time.	5	25.500	S
29.	The topic 'set' is necessary to include in the content of arithmetic.	5	5.200	Ns
30.	All the topic of secondary arithmetic should be removed	60	14.800	S

	which is not continuity in higher secondary level.			
31.	The first priority should be given to arithmetic for study of mathematics.	5	10.500	S

APPENDIX E

χ^2 -Values of Statements in Administrated Attitude Scale to Teacher

S.N.	Statements of the Problems	χ^2 -values	Agree %	Disagree %	Conclusion
27.	I agree that the content of the arithmetic should be continuing as it is.	32.700	30	80	S
26.	Arithmetic should be taken as a useful subject.	26.000	20	15	S
28.	I feel that present topic in the arithmetic should be changed in relation to the need of society at time.	25.500	15	75	S
20.	Fast speed of teaching arithmetic makes the students so lazy.	24.000	90	10	S
12.	Arithmetic is greatest nightmare for students in our school.	21.500	10	70	S
19.	The arithmetical problems are difficult rather than the problems of algebraic and geometric areas of mathematics.	19.000	50	5	S
18.	The class of arithmetic is more interesting rather than the other areas of mathematics.	17.000	70	15	S
22.	If there is not appropriate feedback then it makes arithmetic complicated.	17.000	75	10	S
13.	Leisure time is used to solve arithmetic and geometric problem.	16.600	20	70	S

1.	Poor Teaching only help the bright students	16.300	30	80	S
16.	The teacher must use relevance example in teaching arithmetic.	16.000	5	90	S
30.	All the topics of secondary arithmetic should be removed which is not continuity in higher secondary level.	14.800	40	65	S
11.	The knowledge of arithmetic is essential for all students	13.00	20	60	S
15.	Arithmetical problems must usable and contextual.	13.300		95	S
2.	It doesn't make any difference to the students whether they are taught arithmetic or not.	12.400	85	10	S
5.	The knowledge of arithmetic is essential for all persons.	11.700	50	45	S
31.	The first priority should be given to arithmetic for study of mathematics.	10.500	15	50	S
4.	The teacher gives hint to all types of problem.	9.500	25	65	S
8.	The Teachers gives over all comments after checking homework of arithmetic.	8.500	20	70	Ns
7.	Improving of teaching aids in arithmetic cannot be done because the teachers have a lot of works.	8.000	30	40	Ns
6.	It is not possible to teach all topics in arithmetic using same method.	7.300	95	5	Ns
23.	Besides decimal number system, binary and quinary number system are also useful in our dilly life.	6.800	50	50	Ns
3.	Sometimes the arithmetic teacher invites a	6.000	60	5	Ns

	guest teacher to handle some of the topics, when students do not understand.				
17.	The class of arithmetic is more interesting rather than the other areas of mathematics.	6.000	15	75	Ns
29.	The topic 'set' is necessary to include in the content of arithmetic.	5.200	5	55	Ns
24.	There are many applications of arithmetic in daily life so it should be continue as a compulsory subject.	5.200	20	70	Ns
9.	Emphasis of examination should not be done at expense of students understanding of content of arithmetic.	4.400	20	65	Ns
21.	The non-contextual examples are not appropriate on teaching arithmetic.	4.400	65	15	Ns
10.	Continuous assessment tests should be final grade.	3.600	55	30	Ns
25.	Some of the topics of arithmetic should be taught because they are not applicable anywhere after living school.	2.000	75	20	Ns

APPENDIX F

Attitude Score Obtained by Boys' Students

S. N.	Statement of the Problem	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Total score	Avg. score
	I am motivated to solve problem in arithmetic class.	525	120	45	0	0	690	4.6
2	Work as group a teaching/learning activity is	135	30	0	0	0	165	1.1

	not necessary for the caliber of students in our school since it is time consuming.							
3	We have all the learning materials and equipments we need in arithmetic lesson.	305	0	0	30	105	440	2.94
4	Arithmetic cannot be learn without the use of calculators	75	30	60	0	225	390	2.6
5	Too many projects are given to us in arithmetic.	75	0	45	90	75	285	1.9
6	Teachers have encouraged me to study arithmetic.	600	60	0	0	15	675	4.5
7	The knowledge of arithmetic is essential for all persons.	675	0	0	30	0	705	4.7
8	Arithmetic may help you to all types of problems.	225	90	0	0	60	375	2.5
9	I am sure of myself when i solve arithmetical problems.	300	0	45	60	45	450	3
10	I will use arithmetic in many ways as an adult.	225	0	45	90	45	405	2.7
11	Leisure time is used to solve arithmetical problems then algebraic and geometric problems.	375	0	45	30	45	495	3.3
12	I study arithmetic because many people say that this subject has great importance.	225	180	45	60	15	525	3.5
13	Arithmetical exercises are easy after computing by the use of games.	300	180	0	30	30	540	3.6
14	Arithmetical problems are easily solved by activities.	300	180	45	30	15	570	3.8
15	Arithmetical problems must be usable and contextual.	300	120	0	60	30	510	3.4
16	The class of arithmetic is more interesting rather than the other areas of mathematics	450	0	0	30	45	525	3.5
17	Its no good to allot more time only for	60	0	0	60	375	495	3.3

	arithmetic.							
18	The arithmetic problems are difficult rather than the problem of algebraic and geometric areas of mathematics.	30	30	45	120	300	525	3.5
19	Arithmetic should be allotted more time in school.	60	60	0	120	150	390	2.6
20	I hate arithmetic because their problems are long and outer teacher never creates favorable situation for; earning this subject.	0	30	135	0	450	615	4.1
21	Arithmetic is heard and complex subject.	60	0	45	0	375	480	3.2
22	Fast speed of teaching arithmetic makes the students so lazy.	90	0	90	60	75	315	2.1
23	The content of arithmetic of grade ix is not appropriate on teaching arithmetic.	30	30	45	0	450	555	3.7
24	The non-contextual examples are not appropriate on teaching arithmetic.	45	30	0	60	375	510	3.4
25	Besides decimal number system, binary and quinary number system are also useful in our daily life.	150	0	180	0	60	390	2.6
26	The homework of arithmetic is done in time.	0	180	180	60	15	375	2.5
27	There are many application of arithmetic in daily life so it should continue as a compulsory subject.	150	180	45	90	15	480	3.2
28	Learning arithmetic will enable me to numerate and orderly in thought.	75	120	225	30	15	465	3.1
29	Understanding arithmetic does not necessary require practice.	300	60	0	30	60	450	3
	Total	626	0					

APPENDIX G

Attitude Score Obtained by Girl's Students

S. N.	Statement of the Problem	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree	Total score	Avg. score
1.	I am really motivated to solve problem in arithmetic class	235	76	81	0	57	449	2.99
2.	Group work as a teaching/learning activity is not necessary for the caliber of students in our school since it is time consuming.	92	0	87	40	95	314	2.09
3.	We have all the learning materials and equipments we need in arithmetic lesson.	50	40	165	92	29	376	2.92
4.	Arithmetic cannot be learnt without the use of calculators.	47	40	30	72	275	464	3.09
5.	Too many projects are given to us in arithmetic.	150	148	0	38	64	400	2.67
6.	Teachers have encouraged me to study more arithmetic.	150	72	27	38	74	361	2.41
7.	The knowledge of arithmetic is essential for all persons.	275	0	30	76	47	428	2.85
8.	Arithmetic may help you to all types of problems.	140	72	30	54	67	363	2.42
9.	I am sure of myself when I solve arithmetical problems.	150	108	30	74	46	408	2.72
10	I will use arithmetic in many ways as	225	40	0	58	66	389	2.59

	an adult.							
11	Leisure time is used to solve arithmetical problems then algebraic and geometric problems.	230	36	57	18	67	408	2.72
12	I study arithmetic because many people say that this subject has great importance.	375	40	0	38	46	499	3.32
13	Arithmetical exercises are easy after computing by the use of games.	270	76	54	20	49	469	3.12
14	Arithmetical problems are easily solved by activities.	370	76	0	76	19	541	3.61
15	Arithmetical problems must be usable and contextual.	275	36	27	20	67	425	2.83
16	The class of arithmetic is more interesting rather than the other areas of mathematics.	140	112	27	20	75	374	2.49
17	It is no good to allot more time only for arithmetic.	18	20	27	112	425	602	4.01
18	The arithmetic problems are difficult than the problems of algebraic and geometric areas of mathematics.	37	0	114	36	330	517	3.45
19	Arithmetic should be allotted more time in school.	28	0	87	76	370	561	3.74
20	I hate arithmetic because their problems are long and our teacher never creates a favorable situation for learning this subject.	47	40	27	40	320	474	3.16

21	Arithmetic is hard and complex subject.	28	0	84	76	375	563	3.58
22	Fast speed of teaching arithmetic's makes the students so lazy.	54	0	0	40	450	514	3.43
23	The content of arithmetic of grade IX is not appropriate.	29	36	114	76	230	485 8	3.23
24	The non-contextual examples are not appropriate on teaching arithmetic.	10	20	81	228	230	569	3.79
25	Besides decimal number system, binary and quinary number system are also useful in our daily life.	278	112	27	38	39	494	3.29
26	The homework of arithmetic is done in time.	90	148	60	78	36	412	2.74
27	There are many applications of arithmetic in daily life so it should be continue as a compulsory subject.	185	20	141	36	38	420	2.8
28	Learning arithmetic will enable me to numerate and orderly in thought.	50	80	111	70	28	339	2.6
29.	Understanding arithmetic does not necessary require practice.	38	76	57	72	187	428	2.85

APPENDIX H

Attitude Score Obtained by Teachers

S.N.	Statement of the problem	Strongly	Agree	Neutral	Disagree	Strongly disagree	Total	Avg.
1.	Poor Teaching only help the bright students.	0	0	12	4	75	91	4.55
2.	It does not make any difference to the students whether they are taught arithmetic or not.	11	12	3	0	10	36	1.8
3.	Sometimes the arithmetic teacher invites a guest teacher to handle some of the topics, when students do not understand.	8	8	21	0	5	42	2.1
4.	The teacher gives hint to all types of problem.	20	4	6	8	9	47	2.35
5.	Use of activity methods as well as project work makes arithmetic enjoyable.	15	28	3	2	8	56	2.8
6.	it is not possible to teach all topics in arithmetic using the same method.	10	18	0	0	5	33	1.65
7.	Improving of teaching aids in arithmetic cannot be done because the teachers have many works.	5	2	18	28	5	58	2.9
8.	The teacher gives overall comments after checking homework of arithmetic.	5	12	6	16	6	45	2.25

9.	Emphasis on examination should not be done at expense of students understanding of content of arithmetic.	4	0	9	36	20	69	3.4
10.	Continuous assessments tests should count final grade.	40	12	0	6	6	67	3.35
11.	The knowledge of arithmetic is essential for all persons.	10	8	12	0	12	42	2.1
12.	Arithmetic is greatest nightmare for students in our school.	5	4	12	4	12	37	1.85
13.	Leisure time is used to solve arithmetic and geometric problem.	3	2	6	12	55	78	3.9
14.	The helpful teacher is so beneficial for arithmetic.	4	0	3	28	40	75	3.75
15.	Arithmetical problems must be usable and contextual.	0	0	3	20	70	93	4.65 4
16.	The teacher must use relevance example in teaching arithmetic.	1	0	3	48	30	82	4.1
17.	The class of arithmetic is more interesting rather than the other areas of mathematics.	3	0	6	24	45	78	3.9
18.	It's no good to allot more time only for arithmetic.	13	2	9	0	15	39	1.95
19.	The arithmetic problems are difficult rather than the problem of algebraic and geometric areas of mathematics.	16	0	9	0	5	30	1.5
20.	Fast speed of teaching arithmetic makes the students so lazy.	17	2	0	0	10	29	1.45

21.	The non-contextual examples are not appropriate on teaching arithmetic.	9	8	12	12	0	41	2.05
22.	If there is not appropriate on teaching arithmetic.	11	8	9	4	5	37	1.85
23.	Besides decimal number system, binary and quinary number system are also useful in our daily life.	9	2	0	16	30	57	2.85
24.	There are many applications of arithmetic in daily life so it should be continuous as a compulsory subject.	4	0	6	36	25	71	3.55
25.	Some of the topics of arithmetic should not be taught because they are not applicable anywhere after living school.	12	6	3	4	15	40	2
26.	Arithmetic should be taken as a useful subject.	1	4	39	4	15	63	3.15
27.	I agree that the content of the arithmetic should be continuing as it is.	16	0	3	4	10	33	1.65
28.	I feel that present topic in the arithmetic should be changed in relation to the need of society at time.	13	4	6	8	5	36	1.8
29.	The topic set is necessary to include in the content of arithmetic.	5	12	24	0	5	46	2.3
30.	All the topic of secondary arithmetic should be removed which is not continuity in higher secondary level.	5	0	6	4	60	75	3.75

31.	The first priority should be given to arithmetic for study of mathematics.	2	16	21	8	5	52	2.6
	Total							54.4 13

APPENDIX I

Attitude Score Obtained by Students

S.N.	Statement of the Problem	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total score	Avg. score
1.	I am motivated to solve problem in arithmetic class.	760	196	126	0	57	1139	3.79
2.	Group work as a teaching/learning activity is not necessary for the caliber of students in our school since it is time consuming.	227	30	87	40	95	474	1.58
3.	We have all the learning materials and equipments we need in the arithmetic lesson.	200	40	165	122	134	661	2.20
4.	Arithmetic cannot be learnt without the use of calculators.	122	70	30	132	500	854	2.84
5.	Too many projects are given to us in arithmetic.	225	148	45	128	139	685	2.28
6.	Teachers have encouraged me to study more arithmetic.	750	132	27	38	89	1036	4.53
7.	The knowledge of arithmetic is	950	0	30	106	47	1133	3.77

	essential for all persons.							
8.	Arithmetic may help you to all types of problems.	365	252	30	54	127	828	2.75
9.	I am sure of myself when I solve arithmetical problems.	450	108	75	134	91	858	2.86
10	I will us arithmetic in many ways as an adult.	450	40	45	148	111	794	2.64
11	Leisure time is used to solve arithmetical problems than algebraic and geometric problems.	605	36	102	48	112	903	3.01
12	I study arithmetic because many people say this subject has great importance.	600	220	45	98	61	1024	3.41
13	Arithmetical exercises are easy after computing by the use of games.	570	256	54	50	79	1009	3.36
14	Arithmetical problems are easily solved by activities.	670	256	45	106	34	1111	3.70
15	Arithmetical problems must be usable and contextual.	575	156	27	80	97	935	3.11
16	The class of arithmetic is more interesting rather than the other areas of mathematics.	590	172	27	20	120	929	3.09
17	It's not good to allot more time only for arithmetic.	78	20	27	172	800	1097	3.63
18	The arithmetic problems are difficult rather than the problem of algebraic and geometric areas of mathematics.	67	30	159	156	640	1042	3.47
19	Arithmetic should be allotted more time in school.	88	60	87	196	620	951	3.17
20	I hate arithmetic because their	47	70	162	40	770	1089	3.63

	problems are long and outer teacher never creates a favorable situation for learning this subject.							
21	Arithmetic is hard and complex subject.	88	0	129	76	750	1043	3.47
22	Fast speed of teaching arithmetic makes the students lazy.	144	0	90	100	505	834	2.78
23	The content of arithmetic of grade IX is not appropriate.	59	66	159	76	680	1040	3.46
24	The non-contextual examples are not appropriate on teaching arithmetic.	55	50	81	288	605	1079	3.59
25	Besides decimal number system, binary life.	99	38	207	112	425	881	2.93
26	The homework of arithmetic is done.	90	410	240	138	51	847	2.82
27	There are many applications of arithmetic if daily life so it should be continues as a compulsory subject.	335	220	186	126	53	920	3.06
28	Learning arithmetic will enable me to numerate and orderly in thought.	125	200	336	140	43	844	2.81
29	Understanding arithmetic does not necessary require practice.	97	66	57	212	490	922	3.07
Total								