Chapter – I

INTRODUCTION

Background of the Study

A comfortable and attractive classroom is an environment which enables to stimulate learning (Ahrentzen & Evas, 1989). In addition, the presentable physical environment strengthen the role of promoting students' achievement (Holliman & Anderson, 1986), Welberg (1991) mentioned that a conductive environment is always vital and effective for learning. Other than that, Hathway (1983) stressed that quality classroom lighting is conductive to a greater comfort and contentment. Most effective learning environments start with a meaningful problem that provides the focus for four phases of instruction: activation of existing knowledge (including skill), demonstration of new knowledge, application of new knowledge and integration of new knowledge into the learner's world. (Merrila, 2002)

In terms of teaching to the students, the teachers can create their own style and methods in order to deliver lessons (Loucks-Horsley & Matsumoto, 1999). The relevancy of materials and textbooks is an important resource for teachers in assisting students should be mentioned. These resources many times served as one of the main instruments for shaping knowledge, attitude and principles among the learned group (Noreen, 2003). In terms of attitude to Greiml-Furmann and Greger (2003) suggested that good teachers should give explanations. Browns (2004) mentioned, competent instructor are those who know their subject, are willing to answer, questions, are approachable and also have a sense of humor. Therefore, this investigation seeks to uncover to what extent the teaching methodology, attitude and environment significantly influence the performance of students after the implementation.

Language is a very important tool for communication. Hence, teaching and learning can only take place when the right and appropriate language is selected and used as the medium of instruction in schools. Hence, if a familiar language is used as a medium of instruction in schools, it enhances effective teaching and learning. Where as a non familiar language is used as a medium of instruction. It becomes a barrier to teaching and learning. If teachers and learners get confused with the medium of instruction, the teaching and learning process cannot be effective (Malekeha 2004). This means that the teaching and learning processes should be conducted in appropriate, right, clear and familiar environment to achieve desirable results. Mathematics, like a language is a basic tool of communication. Daily transactions and communications are involved in the frequent use of mathematical concept. Thus, it is quite natural that mathematics is given a very important place in school level education.

Medium of instruction for education seems to show direct or indirect nexus with the acquisition of language and also with the overall academic achievement of learners. Medium of instruction has a direct correlation with academic achievement and its role becomes more crucial in case of acquisition of mathematics. The medium of instruction is mainly affected in science, engineering, medicine, technical institutes and the educational universities of Nepal. More importantly, it is the only language of communication which is used to promote Nepal's increasing diplomatic relations with the outside world.

Medium of instruction plays pivotal role in intellectual development. Medium of instruction is best for the intellectual, social and psychological development. Traditional methods of teaching are still dominant in Nepal. So, professional development is more modern pedagogical practice. It is an area deserving close attention. Teachers 'distribute' knowledge and skills to their students who in turn memorize facts, definitions, and

algorithms. The traditional instruction style in countries like Nepal is advocated not only by teachers but also by parents. Thus, Nepalese education is strongly influenced by content and by examination driven practices. But little or no attention paid to encourage students to use their knowledge and skills to solve practical problems or to try to access their own.

Medium of instruction in the context of this study is primarily seen as a means of delivering course of content. In the context of global education, English medium teaching in Nepal has been taking in position. However, a number of changes in English Medium schools' education, It was changed in term of curriculum, text book, methodologies and use of teaching resources both at school and college levels. The school level curriculum in Nepal is designed and implemented by Curriculum Development Center (CDC). The Curriculum Development Center prepares the textbooks for all school levels. Nepalese educators / experts prepared all subjects text books in public school levels. However, private schools use textbooks approved by the CDC. The urgent need of English learning has added a further dimension with growing number of English Medium schools across the nation (Bhattrai & Gautam 2005). These days private and public schools are using English Medium of instruction. The research Medium of instruction and Mathematics achievement of student has not been conducted yet. How does the medium of instruction help to impact the knowledge for students? Does it really play dominant role to achieve good performance. The researcher tried to find out the answer to these questions.

Statement of the Problem

Mathematics is an essential part of school curriculum which is taught from basic level to higher level. So, every student should learn it and again better achievement. The research medium of instruction may play vital role for Mathematics achievement of students. So, the

researcher wanted to research in this study. Specifically, this study aimed to answer the following questions.

- Does the mathematics achievement of students of the English Medium differ from a Nepali Medium?
- Do the teaching learning activities of English Medium School differ from Nepali Medium School?

Objectives of the Study

This study was done to attain the following objectives.

- To compare the mathematics achievements of students in English Medium and Nepali Medium Schools.
- To analyze the teaching learning activities in English and Nepali Medium School.

Significance of the Study

This study compares the student's mathematics achievement on the basis of medium of instruction in Grade VI students. This study plays vital role for compare the achievements of English and Nepali Medium of instruction.

Hence, the findings of this research study would be beneficial to all the teachers, students, researchers and educationists as well as curriculum designers. It would help the teacher to use appropriate teaching method in different situations. This study would provide the information to the teachers, parents and students about the achievements of students of English and Nepali Medium School. Thus, this study is significant for the reason that it would help to provide information to the concerned agencies to reform and improve the mathematics teaching at lower secondary level.

Statements of the Hypothesis

Research Hypothesis

H_0: There is no significant difference between mathematics achievement of students in English and Nepali Medium Schools.

Statistical Hypothesis

i) $H_0: \mu_1 = \mu_2$ (Null hypothesis)

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

Where, μ_1 and μ_2 are respectively the corresponding parametric means of achievement of students in English and Nepali Medium Schools.

Delimitation of the Study

This study was based on the study of mathematics achievement and medium of instruction of English and Nepali medium schools. The researcher wanted to compare the mathematics achievement of students in English and Nepali Medium Schools and analyze the teaching learning activities in English Medium and Nepali Medium School. The researcher used achievement test and classroom observation form on the tool of this study.

This study was delimited to the achievement of 200 students of English and Nepali Medium Schools of Gorkha District.

This study had some limitations as follows.

- This study was limited to the English and Nepali Medium Schools of Gorkha District. All of these were public schools.
- This study was included only Grade VI students and teachers who taught at that grade.
- In this study private boarding schools were not included.

- It was limited to six secondary schools of Gorkha District.

Operational Definitions of the Key Term

English Medium School: The school in which English language is used to deliver the subject matter.

Nepali Medium School: The school in which Nepali language is used to deliver the subject matter.

Teacher: The person who teach mathematics in grade VI of sampled school.

Achievement: In this study, student achievement means the score obtained by the students on the achievement test in mathematics which is prepared by the researcher.

Public school: The schools which are receiving the government grant for the salary of the teachers.

Chapter- II

REVIEW OF RELATED LITERATURE

Review of related literature is research task, calling for a deep insight and clear prospective of the overall field. The main purpose of review of related literature is to find out what works had been done so far in the area of study being undertaken. It helps to conduct the new research in systematic manner by providing the general outline of the research study and avoid the necessary duplication. Among the literatures reviewed, some were in related to a study of Medium of instruction and Mathematics Achievements of students. The review of literature involves the systematic identification and analysis of documents related to the study undertaken. The previous studies cannot be ignored because they provide the foundation to the present study. Within this assumption some works on relating this topic are presented here.

Shrestha (1991) has conducted a study on the topic "A study of sex difference in mathematics of ninth grades students of Gorkha District" with the objectives to determine the sex influence achievements in mathematics. He prepared to set up tools which are achievement test and questionnaire. He administered them with two hundred eighty students of five schools. He applied t-test to conduct 50 students that Boys developed more than girls at home study with all students. The study concluded that boy's performance is better than girls in mathematics achievement.

Kunwar (2001) in his research on "A comparative study on the achievements in a mathematics by the proficiency certificate level passed students graduated from private and public school" concluded that average score of public school's students were found to be significantly better than of private school's student.

Sharma (2004) conducted on, "Language symbolizes human development". It is a gift to man as the best living being of the world. Without it, a man is the most superior animal with limited expression. Language is the power of human race through which is able to express him well and understand the expressions of others. On its basis, man utilizes the experiences of the past for the present and secures present successes as a basis of future development. As a wonderful discovery of man, language has enriched him tremendously. It has saved the world form man using signal sounds like those used by the dumb. Its development is a sign of social and national development.

Neupane (2005) did his research on " A comparative study of Private and public secondary schools students in Algebra of Kathmandu District," conducted that the mean achievement of the students of private schools is found to be significant than the mean achievement of public schools. He also concluded that the achievement of boys is greater than that of girls.

Koeze (2007) conducted a research on "Differentiate Instruction; The effect on student Achievement in an Elementary School". The purpose of this study was to determine if differentiated instruction has an effect on student achievement. The researcher sought to answer two research questions "Does differentiated instruction have an impact on student achievement?" and "Are the components of differentiated instruction on that have a greater impact on student achievement than others?"This study followed a mixed method design and consisted of two parts. First a quantitative analysis of test scores from the Michigun Education assessment Program. Teacher and student survey result were analyzed as a means to outline broad relationship the data. Findings also suggested that the differentiation strategies of choice and interest play vital role in learning. Findings suggested that teacher

just beginnings differentiation should first administer a learning style inventory to their students.

Bajrachrya (2011) conducted a study on "Relation between student's mathematics Achievement and medium of classroom Instruction." The objective of the study was to find the relation between student mathematics Achievement and the medium of instruction in the classroom teaching. This study was based on grade eight students of Kathmandu valley. The researcher has followed Ross's sampling guideline and selected 390 students from 26 schools as the sample of this study for data collection two types of tools viz. achievement test and teacher interview form used. The reliability of the achievement test was 0.87 and the validity of the achievement test was determined by the means of expert judgments. The obtained data was analyzed by SPSS program. The analyzed result showed that English Medium of instruction in the classroom teaching mathematics was better than the Nepali medium of instruction in classroom teaching mathematics.

Adhikari (2012) conducted "A study of Mathematics Achievements of Students of Public and Private school", his study consisted of Grade -VII students, from public and private school in Nuwakot District. The equal number of students from each public and private school were selected randomly for the sample of the study. The sample of the study included 310 students. The achievement test was administered in Grade -VIII students of public and private school. The mean, standard deviation and z-test were used as statistical tools for the analysis of the data at 0.05 level of significance based on the interpretation and analysis of the data.

Rogier (2012) conducted a research on "The effects of English Medium instruction on language proficiency of students enrolled in higher education in the UAE". This research

seeks to discover what happens to students' English language skills while studying in English medium classes in UAE universities and it looks at how this comparison with what instruction and students think happens to students English proficiency during the four years of study. This is explored through a retrospective panel study using a test / re-test method to investigate score gains on the IELTS s from medium of Instruction. These research finding indicate that there is a statistically significant score gain in all of the English language skill areas that are tested by the IELTS exam after four years of EMI for the participants in this study. The most gain occurred in the area of speaking followed by reading, writing and the listening results from questionnaires and interviews.

Ricablanca (2013) conducted a study to examine the "Effectiveness of mother tongue based instruction on pupils' achievements in mathematics". Specifically, it aimed to describe the profile of the pupils in terms of gender, socioeconomic status and ethnic origin, as certain the level of achievement in mathematics. When the pupils expressed to mother tongue based. They are categorized according to the profile variables, gender, socio-economic status and ethnic origin. A quasi-experimental research design was used involving two group of the grade I pupils of San Nicolas Elementary School in school Year-2013-2014.

Mansor (2015) conducted on "Comparative study of students' mathematics achievement and medium of instruction". It focuses on the policy of changing the medium of mathematics and science from Bahasa Melau to English is an important innovation affecting teachers of mathematics and science. It possesses special challenges not only for teachers who have been trained in the Malay medium but also for the trained in English. The result of the correlation and multiple regressions indicates that all these factors are significantly associated towards students' achievements. Researcher found that during the last three decades there were many studies about the attitudes of teaching profession, studies on the

attitude of students and teachers towards mathematics and the achievement of students in mathematics in different classes of school level.

Shendhe (2015) conducted a study of "A comparative study of English language teaching in English and non-English medium secondary schools/colleges from Grade 8 to Grade 12 in India". This research attempts to compare the teaching process in English and Non-English medium of secondary schools and junior colleges in India. It aims to find out the differences in sets of schools regarding teaching process with variables like language of instruction, comprehension of learners, use of audio visual aids, teaching skills, proficiency of teachers etc. to analyze the selected fifty-six teachers of both medium of school. The findings of this study suggested by that the English medium school teachers use English as a medium of instruction as well as for giving general instruction is more than use of English by the Non-English medium school teachers.

From the review of available literature, it is helpful to compare the achievement of English and Nepali medium of instruction and it is helpful to analyze the teaching learning activities in English and Nepali medium school.

Conceptual Understanding of the Study

A conceptual framework is the representation of the understanding of the theories by the researchers and his / her own conceptualization of the relationship between different variables. A conceptual framework is presented either in graphical or narrative forms which depicts the relation between the variables, brings clarity, focus to see and organize the research questions more clearly.

The researcher deals about the conceptual framework for the research. By reviewing and analyzing various literatures in relation to attain and it deals about researcher's own

concept to conduct the research in an original way. By reviewing the above theoretical review of literatures the following conceptual framework was developed. Thus, the present study is on the following conceptual framework.

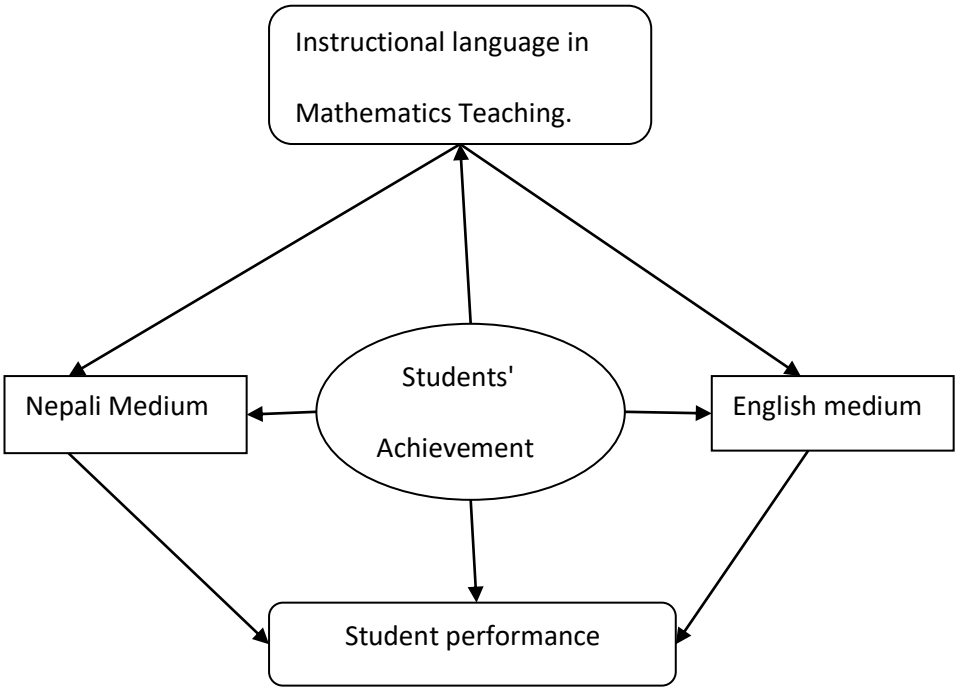


Figure 1: Conceptual framework

From above figure, this portrays conceptual framework. The researcher intended to compare the student's achievements between English and Nepali Medium schools' students. An instructional language refers communicating language in classroom teaching or language used by the teacher to teach, Medium of instruction as English and Nepali Medium. In these two medium of instruction there are different kinds of students who learn together such as mixed ability students, multi level students and different language, aptitude and learning style students. But which medium of instruction raised students' achievements best among the two. It is depended on students' performance. Thus, our independent variable consists of

environment, teaching methodology hypothetically tested in the study. Environment consists of environment in classroom, school and students home can affect the students' performance.

Teaching also affects the performance of students from characteristics of teachers in terms of experience and training, teachers teaching methodology, teaching facilities and teaching materials like books, magazines and other facilities. Performance of students believed to be affected even by the achievements of the students towards learning also plays great role.

Chapter- III

METHODS AND PROCEDURES

This chapter contains the methods and procedure to be done to achieve the objectives of the study and to get the answer of the statement of the problems. It describes the design of the plans and procedures of the study, which are to be carried out to achieve the objectives of the study. The major procedures in the study are described in this chapter as follows.

Design of the Study

This study is about the comparative study of mathematics achievements based on medium of instruction. The researcher adopted mixed method research design. Creswell, Planoclark, Gutmann, and Hanson (2003) states that mixed method study involve the collection or analysis of both quantitative and qualitative data in a single study. In which the data are collected concurrently or sequentially, are given a priority and involve the integration of data at one or more stages in the process of research. This study was based on sequential mixed method design in which mathematics achievement test for quantitative data and classroom observation form for qualitative data.

Population of the Study

This study was undertaken for the purpose of comparing the achievements of students and analyzes the teaching learning activities of teachers in Nepali and English Medium School. So, the population of the study consisted of the Grade VI students and mathematics teacher of Gorkha district. The sampled student had been studying in Grade VI during the academic year 2073 B.S. As the data provided by District Education office, Gorkha, there were 62 Secondary and 78 Lower secondary School among them 7 Secondary and 6 Lower

Secondary School were English Medium School then other remaining 55 Secondary and 72 Lower Secondary Schools were Nepali Medium School.

Sample of the Study

The sample of the students and teachers were determined by random sampling method from Gorkha district. Six schools were randomly selected as the sample of the study among them three English Medium and three Nepali Medium schools. For this study 200 students were selected from Grade VI. Out of them, 100 students were of English Medium and 100 students were Nepali Medium Schools selected by random sampling method. From these six schools, four mathematics teachers were selected randomly including two each from English and Nepali Medium School.

List of sampled school of this study

Table 1: English Medium Schools

S. N.	Name of the Schools	Address	Total number of Students
1	Navajagriti Chandi Secondary School	Bhimsen R.M - 6, Gorkha	30
2	Nava jyoti Secondary School	G. M. Dandidanda, Gorkha	35
3	Saraswoti Secondary School	G.M. Aahale,Gorkha	35
	Total		100

Table 2: Nepali Medium Schools

S. N.	Name of the Schools	Address	Total number of Students
1	Navajagriti Chandi Secondary School	Bhimsen R.M,-6, Gorkha	30
2	Himalaya Ma.Vi.	Lakhan R.M. -7, Gorkha	35
3	Janashakti Lower Secondary School	Bhimsen R.M.-6, Gorkha	25
	Total		100

Tools of Data Collection

This study used two types of instruments: mathematics achievement test and classroom observation form. Mathematics achievements test with 40 items was prepared. Second instrument was classroom observation form, which consists of the elements of teaching learning activities. In detail, tools of this study were as follows.

Achievement Test

Mathematics achievement is the main tool for this study. This tool was design by researcher. This test paper consisted of 50 items multiple choice questions. The researcher

prepared on the basis of specification chart from existing curriculum and text book of Grade VI mathematics. The achievement test paper was prepared on the basis of knowledge, skill, comprehension and qualification level of cognitive domain using Bloom's taxonomy. The researcher prepared the test paper for the pilot study, a pilot study was conducted on 20 students. After the test the researcher prepared the item analysis table (APPENDIX - I). By the help of item analysis table the researcher removed very easy, very difficult and not sufficient question. Then, 40 items were carried out 200 students for to find achievement of English and Nepali medium schools' student.

Reliability and Validity of the Tools

Reliability and validity of the tools was ensured by piloting test and expert judgments.

Reliability of the test

For a research study to be accurate, its findings must be reliable and valid. The issues of reliability and validity have been addressed differently by different writers. According to Kvale (1996) reliability is connected with the persistently of the research findings. According to Yin (1994: 37) "the aim of reliability is to minimize errors and biases". Ensuring reliability is a prerequisite of constructing a good test. If a test is reliable, all the items should correlate with one another. Measurements are reliable if they reflect the true aspects but not the chance aspects of what is going to be measured. Thus, internal consistency of a test is essential for it to serve its purpose.

In method of determining the reliability of an instrument in qualitative research external and internal consistency procedures are used. The split-half method is commonly used for measuring the reliability of an instrument in the internal consistency procedures. The split-half technique needs the same test to be administered on one occasion only. In this

method, the test is divided into two parts and the correlation between these two parts is calculated. The researcher used the split-half method in this study to obtain the reliability measure. This technique is designed to correlate half of the items with the other half and is appropriate for instruments that are designed to measure attitudes towards an issue or phenomena. The test scores were divided into two halves: scores for odd-numbered items and scores for even-numbered items. Then the correlation between the two halves was determined.

The following Spearman-Brown prophecy formula was used to calculate the reliability coefficient of the whole test. $r_{total-test} = \frac{2\, r_{split-half}}{1+ r_{split-half}}$. The split-half reliability coefficient for the split half was 0.836 and the reliability coefficient for the whole test using the above formula was 0.911 (APPENDIX- J). Since this shows an adequate level of reliability, the test was considered to be reliable.

Validity of the test

On the other hand, Validity is the degree to which a choice of a research method investigates what a choice of a research method investigates what it is intended to investigate. In the other words, Validity refers to the truthfulness and trustworthiness of findings. Validity refers to a situation when a research method helps the researcher to gather the intended information to address the question as designed for a particular study and when such findings reflect a clear relationship between the variables of the study (Kvale 1996, Bayman 2004). For the validity of the instruments, the researcher consulted with the thesis supervisor. In this study the research tools were achievement test and Classroom observation. It was prepared by through the consultation with thesis supervisor. The content of the test was discussed with subject experts, mathematics teachers and thesis supervisor and their suggestions were

included prior to the piloting test. Also, similar test construction procedures in the literature were consulted when preparing the test items.

Classroom Observation Form

For the purpose of collecting qualitative data, the observation is commonly used. It is the best approach to collect the required information when the researcher fined facts knowledge. For this study, the researcher observed mathematics classroom activities on English and Nepali medium schools' teacher. The researcher observed the classroom of each teacher on the basis of classroom observation form (APPENDIX - K). For the validity and reliability of the tools, it was prescribed form for practice teaching and it was prepared by Department of Mathematics Education, Tribhuvan University. Then, the researcher was collected the relevant data by consultation under the research instructor and domain expert.

Data Collection Procedure

The researcher chooses sampled students with the help of subject teacher by using simple random sampling method. Since achievement test and classroom observations were the main source of data collection. First of all, the researcher explained about the nature and purpose of the study before the achievement test was administered. At the same time, students were given guideline for responding questions in the test paper. Then, the researcher observed the classroom of the subject teachers and filled the observation form accordingly. Classroom observation was done during teaching learning activities. Researcher observed, interacted and recorded the essential data from the information on the basis of observation form.

Data Analysis Procedure

The data were collected by administering achievement test paper among the sample students and observation of teaching learning activities of teacher using observation form. The answer sheets of the administered achievement test score were analyzed using pre-determined scoring keys. In the first stage, all the test papers were checked. In order to, compare between two medium of instruction. The collected data were analyzed through the mean, standard deviation, and t-test at 0.05 level of significance. The researcher had used the classroom observation form for the qualitative data collection. The data was analyzed by grouping the similar information in descriptive method. The thematic analysis was done collect the information with the related literature.

Chapter - IV

ANALYSIS AND INTERPRETATION OF DATA

The data for the study were collected from grade six students. The collected data were tabulated and analyzed according to the objectives of the study and verification of the hypothesis. This chapter deals with the statistical analysis and interpretation of data obtained from the scores of sample students in the achievement test. These data were tabulated and analyzed using mean, standard deviation and two tailed t-test. The main focus for the qualitative study was to analyze the teaching learning activities in mathematics classroom. This chapter deals with the analysis and interpretation of the collected information derived from the classroom observation. The researcher had observed the teachers classroom activity with help of classroom observation form. The collected information was analyzed under the following headings which are corresponding to the objectives of the study.

Analysis of the Students Achievements on the basis of Achievement Test

The first purpose of the study was to examine the level of mathematics achievement of grade VI students of Gorkha district. The data were obtained from achievement test paper. The analyzed data showed that the maximum and minimum score obtained by the students were 40 and 14 items respectively.

The students' performance in the mathematics achievement test was categorized into five levels in each group. The level of students' achievements in Gorkha district is shown as below.

Table 3: The Level of mathematics Achievement of students in English Medium school

Level of achievements	Test score range (converted 40 marks into 100)	No. of examine	Percent
Distinction	Above 80	94	94%
First Division	60-79	4	4%
Second Division	45-59	1	1%
Third Division	32-44	1	1%
Failed	Below 32		
Total		100	100%

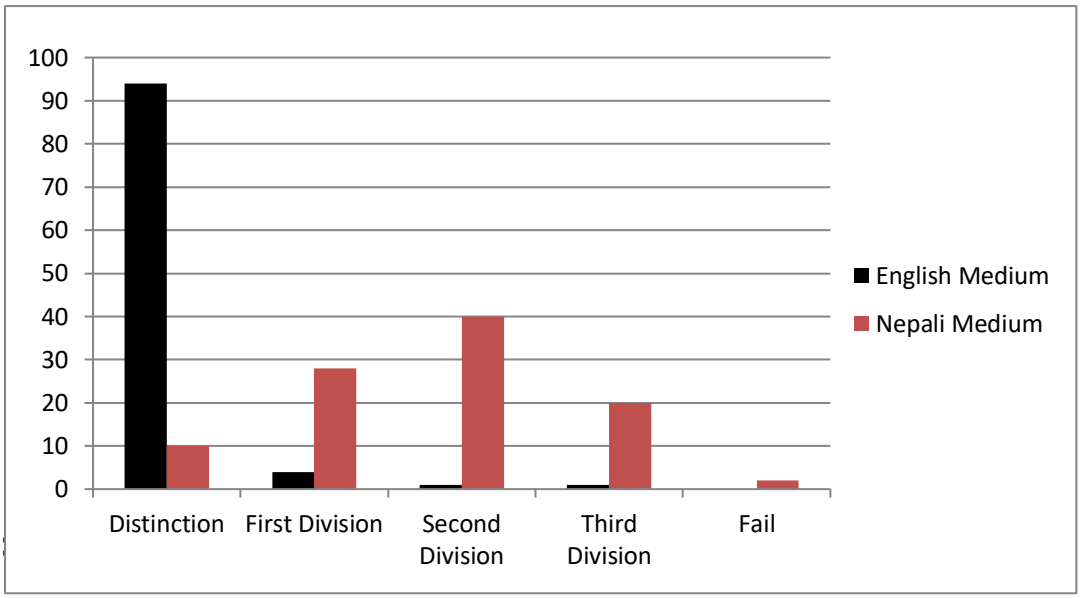
The above table shows that out of the 100 examinees, 94% of students scored distinction marks, 4% students obtained first division marks and 1% percent students obtained second and third division each in achievement in English Medium School.

Table 4: The Level of Mathematics Achievement of students in Nepali Medium School

Level of achievements	Test score range (Converted 40 marks into 100)	No. of examine	Percent
Distinction	Above 80	10	10%
First Division	60-79	28	28%
Second Division	45-59	40	40%
Third Division	32-44	20	20%
Failed	Below 32	2	2%
Total		100	100%

The above table shows that out of the 100 students only 10% of students scored distinction marks. Similarly, 28% of students obtained first division, 40% scored second division, and other 20% obtained third division and rest 2% of students were failed in the achievements test in Nepali Medium School.

Figure 2: level of Mathematics Achievement of student in English and Nepali Medium School, shown in Histogram



Medium

From the above Histogram, it is clear that 94% of students secured distinction marks in English Medium School where only 10% of students secured distinction marks in Nepali Medium School. Similarly 4% of students in English Medium School obtained first division while 28% of students in Nepali Medium School got first division. Moreover, in English Medium School only 1% of student's scored second and third division each while there is 40% and 20% of students in Nepali Medium School. Moreover 2% of students were failed in Nepali Medium School.

Hence, it is obvious from the table that English Medium School has better performance than that of Nepali Medium School.

Comparison of Mathematics Achievement between English and Nepali Medium Schools' students

The mean, standard deviation and corresponding t-value of the scores obtained by the English and Nepali Medium School students are presented in Table 5 as follows.

Table 5: Mathematics Achievement of Students in English and Nepali Medium Schools

Group	No. of students	Mean	S.D.	t-Value	conclusion
Students of English Medium School	100	37.05	3.41	22.35	22.35>1.96
Student of Nepali Medium school	100	21.82	5.90		

From the above table, it is observed that the mean score of students of English and Nepali Medium Schools are 37.05 and 21.82 respectively. Therefore, the mean score of students of Nepali Medium School is lower than the mean score of students of English Medium Schools by 15. 23. The calculated standard deviation of English Medium School is 3.41 and Nepali Medium School is 5.90. The t-value calculated is 22.35. Since the calculated t-value is greater than the tabulated value 1.96. The difference in mean value is found to be significant difference between the mean achievement of English Medium and Nepali Medium school students. Hence, the null hypothesis between the mathematics achievement of English and Nepali Medium School is rejected and the alternative hypothesis is accepted.

Thematic analysis based on Classroom Observation

Qualitative research often involves the use of general ideas, themes, or concepts as tools for making generalizations. Many are non variable concepts or simple nominal-level variables. Those who conduct qualitative studies analyze by organizing data into categories based on themes, concepts, or similar features. While doing this, they may also develop new concepts, formulate conceptual definitions, and examine the relationships among concepts. Coding data has a different meaning in qualitative research than in quantitative data. In qualitative research we organize the raw data into conceptual categories and create themes or concepts.

For the Purpose of fulfilling the objectives, the researcher observed four mathematics teachers' classes on the basis of classroom observation form (Appendix- K). The researcher observed two English Medium Schools' teachers and two Nepali Medium Schools teacher's classroom in different times. The researcher named them A, B, C, D teachers accordingly. The A and B teachers were of English Medium and C and D teachers were of Nepali Medium. The researcher observed the classes based on different themes on classroom observation. Themes are as follows.

- Planning and Preparation of lessons
- Creating and Monitoring Learning Climate
- Understanding and Organization of subject Matters.
- Variety of Instructional Methods
- Designing Learning Climate
- Professional Responsibilities
- Monitoring, Assessment and Follow up

Planning and Preparation of Lessons

Planning and Preparation of lesson plays vital role for effective teaching. In this lesson: design of lesson, revision and warm up strategies, prepares the lesson plans, etc. are main attributes of this topic. In this study, design of lesson refers to teacher preparation for teaching or teacher sets the goal before starting classes. Teacher designs the lesson on the basis of achievable goals and standards of teaching and outcomes. Then, revision and warm up strategies is another most important part of teaching. First of all, teacher motivates the students for learning. Motivation is one of the emotional factors which help students to select appropriate behaviors for study. It refers that the students are inspired and more interested and eager for learning mathematics. Then others part, teacher prepare the lesson plan to use pre-requisite relationship among concept and skill. Teacher makes a plan the instructive to cognitively engage the students. In classroom observation the researcher found following information.

Teacher design lesson that is relevant, monitoring and likely to engage the students.

(Teacher A)

The teacher has prepared strategies of the lesson with fixed objectives which the teacher presents at initial phase of learning. (Teacher B)

The teacher did not prepare the lesson plan and followed the traditional rules of teaching method. (Teacher C)

The teacher prepared the lesson plan which was connected with pre-requisite relationship among the content. (Teacher D)

In classroom observation of above teachers, Teachers A, B, and D made a lesson Plan but teacher C didn't make. Teacher A and B had prepared the lesson plan to connect the pre - requisite knowledge but teacher C didn't prepare the lesson plan and followed the traditional

rules of teaching method. A and B teacher entered the classroom, warmed up and motivated the students first. Then, that teacher revised the previous lesson. So, English Medium school teacher was well prepared for teaching and they designed the lesson plan but Nepali medium school teacher did not do that type of activities.

Creating and Monitoring learning Climate

In classroom teaching learning process, classroom climate is one of the most important predictions for student achievements. For promoting the student learning achievements, the teacher used own disciplinary approach for creating classroom environment. If teacher creates a positive learning environment, student's learns easily. Similarly, Classroom management is other part in teaching. It is also important for keeping the students in concentration. Classroom management is the process of creating conductive environment for teaching and learning. Well management classroom is pre- requisite for optimum learning achievements. The researcher found the following information in classroom observation.

The teacher established respectful, flexible and supportive learning environment with meaningful physical setting. (Teacher A)

The teacher fostered high standards behaviors which were consistently reinforced resulting in little or no interface with students and tried to promote students' inter dependence and interdependent environment. (Teacher B)

The teacher did not create him positive learning environment but students were making noise and felling lazy. (Teacher C)

The teacher create the positive learning environment with inclusive, flexible and supported learning but the teacher did not give the space to discuss and thinking critically among the student. (Teacher D)

In classroom observation, the researcher found that Teacher A and B created positive learning than that of C and D teachers. Physical facilities were infrastructure of classrooms; management of desks benches, suitable classroom size, and well ventilated and so on. In class of teacher B the researcher found that the, teacher divided a classroom in many groups. Then, teacher gives some problems in a group. The teacher motivates the student for to solve the given problem. In class of teacher D, the researcher found that the teacher gives some question to students but teacher did not give the students space to discuss and thinking critically. In the topic, H. C. F., to find highest common multiples of 9 and 16. The teacher did not provide space for discussing. Rather, he solved the problem himself directly and asked his students to solve other similar problems.

So, the researcher found that English medium schools' teacher established a respectful, flexible and supportive learning environment but Nepali medium schools' teacher did not create positive learning environment therefore the student were making noise and felling lazy. In Nepali Medium School, there were different problems of schools like lack of the use of teaching materials, large classroom size; there were no sufficient teaching materials, lack of library and so on. So, that type of schools got low achievement. In English medium school, the teacher established a climate that promotes fairness and respectful environment; where the student and teacher are interested and enthusiastic to learn the concern subject matter.

Understanding and Organization of Subject Matters

Understanding and Organization of subject matters is the main body part of the classroom teaching. The main attributes of this topic were teacher organizes curriculum to support students' understanding of subject matters, teacher integrates the idea and information within and across the subject matters, where students are eager to understand, the

interdisciplinary connections of lesson. Here the researcher observed the teacher's knowledge of content and the structure of the discipline. Similarly, the teacher's pre -requisite knowledge and the relationship with the subject matter was also taken in consideration. In the classroom observation, the researcher found the following information.

The teachers solved all types of problems given in exercise. The teacher broke down the complex objectives in small steps and planned the lesson in the sense of student understanding. (Teacher A)

The teacher presented the subject matter in coherent, chronological and purposeful way. The teacher provided opportunities for students to set high goals and took total responsibility. (Teacher B)

Interdisciplinary connections of lessons in plan and practice were not found there. (Teacher C)

The teacher did not link the lesson with content and there was no structural discipline. (Teacher D)

In classroom observation, the researcher found that in teacher A and B motivated the students for to solve all problems given in exercise. Then, the teacher provides the opportunities to solve the problem in their own idea. The teacher broke down the complex objectives in small steps and planned the lesson in the sense of students' understanding. Whereas the teacher C and D, didn't link the lesson with content and there was a structural discipline. Therefore we can say that effective instructional material and appropriate teaching methods corresponding to the mathematical subject matter create good achievement in Mathematics teaching.

Then the researcher observed the class of the teacher 'A'. He had to teach to find out L. C. M. of 10 and 15. First of all, the teacher asked some questions for pre - requisite knowledge. Then the teacher asked: Find H. C. F. of 10 and 15 and also. Then Say, the remaining factors. At last, the teacher said, L. C. M. = H. C. F x remaining factors. Here the teacher broke down the problem in small steps and student learnt easily. But teacher C and D didn't link the lesson with content and structural discipline.

The researcher found, English Medium Schools' teacher was able to modify the instruction as demanded by the nature of the course. The teacher integrated the idea and information within and across the subject matter where students are egger to understand. The teachers solved all type of problems given in the exercise. The teacher broke down the complex objectives in small steps and planned the lesson in the sense of students' understanding. But in Nepali Medium Schools, the teacher did not focus for valuating students' backgrounds, interests and developmental works. Those teachers did not link with content and structural discipline.

Variety of Instructional Methods

There is various method of instruction for mathematics teaching. The teaching method is adopted on the basis of nature of the lesson. Mostly teachers used lecture method for teaching. In classroom observation time, some teachers used constructivist approach which focuses students not as passive recipients but as active participants in the engagement. In classroom observation, the researcher found the following information of different teachers. *The teacher used interactive model of teaching, all students were participated in learning actively. (Teacher A)*

Teacher gave good strategies for problem solving, critical thinking and other activities for fostering as per the change in environment. (Teacher B)

The teacher focused on teacher centered method. (Teacher C)

The teacher didn't treat student individually and did not use creative learning environment. (Teacher D)

In classroom observation of above teachers, teacher A and B used problem solving or student centered teaching method where as the teacher C and D used traditional teacher centered method. Nowadays most of the school follow student centered ICT based learning. Student centered approach actively engages the students in the learning process. When, researcher observed the class then the researcher got some teachers using student centered method, who were asking some questions for the help of subject matter. Constructivism is focused on the way of people creating meaning through a series of individual construct and experience. It placed emphasis on providing a learning environment. The school environment plays the important role to decide the future position of the students and the life of the students. The regularity of teaching activities and extracurricular activities and discipline are important for the good achievement of the students.

Designing Learning Experiences

Learning styles confirms that when there is accommodate in the classroom, there is positive effect on students' achievements. So, teacher designs short-term and long term plans to foster students learning. Similarly, the teacher modifies the instructional plans to adjust for students need. In classroom observation, the researcher found following information on this topic.

The teacher experienced in the discipline and the area of difficulty was already recognized by the teacher. (Teacher A)

Learning style was co-operative and the teacher make long term plan for student learning. (Teacher B)

The teacher did not focus for valuating student's backgrounds, interest and developmental learning. (Teacher C)

Classroom activities of the teacher were successfully. He had given instruction. (Teacher D)

In classroom observation of above teachers, teacher A and B recognized the student's difficulties. Learning styles was co-operative the teacher had made long term plan for learning. Teacher C and D didn't focus for valuating students' background and classroom activities of the teacher were successfully as he had given clear instruction.

Teachers teaching style was co-operative. Learning style leads to faster and more satisfactory improvement. Social constructivism says that motivation and teaching style are the keys of the teaching learning process, which makes classroom more interesting and encouraging. Teacher should became a facilitator in classroom and provide positive reinforcement. The positive reinforcement is always emphasis in good learning. Physical environment of the Nepali Medium School was satisfactory but the psychological environment was not as good as than English Medium School.

Professional Responsibilities

Professional Responsibility is the main duty of a man. It is form of trustworthiness, every person completes own professional responsibility. It is also as ornaments of a man. Sharma (2005) has recommended that the head teacher should be the man of task oriented in order to make the school effective. School leadership should be handed over to such person. The head teacher is the instructional leader of a school. He has to provide classroom support, administration, teaching observation as the central figure of a school. The main attributes of

this topic were teacher enhance the content knowledge and pedagogical kill (Teacher engage in continuous professional learning), the teacher receives the feedback from colleagues and supervisor, collaborating and sustain professional learning environment. In classroom observation, the researcher found following information on this topic.

The teacher was honest, respectful and had the sense of humor. (Teacher A)

The teacher reflected the planned for professional development with an establishing professional goals and prepared opportunities to grow professionally. (Teacher B)

The teacher engaged in continuous professional learning but the teacher did not receive the feedback from colleagues and supervisor. (Teacher C)

The teacher receives the feedback from colleagues and supervisor but not follow that in real teaching. (Teacher D)

In classroom observation of above teachers, teacher A completed own duty honestly and came in school in time and went to class in time. Teacher B was also honest; the teacher reflected the plan for professional development. Then, the teacher managed the time in classroom activities for effective learning. The teacher C was also responsible for profession but the teacher did not receive the feedbacks from colleagues and supervisor, the teacher thought that he was expert in mathematics and neglected others views. The teacher D received the feedback from colleagues and supervisor but did not follow their views, the teacher did according to his own style. That type of teacher went too late in classroom. School had allocated 40 minutes time per period. Teacher C and D were not serious about the time schedule. School allocated enough time but teacher were not in time. The teacher C was 10 minute late and Teacher D was 5 minute late went to in class every day and they were not regular in the classroom either.

In Nepali Medium Schools teachers, received the feedback from head teachers and school management committee but they did not focus for valuating students' backgrounds, interest and developmental learning but English Medium School teachers were responsible for their duties and they thought how they would make a good student in their subject. So, English Medium Schools got good result and they provided quality education. In teaching learning process, teachers must be punctual and follow the rules of school.

Monitoring, Assessment and Follow Up

Assessment is the act of judging or assessing person, situation or event. Assessment can be used as a tool to evaluate. Assessment should be fair, valid, reliable, transparent, motivating and it should be revealing the performance of all. Monitoring refers to the act of observing something. The attributes of this topic were the teacher encourages students' question, teacher uses as the spot evaluation of students learning, teacher diagnoses the students' learning difficulty, and the teacher uses rubrics for posting student work. In classroom observation the researcher found following information on the topic.

The teacher focused on student's evaluation due to the nature of course. (Teacher A)

Teacher diagnosed the students' learning and teacher evaluates the student work. (Teacher B)

The teacher had already known the student's difficulty area of students but the teacher did not use rubrics for posting students' work. (Teacher C)

The students were participating in learning but they were not doing homework regularly and were not serious for their learning. (Teacher D)

In classroom observation of above teachers, the teacher A, focused on students' evaluation. The researcher found that the teacher gave some class work to student then the teacher checked all students' work and gave suggestion. The teacher B also diagnosed the

students' difficulty and the teacher evaluated the students' work then tabulated students' work. The teacher C had already known students difficulty but the teacher did not make rubrics for posting students work. Teacher gave some questions for students but did not follow them. Teacher D also did not provide classroom activities to the students. Few students had done their homework and the teacher checked 1 or 2 copies. The teacher provided homework to the students but the teacher didn't checked regularly and they were careless about their homework.

The researcher found that there was the lack proper guidance by math teacher in encouraging the students in Nepali Medium School. So, they were unable to grasp the formula and basic concept of mathematics because of irritating teaching style of the mathematics teacher many students got poor performance. They said that the math's teacher didn't explain the essential math formula. The teacher didn't solve all problems of the given chapters in the classroom. As a result, they failed to solve math's problems themselves. Therefore, the teacher is bound to focus on student's evaluation rather than teaching strategies and plans.

In conclusion, English Medium Schools are better than Nepali Medium Schools. The researcher compares the achievement of English Medium and Nepali Medium Schools classroom learning activities. In Nepali medium Schools, The teacher does not use appropriate method and materials. Most of the teachers always provide homework to the students but they do not check and write the comments and suggestions after given the homework. So, the students are weak. It is seen that the teachers do not have good command over the subject matter. Teacher does not use materials to the related topic and the teacher does not motivate their student to learn or practice for given problem in their text book. Many students say that the mathematics is more useful for further study like science, engineering, management etc. Therefore it should be given proper attention from the concerned body. In English Medium School, teachers were well prepared for teaching and prepared lesson plan. Students and teachers both are actively participate for learning. Teacher used teaching material for teaching. So that many cause English Medium School get good result.

Chapter - V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

After the analysis and interpretation of the collected data, an attempt has been made to summarize to enlist the findings and some recommendations for further study. The first section of this chapter presents the summary of the research and the second section presents the recommendations based on the findings of the study.

Summary

This chapter is basically concentrated in deriving some findings from the discussion of chapter IV. This study was concerned with the study to compare the mathematics achievements and medium of instruction. For this study, the researcher developed the achievements test paper with the help of prescribed curriculum and text book of mathematics of grade VI and classroom observation form prepared under the supervision of research supervisor. An achievement test and classroom observation form is the main instrument used for the study.

For this study, the researcher selected 200 students (100 English Medium and 100 Nepali Medium Schools' students) and four mathematics teachers (two teachers each of them) randomly as a sample from six schools of Gorkha District. The pilot test is administered to the sample students in all these schools. The score of 200 students were analyzed by using mean, standard deviation and two-tailed t-test for independent samples and analysis of the learning activities by using classroom observation form under the following headings.

- Comparison of the mathematics achievements of English and Nepali medium students.

- Analysis of the learning activities of English and Nepali Medium of instruction.

Findings

The scores of 200 students were analyzed by using the mean, standard deviation and two-tailed t-test and analysis of the learning activities by using classroom observation form. So, the collected data yielded the following results as finding of the study.

- The mean scores of English and Nepali Medium students were 37.05 and 21.82 respectively. So, the mean score of students of English Medium School was higher than the Nepali medium school by 15.32. This difference was found to be significant at 0.05 levels.
- The calculated standard deviation of English and Nepali Medium Schools are 3.41 and 5.90 respectively.
- The calculated t-value was found greater than the tabulated t- value (22.35 > 1.96), the difference in mean value was found to be significant at 0.05 level. It indicates that there is significance difference between the mean achievements of English and Nepali medium school Students.
- Teaching Learning Method, using teaching materials, attendance of teacher and students, daily checking homework, classroom teaching method plays vital role for mathematics achievement. Among them regularity of students and teachers, teaching method and material are main causes of good achievements.
- After observation of classroom observation, teaching learning activities of English Medium School is better than Nepali Medium School.

In Nepali medium school, Students' participation in the classroom was poor, there was a gap between talented students and weak students which created more difficulties for mathematics teacher, weak students did not get good opportunities to learn in the classroom.

Besides the lecture and problem solving methods, other appropriate techniques were not used while teaching. Class control and motivation were difficult part for teacher in mathematics. Misconception about mathematics in students created various problems for learning mathematics such as they were not laborious interested. The crowdedness of classroom created insufficient spaces to sit in the classroom, lack of space in classroom affected the demonstration and proper use for teaching materials. Teachers were not interested to collect and construct the local materials for mathematics teaching. So, many causes English Medium School is better than Nepali medium school and student achievements are good than Nepali Medium School student.

Conclusions

There are two groups of schools one group of school used English Medium and the other used Nepali Medium as a means of teaching mathematics. The study result shows that English Medium of instruction in classroom teaching was more effective than Nepali Medium. The mean score of English Medium Schools' students was higher than Nepali Medium. So, the result concludes that English Medium of instruction is better than the Nepali Medium of instruction in classroom teaching. Mathematical terms, axioms, and definitions in English are easy for students to understand and study. The students of English Medium schools are comparatively talented than Nepali Medium School. The schools are also well managed and infrastructure are good than Nepali Medium School. Therefore, it seems that medium of instruction plays important role to improve student's achievements.

Recommendations

From the above findings and conclusion, the researcher would like to suggest some recommendations for the improvements in mathematics, to get better achievement at grade VI.

- Since medium of instruction plays vital role, the researcher would like to suggest mathematics teacher to use English Medium for teaching mathematics.
- The researcher had only observed in grade VI student about the achievements of medium of instruction. Similar research can be done in other classes as well.
- This study was conducted in Gorkha district. For the generalization of the results of the study, similar study can be done in wider scope and large sample.
- It is better to research on English and Nepali Medium Schools in various aspects and the special attention should be paid to ensure the effective teaching of mathematics in English Medium School.
- This study shows the poor achievement by Nepali Medium Schools in comparison to English Medium Schools students. To find out the causes of this poor result, it is necessary to go for further researches.

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Appendix - A

Dear all,

This is a partial work my master's thesis entitled 'Medium of Instruction and Mathematics Achievement of Students'. I would be grateful by your appreciation of this question paper. Please tick the given problems in your original manner.

Pilot Test Exam-2073

Class: 6 F. M. 50

Subject: Maths P.M. 16

Name of School…….

Name of the Student: ……..

Choose the correct answer and tick(√) them.

Example: Which of the following number is square number of 5?

a. 3 b. 5 c. 25 d. 20

1. If A = {set of counting numbers less than 10} Then, find n(A) = ?
   a. 10 b. 9 c. 11 d. 8

2 . A sqare has 9 cm^2 area and find their length?

   a. $9cm^2$ b. $3cm^2$ c. $4cm^2$ d. $10cm^2$

3. Which is the greatest numeral formed by four digit.
   a. 1000 b. 100 c. 1111 d. 9999

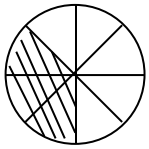
4. How many prime numbers from 1 to 10?
   a. 4 b. 5 c. 10 d. 3
5. Which of the following is the Highest common factor (H.C.F) of 15 and 20?
   a. 10 b. 5 c. 20 d. 15
6. Which of the follwong is the lowest common factor (L.C.M) of 4 and 6 ?
   a. 13 b. 4 c. 6 d.12
7. How many integers are there in between -5 and 3 ?
   a. 7 b. 5 c. 6 d. 9

8. If A = { 2, 3, 5, 7, 9}, B = { 4, 5, 6, 9, 10 } fnd AUB = ?

   a. {2, 3, 4, 5, 6, 7, 9, 10} b. {5, 9} c. {3, 5, 7} d. {6, 9, 10}

9. Which of the following is not rational number?
   a. $\frac{3}{5}$ b. $\frac{1}{2}$ c. $\frac{-1}{5}$ d. $\sqrt{3}$

10. What is the values of shaded part of the figure in form of fraction?



a. $\frac{3}{8}$ b. $\frac{8}{3}$ c. $\frac{5}{8}$ d. $\frac{6}{8}$

11. How much is 3/5 of 1/2 ?

a. $\frac{3}{5}$ b. $\frac{3}{15}$ c. $\frac{3}{10}$ d. $\frac{1}{2}$

12. How many km are there in 22m?

a. $\frac{1}{1000}km$ b. $\frac{22}{1000}km$ c. 1000 km d. 22km

13. How much is 0.3 multiply by 6 ?

a. 0.6 b. 1.8 c. 6 d. 0.8

14. What is the lowest term of 25%.

a. $\frac{1}{4}$ b. $\frac{1}{25}$ c. $\frac{1}{5}$ d. $\frac{1}{100}$

15. Which of the following number is square root of 25.

a. 2 b. 5 c. 4 d. 12

16. How much is 10% of 100.

a. 100 b. 25 c. 75 d.10

17. If 40 students passed out of 50 students of a class, what percentage of the student passed?

a. 18% b. 40% c. 80% d. 50%

18. Subtract from $\frac{5}{8}$ to $\frac{2}{4}$

a. $\frac{3}{4}$ b. $\frac{5}{8}$ c. $\frac{2}{4}$ d. $\frac{1}{8}$

19. Which of the following formula is used to find perimeter of rectangle?

a. l+b b. 2(l+b) c. l×b d. l×b×h

20. What is the ratio of 1cm and 1m?

a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$

21. $\frac{1}{2} = \frac{4}{a}$ and find the values of a?

a. 8 b. 4 c. 6 d. 3

22. Cost price of a radio has Rs. 1580 and a man sold this radio after loss Rs.175, how much cost of selling price ?

a. 1405 b. 1755 c. 1580 d. 175

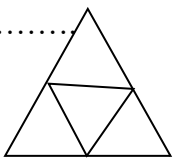
23. What is the lowest term of 20:30.
    a. $\frac{20}{30}$ b. $\frac{1}{2}$ c. $\frac{3}{2}$ d. $\frac{2}{3}$
24. If cost price (CP) = Rs. 50 selling price (SP)= Rs. 75 then profit= ?
    a. 50 b. 75 c. 25 d. 20
25. If cp =70, sp=60 then, loss= ?
    a. 10 b. 60 c. 15 d. 130
26. Which number lies 3 number left from 5?

    a. 2 b. 5 c. 3 d. 8
27. A Shopkeeper bought exercise book for Rs. 20 then sold for Rs. 22? Find out his profit money?

    a. 2 b. 22 c. 42 d. 20
28. If the cost of 10 balls is Rs. 200, what will be the cost of one ball be?
    a. 10 b. 20 c. 2 d. 200
29. If the cost of 1 kg rice is Rs. 12, What is the cost of 5kg of rice?
    a. Rs. 50 b. Rs. 24 c. Rs. 12 d. Rs. 60
30. How many even numbers lies between 1 to 10?

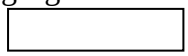
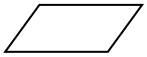
    a. 4 b. 5 c. 3 d. 6
31. In terms of algebraic expressions, shyam had 5 apples, he ate x apples , now how many apples are left with ram?
    a. 5+x b. 5-x c. x d. 5
32. If x = 2, what is the value of 4x?
    a. 8 b. 4 c.2 d. 6
33. If L=3 and b =2, what is the value of l×b= ?
    a. 10 b. 5 c. 6 d. 12
34. If a = 2, b=3 and c= 4 , what is the value of a+b-c ?
    a. 1 b. 2 c. 3 d. 9
35. What is the sum of 3x+4x?
    a. 12x b. 7x c. 3x d. 4x
36. what is the multiples of $2\,a^2b \times 3a^3b$

    a. $6ab$ b. $6a^5b$ c. $6ab^2$ d. $5ab$
37. What is the difference of $13m^2$-$9m^2$?
    a. $4m^2$ b. $13m^2$ c. $9m^2$ d. $11m^2$
38. What is the multiple of 7m×8n?
    a. $56m^2$ b. 15 mn c. 56mn d. $7n^2$
39. The angle which is greater than 90^0 and smaller than 180^0 is called an ……
    a. Right b. Acute c. Reflex d. Obtuse
40. How many triangles are there in the given triangle?
    a. 5 b. 4 c. 3 d.6



41. How many hours are in a day?

    a. 24 b. 12 c. 6 d. 25

42. How many number of sides are there in a quadrilateral?
    a. 3 b. 5 c. 6 d. 4
43. How many vertices are there in a cube?
    a. 8 b. 6 c. 7 d. 12
44. How much will be the area of a rectangle haring its sides length=5cm and bread=4cm
    a. $9cm^2$ b. $20cm^2$ c. $25cm^2$ d. $30cm^2$
45. Which of the following figures has all sides are equal?
    a.  b.  c.  d. 
46. How many paisa in Rs. 2 ?
    a. 2000 b. 200 c. 300 d. 1000
47. Which number is even in the following?
    a. 11 b. 12 c. 13 d. 15
48. How many weeks in a year?
    a. 52 b. 24 c. 7 d. 365
49. How many km in a meter?
    a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$
50. How many degrees are there in a wheel ?

    a. 180^0 b. 90^0 c. 360^0 d. 4

Appendix-B

k'a{ pknAwL k/LIf0f k/LIff–@)&#

sIffM ^–5
k"0ff{ÍM %)
ljifoM ul0ft pQL0ff{ÍM !^

tn lbOPsf k|Zgx?sf] ;lx pQ/ 5fgL l7s -√_ lrGx nufpm .
pbfx/0fM % sf] ju{ ;+Vof slt x'G5 .
a. 3 b. 5 c. 25 d. 20

1. olb A = {10 eGbf ;fgf uGtLsf ;+Vofx?} eP n(A) = ?
a. 10 b. 9 c. 11 d. 8

2. Pp6f ju{sf] If]qkmn 9cm² 5 eg] To;sf] nDjfO{ slt x'G5 <
a. 9cm² b. 3cm² c. 4cm² d. 10cm²

3. rf/ c+sn] ag]sf] ;a}eGbf 7"nf] ;+Vof s'g xf] <
a. 1000 b. 100 c. 111 d. 9999

4. ! b]lv !) ;Dd slt j6f ?9 ;+Vofx? x'G5g\ <
a. 4 b. 5 c. 10 d. 3

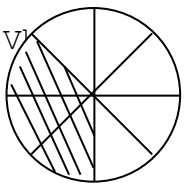
5. tn lbOPsf dWo] 15 / 20 sf] d; (HCF) slt x'G5 <
a. 10 b. 5 c. 20 d. 15

6. tn lbOPsf dWo] 4 / 6 sf] n; (L.C.M) slt x'G5 <
a. 13 b. 4 c. 6 d.12

7. -5 / 3 sf] ljrdf slt cf]6f k"0ff{Íx? 5g\ .
a. 7 b. 5 c. 6 d. 9

8. olb A = { 2, 3, 5, 7, 9}, B = { 4, 5, 6, 9, 10 } eP AUB = ?
a. {2, 3, 4, 5, 6, 7, 9, 10} b. {5, 9} c. {3, 5, 7} d. {6, 9, 10}

9. tnsf dWo] s'g rfxL cfg'kflts ;+Vof (Rational number) xf]Og\ <
a. $\frac{3}{5}$ b. $\frac{1}{2}$ c. $\frac{-1}{5}$ d. $\sqrt{3}$

10. bfofFsf] lrqdf 5fFof kfl/Psf] efunfO{ leGgdf n]V
x'G5 <

a. $\frac{3}{8}$ b. $\frac{8}{3}$ c. $\frac{5}{8}$ d. $\frac{6}{8}$

11. 3/5 sf] 1/2 slt x'G5 <
a. $\frac{3}{5}$ b. $\frac{3}{15}$ c. $\frac{3}{10}$ d. $\frac{1}{2}$

12. 22 ld6/df slt lsnf]ld6/ x'G5 <
a. $\frac{1}{1000}km$ b. $\frac{22}{1000}km$ c. 1000 km d. 22km

13. 0.3 nfO{ 6 n] u'0fg ubf{ slt x'G5 <
a. 0.6 b. 1.8 c. 6 d. 0.8

14. 25% nfO{ n3'td ?kdf ?kfGt/ ubf{ slt x'G5 <

a. $\frac{1}{4}$ b. $\frac{1}{25}$ c. $\frac{1}{5}$ d. $\frac{1}{100}$

15. 25 sf] ju{d'n slt x'G5 <

a. 2 b. 5 c. 4 d. 12

16. 100 sf] 10% slt x'G5 <

a. 100 b. 25 c. 75 d.10

17. Pp6f sIffsf 50 ljBfyL{ dWo] 40 hgf kf; eP eg] slt k|ltzt ljBfyL{ kf; eP<

a. 18% b. 40% c. 80% d. 50%

18. $\frac{5}{8}$ af6 $\frac{2}{4}$ 36fpFbf slt x'G5 <

a. $\frac{3}{4}$ b. $\frac{5}{8}$ c. $\frac{2}{4}$ d. $\frac{1}{8}$

19. cfotsf] kl/ldlt lgsfNg] z'q s'g xf] <

a. l+b b. 2(l+b) c. l×b d. l×b×h

20. 1cm / 1 m sf] cgkft slt x'G5 <

a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$

21. $\frac{1}{2} = \frac{4}{a}$ eP, a sf] dfg slt x'G5 <

a. 8 b. 4 c. 6 d. 3

22. Pp6f dflg;n] ?= 1580 lt/]/ lsg]sf] /]l8of] ?= 175 gf]S;fg ;x]/ aRof] eg] pQm /]l8of]sf] lj=d' slt x'G5 <

a. 1405 b. 1755 c. 1580 d. 175

23. 20:30 sf] n3'td ?k s'g xf] <

a. $\frac{20}{30}$ b. $\frac{1}{2}$ c. $\frac{3}{2}$ d. $\frac{2}{3}$

24. olb qmo d"No -qm=d"_ ?= %) ljqmod"No -lj=d"_ ?= &% eP gfkmf (P) = ?

a. 50 b. 75 c. 25 d. 20

25. olb qm=d" Ö?= 70 lj=d"= Ö?=60 eP gf]S;fg Ö <

a. 10 b. 60 c. 15 d. 130

26. 5 j6f 3 PsfO bfofFlt/ /x]sf] ;+Vof s'g xf] <

a. 2 b. 5 c. 3 d. 8

27. Pp6f k;n]n] ?= @) df lsg]sf] skL ?= @@ df j]Rbf p;nfO{ slt kmfObf x'G5 <

a. 2 b. 22 c. 42 d. 20

28. olb bz ansf] d"No ?= @)) kb{5 eg] ! j6f ansf] d"No slt kb{5 <

a. 10 b. 20 c. 2 d. 200

29. olb ! s]=hL rfdnsf] d"No ?= !@ kb{5 eg] % s]=hL rfdnsf] d"No slt kb{5 <

a. Rs. 50 b. Rs. 24 c. Rs. 12 d. Rs.60

30. 1 b]lv 10 ;Ddsf slt j6f hf]/ ;+Vof x'G5 <

a. 4 b. 5 c. 3 d. 6

31. Zofd;Fu % j6f :ofp lyof] . p;n] cfkm";Fu ePsf] dWo] x cf]6f vfof] . cj Zofd;Fu hDdf slt :ofp 5g\ < ljlho cleJo~hsdf k|:t't u/ .

a. 5+x b. 5-x c. x d. 5

32. olb x=2 eP, 4x sf] dfg slt x'G5 <

a. 8 b. 4 c.2 d. 6

33. olb l=3 / b=2 eP l×b sf] dfg slt x'G5 <

a. 10 b. 5 c. 6 d. 12

34. olb a=2, b= 3 / c= 4 eP a+b-c sf] dfg slt x'G5 <

a. 1 b. 2 c. 3 d. 9

35. 3x+4x sf] of]ukmn slt x'G5 <

a. 12x b. 7x c. 3x d. 4x

36. 2 $a^2b \times 3a^3b$ sf] u'0fgkmn slt x'G5 <

a. 6ab b. $6a^5 b$ c. $6ab^2$ d. 5ab

37. $13m^2-9m^2$ km/s slt x'G5 <

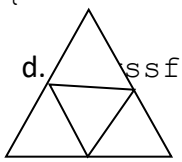
a. $4m^2$ b. $13m^2$ c. $9m^2$ d. $11m^2$

38. 7m×8n sf] u'0fgkmn slt x'G5 <

a. 56m2 b. 15 mn c. 56mn d. $7n^2$

39. 90^0 eGbf 7"nf] t/ 180^0 eGbf ;fgf] sf]0fnfO{ ==========elgG5 <

a. ;dsf]0f b. Go'gsf]0f c. j[xtsf]0f d. ssf]0f



40. lbOPsf] lrqdf sltj6f lqe'hx? 5g\ <

a. 5 b. 4 c. 3 d.6

41. 1 lbgdf slt 306f x'G5 <

a. 24 b. 12 c. 6 d. 25

42. rt'e'{hdf hDdf slt e'hfx? x'G5g\ <

a. 3 b. 5 c. 6 d. 4

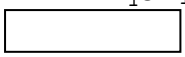
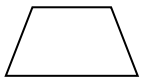
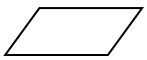
43. 3gdf slt j6f s'gfx? x'G5g\ <

a. 8 b. 6 c. 7 d. 12

44. nDjfO{ =5cm / rf}8fO=4cm ePsf] cfotsf] If]qkmn slt x'G5 <

a. 9cm^2 b. 20cm^2 c. 25cm^2 d. 30cm^2

45. tnsf dWo] s'g rfxL lrqsf] ;a} e'hf a/fa/ 5g\ <

a.  b.  c.  d. 

46. ?= @ df slt k};f x'G5g\ <

a. 2000 b. 200 c. 300 d. 1000

47. tnsf dWo] s'grfFxL hf]/ ;+Vof xf] <

a. 11 b. 12 c. 13 d. 15

48. Ps jif{df slt xKtf x'G5 <

a. 52 b. 24 c. 7 d. 365

49. ! ld6/df slt ls=ld= x'G5 <

a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$

50. Ps k'/f rSsfdf slt l8u|L x'G5 <

a. 180^0 b. 90^0 c. 360^0 d. 450^0

Appendix - C

Dear all,

This is a partial work my master's thesis entitled 'Medium of Instruction and Mathematics Achievement of Students'. I would be grateful by your appreciation of this question paper. Please tick the given problems in your original manner.

Achievement Test Exam-2073

Class: 6 F. M. 40

Subject: Maths P. M. 13

Name of School…….

Name of the Student: ……..

Choose the correct answer and tick (√) them.

Example: Which of the following number is square number of 5?

a. 3 b. 5 c. 25 d. 20

1. If A = {set of counting numbers less than 10} Then, find n(A) = ?
   a. 10 b. 9 c. 11 d. 8

2. Which is the greatest numeral formed by four digit.
   a. 1000 b. 100 c. 1111 d. 9999

3. How many prime numbers from 1 to 10?
   a. 4 b. 5 c. 10 d. 3

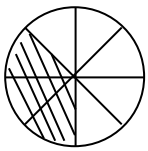
4. Which of the following is the Highest common factor (H.C.F) of 15 and 20?
   a. 10 b. 5 c. 20 d. 15

5. Which of the follwong is the lowest common factor (L.C.M) of 4 and 6 ?

a. 13 b. 4 c. 6 d.12

6. How many integers are there in between -5 and 3 ?
   a. 7 b. 5 c. 6 d. 9

7. Which of the following is not rational number?
   a. $\frac{3}{5}$ b. $\frac{1}{2}$ c. $\frac{-1}{5}$ d. $\sqrt{3}$



8. What is the values of shaded part of the figure in form of fraction?
   a. $\frac{3}{8}$ b. $\frac{8}{3}$ c. $\frac{5}{8}$ d. $\frac{6}{8}$
9. How much is 3/5 of 1/2 ?
   a. $\frac{3}{5}$ b. $\frac{3}{15}$ c. $\frac{3}{10}$ d. $\frac{1}{2}$
10. How many km are there in 22m?
    a. $\frac{1}{1000}km$ b. $\frac{22}{1000}km$ c. 1000 km d. 22km

11. What is the lowest term of 25%.
    a. $\frac{1}{4}$ b. $\frac{1}{25}$ c. $\frac{1}{5}$ d. $\frac{1}{100}$

12. Which of the following number is square root of 25.
    a. 2 b. 5 c. 4 d. 12

13. How much is 10% of 100.
    a. 100 b. 25 c. 75 d.10

14. If 40 students passed out of 50 students of a class, what percentage of the student passed?
    a. 18% b. 40% c. 80% d. 50%

15. Which of the following formula is used to find perimeter of rectangle?
    a. l+b b. 2(l+b) c. l×b d. l×b×h

16. What is the ratio of 1cm and 1m?
    a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$

17. $\frac{1}{2} = \frac{4}{a}$ and find the values of a?
    a. 8 b. 4 c. 6 d. 3

18. What is the lowest term of 20:30.
    a. $\frac{20}{30}$ b. $\frac{1}{2}$ c. $\frac{3}{2}$ d. $\frac{2}{3}$

19. If cost price (CP) = Rs. 50 selling price (SP)= Rs. 75 then profit= ?
    a. 50 b. 75 c. 25 d. 20

20. If cp =70, sp=60 then, loss= ?
    a. 10 b. 60 c. 15 d. 130

21. A Shopkeeper bought exercise book for Rs. 20 then sold for Rs. 22? Find out his profit money?
    a. 2 b. 22 c. 42 d. 20

22. If the cost of 10 balls is Rs. 200, what will be the cost of one ball be?
    a. 10 b. 20 c. 2 d. 200

23. If the cost of 1 kg rice is Rs. 12, What is the cost of 5kg of rice?
    a. Rs. 50 b. Rs. 24 c. Rs. 12 d. Rs. 60

24. In terms of algebraic expressions, shyam had 5 apples, he ate x apples , now how many apples are left with ram?
    a. 5+x b. 5-x c. x d. 5

25. If x = 2, what is the value of 4x?
    a. 8 b. 4 c.2 d. 6

26. If L=3 and b =2, what is the value of l×b= ?
    a. 10 b. 5 c. 6 d. 12

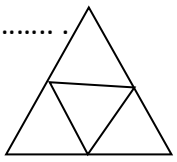
27. If a = 2, b=3 and c= 4 , what is the value of a+b-c ?
    a. 1 b. 2 c. 3 d. 9

28. What is the sum of 3x+4x?
    a. 12x b. 7x c. 3x d. 4x

29. What is the difference of $13m^2$-$9m^2$?
    a. $4m^2$ b. $13m^2$ c. $9m^2$ d. $11m^2$

30. What is the multiple of 7m×8n?
    a. $56m^2$ b. 15 mn c. 56mn d. $7n^2$

31. The angle which is greater than 90^0 and smaller than 180^0 is called an …… .
    a. Right b. Acute c. Reflex d. Obtuse

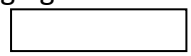
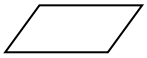


32. How many triangles are there in the given triangle:
    a. 5 b. 4 c. 3 d.6

33. How many number of sides are there In a quadrilateral?
    a. 3 b. 5 c. 6 d. 4

34. How many vertices are there in a cube?
a. 8 b. 6 c. 7 d. 12

35. How much will be the area of a rectangle haring its sides length=5cm and bread=4cm
    a. $9cm^2$ b. $20cm^2$ c. $25cm^2$ d. $30cm^2$

36. Which of the following figures has all sides are equal?
    a.  b.  c.  d. 
37. How many paisa in Rs. 2 ?
    a. 2000 b. 200 c. 300 d. 1000
38. Which number is even in the following?
    a. 11 b. 12 c. 13 d. 15
39. How many weeks in a year?
    a. 52 b. 24 c. 7 d. 365
40. How many km in a meter?
    a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$

The End

Appendix - D

pknAwL k/LIf0f k/LIff @)&#

sIffM ^-5_

k"0f{ÍM $)

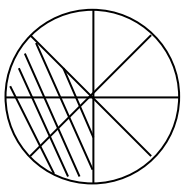
ljifoM ul0ft pQL0ff{ÍM !#

tn lbOPsf k|Zgx?sf] ;lx pQ/ 5fgL l7s -√_ lrGx nufpm .

pbfx/0fM % sf] ju{ ;+Vof slt x'G5 .

a. 3 b. 5 c. 25 d. 20

1. olb A={10 eGbf ;fgf uGtLsf ;+Vofx?}eP n(A)=?
   a. 10 b. 9 c. 11 d. 8
2. rf/ c+sn] ag]sf] ;a}eGbf 7"nf] ;+Vof s'g xf] <
   a. 1000 b. 100 c. 1111 d. 9999
3. ! b]lv !) ;Dd slt j6f ?9 ;+Vofx? x'G5g\ <
   a. 4 b. 5 c. 10 d. 3
4. tn lbOPsf dWo] 15 / 20 sf] d; (HCF) slt x'G5 <
   a. 10 b. 5 c. 20 d. 15
5. tn lbOPsf dWo] 4 / 6 sf] n; (L.C.M) slt x'G5 <
   a. 13 b. 4 c. 6 d.12
6. -5 / 3 sf] ljrdf slt cf]6f k"0ff{Íx? 5g\ .
   a. 7 b. 5 c. 6 d. 9
7. tnsf dWo] s'g rfxL cfg'kflts ;+Vof (Rational number) xf]Og\ <
   a. $\frac{3}{5}$ b. $\frac{1}{2}$ c. $\frac{-1}{5}$ d. $\sqrt{3}$



8. bfofFsf] lrqdf 5fFof kfl/Psf] efunfO{ leGgdf n]Vbf slt x'G5 <
   a. $\frac{3}{8}$ b. $\frac{8}{3}$ c. $\frac{5}{8}$ d. $\frac{6}{8}$
9. 3/5 sf] 1/2 slt x'G5 <
   a. $\frac{3}{5}$ b. $\frac{3}{15}$ c. $\frac{3}{10}$ d. $\frac{1}{2}$
10. 22 ld6/df slt lsnf]ld6/ x'G5 <
    a. $\frac{1}{1000}km$ b. $\frac{22}{1000}km$ c. 1000 km d. 22km
11. 25% nfO{ n3'td ?kdf ?kfGt/ ubf{ slt x'G5 <
    a. $\frac{1}{4}$ b. $\frac{1}{25}$ c. $\frac{1}{5}$ d. $\frac{1}{100}$
12. 25 sf] ju{d'n slt x'G5 <
    a. 2 b. 5 c. 4 d. 12
13. 100 sf] 10% slt x'G5 <
    a. 100 b. 25 c. 75 d.10
14. Pp6f sIffsf 50 ljBfyL{ dWo] 40 hgf kf; eP eg] slt k|ltzt ljBfyL{ kf; eP<
    a. 18% b. 40% c. 80% d. 50%
15. cfotsf] kl/ldlt lgsfNg] z'q s'g xf] <
    a. l+b b. 2(l+b) c. l×b d. l×b×h
16. 1cm / 1 m sf] cgkft slt x'G5 <
    a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$
17. $\frac{1}{2}=\frac{4}{a}$ eP, a sf] dfg slt x'G5 <
    a. 8 b. 4 c. 6 d. 3
18. 20:30 sf] n3'td ?k s'g xf] <
    a. $\frac{20}{30}$ b. $\frac{1}{2}$ c. $\frac{3}{2}$ d. $\frac{2}{3}$
19. olb qmo d"No -qm=d"_ ?= %) ljqmod"No -lj=d"_ ?= &% eP gfkmf (P) = ?
    a. 50 b. 75 c. 25 d. 20
20. olb qm=d" Ö?= 70 lj=d"= Ö?=60 eP gf]S;fg Ö <
    a. 10 b. 60 c. 15 d. 130
21. Pp6f k;n]n] ?= @) df lsg]sf] skL ?= @@ df j]Rbf p;nfO{ slt kmfObf x'G5 <
    a. 2 b. 22 c. 42 d. 20
22. olb bz ansf] d"No ?= @)) kb{5 eg] ! j6f ansf] d"No slt kb{5 <
    a. 10 b. 20 c. 2 d. 200

23. olb ! s]=hL rfdnsf] d"No ?= !@ kb{5 eg] % s]=hL rfdnsf] d"No slt kb{5 <
    a. Rs. 50 b. Rs. 24 c. Rs. 12 d. Rs. 60
24. Zofd;Fu % j6f :ofp lyof] . p;n] cfkm";Fu ePsf] dWo] x cf]6f vfof] . cj Zofd;Fu hDdf slt :ofp 5g\ < ljlho cleJo~hsdf k|:t't u/ .
    a. 5+x b. 5-x c. x d. 5
25. olb x=2 eP, 4x sf] dfg slt x'G5 <
    a. 8 b. 4 c.2 d. 6
26. olb l=3 / b=2 eP l×b sf] dfg slt x'G5 <
    a. 10 b. 5 c. 6 d. 12
27. olb a=2, b= 3 / c= 4 eP a+b-c sf] dfg slt x'G5 <
    a. 1 b. 2 c. 3 d. 9
28. 3x+4x sf] of]ukmn slt x'G5 <
    a. 12x b. 7x c. 3x d. 4x
29. $13m^2$-$9m^2$ km/s slt x'G5 <
    a. $4m^2$ b. $13m^2$ c. $9m^2$ d. $11m^2$
30. 7m×8n sf] u'0fgkmn slt x'G5 <
    a. 56m2 b. 15 mn c. 56mn d. $7n^2$
31. 90^0 eGbf 7"nf] t/ 180^0 eGbf ;fgf] sf]0fnfO{ ==========elgG5 <
    a. ;dsf]0f b. Go'gsf]0f c. j[xtsf] clwssf]0f
32. lbOPsf] lrqdf sltj6f lqe'hx? 5g\ <
    a. 5 b. 4 c. 3 d.6
33. rt'e'{hdf hDdf slt e'hfx? x'G5g\ <
    a. 3 b. 5 c. 6 d. 4
34. 3gdf slt j6f s'gfx? x'G5g\ <
    a. 8 b. 6 c. 7 d. 12
35. nDjfO{ =5cm / rf}8fO=4cm ePsf] cfotsf] If]qkmn slt x'G5 <
    a. $9cm^2$ b. $20cm^2$ c. $25cm^2$ d. $30cm^2$
36. tnsf dWo] s'g rfxL lrqsf] ;a} e'hf a/fa/ 5g\ <
    a. b. c. d.
37. ?= @ df slt k};f x'G5g\ <
    a. 2000 b. 200 c. 300 d. 1000
38. tnsf dWo] s'grfFxL hf]/ ;+Vof xf] <
    a. 11 b. 12 c. 13 d. 15

39. Ps jif{df slt xKtf x'G5 <

a. 52 b. 24 c. 7 d. 365

40. ! ld6/df slt ls=ld= x'G5 <

a. $\frac{1}{10}$ b. $\frac{1}{100}$ c. 1 d. $\frac{1}{1000}$

;dfKt

Appendix - E

ANSWER KEY OF ACHIEVEMENT TEST PAPER FOR PILOT TEST

Item number	Answer	Item number	Answer
1	b	26	d

2	b	27	a
3	d	28	b
4	a	29	d
5	b	30	b
6	d	31	b
7	a	32	a
8	b	33	c
9	d	34	a
10	a	35	b
11	c	36	a
12	b	37	a
13	d	38	c
14	a	39	d
15	b	40	a
16	d	41	a
17	c	42	d
18	b	43	a
19	b	44	b
20	b	45	a
21	a	46	b
22	a	47	b
23	d	48	a
24	c	49	b
25	a	50	c

Appendix - F

ANSWER KEY OF ACHIEVEMENT TEST PAPER FOR FINAL TEST

Item number	Answer	Item number	Answer
1	b	21	a
2	d	22	b
3	a	23	d

4	b	24	b
5	d	25	a
6	a	26	c
7	d	27	a
8	a	28	b
9	c	29	a
10	b	30	c
11	a	31	d
12	b	32	a
13	d	33	d
14	c	34	a
15	b	35	b
16	b	36	a
17	a	37	b
18	d	38	b
19	c	39	a
20	a	40	b

Appendix - G

Marks obtain by students of English Medium School

Name of student's of English Medium schools and their marks.

S.N.	Name of students	Obtain Marks	S.N.	Name of students	Obtain Marks

1	Manjila Shrestha	40	40	Abhishek Bujel	39
2	Sabana khatun	40	41	Rohan Rana Magar	39
3	Manoj Thapa	39	42	Reshma Thapa Magar	38
4	Bishal Bhatta	38	43	Puspa Thapa Magar	39
5	Rohan Shrestha	39	44	Birju Khatri	36
6	Deepa Thapa Magar	36	45	Asmita Ale	39
7	Amina Khatun	39	46	Anish Gurung	39
8	Sujata Kunwar	17	47	Anish aryal	37
9	Saleha Khatun	37	48	Bikram Thapa	40
10	Sajina Simkhada	35	49	Kushal Thapa	39
11	Rajan Thapa	35	50	Mishan Gurung	38
12	Dinesh Rana	36	51	Binya shah	31
13	Ishwor Bhattarai	35	52	Kiran Kumari Shah	39
14	Mahesh Mudvari	36	53	Manisha Basnet	37
15	Ajaya Ale	40	54	Binita Thapa Magar	38
16	Sabina Panday	35	55	Bhumika Pariyar	38
17	Krishala Adhikari	38	56	Roshani Gurung	37
18	Asmita Bhatta	38	57	Nisha Gurung	37
19	Anjan Ale	38	58	Nishma kattel	35
20	Dibas Rana Magar	39	59	Binita Gurung	39
21	Pawan Wosti	37	60	Ramesh Nepali	36
22	Milan Rana	39	61	Samir Shrestha	39
23	Alisha Rana	39	62	Krismat Rana	39
24	Melina shrestha	38	63	Prabin Magrati	39
25	Premika Rana	30	64	Puja Shrestha	40
26	Amit Thapa Magar	32	65	Laxmi Sunar	39
27	Anisha Thapa	30	66	Kritee Sirmal	30
28	Tek Bahadur Nepali	35	67	Nishant thapa	40
29	Ashish Panday	38	68	Dina Dhakal	39
30	Pabitra B.K.	39	69	Asmita Rana	39
31	Ashok Rana	34	70	Akash Gurung	38
32	Dinesh Rana	36	71	Ranjita Sirmal	38
33	Susmi Ale	38	72	Sushma Achhami	40
34	Milan Gurung	40	73	Suruchi Bayalkoti	38
35	AnjitaAle	37	74	sangita Fewali	33
36	Susmita Majkoti	40	75	Bishal Lamichhane	37
37	Prajita Kunwar	38	76	sudip Raj Sunar	38
38	Manju Bayalkoti	39	77	Aita Bahadur Gurung	38
39	Swostik Basnyat	38	78	Bishnu Maya Gurung	23
79	Babin Gurung	39	90	Dipak Gurung	36
80	Dipesh Gurung	39	91	Ajit Koirala	35
81	Dipan Kunwar	37	92	Deepak Achhami	38
82	Aakash Darai	38	93	Samikshya Ramajhi	39
83	Anjan Kunwar	37	94	Prashant Thapa Magar	38
84	Sonali Shrestha	40	95	Asis Sirmal	39
85	Aarati Thapa Magar	39	96	Januka Nepali	34

86	Khusbu Rana Magar	36	97	Rabina Magrati	40
87	Rojina Gurung	31	98	Binita ghimire	36
88	Garima Shrestha	40	99	Dipak Rana Magar	35
89	Rupesh Thapa Magar	36	100	Ranjan Ale Magar	39

Appendix - H

Marks obtain by students of Nepali Medium School

Name of student's of Nepali Medium schools and their marks.

S.N.	Name of students	Obtain Marks	S.N	Name of students	Obtain Marks

			.		
1	Kishwor Ale Magar	26	41	Muskan Basel	17
2	Nikhil Bhattarat	24	42	Urmila Roka	23
3	Balaram Thapa	25	43	shyam Roka	18
4	Sitaram Bhantana	21	44	Rakesh Shrestha	29
5	Bishal AmgAI	23	45	Sudip B.K.	22
6	Rabin Rana	14	46	Kristi Gurung	17
7	Subash Lamsal	21	47	Santosh Roka	25
8	Samina katun	15	48	Anju shrestha	19
9	Jumdin Miya	25	49	Himal Kunwar	23
10	Salina khatun	16	50	Sanoj Shrestha	26
11	Sarif Miya	24	51	Rasila shrestha	18
12	Mubin Miya	26	52	Sandika Shrestha	29
13	Hanif Miya	26	53	Manisha Gurung	30
14	Gita Thapa	21	54	Sumit Shrestha	26
15	Namrata Ale	12	55	Ranjit shrestha	32
16	Laxmi Ale	21	56	Roshani Shrestha	21
17	Milan Ale	18	57	Samjhana Pariyar	25
18	Ramesh Dhakal	21	58	Pan Maya Roka	25
19	Dipendra Koirala	13	59	Biswas Shrestha	18
20	Shishir Pulami	15	60	Bipin Pariyar	20
21	Binda Thapa	14	61	Krishna shrestha	30
22	shusila Thapa	15	62	Salina Shrestha	22
23	Sunil Rana	19	63	Sijan Shrestha	18
24	subash Nepali	20	64	Debraj Thapa	15
25	Dibash Rana	22	65	Ramun Pariyar	20
26	Hom bahadur Thapa	19	66	Abina Dhakal	25
27	Bikram Thapa	18	67	Shyam Thapa	27
28	Sabita shrestha	15	68	Reshma Thapa	11
29	Anjita Bhatta	15	69	suchana Pariyar	19
30	Sansara B.K.	15	70	Nita B.K.	20
31	Lochan Bhantana	19	71	Sabin Rana	14
32	Sugam Thapa	36	72	Sabina Rana	18
33	Dibas Thapa	35	73	Niruta Lamsal	22
34	Durga Thapa	35	74	Krishna Nepali	26
35	Uttam Thapa	32	75	Nisha Thapa	23
36	Smarika B.K.	33	76	Asmita Thapa	25
37	Saroj Bhatta	35	77	Rukshana Khatun	21
38	Rasmi Pandey	34	78	Pramila Simkhada	25
39	Soniya Thapa	34	79	Manish B.K.	23
40	Uttam Rimal	32	80	Manish Rana	22
81	Priti Gurung	19	91	Amrita B.K.	17
82	Sandip Roka	21	92	Rajesh B.K.	18
83	Sushila Dhakal	19	93	Anil Shrestha	15
84	Bibek shrestha	21	94	Nita B.K.	16
85	Ritu Pariyar	16	95	Astha Ale	17
86	Ramesh Shrestha	24	96	Sarmila Shresha	30

87	Surjit Shrestha	14	97	Sirjan shrestha	31
88	Resham kumara Roka	17	98	Kamal Pariyar	20
89	Susan Roka	19	99	Aashish Roka	20
90	Sajima shrestha	18	100	Kaji Thapa	17

Appendix - I

Item Analysis Table

Roll no / Q. no	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total no. Stu. who give right ans..	P-Value = $\frac{R}{N} \times 100$ (%)	Interpretation of P - Value	D-Value = $\frac{R_U - R_L}{N_U \text{ or } N_L}$	Interpretation of D – Value
1	0	1	1	1	0	1	1	0	0	0	1	0	0	0	1	1	0	0	1	1	10	50	General	$\frac{4-0}{6} = 0.66$	Very good question
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	19	95	Very easy	$\frac{5-5}{6} = 0$	Need to remove the question
3	0	1	1	1	1	0	1	0	0	0	1	1	0	0	0	1	1	1	0	0	10	50	General	$\frac{3-0}{6} = 0.5$	Very good question
4	0	1	1	1	1	1	0	0	0	1	1	0	1	1	1	0	0	0	1	1	12	60	General	$\frac{4-2}{6} = 0.33$	Good question
5	1	1	1	1	0	1	1	0	1	0	1	1	1	1	0	1	1	0	0	1	14	70	Substantial	$\frac{6-2}{6} = 0.66$	Very good question
6	1	1	1	1	1	1	0	1	0	1	1	1	1	1	0	1	1	0	1	0	15	75	Substantial	$\frac{4-1}{6} = 0.5$	Very Good question

7	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**16**	**80**	**General**	$\frac{6-4}{6} = 0.33$	**Good question**
8	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**5**	**25**	**very difficult**	$\frac{2-1}{6} = 0.16$	**Need to improve question**
9	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**16**	**80**	**easy**	$\frac{4-2}{6} = 0.33$	**Good question**
10	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**15**	**75**	**General**	$\frac{4-1}{6} = 0.5$	**Very Good question**
11	**1**	**1**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**14**	**70**	**Substantial**	$\frac{4-2}{6} = 0.33$	**Good question**
12	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**6**	**30**	**Very difficult**	$\frac{2-0}{6} = 0.33$	**Very good question**
13	**1**	**1**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**14**	**70**	**Substantial**	$\frac{3-2}{6} = 0.16$	**Need to remove the question**
14	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**16**	**80**	**easy**	$\frac{6-2}{6} = 0.66$	**Very Good question**
15	**1**	**1**	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	**12**	**60**	**General**	$\frac{5-3}{6} = 0.33$	**Good question**
16	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**10**	**50**	**General**	$\frac{4-2}{3} = 0.33$	**Good question**
17	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**10**	**50**	**General**	$\frac{6-3}{6} = 0.5$	**Very good question**

18	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**6**	**30**	**Very difficult**	$\frac{2-2}{6}=0$	**Need to remove question**
19	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**15**	**75**	**substantial**	$\frac{3-1}{6}=0.66$	**Very Good question**
20	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**0**	**10**	**50**	**General**	$\frac{4-2}{6}=0.33$	**Good question**
21	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**12**	**60**	**General**	$\frac{6-4}{6}=0.33$	**Good question**
22	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**1**	**1**	**6**	**30**	**Very difficult**	$\frac{2-3}{6}=-0.16$	**Need to remove the question**
23	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**14**	**70**	**substantial**	$\frac{2-0}{6}=0.33$	**Good question**
24	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**16**	**80**	**easy**	$\frac{2-0}{6}=0.33$	**Good question**
25	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**12**	**60**	**General**	$\frac{5-2}{6}=0.5$	**Very Good question**
26	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**18**	**90**	**Easy**	$\frac{3-3}{6}=0$	**Need to remove the question**
27	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**10**	**50**	**General**	$\frac{5-1}{6}=0.66$	**Very good question**
28	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**10**	**50**	**General**	$\frac{4-2}{6}=0.33$	**Good question**

29	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**18**	**90**	**easy**	$\frac{5-3}{6}=0.33$	**Good question**
30	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**10**	**50**	**General**	$\frac{1-2}{6}=-0.16$	**Need to remove the question**
31	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**10**	**50**	**General**	$\frac{2-0}{6}=0.33$	**Good question**
32	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**14**	**70**	**Substantial**	$\frac{3-1}{6}=0.33$	**Very good question**
33	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**16**	**80**	**easy**	$\frac{4-2}{6}=0.33$	**Good question**
34	**1**		**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**1**	**0**	**10**	**50**	**General**	$\frac{4-2}{6}=0.33$	**Good question**
35	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**18**	**90**	**Easy**	$\frac{6-2}{6}=0.66$	**Very Good question**
36	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**10**	**50**	**General**	$\frac{1-2}{6}=-0.16$	**Need to remove the question**
37	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**15**	**75**	**substantial**	$\frac{5-2}{6}=0.5$	**Good question**
38	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**16**	**80**	**easy**	$\frac{6-4}{6}=0.33$	**Good question**
39	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**18**	**90**	**easy**	$\frac{6-4}{6}=0.33$	**Good question**

40	**1**	**0**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**15**	**75**	**substantial**	$\frac{3-1}{6}=0.33$	**Good question**
41	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	**0**	**1**	**10**	**50**	**General**	$\frac{1-2}{6}=-0.16$	**Need to remove the question**
43	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**1**	**1**	**1**	**12**	**60**	**General**	$\frac{5-1}{6}=0.66$	**Good question**
44	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**14**	**70**	**substantial**	$\frac{2-0}{6}=0.33$	**Good question**
45	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**14**	**70**	**Substantial**	$\frac{3-1}{6}=0.33$	**Very good question**
46	**0**	**1**	**1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	**10**	**50**	**General**	$\frac{4-0}{6}=0.66$	**Very Good question**
47	**1**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	**1**	**0**	**10**	**50**	**General**	$\frac{4-2}{6}=0.33$	**Good question**
48	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**16**	**80**	**General**	$\frac{2-0}{6}=0.33$	**Good question**
49	**0**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**1**	**1**	**12**	**60**	**General**	$\frac{4-1}{6}=0.5$	**Very Good question**
50	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**18**	**90**	**Easy**	$\frac{3-3}{6}=0$	**Need to remove the question**

Note

Item Difficulty Level (P) = $\frac{Number\ of\ Students\ who\ got\ the\ item\ right\ (R)}{Total\ number\ of\ students\ (N)} \times 100$

Discriminating index (D) = $\frac{R_U - R_L}{N_U\ or\ N_L}$ where ;

$R_U = No.of\ students\ in\ the\ upper\ group\ who\ got\ the\ item\ right$

$R_L = No.of\ students\ in\ the\ lower\ group\ who\ got\ the\ item\ right$

$N_U = No.of\ students\ in\ the\ upper\ group$

P-Value Interpretation

P – Value in (%)	Interpretation
0 - 39	Very difficult
40 – 60	General
61 - 75	Substantial
76 – 90	Easy
91 - 100	Very easy

-Sources: Harper and Harper, 1990:363

D – Value Interpretation

D – Value	Interpretation	Comments
-1 - 0.19	Negligible	Need to remove the question
0.20 -0.29	General	Need to improve the question
0.30 -0.39	Good	Good question
0.40– 1.00	Very good	Very Good question

-Source :Eble and Frisbie , 1991:232

APPENDIX - J

Reliability of the Achievement Test Questions

S.N.	Score on odd items(N_O)	Score on even items(N_E)	N_O^2	N_E^2	$N_E . N_O$
1	10	10	100	100	100
2	12	14	144	196	168
3	15	16	225	256	240
4	16	15	256	225	240
5	14	6	169	36	84
6	16	12	256	144	192
7	10	10	100	100	100
8	15	10	225	100	150
9	12	14	144	196	168
10	16	12	256	144	192
11	10	10	100	100	100
12	18	10	324	100	180
13	14	16	196	256	224
14	10	18	100	324	180
15	15	16	225	256	240
16	18	15	324	225	270
17	10	12	100	144	120
18	14	14	196	196	196

19	10	10	100	100	100
20	16	12	256	144	192
Total	$\sum N_O =$ 271	$\sum N_E =$ 252	$\sum {N_O}^2 =$ 3823	$\sum {N_E}^2 =$ 3342	$\sum N_O N_E =$ 3436

$$Correlation\ cofficent\ of\ half\ test\ (r_{split-half})$$

$$= \frac{N\sum N_O N_E - \sum N_O \sum N_E}{\sqrt{N\sum {N_O}^2 - (\sum N_O)^2}\sqrt{N\sum {N_E}^2 - (\sum N_E)^2}}$$

Where, N = 20 = 0.836

$$r_{total\ test} = \frac{2\ r_{split-half}}{1 + r_{split-half}} = 0.911$$

APPENDIX - K

CLASSROOM OBSERVATION FORM

Name of teacher: Date of Observation:

Level of Observed Class: Observed Time:

Name of Observed College/school:

	Attributes	Qualitative Information(Thick Description)
Planning and Preparation of Lesson	o Designs of lessons (In term of achievable goals, standards of teaching and outcomes)	
	o revision and warm of strategies (in term of motivation, incentives, engagement in learning)	
	o Teacher prepares the lesson plans that accommodate prerequisite relationship among the concept and skill.	
	o Teacher Plan the instructive to cognitively engage the students.	
Creating and monitoring learning climate	o Teacher creates a positive learning environment.	
	o Teacher create physical environment that engages the students.	
	o Teachers establish a climate that promotes fairness and respect.	
	o Teacher manages the instructional time and foster respect put interactions with among students.	
	o Teacher maximize the into structural time	

	○ Students and teacher are interested and enthusiastic.	
Understanding and Organization of Subject matters.	○ Teacher organize curriculum to support Student understanding of Subject matter.	
	○ Teacher integrates the idea and information within and across subject matter areas.	
	○ Students are egger to understand.	
	○ Interdisciplinary connections of lesson in plan and practice.	
	○ Teacher knowledge of content and the structure of the discipline.	
	○ Teacher knowledge of prerequisite relationships.	
Variety of Instructional activities	○ Teacher involves Students in deciding what issue to discuss.	
	○ Teacher mind set.	
	○ Teacher's clarity of Instruction.	
	○ Teacher Nimbleness on instruction or activities.	
Instructional methods	○ The opening gained the class's attention.	
	○ Rapport building by teacher.	
	○ Teacher provides a constructivist learning environment.	
	○ Teacher treat students as individual	
Designing learning experience	○ Teacher practice to valuing students' backgrounds, interests, and developmental learning needs.	
	○ Designing short-term and long-term plans to foster student learning.	
	○ Teacher modifies the instructional plans to	

	adjust for students' needs.	
Professional Responsibilities	○ Teacher Enhance the content knowledge and pedagogical skill (Teacher Engage in continuous professional learning)	
	○ Teacher receive the feedback from colleagues and supervisor	
	○ Collaborating and sustain professional learning environment.	
Monitoring, assessment and follow up	○ The teacher encourages students' question.	
	○ Teacher use as the spot evaluation of student learning.	
	○ Teacher Diagnose the Students learning difficulty.	
	○ Teacher use rubrics for posting Students work	

List the competencies that I learnt the class observation

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Observed by:

Samjhana Thapa Magar

Appendix - L

1. Level of Difficulty $P = \frac{U_R - L_R}{T} \times 100\%$

2. Power of Discrimination $D = \frac{U_R - L_R}{T}$

3. Mean $\bar{X} = \frac{\sum fx}{N}$

4. Standard Deviation $(S.D.) = \sqrt{\frac{\sum (X - \bar{X}}{N-1}}$

5. t-test $t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{{\sigma_1}^2}{N_1} + \frac{{\sigma_2}^2}{N_2}}}$