EFFECT OF REINFORCEMENT ON MATHEMATICS ACHIEVEMENT OF LOWER SECONDARY LEVEL STUDENT

A

THESIS

BY

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IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE
DEGREE OF MASTER OF EDUCATION

SUBMITTED

TO

DEPARTMENT OF MATHEMATICS EDUCATION

CENTRAL DEPARTMENT OF EDUCATION

UNIVERSITY CAMPUS

2017

TRIBHUVAN UNIVERSITY

KIRTIPUR, KATHMANDU, NEPAL

Letter of Certificate

This is to certify that **Ms. Drupati Kumari Yadav**, a student of academics year

2069/2070 with exam Roll No. 281009/2070,Campus Roll No. 17, T.U. Regd. No. 9-

3-28-61-2011 and thesis number 1082 has completed her thesis under the rules and

regulation of Tribhuvan University, Nepal. The thesis entitled **"Effect of**

reinforcement on mathematics achievement of lower secondary level students"

embodies the results of her investigation conducted during the period of 2017, in the

Department of Mathematics Education, University Campus, Tribhuvan Univercity,

Kirtipur, Kathmandu, Nepal. I, hereby, recommend and forward that her thesis be

submitted for the evaluation as the partial requirements to award the degree of

Master's in Mathematics Education.

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ACKNOWLEDGEMENTS

ABSTRACT

The present study **" Effect of reinforcement mathematics achievement of lower secondary level students"** is carry out to compare the achievement of the mathematics students taught by using reinforcement and without using reinforcement and analyze the behavior of students.

The study adopted experimental design. Achievement test, lesson plan and observation were used as data collection tool for the study of this research. A pre-test, post-test, non-equivalent group design was adopted to fulfill the objective of the study. For this two school were selected by convenience sampling method from Siraha district, which were similar in terms of achievement and socio-economic status. The researcher has selected 40 students in the sample both the experimental and control group were taught by researcher herself for 24 day by using and without using reinforcement respectively.

Researcher taught the selected units of mathematics textbook of grade VII prescribed by government of Nepal. Student's behavior was observed by the researcher during the experimentation. After this an achievement test was administered on the both group. The result of test was analyzed by using t-test at 0.05 level of significance difference.

It is found that the mean achievement score of the students taught by using reinforcement is better than the mean achievement score of the students taught by without using reinforcement. From the observation, it is concluded that most of the students taught by using reinforcement were very competitive, active, regularly, concentrative and laborious.

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Chapter– I

INTRODUCTION

Background of the Study

Education has become basic needs in 21st century as it produces high quality human resources which help to develop the nation. Mathematics arose from the needs of organized societies. It is a branch of science. The historical development of mathematics shows that the advanced with the ancient period of the human civilization. It seems very difficult to learn and teach up to till. Mathematics seems to be based on practical aspects of human activities (e.g. counting the no of animal, members in family and materials etc.) at the beginning/ancient period.

Psychologists have propounded a variety of learning theories and principles. Most of the psychologist have experimented on animal and applied their findings on human beings. In the beginning of 20th centurythe behavior istheory holds its influence in the state or nation of teaching and learning mathematics. They believed that the behavior can shape by applying appropriate reward and punishment. So, the mathematic learning is considered as function of rewarding and reinforcing students learning. They also believed that the stimulus-response (S-R) relation established best for teaching and learning of mathematics. I.P. Pavlov, Watson and Guthrie propounded theories on S-R learning without re-enforcement but Thorndike, Hull and Skinner propounded stimulus-response (S-R) learning with re-inform cement. (Skinner B.F, 1948)

The modern history of instructional reinforcement began with the proliferation of theories and experimental work in the area of behavior modification in the 1950s

and 1960s. The various behavioral theories of learning are advanced regarding to manage animal and human behavior. The classroom management and effective schooling research of the 1970 and 1980s has helped to clarify the use and effect of reinforcement. And to resolve some of the issues reside by its critics. It plays a vital role to develop the innate power of learner (Robbins, 1998).

It is also known as the modification of the behavior through experience and training. B.F. Skinner defined learning as a process of progressive behavior adoption. Thus, learning is a lifelong process; it is the product of environment, discovery and continuous process (B.F. Skinner, 1948).

The two world reinforcement derived from Greek world reinforcements to strengthen and is used in psychology to refer to anything stimulus which strengths or increases the probability of a specific response. In 1920, Russian psychologist Ir. Pavlov may have been the first to use the word reinforcement with respect to behavior. Tolman (1932) and Skinner (1938) deal it in termof stimulus. Hull (1943) equates reinforcement with derive reduction. Thorndike (1911) described it as a satisfier or annoyer, Denny and Adelman (1955) views it as an elicitor of behavior.

Some studies related to reinforcement and the achievements in mathematics are as follows:

Hull (1952) and Spence (1956) concluded that the presentation of reinforcement leads to the conditioning of a motivational state which they called incentive, motivation, which is determined by the attractions of the reinforcement. Higher education commission Pakistan (2004). Did a research on "Effectiveness of reward and punishment as modifiers of Students classroom behaviors" Taking the

population of the study comprised the teacher serving in government school of Punjab. The result of this study brought out clear picture of the reward and punishment practices being followed in the schools act as useful input improving these practices that influences development of student's desired behaviors.

Behaviorpsychologist B.F. Skinner (1904-1990) is the Professor of Harvard University, U.S.A. has conducted the stimulus-response (S-R) theory. This is based on the ideas that learning is a function of change in overt behavior. He used reinforcement as a procedure for controlling behavior. Not a hypothetical device that produces stimulus response (S-R) connection. He divided re-enforcement into two part positive and negative. Reinforcement theory is one of the motivation theories, it states that reinforced behaviors are repeated and behavior that is not reinforced is less likely to be repeated.

Types of Reinforcement

According to behavioral psychologist (B.F. Skinner) two types of reinforcement

Positive reinforcement: Positive reinforcement means stimuli like food, praise, water, grain, meals, grades etc which encourage repeating the particular behavior. An example of positive reinforcement in the classroom is giving a piece of pencil for scoring a certain percentage on a test. Chocolates are also positive reinforcement.

Negative reinforcement: Negative reinforcement is the stimuli that with draw from doing any particular behavior like loud noise and electric shock, etc. For example, stopping on electrical shock to a rat in order to increase the positive behavior on

B.F. Skinner experimentation is a negative reinforcement. One mistake that people often make in confusing negative reinforcement with punishment.

Thus, reinforcement refers to a wide variety of conditions which can be introduced in the learning situation, to increase the probability that a given reason is re-appear in the same situation. The theoretical meaning of reinforcement varies considerably from one system to another. There are several factors responsible for the reinforcement in mathematics learning of the students, such factors may be teacher's behavior, home environment, parent's attitude and education and socio-economic status also.

Statement of Problem

Mathematics is relatively a difficult subject. It is beginning essential part of school curriculum, most of the school students still take it as a difficult subject. In classroom practice, the traditional method of teaching mathematics is occupying the place which is dominating the motivation and reinforcement. Only a few students aredoing in mathematics and most fails on examination. Students cannot obtain better achievement until they are not motivated to learn. There are different approaches of motivating students in learning material, following the learner centered teaching methods, use of reinforcement etc. This study is done to determine whether the use of reinforcement effect or not on mathematic learning. This study is intended to answer the following questions:

- Does the reinforcement change the behavior of students, which leads to learning mathematics?
- Does the use of reinforcement in mathematics classroom raise the student's achievement?

Objectives of the Study

The objectives of this studyare:

- To compare the achievement of the students of grade VII in mathematics taught by using reinforcement and without using reinforcement.

- To analyze the behavior of students during experimentation.

Hypothesis of the Study

Hypothesis helps to researcher to find out the fact in scientific way and testable form the hypothesis of this study are as follows:

Research Hypothesis

There is no significant difference between the achievement of students taught by using re-enforcement and without using reinforcement.

Statistical Hypothesis

The above research hypothesis is translated in the following statistical hypothesis:

- $H_0 : \mu_1 = \mu_2$ (Null Hypothesis)

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

   Where, μ_1 and $\mu_2$are the mean achievement scores of the students in mathematics of experimental and the control group in pre-test respectively.

- $H_0 : \mu_1 = \mu_2$ (Null Hypothesis)

   $H_1: \mu_1 > \mu_2$ (Alternative Hypothesis)

Where, μ_1 and μ_2 are the mean achievement scores of the students in mathematics of experimental and the control group in post-test respectively.

Significance of the Study

In general mathematics taught at all levels of school curriculum. "How a child learns mathematics in 21st century" is a most important issue in teaching mathematics. Every classroom have full of diversity due to the different ability of students. So the researcher should respect their learning. Also the reinforcement is not used on the base of skill level of students on previous thesis. Thus, the study is down to determine whether the reinforcement rise or did not raise the learning outcomes of students in mathematics. Major significant of the study are follows:

- This study helps teachers to apply reinforcement appropriately in the classroom.
- This study helps teaches to know different types of reinforcement.
- This study directs teachers to determine desired behavior of students in learning.
- This study helps parents about throw their children be motivated towards learning at home also.
- This study remains as the base of further study and investigation in mathematics as well as other subjects.

Delimitation of the Study

The studies are limited to the following areas:

- The study was based on the experimental design.

- Both experimental and control groups contained 20 students.

- The study waslimited on the lower secondary level of SJHSS and SLLHSSSirahadistrict.

- The samples were selected from the grade seven students of these two schools.

- The findings of this study could not be generalized in other level students etc.

Definition of the Key Terms

Reinforcement: Reinforcement is an event that encourages the student to do the expected behaviors and discourages the unexpected behavior. Where expected behaviors areperforming class work, homework, giving attention while teaching and unexpected behaviors are making noise in the classroom, not performing homework and class work etc. Especially, the tangible reinforcement (e.g. Pencil, copy,Kandle as reward and phrase reinforcement correct, excellent, good, thank you etc.) for every right responses.

Experimental Group: The group whichis taught by using reinforcement as known as an experimental group.

Control Group: A group which is not taught by using reinforcement is known as control group.

Achievement: The score obtained by students in the test is defined as the achievement of student in this study.

Pre-test: Pre-test is a test, which measures the achievement of students before conducting the experiment.

Post- Test: Post test is such types of test, which measures the achievement, after conducting the experiment.

Treatment: The different condition under which experimental and control groups are applied are usually referred to as treatment

Techniques: Those techniques, which are using by mathematics teacher to reinforcement the students toward subject matters in classroom.

Chapter – II

REVIEW OF RELATED LITERATURE

Literature review is very important in research design. In order to get good result in research we should read different journals, books, documents which make research more meaningful and realistic. The review of the literature is the process of reading, analyzing, evaluating and summarizing scholarly materials about a specific topic. The review of related literature deals with the theories or research studies, which have been conducted earlier. It facilitated to select appropriate research problem. It helps to conduct the new research in a systematic manner by providing the general outline of the research study and avoids UNintentional replication. Through studying related research, investigators learn which methodologies are proven useful and which seems less promising.

Theoretical Review

The theoretical understanding is the platform of research program. It helps researchers to make a conclusion from the findings. The theoretical understanding guides and integrated the research study. Our concern of the study is 'Effect of Reinforcement on Mathematics Achievement in Lower Secondary Level Students" depends on the theory of reinforcement. There were different learning theories on the basis of reinforcement conducted by I.V. Pavlov, B.F. Skinner, Hull, and Thorndike etc. This study was depending on the behaviorist B.F. Skinner operant conditioning learning theory, which were given below:

If place a rat in a special cage (Tolle a "Skinner box") that had a bar or pedal on one wall that, when pressed, causes a little mechanism to release a food pellet into the cage. The rat was moving around the cage when it accidentally presses the bar and because of pressing the bar, a food pellet falls into the cage. The opinion in the

behavior just prior to the reinforcement, which were the food plate. In a relatively short period of time the rate 'learns' to press the bar whenever it wants food. It leads to one of the principles of operant conditioning theory, which was probability of that behavior occurring in the future.

If the rat presses the bar and continually does not get food the behavior becomes loss. This leads to another of the principle of operant conditioning, which was "behavior no longer followed by the reinforcing stimulus results in a decreased probability of that behavior occurring the future". According to behaviorist B.F. Skinner, the behavior of the student can be improved if we use the different type of reinforcement: positive, negative andpunishment.Theamong of reinforcement can be increase as the skill levels of the students. If the some reinforcement used regularly during an instructional unit, the effect of reinforce decrease and had little impact of the performance of the students. When planning what reinforces to use during instruction, the time of school year should be considered. For ex tangible reinforce were best utilized at the beginning of the school year, preferably during the first one month than before to repeat he act.

The following ideas reveal the essence of B.F. Skinner's theory (GreagarDonavanValdehueza 2010)

- Systematic use of reinforcement can shape students behavior in desired direction.

- Behavior becomes weaker if not followed by reinforcement.

- Behavior is also weakness by punishment.

- In the early stages of learning, constant reinforcement produces the best result.

- Behavior modification was applied in these two main ways:

- The teacher observes the student perform an undesired skill the teacher rewards the student, the student tends to repeat the skill.

- The teacher either ignores the act or punishment the student, then praises a student who was behaving correctly; the misbehaving student become less likely than before the repeat the act.

Empirical Review

Hull (1952) and Spence(1956) conceded that the presentation of reinforces leads to the conditioning of a motivational state which they called incentive, motivation, which was determined by the attractions of thereinforces.

Hansen (1972) in his doctoral dissertation on "An investigation of the effect of required homework on achievement in college mathematics" found that the homework group performed significantly better than the no homework groups on two investigator designed examination but equal to each other on standardized test.

Higher Education Commission Pakistan (2004) did a research on "Effectiveness of reward and punishment as modifiers of student's classroom behaviors" taking the population of the study comprised the teacher serving in government school of Punjab. The results of this study brought out clear picture of the reward and punishment practices being followed in the schools act as useful input improving these practices that influences development of student desired behaviors.

Adhikari(2007) did a research on "A teaching attitude towards reinforcement in teaching mathematic of primary level" with the objective to find the attitude of public teachers towards reinforcement in teaching mathematics at primary level found that all the mathematics teachers teaching at primary school had positive attitude towards reinforcement and statement that reinforcement is the strategy for fast and slow learners of mathematics" was highly accepted.

Pokharel (2007) did a research on "A study on effectiveness of reinforcement on mathematics achievement at primary level" with experimental group giving reinforcement and control group without reinforcement indicated that the mean achievement of experimental group was higher than the mean achievement of control group. The objective; taught with reinforcement without reward and to conform that the place of reinforcement activities in teaching mathematics. He had selected the pretest posttest equivalent group design. He selected 50 students as a sample from two school involving experimental and control group. Experimental group and control group were taught by him.

Tella (2007) did a study on "The Impact of Motivation on Student's Achievement and Learning outcomes in Mathematics among Secondary School Students in Nigeria" with objective 'to explain learning outcomes in senior secondary mathematics in terms of motivating students towards academic gains in the subject'. The two null hypotheses which were tested at 0.05 level of significance of the study were 'there is a no significance difference in the impact of motivation on academic performance of male and female students in mathematics' and 'there were no significance difference of academic performance of highly motivated and lowly motivated students in mathematics achievement test'. An ex-post facto design was adopted for the purpose of the study. It comprised all the senior secondary students of North-West and Ibadan South-West local government areas of OYO state of Nigeria as population of the study. Whereas 450 students were randomly drawn from 10 selected secondary schools to make a sample of the study. A questionnaire which was divided into two parts was administered for 450 participants to gathered data. The first part required the participant's demographic information like as sex, age, class, name of school etc, while the second part contained the items. After collecting the answer

sheet retrieved from the respondents, they were analyzed by using inferential statistics like as t-test and anova. The study concluded that motivation has impact on academic achievement of secondary school students in mathematics with respect to gender. It also revealed that highly motivated students perform better academically than the lowly motivated students.

Pant (2010), did a research entitled "A Study on the Effect of Reinforcement in Mathematics Achievement of a Secondary Level" with the objective; 'to compare the achievement of study taught by using reinforcement and without using reinforcement'. The pretest, posttest and non-equivalent group design was adopted for his study. Two equivalent groups were established on the basis of pretest results. Shree Jharpo Higher Secondary School of Sindhupalchowk district was purposively selected. By avoiding in regular studies, he had elected 40 students as a sample by lottery method. Two groups were made experimental and control with the help of coin tossing. Both the experimental and control group was taught by the researcher himself on selected unit of grade IX. After completing experiment, researcher administered the posttest constructed by him. The result of the test showed that the mean achievement scores in mathematics of experiential group were found greater than that of control group on post test. He concluded that reinforcement affects in mathematics learning at secondary level. He had suggested about further study whether the reinforcement affects or not on the other level students.

Shahi (2010), did research on the "Motivation Techniques Used by Teacher in Mathematics Classroom" with the objective 'to evaluate in what extent secondary school teachers have use motivation techniques in real classroom teaching' and 'to analyze the teacher's view on the role of motivation for teaching and learning'. He found that most of hit etecahe5rs were unable to identify student's difficulties and

problems, as a result students did not interested to learn and unable to understand the solution of problem clearly. He emphasized that the teaching learning process was not effective due to the lack of using motivation. He concluded that motivation is an important factor in effective teaching and learning mathematics as the case with all lesson.

Rijal (2011), did a research on "Effect of Reward on Learning Mathematics at Primary Level" with the objective 'to find the achievement of student taught with reward and without reward in mathematics teaching. For this study two public schools SSHS and SBLSS of Jalajale, Tehrathum were selected by convenience sampling method which were similar in marks obtain by students in final examination of grade IV. Researcher had determined the SSHS as experimental group and SBLSS as a control group. He had concluded that the mean achievement score of student taught by using reward was higher than the mean achievement score of student taught without using reward. He also found that reward affects the student's behavior positively. This shows that the students who were taught by using reward more were found active, regular participating in all the classroom activities than the students who were taught without using reward.

From the literature review, we had founded that the use of reinforcement brings better achievement in mathematics at secondary level and teacher was positive attitude towards using reinforcement. Where, reward was an example of positive reinforcement that influenced on the mathematics learning. Only achievements of students were measured on above research, there was a lack of analysis of behavior of the students. Does giving reinforcing only yield better achievement of student? Does the reinforcement help to change the behavior of student? To give the answer of these

questions the research 'Effect of Reinforcement in mathematicslearning at lowersecondary level' is done.

Conceptual Framework of the Study

The conceptual framework was the basis of investigators research problem. It wasthe graphical representation of the tasks, which were going to be performed by the researcher on her experimentation. It is made by the help of reinforcement theory:

Specify the desired behavior of the students

Applying teaching learning activities

Giving classroom/ homework to evaluate the student's learning outcomes

Delivery of the reinforcmenet according as behaviour

Note the behavior of the students
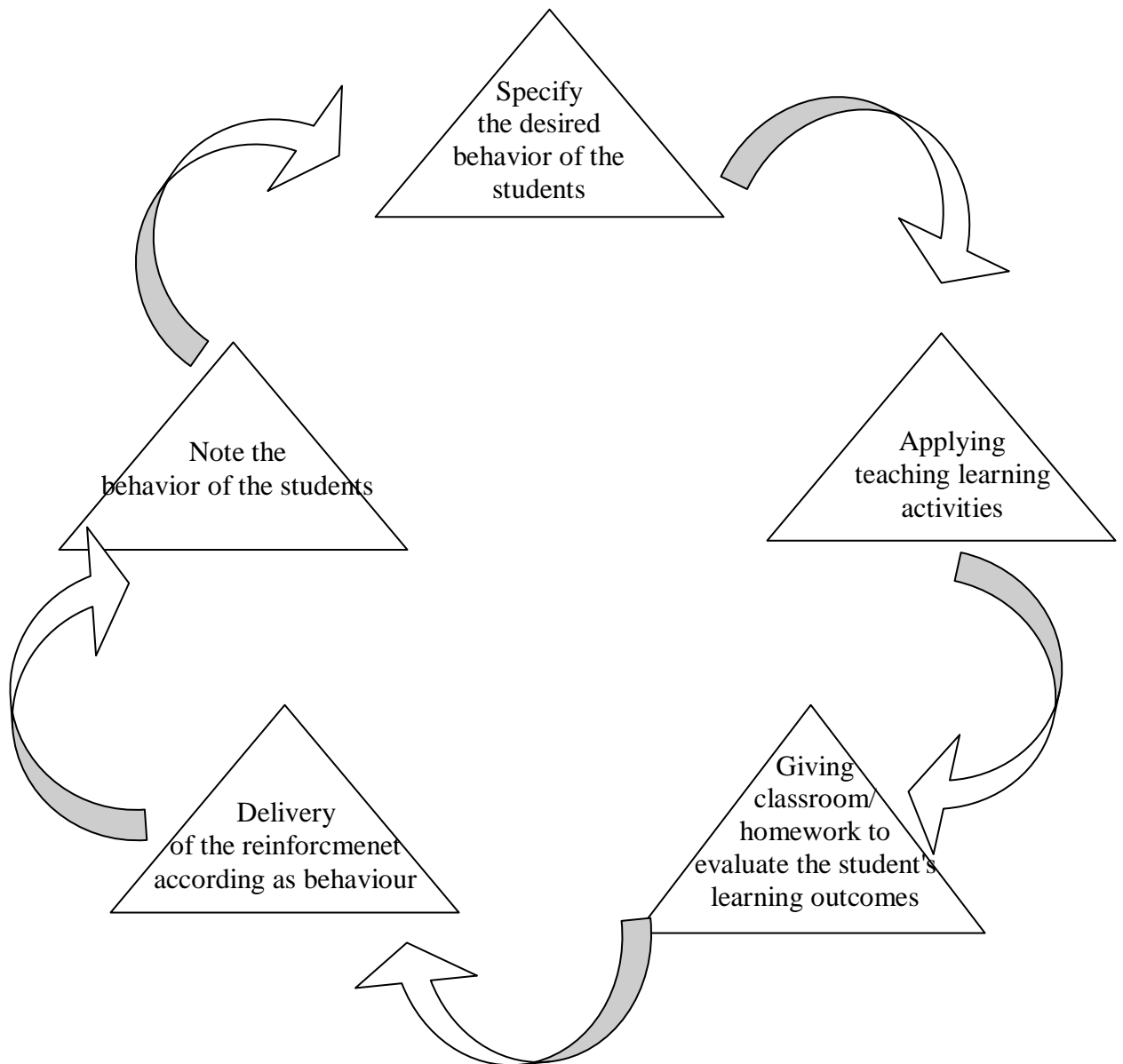
On the basis of following chart of conceptual framework my study were guided:

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        ┌──────────┐          ┌──────────┐          ┌──────────────┐
        │ Control  │◄─────────│ Pretest  │─────────►│ Experimental │
        │  Group   │          └──────────┘          │    Group     │
        └────┬─────┘                                 └──────┬───────┘
             │                                              │
             ▼                                              ▼
        ┌─────────┐         ┌────────┐          ┌─────────┐
        │ Result  │────────►│ Effect │◄─────────│ Result  │
        └────▲────┘         └────────┘          └────▲────┘
             │                                        │
             │                                   ┌────────────┐
             │                                   │    With    │
      ┌──────────────────────┐                   │reinforcement│
      │ without reinforcement│                   └────────────┘
      └──────────┬───────────┘
```

Control Group ← Pretest → Experimental Group

Control Group → Result

Experimental Group → Result

Result → Effect ← Result

Result (left) ← without reinforcement

Result (right) ← With reinforcement

With reinforcement → Physical object (chocolate, pencil, kindle etc)

With reinforcement → Verbal Means (Excellent, good, wrong)

without reinforcement → Effectiveness ← Physical object / Verbal Means

Post test → Effectiveness

(Curriculum Research Center T.U.)

At first, researcher specified the student's behavior of learning with respect to the pretest. Then she taught both of the group by using lesson plan. Researcher gave the class work and homework properly was get physical objective (chocolate, pencil, eraser, copy, pen etc) and verbal means (good, excellent, no wrong, best student on

the class etc.) But the students of control group who had performed class work and homework properly were treated just by the word 'good', Thanks'.

After the completion of teaching by using reinforcement on experimental group researcher noted the behavior of students on her diary. In which researcher gave a chocolate after one correct response. A single pencil was given after two correct responses. This process was repeated every day so that the behavior of performing class work and homework was shaped on the students.

Chapter – III

METHODS AND PROCEDURES

Research methodology was considered as the heart of research. According to the nature of research study research design is prepared. This chapter contained the topic research design, population of the study, sample of the study, data collection instruments, standardization of the test, variable studies, data collection procedure and date analysis procedure. The major procedure of this study was as following:

Research Design

This research was based on experimental method. This was an experimental research within this pre-test, post-test andnonequivalent group or two groupdesign was adopted, which was both quantitative and qualitative in nature. In this experimental research, the researcher had manipulated reinforcement as independent viable, control other relevant variables and observe the effect on learning (dependent variables). Along with different behavior of students was noted in the time of experimentation. The pattern of study was as following:

Table No. 1

Group	Pretest	Treatment	Posttest
E	A_E	X	B_E
C	A_C	-	B_C

Where, E=Experimental Group

        C=Control Group

        X=Treatment

A_E=Pre-test given to experiential group

A_C=Pre-test given to control group

B_E=Post-test given to experimental group

B_C=Post-test given to control group

Population of the Study

This research required small area for research. The study constituted all the students of grade VII studying mathematics subject in siraha district areas in public schools during the academic year 2073 B.S. were the population of the study.

Sample of the Study

The two public schools of Siraha district named as Shree Janta higher secondary school Gadha,Siraha and Shree LaxmanLalita higher secondary school were selected by the convenience sampling methodwithin 10 government school were pretest result, which are similar in socio – economic status. The researcher had selected 40 students in the sample. The score of the students were taken from the final exam in mathematics of grade VI.The sampling criteria in both groups were as follows:

Table No. 2

Classification of Students	No of Students in Sample
Distinction	2
First Division	6
Second Division	5
Third Division	5
Failure	2

Students were selected in sample by using stratified sampling method with respect to their classification as mentioned above. The scores of the students were taken from the final exam in mathematics of grade VI.

Lesson Plan

For the experimentation, 24 lesson plans were developed with the help of supervisor based on mathematics curriculum of grade VII including the chapter's concept of sets, fraction and decimal, ratio, proportion and percentage, profit and loss, algebraicexpression,similarity and congruency Fundamental Operation on Mathematics, Time and Money, line and angle (Presented in Appendix A).

Variable Studied

A variable is something that can be change, such as a characteristic or value. Variables are generally used in psychology experiments to determine if change to one thing result in changes to another.

Independent Variable

In this study, reinforcement is an independent variable. An independent variable in a scientific experiment is the variable that is changed to test the effect on a dependent variable. Independent variables are the variables that the experimenter change to test their dependent variable. In this study, reinforcement is an independent variable.

Dependent Variable

A dependent variable is the variable being tested in a scientific experiment. The dependent variable is dependent on the independent variable. As the experimenter changes the independent variable, the change in the dependent variable is observed and recorded. In this study mathematics achievement is a dependent variable.

The Exercises to Control the Extraneous Variable

Subject Matter: In both experimental and control groups, same contents were taught from the same textbook prescribed by government of Nepal.

Evaluation Applied: After the end of experimentation, same test wasgiven to both experimental and control group. The researcher herself marked the test paper of students from both groups.

Selection of School: Such two publicschoolwereselected in sample which were similar in socio-economic status, facilities and result of students and from the same resource Center.

Length of the Experiment: The experiment was conducted for 24 days to both experimental and control group.

Equating the Groups: Experimental and control groups were made comparable on the basis of marks obtained in mathematics at the final examination of grade VI.

Students: The student who are regular and not taking the tuition or extra class were selected in the sample.

Teacher Variable: Researcher herself taught both experimental and control group.

Some Uncontrollable Affecting Variable in the Experiment

Student's Labor: Students may labor more or less than expected by the researcher and self study of the students may affect in the result of research which is out of control.

Student's Home Environment: Student's home environment has great effect on student's behavior and attitude but it cannot be controlled by the teacher or researcher.

Data Collection Tools

An achievement test is main instrument for the data collection. Some questions were developed by researcher herself by the help of teacher guide. Some questionswere taken from their subject teacher and specification of grade VII. The researcher wasprepared three research tools. Theconstruction of achievement test, lessonplan and observation.

Achievement Test: Achievement test is a type of test which measures a person's degree of learning, success or accomplishment in subject matter. Since the main

concern of the study was find the effect of reinforcement in mathematics learning. So it wasbetter to use the achievement test as a main tool of collecting data. For the purpose to make the group comparable, the pre-test of 30 marks from the textbook of class VII prescribed by government of Nepal was prepared and adopted both groups. The researcher wasconstructed the achievement test(post-test) consisting 5 subjective questions for each question to 3 marks and 15 objective questions for each question to 1 marks from mathematics curriculum of grade seven from which she had taught in the timeof experiment with the help of supervisor and subject expert. The full mark of this achievement test was of 30.

Observation: Observation is the most reliable tool go find out the reality.Researcherwere observed the behavior of students during the experimentation and recorded after completion ofinstructional activities. She noted the student's participation in learning interaction, regularity in doing homework and class work, attendance rate, concentrative, active, interest in subject matteretc.ofboth group by regular class observationon noted her diary/ note keeping. The behaviors, which were shown by student, were analyzed carefully every day.

Item Analysis

Item analysis was defined as the process of detaching faulty itemonthe basisof difficulty level and discriminating index of each item. It was used to determine the utility, appropriateness and qualityof the question. For the purpose of item analysis, the researcher prepared an achievement test and administrated to 26 students of grade VII of SJHSS and SLLHSS of sirahadistrict. Which werenot includedinthe sample?The Correct answers werescored with 1 and incorrect answers werescored with '0' for objective type questions. And the scoring criterion of the subjective

question wasdivided into 3 steps. Each right response of second step depended on the rightresponse of first. The correct response of each step wasmarked with 1. For item analysis, all 26 students weredivided into two groups by 50% of high marking students and 50% of low marking students from total. Out of them 27% (7 students) from high marking students and 27% (7 students) from low marking students wereselected. By using the statistical formula, difficulty level and discriminating index of each 22 items were calculated where 5 items were cancelled and only 17 were accepted (shown inAppendix C). After cancelling and modifying the items, the refined instrument of achievement test wasprepared.

Determination of Reliability and Validity of Test

For the reliability of the test, the researcher followed the test-retest method which wasadministrated to seven grade student of SJHSS. By the calculating of coefficient correlation, the reliability if the test was determined which was 0.98 (shown in Appendix D). It indicates that the achievement test was highly reliable. The content validity of the test was be setup by using the specification grid of grade seven and approved by mathematics experts as well as school subject teacher.

Data Collection Procedure

This study was carried out at SJHSS and SLLHSS,as a sample schools by convenience sampling method from same resource centre. They are similar in socio-economic status and result of students. Two groups from SJHSS and SLLHSS schoolswere selected by stratified sampling method, each of them are consisting 20 students. For the purpose to make the group comparable, the pre-test of 30 marks from the textbook of class VII prescribed by government of Nepal was prepared and

adopted to both groups. Researcher were checked the answer sheet and scored. Both sample groups contained the students of all categories (distinction, first division, second division, third division holder and failure) for the purpose to make the sample more representative, which were assumed to ready for true experiment as we desired. The prepared achievement test was administered to the both group of students. After that, the researcher herself checked the answer sheet.

Data Analysis Procedure

The collected set of data on student's achievement were statistically analyzed and interpreted. The statistics formula such as mean, standard deviation, and variancewere applied to analyze the data of both experimental and control group (statistical formulas are shown in (Appendix F). The mean achievements of experimental and control groups on post-test of students were compared by using t-test at0.05 level of significance with N_1+N_2-2 degree of freedom. "And the data obtained from the daily observation were analyzed descriptively. The behavior of students which were noted her diary."

Chapter - IV
ANALYSIS AND INTERPRETATION

This was an experimental research related to "The effect of reinforcement on mathematics achievement of lower secondary level students. The objectives of this study were 'to compare the achievement of the students of grade VII in mathematics taught by using reinforcement and without using reinforcement in lawyer secondary level and to analyze. The behavior of students during experimentation a pre-test post-test non-equivalent group design was adopted for the purpose of the study. For this to students were taken as sample from each school Shree Janta Higher Secondary School Gadha. Siraha and Shree LaxamanLalita Higher Secondary School Raghunathpur, Siraha as experimental and control groups respectively sample and sampling process tools reliability and validity of process\ data analysis process Analysis interpretation of the collected data was the most important part of the study. Data were collected from the research field. The score of the students were analyzed using the statistical method of analysis and achievement test were analyzed by using quantitative technique and the qualitative information on students learning difficulty and learning progress was analysis by using qualitative method and then the obtained data were analyzed and interpreted under the following handing.

➢ Comparison of the mean achievement score of experimental and control groups on pretest.

➢ Comparison of pre-test result.

➢ Comparison of post-test result.

Comparison of Mean Achievement Scores of Experimental and Control Groups on pre-test.

In this section, the researcher had presented the data of pretest in detail. The score obtained by the students of the experimental and control groups in pretest hadbeen giving in Appendix c. The mean, variance standard deviation and t-test analysis had been summarizing in the following table:

Table No. 1

Comparison of pre - test Result

Groups	Sample	Mean	Variance	S.D.	Calculated t-value
Experimented	20	16.2	30.61	5.53	
Control	20	16.8	39.82	6.39	0.3197

Critical point (0.05,38) = 1.645

From above table, clear that the mean variance, and standard deviation of the score in the pretest of experimental groups were 16.2, 30.61 and 5.53 and similarly the control groups were 16.8, 39.82, 6.31 which shows that mean score of experimental and control group were nearly equal since the calculated t-value were 1.65 at 0.05 level of significance with degree of freedom 38. Therefore, the calculate t-value does not exist the tabulated t- value (i.e. 1.65), the null hypothesis that there was no significant difference between experimental and control groups on pretest scores were accepted.

Table No .2

"Comparison of Posttest Result"

Groups	Sample	Mean	Variance	S.D.	calculate t-value	decision
Experimented	20	21.2	29.11	5.4	2.0672	Significance difference
Control	20	17.2	45.15	6.72		

Critical point (t 0.05, 38) = 1.645

From the above table clear that the mean, variance and standard deviation of the score in post-test of experimental groups were 21.2, 29.11and 5.4 respectively and similarly, the control groups were 17.2, 45.15 and 6.72 respectively. This shows that there was significance difference between the mean score of experimental groups were 21.2 which were highly greater than that the mean score of control group were 17.2 It means that the better performance of experimental group over control group on the post- test scores might have been attributed due to new treatment given to experimental group in the reinforcement of control group exercised in the experiment.

Comparison of Pretest and Posttest Resultof Both Groups in Bar Diagrams

Bar diagram is the visual of the data. It helps the teachers, students and others to understand the data result more effectively. The above information and interpretation can be easily understoodif they are depicted through bar diagram. If pictorial representation is effectively done, the data were seen rather than studied and are grasped as totality. The researcher presented the data in bar graph which is given below:

Bar Diagram

Comparison of Pretest and Posttest Result
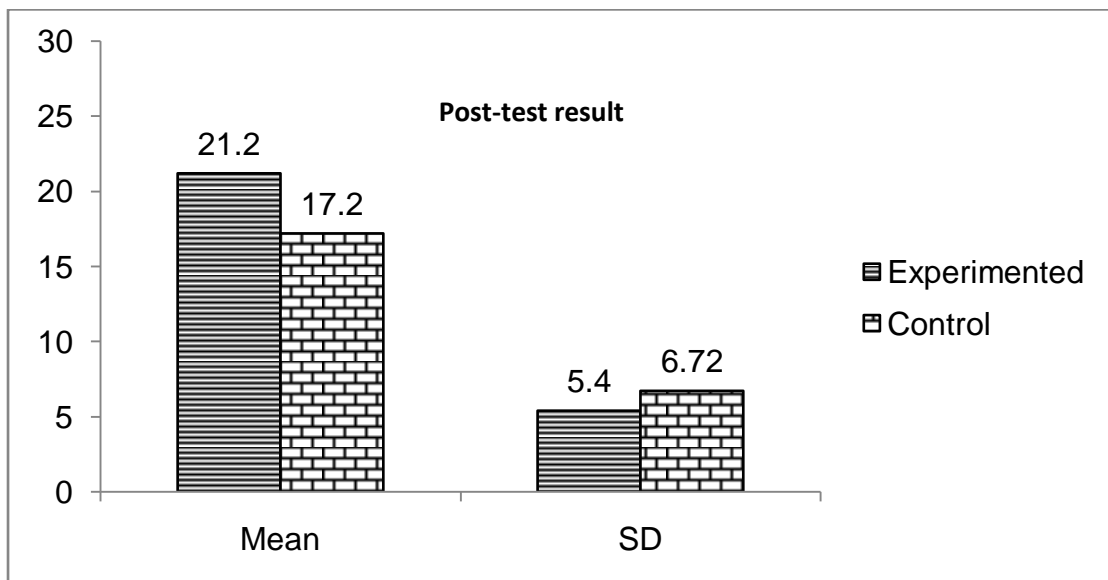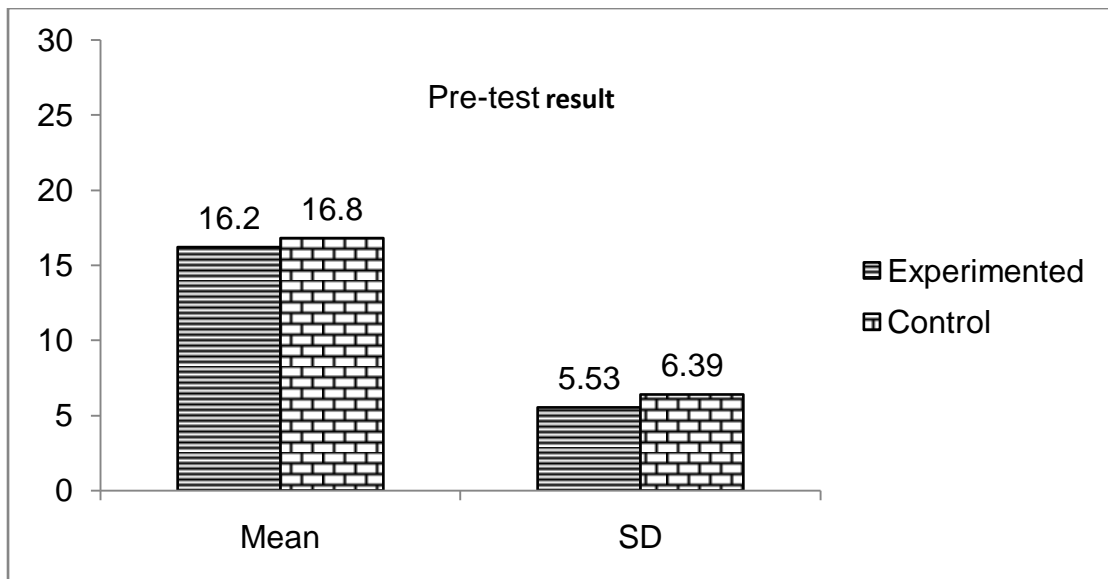
The above bar diagram indicates the mean and Standards derivation of experimental group and Controller group on pretest and posttest. The bar diagram 1 show that difference in mean scores and standard deviation scores obtained by the students of experimental and controlled group on pretest were 16.2, 16.8 & 5.53, 6.39 on the other hands the mean & Standard derivation scores obtained by the students of experimental & control groups on posttest are 21.2, 17.2 & 5.4, 6.72.

Qualitative Analysis

Qualitative analysis wasmadebased onthe observation reports made by researcher himself. Qualitative analysis haddone with the help of the information collected through daily classroom observation. On the basis of classroom instruction the researcher observed the students activities noted daily in his notebook. The researcher had been completely done on the topic "Effect of reinforcement on mathematics achievement of lower secondary level students" with the objective of to compare the achievement of the students of grade VII in mathematics taught by using reinforcement and without using reinforcement and to analyze the behavior of students during experimentation at class room. The research was experimental in nature. Ithelps to fulfill the objective properly.

Qualitative analysis was made on the basic of observation reports. In the research process, observation was on effective and suitable method for reliable primary data collection tools observation helps to seek information and knowledge using sense organs. Etymologically, observation is an act of watching something and somebody carefully for a period of time especially to clean something on the basis of class room instruction the researchers observed the students activities. Achievement of mathematical knowledge depends upon the teaching method. If teaching method was interesting, they were get good knowledge as well as good marks in mathematics from the Appendix 'B' when the research observed the classroom by the following process.

For the experimentation researcher had divided two groups one was control group the next was experimental group researcher though control group for 24 days without using reinforcement. While teaching researcher noticed the problem almost

students were seems in active to learn classroom while the researcher taught. Most of the students didn't do the problem as homework and class work also. They only wrote the solution of problem in their copy which was solved by teacher. Most of the students were joking or enjoying out of the matter so the discipline of class was not well. Really researcher asked the questions randomly but researchers didn't use any types of reinforcement and reward of the right responses of pupils. The participation of students in learning activities was passive weak performance of students was observed only the highly achieve were participated for seeking the right answer of the question and a few students performed class work and home work properly the attendance rate of students was also low.

In next experimental group researcher taught by reinforcement technique for 24 days. It was found that most of the students of experimental group became more exited while using the reinforcement on teaching mathematics we can easily notice the friendly teacher student environment where they are enjoying the subject matter and always ready to learn more. Reinforcement was the most important factor of motivation in the classroom. It is necessary to use in classroom in suitable content, simply positive verbal reinforcement like nods and smites speech pattern were seen it different posture. It contributed in the development of students participation, interaction increasing confidence level enjoying class work and home work regularity students of experimental group were presented regularly were also participated more than the girl students of control group. In short most of the students of experimental group were very, active, contrastive, laborious and completive in comparison to the control group. The attendance rate of control group was lower than the experimental group also.

Hence the achievement of the students taught by using reinforcement was better than the achievement of the students taught without using reinforcement on mathematics at lower secondary level students.

List the behaviors,

1.	excited	Interest in class work	all were participated
2.	active	laborious	Do homework
3.	regularity	interaction	Completive
4.	concentrative	Interest in subject matter	regularity

The behaviors as listed above then tended to repeat and supported to be habituation in the behaviors.

Chapter - V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter is basically concerned on the summary, findings, conclusion and recommendations. After the analysis and interpretation of collected data, an attempt has been made to summarize and list the findings conclusion and some recommendation for further study.

Summary of the Study

This study was concerned with the effect of reinforcement on mathematics achievement of Lower secondary level students at government schools. The study had been conducted to explain and interpret the objectives which are to compare the achievement of the students of grade VII in mathematics taught by using reinforcement and without using reinforcement and To analyze the behavior of students during experimentation.

The study was experimental design. The population of the study was all the students of grade seven from Siraha district. The sample schools were selected through the convenience method of sampling which was named as Shree Janta Higher Secondary School Gadha and Shree LaxmanLalita higher secondary school. A pre-test, post-test non equivalent group design was adopted to fulfill the objectives of the study. Two equivalent groups were established on the basis of pretest result. Each group of students contained 20 students. The t-test was applied in order to ascertain the difference between two groups. The researcher herself taught the selected unit to both experimental and control groups. The instruction period was 24 days only post-test was administered to the sample of the students in both groups with the same

questions. The researcher had prepared research tools which are construction of lesson plan achievement test, and observation. After competition of the experimental stage an achievement test of 30 marks including 5 subjective and 15 objectives questions was adopted to both groups. Then the score obtained by the students on post-test was analyzed and interpreted by using t-test at 0.05level of significance. Experiment group was found to achieve better than the control group. Hence it is concluded that by using reinforcement caused better achievement than without using reinforcement.

Finding of the Study

The purpose of this study was to find effect of reinforcement in mathematics learning at basic level. After analyzing the pre-test and post- test, it is evinced that implementing motivational activities in mathematics in classroom, providing literacy or non-literacyreinforcement in the mathematics classroom indeed increase the student learning ability and their practices. From the above analysis and interpretation of data, we can yield the following findings of the study:

➢ The learning by using reinforcement is effective so, the students remember every answer of the question which was previously taught they don't forget any answer of question for long time.

➢ There is no significant diff between mean score of experimental and control group before experimental pre-test but the mean score in mathematics of experimental group were found greater than that of experimental group were found greater than that of control group after experiment post-test.

➢ Most of the students were become very competitive, active, concentrative and laborious throughout the use of reinforcement.

➢ Reinforcement is the best strategy for fast and slow learners of mathematic but most of the show learner.

➢ Reinforcement plays a vital role in enhancing students thinking skills from visual to descriptive analytical level.

Conclusion of the Study

From the above finding of the study, it is concluding that the students of the experimental group achievement scores increased in comparison to control group. While using reinforcement in study the students enjoy the subject matter and always ready to learn more and more, also more achievement. In the some way the student participation interaction and the confidence level increase. They enjoy doing class work and home work. This shows that the student who were taught using reinforcement more were found active, regular in all the activities of classroom than the student who were taught without using reinforcement. I find regularity of student and their performance skill better than students of control group the attendance rate of control group is lower than the experimental group. From over all analysis of the collected data, it seems that reinforcement helps to acquire Researcher used reinforcement as treatment for experimental group to motivate students for mathematics learning which caused better performance. Hence, it can be concluding that it is better to use the different types of reinforcement with the proper knowledge.

Recommendation and Suggestions

On the basis of this study, the following suggestions will be put forward for further research. Due to the limitation of this study the result may not be generalized to all are and all levels. On the basis of the study, some measures have been recommended for the improvement of the teaching situation in lower secondary level class as given below.

- ➢ To find out the influencing factors which create the difficulties to use reinforcement in teaching mathematics at lower secondary level students.
- ➢ It is recommended to study about the relationship between attitude of mathematics teachers towards using reinforcement and their teaching practices.
- ➢ More extension research studies must be designed and carried out in order to investigate the effect of the use of reinforcement teaching mathematics in large samples and various school of different part of Nepal.

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Appendix C

Item Analysis

Students No.	Rank of students																P value	D value	Remarks
	Upper 27% students making correct response								Lower 27% students making correct response										
Item No.	1	2	3	4	5	6	7	Total	1	2	3	4	5	6	7	Total			
1	1	1	0	1	1	1	1	6	1	0	0	1	0	1	0	3	64.2%	0.43	Accepted
2	1	1	1	1	1	1	1	7	1	1	1	1	0	1	1	6	92.9%	0.14	Cancelled
3	0	1	1	0	1	1	1	5	0	1	0	0	1	0	1	3	57.14%	0.29	Accepted
4	1	1	1	0	1	0	1	5	0	0	1	0	0	1	0	2	50%	0.43	Accepted
5	1	0	1	1	1	1	1	6	1	0	1	1	1	0	0	4	71.5%	0.29	Accepted
6	1	0	1	1	0	0	1	4	0	1	0	1	0	1	1	4	57.14%	0	Cancelled
7	1	1	1	1	1	1	0	6	1	1	0	1	0	0	1	4	71.42%	0.29	Accepted
8	1	1	0	1	1	0	1	5	0	1	0	0	1	1	0	3	57.14%	0.29	Accepted
9	0	0	1	1	1	1	1	5	1	0	0	1	0	0	1	3	57.14%	0.29	Accepted
10	1	1	0	0	1	1	1	5	1	0	1	0	0	0	1	3	57.14%	0.29	Accepted
11	0	1	1	1	1	1	1	6	0	0	0	1	1	0	0	2	57.1%	0.57	Accepted
12	1	1	1	0	1	1	1	6	1	1	1	1	1	0	1	6	85.7%	0	Cancelled
13	1	1	1	0	1	1	0	5	0	0	0	0	0	0	1	1	42.85%	0.57	Accepted
14	1	1	0	0	0	1	1	4	0	0	0	0	0	0	0	0	28.5%	0.57	Accepted
15	0	1	1	1	1	1	1	6	1	0	0	0	0	0	0	1	50%	0.71	Accepted
16	1	0	1	1	0	1	0	4	0	1	0	0	0	1	0	2	42.85%	0.29	Accepted
17	1	1	1	1	1	1	1	7	1	0	0	0	1	1	0	3	71.5%	0.58	Accepted
18	1	1	0	1	1	1	1	6	0	0	0	0	0	1	0	1	50%	0.72	Accepted
19	0	0	0	1	1	1	0	3	0	0	0	0	0	1	0	1	28.5%	0.28	Cancelled
20	1	1	1	1	1	1	1	7	0	0	1	0	0	0	0	1	57.2%	0.86	Accepted
21	1	0	1	0	1	0	0	3	1	0	0	0	0	0	1	2	35.7%	0.14	Cancelled
22	1	1	1	0	1	1	1	6	0	1	0	1	0	0	0	2	57.1%	0.57	Accepted
Total	17	16	16	14	19	18	17		10	8	6	9	6	9	8				

Appendix D

Reliability of the Achievement Test

S.N.	Marks obtain in first test	Marks obtain in second test	XY	X^2	Y^2
1	27	28	756	729	784
2	26	26	676	676	676
3	26	28	728	676	784
4	25	22	550	625	484
5	24	20	480	576	400
6	23	26	598	529	676
7	23	24	552	529	576
8	22	25	550	484	625
9	21	18	378	441	324
10	21	22	462	441	484
11	19	20	380	361	400
12	18	18	324	324	324
13	17	17	289	289	289
14	17	17	289	289	289
15	16	15	240	256	225
176	16	14	224	256	196
17	15	18	270	225	324
18	14	15	210	196	225
19	12	14	168	144	196
20	11	12	132	121	144
21	11	11	121	121	121
22	10	9	90	100	81
23	9	11	99	81	121
24	6	7	42	36	49
25	5	5	25	25	25
Total	X = 423	Y = 442	XY = 8633	X^2 = 8530	Y^2 = 8822

$$r_{xy} = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}} = \frac{25 \times 8633 - 423 \times 442}{\sqrt{25 \times 8530 - (423)^2}\sqrt{25 \times 8822 - (442)^2}}$$

= 0.98(which is highly reliable)

Appendix E

Score Obtained by Students in Pre-test and Post-test

S.N.	Pre-test (30 marks)		Post-test (30 marks)	
	Experimental Group	Control Group	Experimental Group	Control Group
1	26	28	29	28
2	25	26	29	27
3	23	25	27	25
4	23	23	27	24
5	22	22	26	23
6	21	20	25	23
7	19	19	24	21
8	19	19	24	20
9	18	18	23	22
10	17	17	20	18
11	17	15	22	15
12	16	13	21	19
13	15	13	22	15
14	15	12	16	10
15	14	12	18	11
16	13	11	16	11
17	10	9	19	10
18	8	8	15	9
19	8	7	12	7
20	7	7	10	6
Average	16.2	16.8	21.2	17.2
Standard Deviation	5.35	6.31	5.40	6.72

Appendix F

Statistical Formula Used in Study

S.N	Subject	Symbol	Formula

1	Mean	$\overline{X}$	$\dfrac{\sum fx}{N}$ Where X = Random variable & f = frequency
2	Variance	S^2	$\dfrac{\sum fd^2}{N} - \left(\dfrac{\sum fd}{N}\right)^2$
3	Pooled variance	$S^2{}_p$	$\dfrac{(n_1-1)S_1{}^2 + (n_2-1)S_2{}^2}{n_1+n_2-2}$
4	Standard deviation	S	$\sqrt{\dfrac{\sum fd^2}{N} - \left(\dfrac{\sum fd}{N}\right)^2}$
5	Pearson's correlation coefficients	r_{xy}	$\dfrac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\,\sqrt{N\sum Y^2 - (\sum Y)^2}}$
6	Difficult level of item	P%	$\dfrac{R_U + R_L}{N} \times 100\%$ where R_u= No. of correct responses given by upper 27% student R_L= No. of correct responses given by lower 27% students
7	Discrimination index of item	D	$\dfrac{R_U - R_L}{\dfrac{N}{2}}$
8	t-distribution	T	$\dfrac{\overline{X}_1 - \overline{X}_2}{\sqrt{\dfrac{(n_1-1)S_1{}^2 + (n_2-1)S_2{}^2}{n_1+n_2-2}}\,\sqrt{\dfrac{1}{n_1}+\dfrac{1}{n_2}}}$ Where, $\overline{X}_1$ and $\overline{X}_2$ are mean scores of experimental and control group respectively? $S_1{}^2$ and $S_2{}^2$ are the variance of experimental and control group respectively.

Appendix G

Observation Check-list for Researchers

S. N.	Experimental Group								Control Group							
	A	R	C	DCW	DHW	L	I	P	A	R	C	DCW	DHW	L	I	P
1	√			√	√							√	√			
		√	√			√	√	√	√	√	√			√	√	√
2	√			√	√							√	√			

		√	√			√	√	√	√	√	√			√		√
3	√	√	√	√	√	√	√	√		√	√		√		√	√
4	√	√	√	√	√	√	√	√	√		√	√	√	√		
5	√	√	√	√	√	√	√	√	√		√		√		√	√
6	√	√	√	√	√	√	√	√		√		√		√		√
7	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
7	√	√	√	√	√	√	√	√		√	√		√		√	
9	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
10	√	√	√	√	√	√	√	√	√	√			√			√
11	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
12	√	√	√	√	√	√	√	√		√	√				√	√
13	√	√	√	√	√	√	√	√	√	√		√	√	√	√	
14	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√
15	√	√	√	√	√	√	√	√	√	√			√	√		√
16	√	√	√	√	√	√	√	√		√	√	√		√	√	
17	√	√	√	√	√	√	√	√	√	√	√		√	√	√	√
18	√	√	√	√	√	√	√	√	√		√	√	√	√		√
19	√	√	√	√	√	√	√	√	√	√		√	√	√	√	√
20	√	√	√	√	√	√	√	√		√	√	√	√		√	√

A: Active

R: Regularity

C: Concentrative

L: Laborious

I: Interaction, P: Participation,

ICW: Interest in class work, IHW: Interest in home work

Appendix A

दैनिक पाठयोजना नं. १

विषय : मेरो गणित   एकाई : परिमिति र क्षेत्रफल

कक्षा: ७ पाठशीर्षक : वर्ग र आयतको परिमिति

समय: ४५ मिनेट

१. विशिष्ट उद्देश्य: यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- वर्ग र आयतको परिमिति निकालने सुत्र भन्न,

- वर्ग र आयतको परिमिति निकाल्न ।

२. शैक्षिक सामग्रीहरु : चार्टपेपरबाट वनेका वर्ग र आयतनका चित्रहरु, दैनिक शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- वर्ग र आयतका चित्रहरु प्रदर्शन गरि विद्यार्थीहरुलाई शिक्षणप्रति उत्प्रेरना जगाउने।

- वर्ग र आयतको परिभाषा कालोपाटीमा लेखेर सिकाउने साथै विभिन्न किसिमका चित्रहरु कोरेर देखाउने ।

- विद्यार्थीहरुलाई वर्ग र आयतको परिमिति निकाल्ने सुत्र भन्न लगाउने र पछि मात्र आफू भन्ने ।

- वर्ग र आयतको चित्र कालोपाटीमा कोरी सिकारुहरुलाई छुट्याउन लगाउने र सही उत्तर दिने प्रयोगात्मक समूहका सिकारुलाई चकलेट दिएर प्रोत्साहित गर्ने तर नियन्त्रित समूहका सिकारुलाई मौखिक प्रोत्साहन गर्ने ।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ

क) वर्गको परिमिति निकाल्ने सुत्र के हो ?

ख) आयतको परिमिति निकाल्ने सुत्र के हो ?

ग) दिइएको चित्रमध्ये वर्ग र आयत के हो छुट्याउनुहोस् ?

....
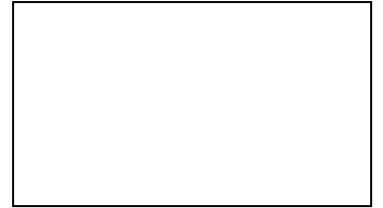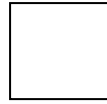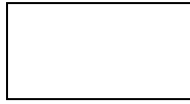
सही जवाफ दिने प्रयोगात्मक सम''हका सबै विद्यार्थीलाई चकलेट दिइनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहको लागि अभ्यासको प्रश्न नं. १, २, ३ र ४ गृहकार्यको रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्यगरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा पेन्सील दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

विषय : मेरो गणित   एकाई : परिमिति र क्षेत्रफल

कक्षा : ७   पाठशीर्षक : वर्ग र आयतका क्षेत्रफल

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- वर्ग र आयतको क्षेत्रफल निकालने सुत्र भन्न,

- वर्ग र आयतको क्षेत्रफल निकाल्न ।

२. शैक्षिक सामग्रीहरु : चार्टपेपरबाट बनेका वर्ग र आयतनका चित्रहरु, दैनिक प्रयोग हुने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- वर्ग र आयतका चित्रहरु प्रदर्शन गरि विद्यार्थीहरुलाई शिक्षणप्रति उत्प्रेरना जगाउने।

- वर्ग र आयतको परिभाषा कालोपाटीमा लेखेर सिकाउने साथै विभिन्न किसिमका चित्रहरु कोरेर देखाउने ।

- विद्यार्थीहरुलाई वर्ग र आयतको क्षेत्रफल निकाल्ने सुत्र भन्न लगाउने र पछि मात्र आफु भन्ने ।

- वर्ग र आयतको चित्र कालोपाटीमा कोरी सिकारुहरुलाई छुट्याउन लगाउने र सही उत्तर दिने प्रयोगात्मक समूहका सिकारुलाई चकलेट दिएर प्रोत्साहित गर्ने तर नियन्त्रित समूहका सिकारुलाई मौखिक प्रोत्साहन गर्ने ।

- कालोपाटीमा ४ से.मि. लम्वाई र ३ से. मि. चौडाई भएको आयतको क्षेत्रफल आ–आफ्नो कापीमा निकाल्न लगाउने ।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ

क) वर्गको क्षेत्रफल निकाल्ने सुत्र के हो ?

 ख) आयतको क्षेत्रफल निकाल्ने सुत्र के हो ?

ग) दिइएको वर्ग र आयत को क्षेत्रफल निकाल्नुहोस् ?

क)

ख)

सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई कापी दिइनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहको लागि अभ्यासको प्रश्न नं. १, २, ३ र ४ गृहकार्यको रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा कापी दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

विषय : मेरो गणित   एकाई : समूह

कक्षा : ७ पाठशीर्षक : उपसमूह

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- समूहको परिभाषा भन्न,

- समूहबाट विभिन्न उपसमूह छुट्याउन ।

२. शैक्षिक सामग्रीहरु : चार्टपेपरमा विभिन्न कलरले वनेका समूह र उपसमूहका चित्रहरु, दैनिक प्रयोग हुने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश गरिसकेपछ्धी एउटा सानो चुटकिला सुनाई विद्यार्थीहरुलाई आफूतिर ध्यान आकर्षण गर्दै कक्षा अगाडी बढाउने ।

- त्यसपछ्धी कक्षाकोठामा भएका सिकारुहरु केटाकेटालाई एकातिर र केटीकेटीलाई अर्को तिर वस्न लगाउने साथै केटा र केटीको समूह बनाएको भनेर जानकारी गराउने ।

जस्तै : कक्षा ७ का केटीहरुको समूह, $A = \{$ सीता, गीता, रिता, रुपा, रुबी, वविता, कविता $\}$

कक्षा ७ का केटाहरुको समूह, $B = \{$ राम, श्याम, हरी, प्रविन, विजय, रविन, दिपक $\}$

- एपरोक्त अनुसारको समूह वोर्डमा लेख्दै जाने ।

- समूह ∕ सर्वव्यापक समूह र उपसमूहको परिभाषा वोर्डमा लेखि विद्यार्थीहरुलाई पनि आ–आफ्नो कापीमा लेख्न लगाउने ।

- सिकारुहरुलाई विभिन्न समूहहरुका उदाहरण दिन लगाउने र एक जनालाई वोर्डमा लेख्न लगाउने ।

- अनत्यमा माथिको उदाहरणलाई दुवै समूहका गुण ∕ विशेषता आउन सक्ने समूह $U = \{$ कक्षा ७ का विद्यार्थीहरु $\}$ सर्वव्यापक समूह हो भनेर जानकारी गराउने ।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ

क) समूह भनेको के हो ?

ख) सर्वव्यापक समूह $U = \{$ ५० भन्दा साना पूर्ण सङ्ख्याहरु $\}$ हो । अव तलका समस्याहरु समाधान गर ।

➤ ४ का अपवर्त्यहरुको समूह $m_४$ लाई सुचिकरण विधिबाट लेख ।

➤ ६ का अपवर्त्यहरुको समूह $m_६$ लाई सुचिकरण विधिबाट लेख ।

➤ समूह ग मा पर्ने थप २ समूह बनाऊ ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई कपि पुरस्कार दिइनेछ भने दुई प्रश्नको सही उत्तर दिनेलाई पेन्सिल र एकमात्र सही उत्तर दिनेलाई पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : अभ्यास ११.१ को प्रश्न नं. १, २, ३ र ४ गृहकार्यको रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा कापी दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिने ।

दैनिक पाठयोजना नं. ४

विषय : मेरो गणित   एकाई : समूह

कक्षा : ७ पाठशीर्षक : उपसमूह

समय : ४५ मिनेट   `

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- उपसमूहको परिभाषा भन्न,

- उपसमूहलाई सङ्केतमा जनाउन र सर्वव्यापक समूहबाट विभिन्न उपसमूह छुट्याउन ।

२. शैक्षिक सामग्रीहरु : चार्टपेपरमा विभिन्न कलरले वनेका समूह र उपसमूहका चित्रहरु, दैनिक प्रयोग हुने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश गरिसकेपछी अघिल्लो कक्षाको समिक्षा गर्दै विद्यार्थीको ध्यान आफूतिर आकर्षित गर्दै कक्षा अगाडी बढाउने ।

- एउटा सर्वव्यापक समूह $U = \{$ ४ सम्मका प्राकृतिक सङ्ख्याको समूह$\}$

    $= \{१, २, ३, ४\}$ बोर्डमा लेख्ने ।

- सिकारुहरुलाई एक मात्र सदस्य, दुई मात्र सदस्य, तीनमात्र सदस्य र चारमात्र सदस्य भएको समूह छुट्टयाउन लगाउने साथै समूहहरु कालोपाटीमा सङ्कलन गर्दै छलफल गर्ने ।

- यदि एउटा समूह X मा भएका सवै सदस्यहरु अर्को समूहY का पनि सदस्यहरु हो भने X Y को उपसमूह हुन्छ ।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ :

क) समूह F = { केरा, स्याउ, आँप } बाट बन्ने सबै उपसमूहहरु लेख?

ख) समूह R = {१, २, ३}बाट बन्ने सबै उपसमूहहरु लेख ?

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई कपि पुरस्कार दिइनेछ र एकमात्र सही उत्तर दिनेलाई पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य :

अभ्यास ११.२ मा दिइएको समस्याहरु हल गरेर ल्याउने । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा इलेजर दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ

दैनिक पाठयोजना नं. ५

विषय : मेरो गणित   एकाई : समूह

कक्षा : ७ पाठशीर्षक : भेन चित्र

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

● विभिन्न समूहलाई भेन चित्रमा देखाउन ।

२. शैक्षिक सामग्रीहरु : चार्टपेपरमा विभिन्न कलरले वनेका समूह र उपसमूहका भेनचित्रहरु, दैनिक प्रयोग हुने शिक्षण सामग्रीहरु ।

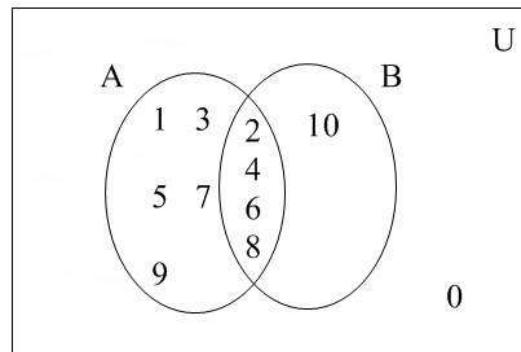३. शिक्षण सिकाई क्रियाकलाप : अघिल्लो पाठको पूर्नरावलोकन गराउँदै तोकिए बमोजिम पूनर्वल दिइनेछ ।विद्यार्थीहरुलाई चार्ट पेपरमा भेन चित्रको चित्र देखाई विभिन्न समूहलाई विभिन्न रङ्गले रङ्गाउन लगाउने ।समूह वा समूहका विभिन्न सम्बन्धहरु जनाउने चित्रात्मक प्रस्तुतिलाई भेनचित्र भनिन्छ भने जानकारी गराउने ।विभिन्न उदाहरणहरु मथि छलफल गर्ने,

जस्तै :

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ

यदिU = { ०, १, २, ३,...................१०}, A = { १, २,...............९}, B = { २, ४, ६, ८, १०}, C = { १, ३, ५, ७, ९ }, D = { ३, ५, ७} र E = { १, २, ३, ४, ५ } छ भने तलका प्रश्नहरुलाई भेनचित्रमा देखाऊ :

क) समूह A र B लाई आपसमा तुलना गरी हेरौं ।

ख) समूह C र D लाई आपसमा तुलना गरी हेरौं ।

ग) समूहD र Eलाई आपसमा तुलना गरी हेरौं ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई कपि पुरस्कार दिइनेछ र एकमात्र सही उत्तर दिनेलाई पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : अभ्यास ११.३ मा दिइएको समस्याहरु हल गरेर ल्याउने। प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा पेन्सील दइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. ६

विषय : मेरो गणित   एकाई : समरुपता र अनुरुपता

कक्षा : ७ पाठशीर्षक : समरुपता

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- समरुप आकृतिको परिभाषा भन्न,

- समरुप आकृतिहरु छुट्टयाउनु ।

२. शैक्षिक सामग्रीहरु : कार्डवोर्ड पेपरबाट बनेकाविभिन्न साइजका समरुप आकृति र दैनिक प्रयोगमाआउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश पछी पाठसँग सम्बन्धीत विभिन्न प्रश्नहरु सोधी सिकारुहरुको ध्यान आफूतिर केन्द्रित गर्ने ।

- चार्टपेपरमा कोरिएको चित्र विद्यार्थीहरुलाई अवलोकन गर्न लगाउने र घरमा दैनिक प्रयोगहुने समरुप आकृतिहरु भन्न लगाउने ।

- उस्तै आकार तर फरक नाप भएका आकृतिहरुलाई समरुप आकृति भनिन्छ भनि जानकारी गराउने ।

जस्तै :
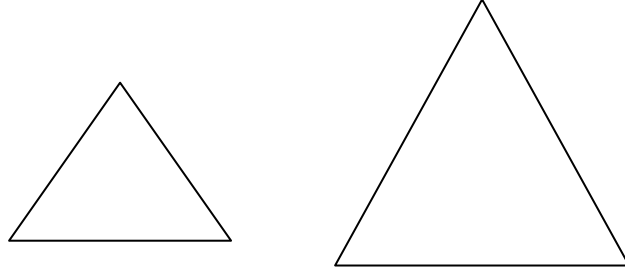
● अन्त्यमा समरुप आकृति सम्बन्धी विभिन्न उदाहरणहरु माथि छलफल गर्ने।
प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने
तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने
।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ :

क) समरुप आकृति भनेको के हो ?

ख) फरक फरक नाप भएका चार चार ओटा समरुप आकृतिहरु कापीमा कोर ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई
एउटा/एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई चकलेट दिइ
पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास ३.१ को प्रश्न नं. क,
ख, ग, घ, ङ, च र छ गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले
सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर Most talent of the day भनि
घोषित गरिनेछ तर नियन्त्रित सम''हका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. ८

विषय : मेरो गणित   एकाई : समरुपता र अनुरुपता

कक्षा : ७ पाठशीर्षक : अनुरुपता

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

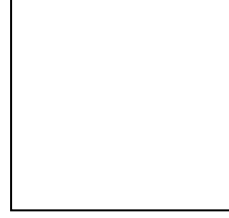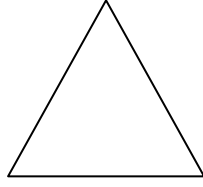- अनुरुप आकृतिको परिभाषा भन्न,
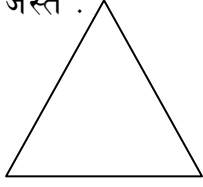
- अनुरुप आकृतिहरु छुट्टयाउन ।

२. शैक्षिक सामग्रीहरु : कार्डवोर्ड पेपरबाट बनेका विभिन्न साइजका अनुरुप आकृति र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश पछी पाठसँग सम्बन्धीत विभिन्न प्रश्नहरु सोधी सिकारुहरुको ध्यान आफूतिर केन्द्रित गर्ने ।

- चार्टपेपरमा कोरिएको चित्र विद्यार्थीहरुलाई अवलोकन गर्न लगाउने र घरमा दैनिक प्रयोगहुने अनुरुप आकृतिहरु भन्न लगाउने ।

- उस्तै आकार र उही नाप भएका आकृतिहरुलाई अनुरुप आकृति भनिन्छ भनि जानकारी गराउने ।

जस्तै :

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● अन्त्यमाअनुरुप आकृति सम्बन्धी विभिन्न उदाहरणहरु मथि छलफल र प्रश्न गर्ने। प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ :

क) अनुरुप आकृति भनेको के हो ?

ख) फरक फरक नाप भएका चार चार ओटा अनुरुप आकृतिहरु कापीमा कोर।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई एउटा/एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई कापिदिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास ३.२ को प्रश्न नं. क, ख, ग, घ, ङ, च र छ गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेका छन् हात उठाउन लगाएर Most talent of the day भनि घोषित गरिनेछ तर नियन्त्रित सम"ुहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ।

दैनिक पाठयोजना नं. ८

विषय : मेरो गणित एकाई : भिन्न र दशमलव

कक्षा : ७ पाठशीर्षक : भिन्नका शाब्दिक समस्या

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- भिन्न सम्बन्धी शाब्दिक समस्याहरु हल गर्न ।

२. शैक्षिक सामग्रीहरु : कार्डवोर्ड पेपरमा बनाएको विभिन्न भिन्नका आकृति र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- अघिलो कक्षाको छोटो समिक्षा गर्दै कक्षा क्रियाकलाप अगाडी बढाउने ।

- चार्टपेपरमा विभिन्न चित्रहरु कोर्न लगाई त्यसलाई दुई चार टुक्रामा बाडन लगाउने र त्यसमध्ये एउटा टुक्रा लिई यो पूर्ण चित्रको कति भाग हो भनि सिकारुहरुलाई पालैपालो सोधने । सही उत्तर दिने सिकारुलाई एउटा समूहमा र गलत उत्तर दिने सिकारुलाई अर्को समूहमा राख्ने ।

- पछी उक्त चित्रहरु माथि छलफल गर्दै भिन्न सम्बन्धी विभिन्न किसिमका शाब्दिक समस्याहरुको बारेमा छलफल अगाडी बढाउने ।

जस्तै : दिपकले प्रतेयक महिना रु. १२०००कमाउछ । उसको आम्दानीको तिन भागको एक भाग शिक्षणमा खर्च गर्छ । त्यसतै चार भागको एक भाग खानामा खर्च गर्छ । अब उसले जम्मा कति रकम खर्च गर्छ ?

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ :

क) रामले उसको बाबुले रु. ७००० दिनुभयो । उसले तीन भागको किताब किन्यो । चारभागमा एक भागको कपडा किन्यो।पाँचभागको एकभाग यात्रा गरि खर्च गयो भने कति रकम बचत गरेछ ।

ख) कुनै सङ्ख्याको ३/५ भाग ९० हुन्छ भने सो सङ्ख्या पता लगाऊ ?

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई एउटा/एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई चकलेट दिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १६.१ को प्रश्न नं. १, २, ३, ४ र ५ गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर Most talent of the day भनि घोषित गरिनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. ९

विषय : मेरो गणित एकाई : भिन्न र दशमलव

कक्षा : ७ पाठशीर्षक : दशमलवको सरलीकरण र शाब्दिक समस्याहरु

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

● दशमलवको सरलीकरण र भिन्न सम्बन्धी शाब्दिक समस्याहरु हल गर्न ।

२. शैक्षिक सामग्रीहरु :रुमाल, किताब, कार्डवोर्ड पेपरमा वनाएको विभिन्न भिन्नका आकृति र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

● अघिलो कक्षाको छोटो समिक्षा गर्दै कक्षा क्रियाकलाप अगाडी बढाउने ।

● चार्टपेपरमा विभिन्न चित्रहरु कोर्न लगाई त्यसलाई दुई चार टुक्रामा बाडन लगाउने र त्यसमध्ये एउटा टुक्रा लिई यो पूर्ण चित्रको कति भाग हो भनि सिकारुहरुलाई पालैपालो सोधने । सही उत्तर दिने सिकारुलाई एउटा समूहमा र गलत उत्तर दिने सिकारुलाई अर्को समूहमा राख्ने ।

● विभिन्नदशमलवको सरलीकरण र शाब्दिक समस्याहरु माथि छलफल गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछ

क) आयतकार रुमालको लम्बाई ५.२ से.मि. र चौडाई ४.८ से. मि. रहेछ भने रुमालको परिमिति निकाल ।

जस्तै: (६४.३२–४०.६४) x २.२२

मथिका प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई एउटा ⁄ एउटा पेन्सिल दिइनेछ भने भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १६.२ मा दिईएका समस्याहरु गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर Most talent of the day भनि घोषित गरिनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. १०

विषय : मेरो गणित एकाई : अनुपात, समानुपात र प्रतिशत

कक्षा : ७ पाठशीर्षक : प्रतिशतका सरल समस्याहरु

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- प्रतिशतको बारेमा बुझनेछ,

- प्रतिशतसँग सम्बन्धित सरल समस्याहरु हल गर्न ।

२. शैक्षिक सामग्रीहरु : कार्डवोर्ड पेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश पछी पाठसँग सम्बन्धीत विभिन्न प्रश्नहरु सोधी सिकारुहरुको ध्यान आफूतिर केन्द्रित गर्ने ।

- प्रतिशत भनेको प्रति सयमा हिसाब गर्नु हो । भिन्नलाई प्रतिशतमा बदल्दा १०० ले गुणन गरी % चिन्ह राख्नुपर्छ । प्रतिशतलाई भिन्नमा बदल्दा १०० ले भाग गरी % लाई हटाउनु पर्छ । जस्तै : २०% भनेको १०० मा २० अर्थात २०/१०० हुन्छ । ७५% भनेको १०० मा ७५ अर्थात ७५/१०० हुन्छ भनि जानकारी गराउने ।

- अन्त्यमाप्रतिशतसम्बन्धी विभिन्न उदाहरणहरु मथि छलफल गर्ने । प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने ।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधनेछन्

क) रु. १५० को २०% प्रतिशत कति हुन्छ?

 ख) रु. २० को १५% कति प्रतिशत हुन्छ ?

 ग) कति रुपियाँको २५% प्रतिशत ले रु. ३५० हुन्छ ?

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई एउटा ⁄ एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई चकलेट दिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १७.१ को समस्याहरु गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई पुरस्कृत गसरन्छ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

विषय : मेरो गणित   एकाई : अनुपात, समानुपात र प्रतिशत

कक्षा : ७ पाठशीर्षक : अनुपात

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य :

यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- अनुपातको परिभाषा भन्न,

- अनुपातसम्बन्धी समस्याहरु हलगर्न ।

२. शैक्षिक सामग्रीहरु : कार्डवोर्ड पेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश पछी पाठसँग सम्बन्धीत विभिन्न प्रश्नहरु सोधी सिकारुहरुको ध्यान आफूतिर केन्द्रित गर्ने ।

- दुईओटा उस्ताउस्तै परिमाणहरु a र b को अनुपात a|b वा a:b हुन्छ । जहाँ a र b लाई क्रमशः a पहिलो पद अंश र b लाई दोस्रो पद हर भनिन्छ भनि जानकारी गराउने ।

- अन्त्यमा अनुपातसँग सम्बन्धित विभिन्न चित्रहरु अवलोकन गर्न दिने साथै विभिन्न उदाहरणहरु मथि पनि छलफल गर्ने ।

- सिकारुलाई पालैपालो कक्षामा उपस्थित केटाकेटीको संख्यालाई अनुपातमा देखाउन लगाउने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधनेछन्

   क) १२ केटा र २० केटीको अनुपात कति हुन्छ ?

   ख) १६ र २० को अनुपात कति हुन्छ ?

   ग) अनुपात भनेको के हो?

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई एउटा/एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई चकलेट दिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १७.२ को समस्या नं. १, २, ३, ४ र ५ गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई Most talent of the day भनिन्छ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

<center>दैनिक पाठयोजना नं. १२</center>

विषय : मेरो गणित   एकाई : अनुपात, समानुपात र प्रतिशत

कक्षा : ७ पाठशीर्षक : समानुपात

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- समानुपातको परिभाषा भन्न,

- समानुपातसम्वन्धी समस्याहरु हलगर्न ।

२. शैक्षिक सामग्रीहरु : कार्डवोर्ड पेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश पछी पाठसँग सम्बन्धीत विभिन्न प्रश्नहरु सोधी सिकारुहरुको ध्यान आफूतिर केन्द्रित गर्ने ।

- चारओटा उस्तै प्रकारका परिमाणहरु व सङ्ख्यातमक a, b, c d को अनुपात a b को अनुपात c d अनुपातसँग बराबर भएको अवस्थालाई समानुपात भनिन्छ । यसलाई $a|b=c|d$ वा $a:b::c:d$ लेखिन्छ । वा, $a \times d = b \times c$ हुन्छ ।

- अन्त्यमासमानुपातसँग सम्बन्धित विभिन्न चित्रहरु अवलोकन गर्न दिने साथै विभिन्न उदाहरणहरु मथि पनि छलफल गर्ने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछन्

क) के ३, ४, ९ र १२ समानुपातमा छन्?

ख) ४, ७, २० र x समानुपातमा भए चौथो पद x को मान पत्ता लगाउ?

ग) समानुपात भनेको के हो ?

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई एउटा/एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई कापी दिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १७.२ को समस्या नं. ६, ७, ८, ९ र १० गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा कापी दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. १३

विषय : मेरो गणित   एकाई : ठोस आकृति

कक्षा : ७ पाठशीर्षक : विभिन्न ठोस आकृतिका नमुनाहरु

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- ठोस आकृति सम्बन्धी अधारभूत ज्ञान हासिल गर्न ।

२. शैक्षिक सामग्रीहरु : जियोबोर्ड र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- कक्षा प्रवेश पछी पाठसँग सम्बन्धीत विभिन्न प्रश्नहरु सोधी सिकारुहरुको ध्यान आफूतिर केन्द्रित गर्ने ।

- विभिन्न ठोस आकृतिको उदाहरण सहित छलफल अगाडी बढाउने ।

- जियाबोर्डका रबर तन्काएर विभिनन आकृतिहरु बनाउन लगाउने र पालैपालो प्रत्येकलाई सोध्ने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधनेछन्

क) नियमित बहुभुजका कुनै तिनजटा तथ्य उल्लेख गर ।

ख) बेलनाको खोका नमुनाको निर्माण गर ।

ग) सोलीको उदाहरण सहित परिचय देऊ ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई एउटा/एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई पेन्सील पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास ५.१ को समस्या गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा पेन्सील दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. १४

विषय : मेरो गणित   एकाई : पूर्ण सङ्ख्या

कक्षा : ७   पाठशीर्षक : सङ्ख्याको वर्ग

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- वर्गसङ्ख्या सम्बन्धी अधारभूत ज्ञान हासिल गर्न ।

- वर्गसङ्ख्याको निकालन ।

२. शैक्षिक सामग्रीहरु :चर्टपेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- अघिल्लो पाठको पूनरावलोकन गराउँदै उल्लेख गरिए बमोजिम पूर्नबल प्रदान
  गरिनेछ ।

- उदाहरण सहित वर्गको परिभाषा बताइनेछ ।

- कुनै पूर्ण सङ्ख्यालाई आफैँसगँ गुणन गर्दा आउने गुणन फललाई नै वर्ग सङ्ख्या
  भनिन्छ । वर्ग सङ्ख्या निकाल्दा दिएको सङ्ख्यालार्य त्यही सङ्ख्याले गुणन गर्नुपर्छ ।
  जस्तै : ४ को वर्ग सङ्ख्या १६ हुन्छ भनेर जानकारी गराउने र अन्य थुपरै
  उदाहरणहरुमाथि छलफल गर्ने साथै विभिन्न प्रश्नहरु सिकारुहरुलाइ सोधने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समूहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछन्

क) ४ र ५ को वर्ग सङ्ख्या निकाल ।

ख) वर्ग सङ्ख्याको उदाहरण सहित परिभाषा भन्न ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १२.१ को समस्या गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाईMost talent of the dayघोषित गरिनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. १५

विषय : मेरो गणित   एकाई : पूर्ण सङ्ख्या

कक्षा : ७ पाठशीर्षक : वर्गमूल

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

* वर्गमूल सम्बन्धी अधारभूत ज्ञान हासिल गर्न ।

* सङ्ख्याको वर्गमूल निकालन ।

२. शैक्षिक सामग्रीहरु :चर्टपेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

* अघिल्लो पाठको पूनरावलोकन गराउँदै उल्लेख गरिए बमोजिम पूर्नबल प्रदान गरिनेछ ।

* उदाहरण सहित वर्गमूलको परिभाषा बताइनेछ ।

* कुनै पनि वर्ग सङ्ख्याका दुई ओटा उस्ताउस्तै गुणनखण्डहरु हरन्छन् भने ती गुणन खण्डहरुमध्ये एउटालाई त्यस सङ्ख्याको वर्गमूल भनिन्छ । जस्तै : ४ को वर्गमूल २ हुन्छ भनेर जानकारी गराउने र अन्य थुपरै उदाहरणहरुमाथि छलफल गर्ने साथै विभिन्न प्रश्नहरु सिकारुहरुलाइ सोध्ने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा इरेजर दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधिनेछन्

क) ४ र १६ को वर्गमूल निकाल ।

ख) वर्गमूलको उदाहरण सहित परिभाषा भन्न ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई एउटा ⁄ एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई दिइ पुरस्कृत गरिनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १२.१ को समस्या गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई Most talent of the day घोषणा गरिन्छ भने नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

दैनिक पाठयोजना नं. १६

विषय : मेरो गणित   एकाई : पूर्ण सङ्ख्या

कक्षा : ७   पाठशीर्षक : सङ्ख्याको घन

समय : ४५ मिनेट

१. विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- घनसङ्ख्या सम्बन्धी अधारभूत ज्ञान हासिल गर्न ।

- घनसङ्ख्याको निकालन ।

२. शैक्षिक सामग्रीहरु : चर्टपेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३. शिक्षण सिकाई क्रियाकलाप :

- अघिल्लो पाठको पूनरावलोकन गराउँदै उल्लेख गरिए बमोजिम पूर्नबल प्रदान
  गरिनेछ ।

- उदाहरण सहितघनको परिभाषा बताइनेछ ।

- कुनै तिन वटा उही सङ्ख्याको गुणन फललाई नै घन सङ्ख्या भनिन्छ । वर्ग
  सङ्ख्या निकाल्दा दिएको सङ्ख्यालाई त्यही दुई सङ्ख्याले गुणन गर्नुपर्छ । जस्तै :
  ४ को घन सङ्ख्या ६४ हुन्छ भनेर जानकारी गराउने र अन्य थुप्रै
  उदाहरणहरुमाथि छलफल गर्ने साथै विभिन्न प्रश्नहरु सिकारुहरुलाइ सोध्ने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४. मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधनेछन्

क) ४ र ५ को घन सङ्ख्या निकाल ।

ख) घन सङ्ख्याको उदाहरण सहित परिभाषा भन्न ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सबै विद्यार्थीलाई एउटा ∕ एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई चकलेट दिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५. गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १२.२ को समस्या गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सबै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा कापी दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।

विषय : मेरो गणित   एकाई : पूर्ण सङ्ख्या

कक्षा : ७   पाठशीर्षक : घनमूर्ल

समय : ४५ मिनेट

१.विशिष्ट उद्देश्य : यस पाठको अन्तयमा विद्यार्थीहरु निम्न क्रियाकलाप गर्न सक्षम हुनेछन्

- घनमूल सम्बन्धी अधारभूत ज्ञान हासिल गर्न ।

- सङ्ख्याको घनमूल निकालन ।

२.शैक्षिक सामग्रीहरु : चर्टपेपर र दैनिक प्रयोगमा आउने शिक्षण सामग्रीहरु ।

३.शिक्षण सिकाई क्रियाकलाप :

- अधिल्लो पाठको पूनरावलोकन गराउँदै उल्लेख गरिए बमोजिम पूर्नबल प्रदान गरिनेछ ।

- उदाहरण सहित घनमूलको परिभाषा बताइनेछ ।

- कुनै घनसङ्ख्याका तिन ओटा उस्तै गुणन खण्डहरुकध्ये एउटालाई उक्त घन सङ्ख्याको घनमूल भनिन्छ । जस्तै : ८ को घनमूल २ हुन्छ भनेर जानकारी गराउने र अन्य थुपरै उदाहरणहरुमाथि छलफल गर्ने साथै विभिन्न प्रश्नहरु सिकारुहरुलाइ सोध्ने ।

- प्रयोगात्मक समूहका विद्यार्थीले सही जवाफ दिएमा चकलेट दिएर प्रोत्साहन गर्ने तर नियन्त्रित समूहका विद्यार्थीले सही जवाफ दिएमा मौखिक रुपमा प्रोत्साहन गर्ने।

४.मूल्याङ्कन : प्रयोगात्मक र नियन्त्रित दुवै समुहका विद्यार्थीलाई निम्न प्रश्नहरु सोधनेछन्

क) २७ र १२५ को घनमूल निकाल ।

ख) घनमूलको उदाहरणसहित परिभाषा भन्न ।

मथिका सबै प्रश्नको सही जवाफ दिने प्रयोगात्मक समूहका सवै विद्यार्थीलाई एउटा ⁄ एउटा पेन्सिल दिइनेछ भने र एकमात्र सही उत्तर दिनेलाई चकलेट दिइ पुरस्कृत गरिनेछ भने नियन्त्रित समूहका विद्यार्थीलाई स्याबासी मात्र दिइनेछ ।

५.गृहकार्य : प्रयोगात्मक र नियन्त्रित दुवै समूहका लागि अभ्यास १२.२ को समस्या गृहकार्यका रुपमा दिइनेछ । प्रयोगात्मक समूहका विद्यार्थी जसले सवै गृहकार्य गरेकाछन् हात उठाउन लगाएर प्रत्येकलाई एउटा एउटा पेन्सिल दिइनेछ तर नियन्त्रित समूहका विद्यार्थीलाई धन्यवाद मात्र दिइनेछ ।