# CHAPTER - I

# INTRODUCTION

## 1.1 Background of the Study

Mathematics, a well established an exciting discipline, which is limited by ancient human civilization. At the primitive time mathematics was originated for counting by using stone and by cutting notches in a piece of stick. Mathematical structure is characterized by undefined terms, defined terms, axioms and rules of logics. Mathematics plays an important role in the organization and maintains of our social structure. We use mathematical activities directly or indirectly to solve daily life problem. Mathematics is the logical study of shape, arrangement, quantity and many related concept. Mathematics helps people to understand and to interpret very important qualitative aspects of mathematics and natural phenomena. It has important role for the development of science and technology. Mathematics provides a set of tools for describing, analyzing and predicating the behavioral of system of many kind conversing different aspects of the world. It is useful in accounting, surveying, engineering, physical science, biology, economics, business and many factors of everyday life.

Sindha (1995) has described: “Society is a phenomena of balancing of various social forces. Mathematics helps in creating a social order in this phenomenon. It regulates the functioning of society in many ways. Social conditions live justice, fair play, healthy competition, symmetry, harmony etc. have often to be described in mathematical term for purpose of clarity.”

History of mathematics is a part of the history of human civilization. This view also justified that mathematic was originated from the river valley civilization like, the Tigris, the Nile, the Euphrates and the Hang Ho etc. by supporting this version Eves (1980) stated that, "early Mathematics required a partial basis for its development and such a basis arose with the evolution of more advanced forms of society. It was along some to the great rivers of Africa and Asia that the new forms of society made their appearance the Nile in Africa, the Tigris and Euphrates in Western Asia, the Indus and then the Ganges in south-central Asia, and the Hang Ho and then the Yangtze in eastern Asia. The rivers furnished convenient transportation, flood control and irrigation. Thus early mathematics can be said to have originated in certain areas of the ancient orient primarily as a practical science to assist in agricultural and engineering pursuits. These pursuits required the computation of a usable calendar, the development of systems of weight and measures to serve in the harvesting, storing and apportioning of foods, the creation of surveying methods for canal and reservoir construction and for parceling land, and the evolution of financial and commercial practices for raising and collecting taxes and for purposes of trade."

There had been many researchers and educational conferences about school mathematics in the world. Among these the Cambridge conference on school mathematics (1963) reported as: "mathematics education to fulfill the needs of an advanced and advancing community must be under continual security and undergo constant change and it is the responsibility of all mathematics, working in university, school or industry to concern themselves with the problem of keeping mathematical educational vites and up to date."

In the context of Nepal the concept of school students does not seem to be positive for mathematics learning. So the result of final examination of school level being very poor especially in mathematics all over in Nepal. Many students give more emphasis for passing exam rather than learning by understanding. They try to get 32 marks. The main cause of their less interest for it is their poor mathematical concept. Though teachers get basic mathematical knowledge they don't want to teach in depth. It is said that the mathematics being poor in higher class of school by the cause of carelessness in the basic class. The teachers focus more time of his teaching for problem solving. They emphasis deductive rather than inductive method. The weak students are not getting enough chance for their improvement. So mathematics learning seems to be harder in these days. As a result all students make negative concepts for mathematics learning. In general most of the schools promote students though they fail in mathematics and other one or two subjects. That is the main cause of high failure in SLC Exam. The students get a great fear for passing SLC. They show irregular in exam to pass this subject.

In spite of that some students still get great interest for mathematics. It is the subject for them to secure high score to get better division. If any effective method is followed for teaching, we can attract their attention for mathematics. We can see several examples, where students fail in mathematics though they are much interested in it. One cause for this failure in exam is also the lack of effective teaching. Most of the students fail in this subject after some implementation of new curriculum. The most of the failure students in every year fails due to mathematics. In fact the new curriculum and old untrained teachers are responsible to the higher falure rate. In 2058 which is the year of applying new curriculum, only 21% of student passed in mathematics from government schools. It

was really the lowest pass percent in mathematics in SLC exam so far. We can conclude the fact that students' achievement in mathematics is very low in Nepal. Either most of the students fails or secure low score in SLC exam in this subject. The condition of SLC result is declining mostly in government schools than in private schools.

Achievement is the tool for evaluating students, which helps to determine the quality of the students in their related areas. The popular and reliable evaluating tool for students is examination. There are different types of examination to scale student's achievement in different level. The level of students is determined by evaluation applying different tools of achievement. The tools of achievement are examination such as oral, written, practical etc. they can be the reliable means for the determination of achievement of students and achievement is inevitable in the teaching to scale the students level and their skills, knowledge and attitude for upgrading their classes.

Achievement is determined by different variables such as school related variables, students related variables and household related variables. These variables are entirely related to achievement obtained by students. The school related variables comprise of learning environment at schools, the academic qualification of teachers, teaching experience and ability, class size, location of school, type of instructional materials used, teacher's ethnic background, student teacher ratio, physical status. The students related variables included factors such as gender, age, background, knowledge of mathematics, attendance in class and duration of study at home.

There are several factors that are responsible for the achievement in mathematics of the children. Those factors may be teacher's personality,

home environment, instructional materials, individual difference, peer group, parents' attitudes and socio-economic status etc. among these socio-economic statuses is an important factor that effects the achievement in mathematics. This study indicated that such socio-economic factors differ significantly in academic achievement of Gandharva community or not? It is considered that socio-economic status covers, parent's education, family income, family size, parents' occupation and birth order of child. Socio-economic status is an important factor that effect in every field.

Soares and Collares (2006) was of the view that family economic resources, which include the existence of some goods in the students house like the number of bathrooms, cars, radios, TVs, fridges, freezers, vacuum cleaner, computer, the number of family members per room in the students' house the existence of house maids and whether or not the students works always have to be considered in research on students achievement. He went further to say that family spending patterns above the subsistence level reflect family values, including the cultural ones. Families that highly value their children education, spend proportionally, more on cultural goods and other schooling resources.

Moreover, family's daily routine, which is indicated by behavior rules, organized schedules, trust, punctually, cleanliness, family's general psychological climate, which is indicated by parents relationship, educational approach to the child, frequency of parent's participation at the child's activities; constant presence of stress, which is indicated by economic problems in the family loss of beloved ones, disease and addictions and some of the factors to be considered. The absence of one parent in the students' life because of divorce, abandonment and mother's

option can affect students' achievement levels (Soares and Collares, 2006).

The process of learning depends not only of family factors but also of students personal characteristics that are naturally correlated with family characteristics but have an effect on their own. Therefore, in order to analyze achievement, some student's personal characteristics must be taken into account. Oloye (1989) further states that the socio- economic status of the parents effects students' academic performance. The health, diet, sleeps, natural and social contacts all have their influence upon the students' mental development. If they are properly nourished with balanced diets they will be healthy, their brain would develop properly and so they could have an excellent brainpower, which they need for good academic performance (Aueni and Adu, 2003). Bojuwage and Eniola (1992) have also argued that maternal relationship of the parent's socio-economic status of the family, authority pattern in the home, how warm or hostile the parents are all have their effect on the social learning and psychological experience of the child at home and at school. Parents who are restrictive are known to have children that are submissive and dependent. Furthermore, children from broken homes and unstable marriage relations perform poorly in school.

UNESCO (1991, p.25) in a article entitled "Parent learning support system". It is written: The foremost responsibility of the parents is to bring further children that are assets to the family, to the community and to the wider societies, the country, children, guardian and the residents of the community where the children belong equally grow capable of productive and beneficial participation in the varied process which take place in their immediate as well as extended environment i.e. in the social, economic, cultural and other process of disenable human values".

CERIED (1985, p.20), in the report “Instructional improvement in Primary school” has mentioned that “The quality of education that a study receives depends not only up on the relevance and appropriateness of the curriculum, text books and school activities but also affected by attitude and behavior of his parents towards his education".

**Introduction of Gandharva People**

Nepal is the land of diverse caste and ethnicity. These different caste and ethnicity have their own art, culture, ritual, language, social norms and own fundamental characteristics. From the amalgamation of such castes, Nepali society culture and national unity has been developed and built. A man without culture is animal alike. The ethnic existence of the caste collapses if their society’s art, culture and ritual collapse. Culture is the pure form of consecration and men get it as a member of society. Culture is the sum total of what men practiced since the ancient time.

Here is the unity in diversity though different castes and ethnic groups have diversity within them. Illustrating about the cast, almost two hundred years ago, King Prithwi Narayan Shah had said that Nepal is the common garden of four varna and thirty-six caste. There are many castes Newar, Gurung, Rai, Limbu, Sherpa, Thakali, Tharu, etc. residing all over the country and in comparison with them the untouchable caste like Damai, Kami, Sarki, Pode, Gandharva, Badi are marginalized and are in minority. In comparison with the majority upper caste, these lower caste have little knowledge are poor, uneducated and are below line of the poverty. Gandharva is one of the castes among the lower caste. Because of the unique occupation they adopt from the ancient time, they have their own characteristic. From the ancient time they lived their lives by singing in the jatra and village.

Gandharva refers to a group of 'dalit' people of Nepal. The term dalit, literally lower class, has become one of the defining term for Gandharva. It has its root on the cast division of Hindu culture. Hindu culture has been deeply rooted in cast hierarchy. In the hierarchy Brahmins remain at the top of the order. Below than Brahmins are Kshyatri, Vaisyas and Sudras respectively. Gandherva are one of the ethnic groups of Sudra caste. They are labeled as an untouchable race. There are many opinions about the origin of Gandharva. However, most of the Gandharva regard themselves as the descendent of Gandharva Rishi, one of the four Rishis created by Brahmaji. About the origin of Gandharva Tribal Ethnography of Nepal writes:

> *Among these four Rishis, there was one Gandharva who was less cunning than his colleagues, and it is because of this susceptible nature of his that the other three rishi wanted to remove him from their group so they conspired. They gave him a leg of a cow and told him to go beg for alms uttering the word awariha. Not understanding the plot, this simple minded Gandharva Rishi did as he was told that he had defiled himself because he had used the leg of a cow and so from then on he was continuing his life as a beggar. Thus, it is believed that Gandharva is the progenitor of the Gaine and since he was defiled, the Gaine are borne as a low cast today. (218)*

Gandharva taking their lower cast status as tradition follow the rules and regulations propounded by Brahmins and accept their restricted position in the society. Under the hegemonic structure of Hindu culture Gandharva are compelled to lead the life of suffering, domination and victimization. They are termed as untouchable race and are restricted to

enter into the houses and temples of Brahmins. But for Arun Gupta such tendency is not universal, as he says: “There are instances, though few in Hindu communities, when such under-privileged people are forbidden to go to the temples” (137).

Another defining factor of Gandharva is their occupation of singing and playing ‘*sarangi*’ (a kind of stringed musical instrument made up of wood). About this, Ram Saran Darnal remarks: “Gaines who are also regarded as the Gandharva, are also the traditional artists of Nepali society” (142). They orally sing the songs in the houses of upper class people and through which they are earning their livelihood. But their identity as artist has also been the construct of hegemonic Hindu culture. By singing they only reproduce hegemonic Hindu culture

There are 5887 Gandharva of total population of present Nepal. They cover 0.03% of overall population. There are 2857 male and 3030 female population of Gandharva (CBS.2001). Gandharva reside in almost the mid-hilly region. The majority of Gandharva are living in Pokhara sub-metropolitan city, Batulechour ,Hyamja, Barsammi, Begnas, Gagangauda etc.

The main religion of Gandharva caste is Hindu but this caste is humiliated by same Hindu orthodox. They are not permitted to enter the house of so called upper caste; Brahman and Kshyatri. Not only this, they are being prohibited to enter the temple of God and Goddess. But now Government of Nepal in the interim constitution of Nepal 2063 B.S. has dictated the right of equality to all the people. They are managed to enter in the temple as other cast can. It is not exaggeration to say that cast system is one of the big obstacles of Nepal though male and female are the two cast from the origin of human being.

Our society is delved in superstardom. On the other hand the world is rapidly developing in educational field but the literacy rate of our country is very low. There is no equality between male and female, poor and rich, upper cast and lower cast. And the vital cause of this inequality is the absence of education. It is invited to give emphasis on education to make the country and society prosperous. The first place to get such formal education is school that not only makes the people academically high but also make them to face every problem and makes them moral helpful social etc. Now different programs are running in our country, which is the appropriate example of the country cannot progress without educational development.

Learning requires active involvement of learners. The way of acquiring knowledge is learning. It is complex process that we cannot easily grasp it. Especially in mathematics there are many factors that affect students' learning, like culture, students interest, process of learning, school environment, these factors come as an obstacle in learning. So this study aimed to find out these factors which affect on learning mathematics.

There are so many factors that affect on learning mathematics. Gandharva are different cultural groups. Because of the different in society, culture, Gandharva students are different in learning process. They are economically weak as educationally. So, in comparison to the other students Gandharva students face various problems, that directly affects in learning. Mathematics is a subjects of practice so in learning mathematics, their problems come as an obstacle to the Gandharva students. So, the study was concerned mainly to find out such factors that affect on learning mathematics.

## 1.2 Statement of the Problem

There are so many factors related to socio-economic status of parents of Gandharva students that effect to achievement mathematics. This study was mainly concerned with "Impact of Socio-Economic Status in their Children's Mathematics Achievement on Gandharva Community" in Kaski district at secondary level. This study was based upon the answer related to the following questions.

i. Does socio-economic status influence the achievement of Gandharva students in Mathematics?
ii. Does the achievement on Mathematics differ on boys and girls of ethnic tribe of Gandharva in accordance to socio-economic status?

## 1.3 Significance of the Study

Nepal is multiethnic, multi-linguistics and multicultural country. So many traditional fundamental processes of mathematical concepts are used in many different cultural groups. Beside these it is necessary to know that Mathematics is an essential part of school curriculum. So every student should study it and gain better achievement. It has been taught for all pupils as a compulsory subject at school level. So every student needs the fundamental knowledge of Mathematics to solve his/ her daily life problems. There are several factors that influence on Mathematics achievements. Socio-economic status is important factor that may impact on Mathematics achievement. So this study has the following implications.

i. This study will provide the information about the socio-economic status of Gandharva

ii. The study will provide information to the teacher about the achievement level of Gandharva students who came from different socio-economic status.

iii. This study will help to the Mathematics curriculum designers to design better curriculum according to student's different socio-economic status.

iv. This study will help to the government to make policy about Gandharva Community.

v. This study will helpful for further researcher.

## 1.4 Objectives of the Study

This study has the following objectives:

i. To find the level of mathematics achievement of Gandharva students with respect to different socio-economic status of the parents.

ii. To find the correlation between parents' socio-economic status and mathematics achievement of their children.

iii. To compare the achievement of students in different economic status gender-wise.

## 1.5 Hypothesis of the Study

**Research Hypothesis**:

There is no significant difference between the achievement of boys and girls of Gandharva students in mathematics.

**Statistical Hypothesis:**

$H_0$ : $\mu i = \mu j$ (Null hypothesis)

Where, $\mu_i$ and $\mu_j$ are mean achievement of boys and girls students.

## 1.6 Limitation of the Study

This study as a micro study of Kaski district contains the following limitations:

i. This study was limited to within Kaski district.
ii. This study was limited to within Hemja V.D.C. and Batulachaur V.D.C.
iii. All the Gandharva students at class ten from different socio-economic condition were included in this study.

## 1.7 Description of Variables

**Achievement**

Achievement in this study is defined in terms of mathematics score obtained by the student in the achievement test constructed by the researcher.

**Knowledge**

The ability to recall definition, notations, concepts and information already discussed and developed in the mathematics.

**Comprehension**

The ability to transfer data form to one from another or to understand symbolic statement.

**Application**

The ability to apply knowledge in specific and concrete situation.

**Skill**

The ability to manipulate symbols, tackle the problems and complete the required values in the problem.

**Students**

The students in this study refer to those Gandharva boys and girls of Public School who are just completed grade nine and currently in grade ten from new academic session 2067.

**Socio-economic Status**

Socio-economic status of the Secondary school children has been taken as a composite of different variables:

i) Parents education
ii) Parent's occupation
iii) Family size
iv) Family income

**Parent's Education**

This variable has been included in this category. A value of 0 has been assigned to illiterate, 1 for literate and 2 for Educated.

**Literate People**

People who are able to read and write and also the people acquiring school education below SLC standard.

**Illiterate People**

People who are unable to read and write.

**Educated**

People who have passed at least S.L.C.

**Parent's Occupation**

This variable has been included in this category. A value of 2 has been coded who engaged in service and 0 for who engaged in agriculture and 1 for business.

**Family Size**

In this study, the terms family size refers to the parents and their children only. This variable has been included in this category. A value of 0 has been coded to those children whose family size small, 1 for children with middle size and 2 for large size.

**Small Size**

The number of member less than or equal to four in family.

**Middle Size**

The numbers of members in a family between 5-8 in a family.

**Large Size**

The numbers of members in a family greater than 8.

**Family Income**

This variable has been included in this category. A value of 0 has been coded to those children whose family income low, 1 for children whose with middle income and 2 for those children whose family income high.

**High Income**

The group of family who earns more than Rs. 2 lakhs per year.

**Middle Income**

The group of family who earns between Rs. 60,000- Rs. 2,00,000 per year.

**Low Income**

The group of family who earns less than Rs. 60,000 per year.

# CHAPTER - II

# LITERATURE REVIEW

## 2.1 Reviewing the Related Literature of the Study

Review of related literature is an excluding task, calling for a deep insight and clear prospective of the overall field. The main purpose of review of the related literature is to find out what works have been done in the area of the research problem under study and what has been done in the field of the research study being under taken. This chapter deals with some literature, which reviewed from different books and reports related to this study.

**Empirical Theory**

Douglas (1977) found that the comparable results in his national sample that middle class parents take more interest in their children's progress at school than the manual working class parents and they become relatively more interested as their children grow older. They visit the schools more likely to ask to see the head as well as the class teacher where as the manual working class parents are usually contact to see class teacher only. But the most striking difference is that many middle class fathers visit the schools to discuss their children's progress where as manual working class fathers seldom do.

Pandit (1980) studied on "Attitude of secondary school students and their parents towards mathematics and other subjects of instruction". He found that both the students and their parents demonstrated positive attitudes towards mathematics as a subject study at school level. He also concluded

that the attitude of male students towards mathematics as a school subject was significantly greater than that of female students.

CERID (1998) carried out a study on "Evaluation system in the Secondary schools of Nepal" found that fifty percent parents mentioned that they do guide their children during examination. About thirty one percent mentioned that they arrange for special tuition. The rest mentioned that their children prepare for examination by studying together with peers. Only ten percent children dropped out of the school without completing grade due to low family income and the need to be engaged in household activities.

Sah (2000) conducted a study entitled "Comparative study of achievement in mathematics of lower secondary level students of different ethnic groups" including 150 Brahmins, Sah and Chaudhary students of grade eight students of the selected five public lower secondary schools in Saptari district. The result of this study showed that the mathematical achievement of Brahmin students is higher than Sah and Chaudhary students and Sah students achievement is higher than Chaudhary students.

BPEP (1997) concluded a 'National level Achievement Study on a sample of grade three children in Nepal', parents' involvement on children's education, However, the researchers observed that:

a. Regression analysis did not reveal any factor influence on students achievement and
b. Helps available at home for study and frequency of parents visit to school did not reveal any influence on students' achievement.

Bouck (1936) studied the influence of education on the present children learning attitude and behavior. The investigator found that parents' education was on influential factor in child development. Similarly, other investigator like Elder (1949), Samples and Smith (1954), Samples and Bell (1958), Barchinal (1958) a studied on the same topic.

Chaudhary (2000), conducted a study in "A comparative study of achievement of Secondary level students related to parents educational status" including 150 students studying in grade five of public schools in Saptary district. The finding of this study showed that the mathematical achievement of educated parents' children were higher than literate and illiterate parents' children. Similarly the mathematical achievement of literate parents' children were higher than illiterate parents' children. In other words, mathematical achievement of students of grade v is effected by parents' educational status.

Adhikari (2001), did a research on "A comparative study of achievement in mathematics of Secondary level students related to parents' income" including eighty nine students of grade v and their parents of Nirmal Pokhari VDC of Kaski district by using purposive sampling. The finding of this study showed that the mathematical achievement of high-income group is higher than middle income and low-income group students. But the mathematical achievement of middle group was not found significantly higher than low-income group students. He found that mathematical achievement of grade v students was affected by their parents' income.

Third International Mathematics and Science Study (TIMSS) measure socio-economic status in two ways: parent's education level, and family wealth, as defined by a scale derived from survey questions about

possessions in the home (e.g. number of books, computer, video camera, etc). Students from wealthier families were expected to have more of these items in their home. The TIMSS program is important for two reasons: firstly it demonstrates a significant positive relationship between learning in mathematics and science and both socio-economic factors; second, it provides insights into relatively simple and unobtrusive measures of socio-economic status. In the most recent iteration of TIMSS (2002-03), for a year 8 students achievement in both mathematics and science was found to be higher for those whose parents had completed a university degree. Students who used a computer both at home and at school achieved a significantly higher science score than those who only used a computer at school (Thompson and Fleming, 2003).

The socio-economic status (SES) of a child is most commonly determined by combining parents' education level, occupational status, and income level (Jaynes 2002). Studies have repeatedly found that SES affects students' outcomes (Baharudin and Luster 1998, Jeynes 2002, Eamon 2005). Students who have a low SES earn test scores and are more likely to drop out of school (Eamon 2005, Hochschild 2003).

Tharu (2005) conducted a study entitled "Impact of socio-economic status on mathematical achievement" including 140 students (79 boys and 61 girls) of grade ten students of the selected four secondary school in Bardia district. He was studied using achievement test paper to find the achievement of different socio-economic status students and he also collected all information about socio-economic status by using questionnaire tools for students as well as their parents. From this study he found that mathematical achievements of students' were found to be strongly associated with the socio-economic status of the children. Those students were achieved good marks in mathematics that came from the

good socio-economic status and the students achieved low marks that have poor socio-economic status. Similarly, the boy's mathematical achievement was found to be strongly associated with father's education, father's occupation, father's income than of girls and he also found that family income had negative effect on mathematical achievement of boys where as it had mild positive effect on mathematical achievement of girls.

Poudel (2005) studies "Learning strategies of mathematical concepts of out of school". His main target in this research was to find out the learning skills and ways of learning mathematics in the daily life of the untouchable children who were out of school. In this research the researcher was choose Ghorme village of Kaski district and studied the four children of Kami and Sarki caste. He selected two children in each case and studied briefly about these children how they are learning mathematics. From this study the researcher found that non schooling children from Dalit caste learned mathematics through their everyday life in different ways. They learned by looking others work, by hearing their peers, parents and other elders. He also found the information of mathematical ideas on Dalit children began with household work, farms works, labor works, playing and other activities.

Neupane (2006) study entitled "Effect of socio-economic status on mathematics achievement". For this he included 84 students in which 42 were boys and 42 were girls from Dura and Gurung community from five public school of Lamjung district. In his study he found that mathematical achievement of students is positively correlated with father's education. But the father's occupation, family size and structure of family are negatively correlated with mathematical achievement. He also found that mathematical achievement of boys is higher than girls and mean score of Dura students is higher than that of Gurung students.

## Research Paradigm: Positivism Theory

Although positivism has been a recurrent theme in the history of western thought from the Ancient Greeks to the present day, it is historically associated with the nineteenth-century French philosopher, Auguste Comte, who was the first thinker to use the word for a philosophical position (Beck, 1979). Here explanation proceeds by way of scientific description (Acton, 1975). In his study of the history of the philosophy and methodology of science, Oldroyd (1986) says: It was Comte who consciously 'invented' the new science of society and gave it the name to which we are accustomed. He thought that it would be possible to establish it on a 'positive' basis, just like the other sciences, which served as necessary preliminaries to it. For social phenomena were to be viewed in the light of physiological (or biological) laws and theories and investigated empirically, just like physical phenomena. Likewise, biological phenomena were to be viewed in the light of chemical laws and theories; and so on down the line. (Oldroyd, 1986)

Comte's position was to lead to a general doctrine of positivism, which held that all genuine knowledge is based on sense experience and can only be advanced by means of observation and experiment. Following in the empiricist tradition, it limited inquiry and belief to what can be firmly established and in thus abandoning metaphysical and speculative attempts to gain knowledge by reason alone, the movement developed what has been described as a 'tough-minded orientation to facts and natural phenomena' (Beck, 1979).

Since Comte, the term positivism has been used in such different ways by philosophers and social scientists that it is difficult to assign it a precise and consistent meaning. Moreover, the term has also been applied to the

doctrine of a school of philosophy known as ‘logical positivism’. The central belief of the logical positivists is that the meaning of a statement is, or is given by, the method of its verification. It follows from this that unverifiable statements are held to be meaningless, the utterances of traditional metaphysics and theology being included in this class.

However the term positivism is used by philosophers and social scientists, a residual meaning is always present and this derives from an acceptance of natural science as the paradigm of human knowledge (Duncan, 1968). This includes the following connected suppositions which have been identified by Giddens (1975).

First, the methodological procedures of natural science may be directly applied to the social sciences. Positivism here implies a particular stance concerning the social scientist as an observer of social reality. Second, the end-product of investigations by social scientists can be formulated in terms parallel to those of natural science. This means that their analyses must be expressed in laws or law-like generalizations of the same kind that have been established in relation to natural phenomena. Positivism here involves a definite view of social scientists as analysts or interpreters of their subject matter. Positivism may be characterized by its claim that science provides us with the clearest possible ideal of knowledge.

# CHAPTER - III

# METHODOLOGY

The present study is focused on Impact of Socio-economic Status on their Children's Mathematics Achievement on Gandharva community "in secondary level. All the independent variables are Socio-economic status i.e. father's education, father's occupation, family size and family income where as mathematics achievement was dependent variable. The researcher has used descriptive-survey method for the study. In this chapter the population of the study, procedure for the selection of the sample, construction, validation, reliableness and refinement of the instrument, analytical design of study, data collection procedure and data analysis procedure are described and discussed.

## 3.1 Population of the Study

The population of the study consisted of all the Gandharva students of grade ten (who had just passed grade 9) of secondary levels and their parents of Hemja V.D.C. and Batulachaur V.D.C. in Kaski district.

## 3.2 Sample of the Study

Kaski district lies in the western development region of Nepal. There are many ethnic group in Kaski district. Gandharva is also an ethnic group in this district. This community is located mainly in Hemja V.D.C. and Batulachaur V.D.C. and the educational status of their is very low than the other caste. So, the researcher had selected the area Hemja V.D.C. and Batulachaur V.D.C. All the Gandharva students of class ten and their parents were the sample of this study in these areas.

## 3.3 Instrument

### 3.3.1 Construction

For this study, the researcher constructed an achievement test paper with the help of prescribed curriculum and textbook of grade nine mathematics consisting 54 multiple-choice items. Equal weightage was given for all chapter on the basis of objectives. The items were selected from different areas of mathematic i.e. sets, arithmetic, mensuration, algebra, geometry, trigonometry, statistics, and probability. There were 3 (5.56%) items from Sets,8 (14.81%) items from arithmetics, 7(12.96%) items from mensuration, 16 (29.62%) items from algebra, 10(18.52%) items from geometry, 3 (5.56.%) items from trigonometry, 5(9.26%) items from statistics and 2 (3.70%) items from probability.

Similarly, it contained 16 items from knowledge, 18 items from comprehension, 9 items from skill and 11 items from application level of cognitive domain. The test items covering different areas of mathematics and different level of cognitive domain are shown in Appendix-V

### 3.3.2 Items Analysis

The researcher administered the test among 25 students of Shree Bhoomeswor Secondary School, Dhital-4 Kaski for the pilot testing of the achievement test. Before administering the test paper, the researcher instructed the students how to respond the test. To finalize the items of the test, item analysis was done. Level of difficulty and power of discrimination of each item was calculated from 27 percent of higher score i.e. 7 students of higher score and 27 percent of lower score i.e. 7 students of lower score.

To find the reliability of the test paper the score of 25 students of the item analysis chart are identified by the letter in the first column of the table show in Appendix-III. The score on the odd and even items of the fifty four items in the test are shown in the second and third column. The sums of difference between the 25 pairs of half test scores are shown in the fourth and fifth column in the table shown is Appendix-III.

From the calculation, the reliability coefficient was found 0.902. Item analysis shows that the level of difficulty and power of discrimination of each item in the instrument. P-value and D-value of each item were calculated from the tabulated twenty-seven percent of the lowest scores of 25 students on the test using the given relation given in the Appendix-IV. Item number 2, 8, 14, 23, 25, 28, 33, 47, 51, whose D-value or P-value do not lie between 0.3 to 0.7 or 30 percent to 70 were cancelled. In this way items were accepted for the final form in Appendix-VIII. Hence the refined achievement test paper contains only 45 items (Appendix-VIII).

## 3.4 Procedure of Data Collection

While constructing of mathematics achievement test the next step was to administer this instrument upon the grade 10 children of public school selected in the sample from Kaski district. The researcher met the headmaster, explained in detail the purpose of the visit and sought permission and appointment of visit the school on next day. The tool for the study was administrated on a sample of 15 student from the school included in the sample. Before administrating the test, the researcher explained the answering procedure of mathematics achievement test to the students. The time allocated for completing the test was one and half hour. After, the time duration of examination the answer sheets were collected and scored by the researcher. Also, the student questionnaire

form was administered on a sample of 15 students to know the parent's education, parent's occupation, and family size and the researcher visited to each of selected parents of sampled students. The researcher met the parents and collected the family income and scored by the researcher and scores were tabulated for the analysis.

## 3.5 Data Analysis Procedure

The mean, standard deviation and correlation coefficient were used for the analysis of data. The mean was used to find the level of mathematic achievement. Correlation co-efficient was used for determine the relation between the independent variables. T-test was used to find out the significance difference in the mathematics achievement between boys and girls.

# CHAPTER - IV

# ANALYSIS OF DATA AND INTERPRETATION OF THE RESULTS

The data for the study were collected from grade ten students and related parents of sample students from the selected sample. Student questionnaire form was used to know information's about Father's Education, Occupation and Family Size and parent questionnaire form was used to know the information's about Family Income. The collected data were tabulated and analyzed for the study of attainment of objectives.

This chapter deals with the statistical analysis and interpretation of data obtained by using tools achievement test, student questionnaire and parent questionnaire form of sample students and related parents of sample student. These data were tabulated and analyzed using mean, standard deviation and correlation co-efficient. The data obtained by above mentioned tools were analyzed under the following headings:

1. Mean and standard deviation of mathematics achievement by Father's Education.

2. Mean and standard deviation of mathematics achievement of Father's Occupation.

3. Mean and standard deviation of mathematics achievement by Family Income.

4. Mean and standard deviation of mathematics achievement by Family Size.

5. Mean and standard deviation of mathematics achievement by gender.

6. Mean and standard deviation of explanatory variables and their correlation with dependent variable.

7. Inter correlation of socio-economic related variables and mathematics achievement.

8. Means and standard deviations of explanatory variables and their correlation with mathematics achievement gender-wise.

9. Inter correlations of socio-economic related variables and mathematics achievement of boys.

10. Inter correlations of socio-economic related variables and mathematics achievement of girls.

**Mean and Standard Deviation of Mathematic Achievement by Father's Education**

The mean and standard deviation of the scores obtained by the student according to parents education are presented in the following table.

**Table No. 1**

**Mean and Standard Deviation of Mathematic Achievement by Father's Education**

| Group | No. of Cases | Mean | S.D. |
|---|---|---|---|
| Educated | 4 | 29.25 | 3.96 |
| Literate | 7 | 22.00 | 4.14 |
| Illiterate | 4 | 18.50 | 4.33 |

The above table shows that the mean scores of student of educated, literate and illiterate fathers were 29.25, 22.00 and 18.50 respectively. And the standard deviation were, 3.96 for educated, 4.14 for literate and 4.33 for illiterate. Therefore, the mean score of educated fathers' children is higher than the mean score of literate and illiterate fathers' children and the mean score of literate fathers' children is higher than those of illiterate fathers' children.

**Mean and Standard Deviation of Mathematics Achievement by Fathers' Occupation**

The mean and standard deviation of the scores obtained by students according to fathers' occupation are tabulated in presented in the following table.

**Table No. 2**

**Mean and Standard Deviation of Mathematics Achievement by Fathers' Occupation**

| Group | No. of Cases | Mean | S.D. |
|---|---|---|---|
| Job | 7 | 23.14 | 7.88 |
| Trade | 4 | 22.25 | 2.68 |
| Agriculture | 4 | 23.50 | 2.96 |

The above table shows that job, trade and agriculture fathers' are 23.14, 22.25 and 23.50 respectively. The standard deviations of students according to fathers' occupation (i.e. job, trade and agriculture) are 7.88, 2.68 and 2.96 respectively. The mean score of agriculture fathers' children is higher than the mean score of trade and job fathers' children

and the mean score of job fathers' children is higher than the mean score of trade fathers' children.

**Mean and Standard Deviation of Mathematics Achievement by Family Income**

The mean and standard deviation of the scores obtained by students according to family income are presented in the following table.

**Table No. 3**
**Mean and Standard Deviation of Mathematics Achievement by Family Income**

| Group | No. of Cases | Mean | S.D. |
|---|---|---|---|
| High Income | 3 | 22.33 | 1.25 |
| Middle Income | 9 | 25.11 | 5.86 |
| Low Income | 3 | 17.33 | 4.11 |

The above table shows that the mean scores of students of high-income middle income and low-income family are 22.33, 25.11, 17.33 respectively. Similarly, the standard deviation of the scores of students of high income, middle income and low-income family are 1.25, 5.86 and 4.11 respectively. The mean scores of middle income is higher than high and low income and the score of high income children is higher then low income.

**Mean and Standard Deviation of Mathematics Achievement by Family Size**

The mean and standard deviation of the scores obtained by students according to family size are presented in the following table.

**Table No. 4**

**Mean and Standard Deviation of Mathematics Achievement by Family Size**

| Group | No. of Cases | Mean | S.D. |
|---|---|---|---|
| Small Size | 4 | 24.75 | 3.269 |
| Middle Size | 9 | 23.77 | 5.884 |
| Large Size | 2 | 16.00 | 4.00 |

The above table shows that the mean score of students of small, middle and large size are 24.75, 23.77 and 16.00 respectively. The standard deviation of the score of students of small, middle and large size are 3.269, 5.884 and 4.00 respectively. The mean score of students of small size is higher than that of middle size and large size and the mean score of students of middle size is higher than that of large size.

**Mean and Standard Deviation of Students Achievement in Mathematics by Gender**

The mean and standard deviation of the scores obtained by students by students by gender of child are presented in the following table.

**Table No. 5**

**Mean and Standard Deviation of Students Achievement in Mathematics by Gender**

| Group | No. of Cases | Mean | S.D. | T-Value | Remarks |
|---|---|---|---|---|---|
| Boys | 6 | 25.83 | 2.91 | 1.674 | 1.674<1.96 |
| Girls | 9 | 21.11 | 6.42 | | |

The above table shows that the mean score of boys and girls are 25.83 and 21.11 respectively. The standard deviation of boys and girls are 2.910 and 6.42 respectively. The mean score of boys is higher than that of girls. At a 0.05 level of significance and degree of freedom 13 the calculated value i.e. 3.414 is lesser than the tabulated value i.e. 1.96. So the null hypothesis was rejected so there is a significance difference in the achievement of boys and girls and that the boys are probably better.

**Mean and Standard Deviation of Explanatory Variables and their Correlation with Dependent Variable**

The mean and standard deviation of the explanatory variables along with their correlation with the dependent variables are presented in the following table.

**Table No. 6**

**Mean and Standard Deviation of Explanatory Variables and their Correlation with Dependent Variable**

| S. N. | Explanatory Variables | Mean | S.D. | Correlation with Dependent Variables |
|---|---|---|---|---|
| 1 | Father's Education | 1 | 0.730 | 0.1921 |
| 2 | Father's Occupation | 1.2 | 0.833 | -0.0032 |
| 3 | Family Size | 0.867 | 0.6182 | -0.0899 |
| 4 | Family Income | 1 | 0.6325 | 0.0628 |
| | Dependent Variable | | | |
| 1 | Mathematics Achievement | 23.00 | 5.785 | |

The above table shows that mathematics achievement of students were found to be strongly associated with the father's education where as family income had the low relationship. The family sizes and fathers' education of child were negatively correlated with the mathematics achievement. By this result it was concluded that father's education help to improve the children's mathematical achievement. But family size and father occupation does not help to improve the children's mathematical achievement.

**Inter Correlation of Socio-Economic Related Variables and Mathematics Achievement**

The inter-correlation of four socio-economic related variables and mathematics achievement are presented in the following table.

**Table No. 7**

**Inter Correlation of Socio-Economic Related Variables and Mathematics Achievement**

| Variables | F.E. | F.O. | F.S. | F.I. |
|---|---|---|---|---|
| M.A. | 0.1921 | -0.0032 | -0.0899 | 0.0628 |
| F.E. | | 0.21926 | -0.5906 | 0.43301 |
| F.O. | | | -0.3367 | 0.1266 |
| F.S. | | | | -0.51149 |
| F.I. | | | | |

The above table shows that mathematics achievement of students were found to be strongly associated with the father's education where as family income had the low relationship. The family sizes and fathers' education of child were negatively correlated with the mathematics achievement. The variable fathers' education was positively correlated

with father's occupation and family income and negatively correlated with family size. The variable father's occupation was low positively correlated with family income and negatively correlated with the family size . Also, family size is negatively correlated with family income. By this result it was concluded that father's education help him to get a good job but large family size does not help in the achievement of the children education.

**Mean and Standard Deviations of Explanatory Variables and their Correlation with Mathematics Achievement by Gender**

Mean and standard deviation of the explanatory variables alone with their correlation with the dependent variable by Gender is presented in the table below.

**Table No. 8**

**Mean and Standard Deviations of Explanatory Variables and their Correlation with Mathematics Achievement by Gender**

| S.N. | Explanatory Variables | Mean | | S.D. | | r | |
|---|---|---|---|---|---|---|---|
| | | Boys | Girls | Boys | Girls | Boys | Girls |
| 1 | Father's Education | 1.33 | 0.778 | 0.4714 | 0.7857 | 0.7693 | 0.8161 |
| 2 | Father's Occupation | 1.5 | 1 | 0.7637 | 0.8165 | -0.2624 | -0.1272 |
| 3 | Family Size | 0.5 | 1.11 | 0.5 | 0.5667 | 0.2863 | -0.4005 |
| 4 | Family Income | 1.167 | 0.889 | 0.3727 | 0.737 | -0.743 | 0.3549 |
| | Depended Variable | | | | | | |
| | 1. Mathematics Achievement | 25.83 | 21.11 | 2.911 | 6.419 | | |

From the above table it was found that both boy's and girl's mathematical achievement was strongly associated with fathers. Father's occupation was negatively correlated with both the boy's and girls achievement. Family income was positively low correlated with boy's achievement and negatively correlated with girl's achievement. And lastly family size was negatively correlated with boy's achievement and positively correlated with girl's achievement. By this result it was concluded that father's education help to improve the both boy's and girl's mathematical achievement Family size and father's occupation does not help to improve both boys' and girl's mathematical achievement.

**Inter Correlations of Socio-economic Related Variables and Mathematics Achievement of Boys**

The inter-correlation of four socio-economic related variables and mathematics achievement for boys are presented in the following table.

**Table No. 9**

**Inter Correlations of Socio-economic Related Variables and Mathematics Achievement of Boys**

| S.N. | Variables | F.E. | F.O. | F.S. | F.I. |
|---|---|---|---|---|---|
| 1 | M.A. | 0.7693 | -0.02624 | -0.2863 | -0.743 |
| 2 | F.E. | | -0.3162 | 0.00 | -0.3162 |
| 3 | F.O. | | | -0.6547 | 0.2928 |
| 4 | F.S. | | | | -0.4472 |
| 5 | F.I. | | | | |

The above table shows that mathematics achievement was strongly positive correlation with father's education, negatively correlated with father's occupation, family size and family income. The variable parents

education was negatively correlated with the variables father's occupation and family income but zero correlated with family size. The variables father occupation was negatively correlated with family income and family size. And lastly family income is negatively correlated with family size.

**Inter-Correlation of Socio-Economic Related Variables and Mathematics Achievement of Girls**

The inter-correlation of four socio-economic related variables and mathematics achievement for girls are presented in the following table.

**Table No. 10**

**Inter-Correlation of Socio-Economic Related Variables and Mathematics Achievement of Girls**

| S.N. | Variables | F.E. | F.O. | F.S. | F.I. |
|---|---|---|---|---|---|
| 1 | M.A. | 0.8161 | -0.1272 | -0.4005 | 0.3549 |
| 2 | F.E. | | 0.3464 | -0.6934 | 0.5330 |
| 3 | F.O. | | | 0.00 | 0.00 |
| 4 | F.S. | | | | -0.5026 |
| 5 | F.I. | | | | |

The above table shows that mathematics achievement was strongly correlated with fathers' education along with family income and negatively correlated to father occupation and family size. Father's education was positively correlated with father's occupation and family income and family size. Father's occupation was zero correlated with family income family size. And lastly family income was positively correlated with family size..

# CHAPTER - V
# SUMMARY, FINDINGS CONCLUSION AND RECOMMENDATIONS

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

## 5.1 Summary

This study was undertaken to identify the impact of socio-economic status on mathematics achievement of Gandharva students of secondary level. For this study, the researcher developed the achievement test paper with the help of prescribed curriculum and textbook of mathematics of grade nine and administrated the test in Shree Bhoomeshwor Secondary School, Dhital-4, Kaski for the item analysis of the test and for checking its reliability and validity to standardized test. Also, the research developed the student questionnaire form and parent questionnaire form with the help of supervisor. Achievement test, student questionnaire form and parent questionnaire form were main instrument used for the study.

The main objectives of the study were as follows:

1. To find the mean of mathematics achievement of Gandharva students with respect to different socio-economic status of the parents.

2. To find the correlation between parent's socio economic status and mathematics achievement of their children.
3. To compare the achievement of students in different socio-economic status gender wise.

For this study the researcher selected the three public school in Kaski district. 15 students were selected for this study. 6 were boys and 9 were girls. The data were obtained through the administration of test paper, student questionnaire form and parent questionnaire form. The student's questionnaire form was developed to get detailed information about father's education, fathers' occupation, family size and parent questionnaire form was designed to get information about family income.

## 5.2 Findings

The statistical analysis of the collected data yielded the following results as the findings of the study.

a. The mean scores of students having educated, literate and illiterate fathers are 22.95, 22.00 and 18.50 respectively. The mean score of educated father's children is higher than that of literate, illiterate fathers' children. And the mean score of literate fathers' children is higher than that of illiterate.

b. The mean scores of students from job trade and agriculture occupation fathers are 23.14, 22.25 and 23.5 respectively. The mean score of agricultural fathers' children is higher than that of job holders and trade father's child. And job holder father’s children mean score is higher than that of trade.

c. The mean score of students from small size, middle size and large size family are 24.75, 23.77 and 16.00 respectively. The mean score of small size family children is more than the middle and large size family.

d. The mean score of high income middle income and low income family children are 22.33, 25.11and 17.33 respectively. The mean score of middle income family children is higher than that of high and low income family.

e. The mean score of boys and girls are 25.83 and 21.11 respectively. The mean score of boys is higher than that of girls.

f. The variable parents education and family income are positively associated with mathematics achievement and positively affected children's mathematics achievement.

g. The variable father occupation and family size is negatively correlated with mathematics achievement that adversely affects children's achievement.

h. The variable father's education is positively correlated with family income that the father's education help to support the economic status of the family.

i. Father's education is negatively correlated with family size.

j. Father occupation is positively correlated with family income and negatively with family size.

k. Family size and family income are negatively correlated to each other.

l. Both boy's and girl’s mathematics achievement is found to be strongly associated with father's education.

m. The variable father occupation, family size and family income are low positive and negative correlation with boys achievement

n. Family income is positively correlated with girls mathematics achievement but family size and father occupation are negatively correlated.

## 5.3 Conclusion

From the findings of the study the research made the following conclusions.

The score obtained by students in mathematics is found significantly correlated with parents education, and family income positively but negatively correlated with father's occupation and family size.

The achievement in mathematics of boys is positively correlated with variables father's education and family size but negatively correlated with father occupation and family size. The achievement in mathematics of girls is positively correlated with the variables father's education and family income but negatively correlated with family size and father's occupation. This proves that parent's educational attitude towards children was positive in Gandharva community.

The achievement of mathematics of Ghandarva students is very low. So, awareness about the importance of education among the Ghandarva people helps to develop a positive attitude in them about the education as well as to increase the level of their commitment in providing education to children. Also, to get better achievement in mathematics and to control

drop-out, different technique, methods are necessary to be used in teaching activities and developed positive attitude towards education.

## 5.4 Recommendations

After conducting this study, the researcher got some findings. On the basis of these findings, the researchers would like to suggest some recommendations for the improvement in mathematics achievement.

a. The study of this kind should be conducted at all levels of schools and in other subjects as well.

b. This study was limited to students of grade IX from three public schools, hence the researcher cannot generalize the finding of this study to all grades and the whole country. So the similar study about Gandharva should be done regional wise as well as national wise where the Gandharva are lived in order to establish the findings of the study.

c. Most of the Gandharva people are deprived from getting good education in our country. If any member of the family is educated they can educate the whole members of the family, despite the fact that most of the parents are uneducated. As a result, we can't expect the qualitative education from the Gandharva children. Therefore, the government should take immediate step to increase the number of literate people. The government also should help the children by providing financial support conducting adult uteracy classes, social welfare programmes and so on.

d. The Gandharva people are backwards group than the other ethnic group in Nepal. They have low economic condition. Most of them

are uneducated. The family members in their family are more than other groups. And the employment rate is very low in own country in this community. So they must to go to foreign country to earn money. So the government must lunching the suitable programme to improve socio-economic status especially for Gandharva community.

e. The educational attitude of parent's toward girls is negative in Gandharva community. So the achievement of Gandharva girls is low than the boy. They are forced to marry in school age. So the Gandharva parent's must make the positive educational attitude towards their girls.

f. Promoting research and development efforts should be provided for increasing mathematics achievement. The achievement level of Gandharva students is very low. Therefore the mathematics teacher should apply the different technique, suitable method for the teaching achievement to get better achievement.

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## APPENDIX - I

## pknlAw k/LIff 2067

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!$=@

;do M ! 306f #) ldg]6

ljBfnosf] gfd M

ljBfyL{sf] gfd M

;jf]{Qd pQ/df /]hf lrGx -√_ nufpm .

Q.N.1. olb A / B vlK6Psf ;d'x eP n (A∪B) = ….. x'G5 .

a. n (A∪B) = n (A) + n (B)

b. n (A∪B) = A (A) + n (B) + n (A∩B)

c. n (A∪B) = n (A) + n (B) - n (A∩B)

d. n (A∪B) = n (A+B) + n (A-B)

Q.N 2. 120 hgf dflg;df ul/Psf] ;j{]lf0fdf 80 hgfn] s[lif k]zf ckgfPsf 5g 85 hfuL/] k]zf ckgfPsf 5g\ . s'g} k]zf gug]{ sf]xL klg 5}gg\ eg] b'j} k]zf ckgfpg] slt xf]nfg <

a. 45 b. 60 c. 80 d. 40

Q.N.3. 25 hgf ljBfyL{ ePsf] sIffdf 17 hgfn] elnjn dg k/fp5g\ 15 hgfn] jf:s]6an / 10 hgfn] b'j} dg k/fp5g\ eg] s'g} klg dg gk/fpg] ljBfyL{ slt xf]nfg <

a. 17 b. 5 c. 3 d. 10

Q.N.4 ? a k|lts]hL kg]{ s'g} j:t' / ? b k|lts]hL kg]{ pxL j:t' m:n sf] cg'kftdf ld;fpbf ldl>t j:t'sf] k|lts]hL slt d"No k5{ <

a. $\frac{ma+nb}{m+n}$ b. $\frac{na+mb}{m+n}$

c. $\frac{m+n}{ma+nb}$ c. $\frac{m+n}{na+mb}$

Q.N.5 olb ? 100 (IC) a/fj/ ? 160 (NC) . 1 cd]l/sg 8/n a/fa/ ? 75 (Nc) eP ? 75000 (IC) a/fa/ slt cd]/Lsg 8n/ x'G5 <

a. $ 1800 b. $1700 c. $ 1600 d.$1200

Q.N.6 Pshgf 7]s]bf/n] Pp6f sfd 20 lbgdf l;Wofpg] lhDdf lnP5 p;n] tTsfn} 40 hgf dflg; sfddf v6fP5 16 lbgkl5 b'OltxfO sfd dfq k"/f eP5 . slt dflg; yKbf lgwf{l/t sfd ;dodf k"/f x'G5 <

a. 40 b. 30 c. 20 d. 10

Q.N.7 15 j6f j:t'sf] d"No ? 90 k5{ eg] ? 150 df slt j6f j:t' kfO{G5 <

a. 10 j6f b. 25 j6f c. 15 j6f d. 40 j6f

Q.N.8 jflif{s ? 82000 cfo cfh{g ug]{ Ps hgf dflg;n] ? 14280 cfos/ ltb{5 / ? 31000 ;Ddsf] cfodf cfos/ 5'6 5 eg] cfos/ b/ slt xf]nf <

a. 28% b. 20% c. 14% d. 17.41%

Q N. 9.tnsf dWo] d"nwg lgsfNg] z'q s'g xf]<

a. A-I b. $\frac{1\times 100}{T\times R}$ c. $\frac{A\times 100}{100+TR}$ d. dflysf ;a}

Q.N.10 ? 100 kg]{ s'g} j:t'df 13% Eof6 nufpbf slt /sd ltg'{ k5{ <

a. ? 100 b. 87 c. 20% d. 90

Q.N.11 ? 1540 sf] 10% k|ltjif{ Jofhb/n] 2 jif{df hDdf slt Jofh kfOG5

a. ? 100 b. 308 c. 300 d. 154

Q. N. 12 olb nDjfO{ l rf}8fO{ b / prfO{{ h 5 eg], rf/ leQfsf] lf]qkmn lgsfNg] z'q s'g xf] <

a. 2h(l+b) b. 2(l+b) c. 2(lb+bh+lh)

d. dflysf s'g} klg xf]Og

Q.N.13 cw{Jof; r ePsf] j[Qsf] lf]qkmn lgsfNg] ;'q s] xf] <

a. $\pi r^2$ b. $2\pi r^2$ c. $\frac{\pi r^2}{2}$ d. $\pi d^2$

Q.N.14. nDjfO{ 5m rf}8f{ 3m / prfO{ 2 m ePsf] sf]7fsf] rf/leQf e'O{ / l;lnªsf] lf]qkmn slt xf]nf <

a. 32 $m^2$ b. 62$m^2$ c. 40$m^2$ d. 30$m^2$

Q.N.15 Pp6f juf{sf/ sf]7fsf] e"Osf] lf]qkmn 100$m^2$ 5 o;sf] e"Odf Knf:6/ ubf{ k|lt ju{ ld6/ ? 6 sf b/n] slt vr{ nfU5 <

a. Rs. 500 b. Rs. 25 c. Rs. 150 d. Rs. 400

Q.N.16. Pp6f cfoftsf/ v]tsf] aflx/L lf]qkmn lgsfNg] z'q s] xf] <

a. 2t(l+b-2t) b. 2t(lxb-2t) c. 2t(l-2t) d. 2t(l+b+2t)

Q.N.17. 6.3m nfdf] / 5.7m rf}8fO{ ePsf] sf]7fdf 1.33m km/flsnf] sfk{]6 laR5fpbf slt nfdf] sfk{]6 rflxPnf <

a. 25cm b. 20cm c. 27cm d. 22m

Q.N.18 Pp6f j[Qsf] Jof; 14 cm 5 eg] o;sf] kl/lw slt x'G5 <

a. 40cm b. 44cm c. 88cm d. 44m

Q.N.19 . $a^3+b^3$ sf] u'0fgv08x? tnsf dWo] s'g xf]nf<

a. $(a+b)(a^2+ab+b^2)$ b. $(a+b)(a^2+2ab+b^2)$

c. $(a+b)(a^2-ab+b^2)$ d. $(a-b)(a^2+ab+b^2)$

Q.N. 20 $\frac{a^m}{a^{-n}}$ sf] ;/n ?k tnsf dWo] s'g xf] <

a. $a^{m-n}$ b. $a^{m+n}$ c. $a^{mxn}$ d. $a^{\frac{m}{n}}$

Q.N. 21. olb $\frac{2}{4}=\frac{x}{20}$ eP x sf] dfg slt x'G5 <

a. 10 b. 40 c. 80 d. 20

Q.N. 22. $a^2$ +5a +6 sf u0fg'v08x? tnsf dWo] s'g xf] <

a. (a+2) (a-3) b. (a+2)(a+3) c.(a-3)(a-2) d.(a+3)(a-2)

Q.N. 23 . $x^2$-3x+2=0 eP x sf] dfg slt xf]nf <

a.(1,2) b.(-1,-2) c. (3,1) d. (2,3)

Q.N.24. $\sqrt[3]{64}$ a/fa/ slt x'G5 <

a. 3 b. 8 c. 16 d. 4

Q.N.25 2, 6 / x lg/Gt/ ;dfg'kftdf eP x sf] dfg slt x'G5 <

a. 12 b. 3 c. 18 d. 8

Q.N. 26 $(x^{a+b})^{a-b} \times (x^{b+c})^{b-c} \times (x^{c+a})^{c-a}$ sf] dfg slt x'G5 .

a. 2 b. $a^2-b^2$ c. $b^2c^2$ d. 1

Q.N. 27. $a^2+b^2$ z'q s] x'G5 <

a. (a+b) (a-b) b. $(a+b)^2-2ab$ c. $a^2+2ab+b^2$ d. $(a+b)^2$

Q.N.28. x sf] dfg slt x'G5 < $\frac{x}{3}+\frac{2}{x}=\frac{7}{3}$

a. (7.3) b. (5.7) c.(6.1) d. (6.6)

Q.N.29. $\left(\frac{27}{8}\right)^{-\frac{2}{3}}$ sf] dfg slt xf]nf <

a. $\frac{4}{9}$ b. $\frac{2}{3}$ c. $\frac{3}{2}$ d. $\frac{9}{4}$

Q.N. 30. $ax^2+bx+c=0$ eP x sf] dfg slt x'G5 .

**a.** $\frac{-b+\sqrt{b^2-4ac}}{2a}$ **b.** $\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

**c.** $\frac{-b\pm\sqrt{b^2+4ac}}{2a}$ **d.** $\frac{-b+\sqrt{b^2+4ac}}{2}$

Q.N 31. olb 2x=3y, x+y= 5, eo x / y sf] dfg slt x'G5 <

a. (3, 2) b. (2, 3) c. (3, 1) d. (2, 1)

Q.N. 32. $a^4- b^4$ sf u'0fgv08x? tnsf dWo] s'g xf] <

a $(a^2+b^2)$ $(a^2+b^2)$ b. $(a^2+b^2)(a-b)$ $(a+b)$

c. $(a^2+b^2)^2$ d. $(a^2-b^2)^2$

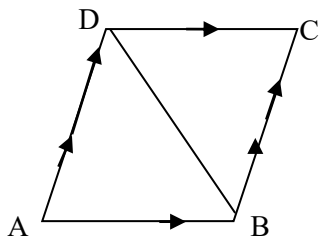
Q.N.33. $9^{\frac{x}{2}}=3$ eP x sf] dfg slt x'G5 <

a. 1 b. 2 c. 0 d. -1

Q. N. 34. $\sqrt[4]{\frac{512x^7y^5z^3}{2x^3yz^{-1}}}$ sf] dfg slt x'G5 <

a.$4xy^2z$ b. $4x\ ^2yz$ c.$4xyz\ ^2$ d.4xyz

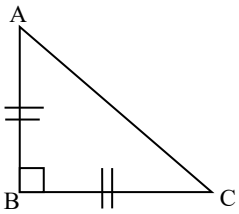
Q.N.35 olb $\Delta ABD$ sf] If]qkmn 22 $cm^2$ eP □ABCD sf] If]qkmn slt xf]nf <




a. $22cm^2$ b. 22cm

c. $44cm^2$ d. 44cm

Q.N.36 ∠BAC sf] dfg slt x'G5 <




a. $45^0$ b. $90^0$

c. $30^0$ d. $60^0$

Q.N.37. ju{sf ==========

a. ;a} e'hf cfk;df a/fa/ x'G5g\ .

b. ;a} sf]0fx? ;dsf]0f x'G5g\ .

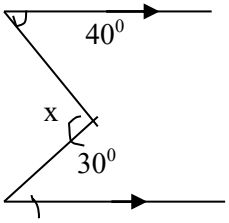
c. ljs0f{x? j/fj/ x'G5g\ .

d. dflysf ;a} .

Q.N.38. ;dafx' $\Delta$ sf] lf]qkmn lgsfNg] z'q s] xf] <

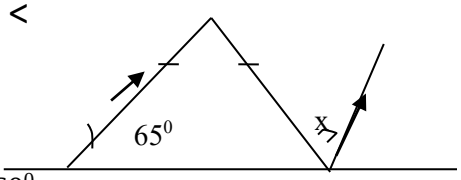
a. $\frac{\sqrt{3}}{2}a^2$ b. $\frac{\sqrt{3}}{4}a^2$

Q.N. 39. lbOPsf] lrqdf x sf] dfg slt xf]nf<



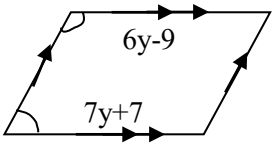

a. $40^0$ b. $70^0$ c. $30^0$ d. $10^0$

Q.N. 40. tnsf] lrqcg';f/ x sf] dfg slt x'G5 <



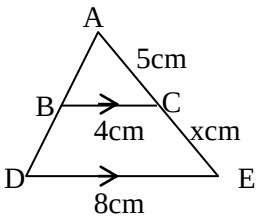

a. $30^0$ b. $40^0$ c. $50^0$ d.$60^0$

Q.N.41. y sf] dfg slt x'G5 <



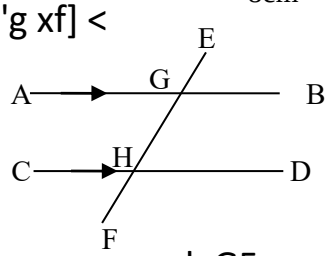

a. $15^0$ b.$12^0$ c.$14^0$ d. $17^0$

Q N.42. bfofFsf] lrqdf x sf] dfg slt x'G5 <




a. 6 b. 7 c. 9 d. 10

Q.N.43. lbOPsf] lrqdf ∠AGH sf] ;+utsf]0f s'g xf] <




a. ∠AGH b. ∠AGE

c. ∠CHG d. ∠CHF

Q.N.44. j[Qsf] s]Gb|af6 uPsf] lhjfnfO ========== elgG5 .

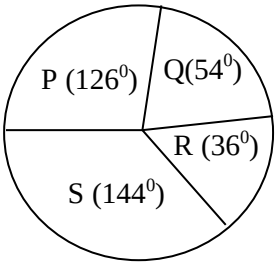
a. Jof; b. cw{Jof; c. s]Gb|ljGb' d. kl/lw

Q.N.45. j}olQms tYofÍsf] $Q_3$ lgsfNg] z'q s] xf] <

a. $\frac{N+1}{4}$ cf} kb b. $\frac{3(N+1)}{4}$ cf} kb c. $\frac{3N}{4}$ cf} kb d. $\frac{N}{4}$ cf} kb

Q.N.46. tnsf] tYofÍsf] dWos 26 eP a sf] dfg slt xf]nf <

13, 19, 24, a, 29, 33, 37



a. 27 b. 26 c.24 d. 29

Q.N.47. lbOPsf] kfOrf6{df p sf] % slt x'G5 <

a. 40% b. 10% c.15% d. 35%

Q. N. 48. jlu{s[t tYofÍsf] dWos lgsfNg s'g ;'q k|of]u ul/G5 .

a. $\frac{\sum fx}{N}$ b. $\frac{\sum x}{N}$ c. $\frac{\sum fm}{N}$ d. $\frac{N}{2}$

Q.N. 49 tnsf] tYofÍaf6 $Q_1$ slt x'G5 <

17, 59, 29, 35, 63, 27, 44

a. 44 b.35 c.13 d. 27

Q.N.50 Tan $30^0$ sf] dfg slt x'G5 <

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

Q.N.51 ;dafx' lqe'hsf k|To]s sf]0f slt l8lu|sf x'G5g\

a. $30^0$ b. $40^0$ c. $50^0$ d. $60^0$

Q.N.52 olb A=$30^0$ B=$0^0$ eP. $4\sin^2 A \times \cos^2 B$ sf] dfg slt x'G5 <

a. 1 b. 2 c. 3 d. 0

Q.N. 53 . Ps hgf ue{jtL dlxnfn] ;f]daf/ g} aRrfnfO{ hGd lbg] ;DefJotf slt x'G5 <

a. $\frac{1}{2}$ b. $\frac{2}{7}$ c. $\frac{1}{7}$ d . $\frac{1}{7}$

Q.N. 54. Pp6f tf;sf] Kofs]6af6 gx]/Lsg Pp6f kQf lgsfNbf ;f] tf; lrq ePsf] kg]{ ;DefJotf slt x'G5<

a. $\frac{3}{5}$ b. $\frac{3}{13}$ c. $\frac{4}{13}$ d. $\frac{1}{13}$

# APPENDIX - II

## Answer Key of Achievement Text

| Q.N | Answer | On | Answer |
|---|---|---|---|
| 1 | c | 28 | a |
| 2 | a | 29 | a |
| 3 | c | 30 | a |
| 4 | a | 31 | d |
| 5 | c | 32 | b |
| 6 | a | 33 | a |
| 7 | b | 34 | c |
| 8 | a | 35 | c |
| 9 | d | 36 | a |
| 10 | a | 37 | d |
| 11 | b | 38 | b |
| 12 | a | 39 | b |
| 13 | a | 40 | c |
| 14 | b | 41 | c |
| 15 | a | 42 | d |
| 16 | d | 43 | c |
| 17 | c | 44 | a |
| 18 | b | 45 | b |
| 19 | c | 46 | a |
| 20 | b | 47 | b |
| 21 | a | 48 | c |
| 22 | b | 49 | a |
| 23 | a | 50 | b |
| 24 | d | 51 | d |
| 25 | c | 52 | c |
| 26 | d | 53 | c |
| 27 | b | 54 | b |

## APPENDIX - III

## Split Half Reliability Calculation Table

| Students | Odd | Even | Sum | Different |
|---|---|---|---|---|
| A | 24 | 20 | 44H | 4H |
| B | 8 | 11 | 19 | -3L |
| C | 6 | 2 | 8L | 4H |
| D | 6 | 3 | 9L | 3 |
| E | 18 | 14 | 32H | 4H |
| F | 9 | 11 | 20 | -2 |
| G | 17 | 13 | 30 | 4H |
| H | 19 | 13 | 32H | 6H |
| I | 19 | 19 | 38H | 0 |
| J | 14 | 10 | 24 | -2L |
| k | 7 | 4 | 11L | 3 |
| L | 13 | 13 | 26 | 0 |
| M | 4 | 10 | 14L | -6L |
| N | 15 | 11 | 26 | 4H |
| O | 4 | 3 | 7L | 1 |
| P | 19 | 20 | 39H | -1 |
| Q | 14 | 17 | 31 | -3L |
| R | 4 | 7 | 11L | -3L |
| S | 16 | 19 | 35H | -3L |
| T | 14 | 11 | 25 | 3 |
| U | 5 | 5 | 10L | 0 |
| V | 14 | 14 | 28 | 0 |
| W | 6 | 10 | 16 | -4L |
| X | 17 | 9 | 26 | 8H |

| | | | | |
|---|---|---|---|---|
| Y | 19 | 23 | 42 | -4L |

# APPENDIX - IV

## Item- Analysis Table

## P and D Values with Respect to Each Item of Mathematics Achievement Test

| Q.N | UR | LR | D.V | P.V | Decision | Q.N. | UR | L.R | D.V | P.V | Decision |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6 | 1 | 50 | 0.71 | A | 28 | 6 | 3 | 64 | 0.24 | R |
| 2 | 5 | 4 | 64 | 0.14 | R | 29 | 5 | 3 | 57 | 0.28 | R |
| 3 | 5 | 1 | 43 | 0.57 | A | 30 | 5 | 2 | 50 | 0.42 | A |
| 4 | 6 | 2 | 57 | 0.57 | A | 31 | 5 | 2 | 50 | 0.42 | A |
| 5 | 4 | 2 | 43 | 0.29 | A | 32 | 5 | 1 | 42 | 0.57 | A |
| 6 | 3 | 1 | 29 | 0.29 | A | 33 | 5 | 2 | 50 | 0.42 | A |
| 7 | 6 | 0 | 43 | 0.86 | A | 34 | 4 | 1 | 35 | 0.42 | A |
| 8 | 3 | 4 | 50 | 0.14 | R | 35 | 5 | 2 | 50 | 0.42 | A |
| 9 | 5 | 0 | 36 | 0.71 | A | 36 | 4 | 3 | 50 | 0.42 | A |
| 10 | 5 | 1 | 43 | 0.57 | A | 37 | 6 | 3 | 64 | 0.42 | A |
| 11 | 6 | 1 | 50 | 0.71 | A | 38 | 5 | 1 | 43 | 0.57 | A |
| 12 | 6 | 1 | 50 | 0.71 | A | 39 | 5 | 1 | 43 | 0.57 | A |
| 13 | 4 | 2 | 43 | 0.29 | A | 40 | 6 | 3 | 64 | 0.42 | A |
| 14 | 3 | 0 | 21 | 0.43 | R | 41 | 5 | 1 | 43 | 0.57 | A |
| 15 | 4 | 0 | 29 | 0.57 | A | 42 | 5 | 1 | 50 | 0.42 | A |
| 16 | 5 | 2 | 50 | 0.43 | A | 43 | 5 | 1 | 43 | 0.57 | A |
| 17 | 4 | 0 | 29 | 0.57 | A | 44 | 5 | 1 | 43 | 0.57 | A |
| 18 | 4 | 2 | 43 | 0.29 | A | 45 | 6 | 3 | 64 | 0.42 | A |
| 19 | 5 | 0 | 36 | 0.71 | A | 46 | 4 | 1 | 35 | 0.42 | A |
| 20 | 6 | 1 | 50 | 0.71 | A | 47 | 3 | 4 | 50 | -0.14 | R |
| 21 | 5 | 2 | 50 | 0.43 | A | 48 | 4 | 1 | 35 | 0.41 | A |
| 22 | 5 | 2 | 50 | 0.43 | A | 49 | 5 | 1 | 43 | 0.57 | A |
| 23 | 3 | 0 | 21 | 0.43 | R | 50 | 5 | 2 | 50 | 0.42 | A |
| 24 | 5 | 1 | 43 | 0.57 | A | 51 | 7 | 5 | 86 | 0.28 | R |
| 25 | 7 | 7 | 100 | 0 | R | 52 | 4 | 1 | 35 | 0.42 | A |
| 26 | 5 | 1 | 43 | 0.57 | A | 53 | 6 | 3 | 64 | 0.42 | A |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | 6 | 2 | 57 | 0.57 | A | 54 | 4 | 1 | 35 | 0.42 | A |

## APPENDIX -V

### A. Specification Chart of Achievement Test

| S.N. | Areas | k | C | S | A | Total | Percentage |
|---|---|---|---|---|---|---|---|
| 1 | Set | 1 | 2 | - | - | 3 | 5.56 |
| 2 | Arithmetic | 2 | 2 | 2 | 2 | 8 | 14.81 |
| 3 | Mensuration | 3 | 2 | 1 | 1 | 7 | 12.96 |
| 4 | Algebra | 4 | 5 | 3 | 4 | 16 | 29.62 |
| 5 | Geometry | 4 | 2 | 2 | 2 | 10 | 18.52 |
| 6 | Statistics | 1 | 2 | 1 | 1 | 5 | 9.26 |
| 7 | Trigonometry | 1 | 2 | - | - | 3 | 5.56 |
| 8 | Probability | - | 1 | - | 1 | 2 | 3.70 |
| | Total | 16 | 18 | 9 | 11 | 54 | 100 |

## APPENDIX - VI

## pknAwL k/LIff 2067

sIffM— ( k"0ff{Í=M $%

ljifo M— clgjfo{ ul0ft pQL0ff{ÍM

!$=@

;do M ! 306f #) ldg]6

ljBfnosf] gfd M

ljBfyL{sf] gfd M

;jf]{Qd pQ/df /]hf lrGx -√_ nufpm .

Q.N.1. olb A / B vlK6Psf ;d'x eP n (A∪B) = ….. x'G5 .

a. n (A∪B) = A (A) + n (B)

b. n (A∪B) = A (A) + n (B) + n (A∩B)

c. n (A∪B) = n (A) + n (B) - n (A∩B)

d. n (A∪B) = n (A+B) + n (A-B)

Q.N.2. 25 hgf ljBfyL{ ePsf] sIffdf 17 hgfn] elnjn dg k/fp5g\ 15 hgfn] jf:s]6an / 10 hgfn] b'j} dg k/fp5g\ eg] s'g} klg dg gk/fpg] ljBfyL{ slt xf]nfg <

a. 17 b. 5 c. 3 d. 10

Q.N.3 ? a k|lts]hL kg]{ s'g} j:t' / ? b k|lts]hL kg]{ pxL j:t' m:n sf] cg'kftdf ld;fpbf ldl>t j:t'sf] k|lts]hL slt d"No k5{ <

a. $\frac{ma+nb}{m+n}$ b. $\frac{na+mb}{m+n}$

c. $\frac{m+n}{ma+nb}$ c. $\frac{m+n}{na+mb}$

Q.N.4 olb ? 100 (IC) a/fj/ ? 160 (NC) . 1 cd]l/sg 8/n a/fa/ ? 75 (Nc) eP ? 75000 (IC) a/fa/ slt cd]/Lsg 8n/ x'G5 <

a. $ 1800 b. $1700 c. $ 1600 d.$1200

Q.N.5 Pshgf 7]s]bf/n] Pp6f sfd 20 lbgdf l;Wofpg] lhDdf lnP5 p;n] tTsfn} 40 hgf dflg; sfddf v6fP5 16 lbgkl5 b'OltxfO sfd dfq k"/f eP5 . slt dflg; yKbf lgwf{l/t sfd ;dodf k"/f x'G5 <

a. 40 b. 30 c. 20 d. 10

Q.N.6 15 j6f j:t'sf] d"No ? 90 k5{ eg] ? 150 df slt j6f j:t' kfO{G5 <

a. 10 j6f b. 25 j6f c. 15 j6f d. 40 j6f

Q N.7. tnsf dWo] d"nwg lgsfNg] z'q s'g xf]<

a. A-I b. $\frac{1 \times 100}{T \times R}$ c. $\frac{A \times 100}{100 + TR}$ d. dflysf ;a}

Q.N.8 ? 100 kg]{ s'g} j:t'df 13% Eof6 nufpbf slt /sd ltg'{ k5{ <

a. ? 100 b. 87 c. 20% d. 90

Q.N.9 ? 1540 sf] 10% k|ltjif{ Jofhb/n] 2 jif{df hDdf slt Jofh kfOG5

a. ? 100 b. 308 c. 300 d. 154

Q. N. 10 olb nDjfO{ l rf}8fO{ b / prfO{{ h 5 eg], rf/ leQfsf] If]qkmn lgsfNg] z'q s'g xf] <

a. 2h(l+b) b. 2(l+b) c. 2(lb+bh+lh)

d. dflysf s'g} klg xf]Og

Q.N.11 cw{Jof; r ePsf] j[Qsf] If]qkmn lgsfNg] ;'q s] xf] <

a. $\pi r^2$ b. $2\pi r^2$ c. $\frac{\pi r^2}{2}$ d. $\pi d^2$

Q.N.12 Pp6f juf{sf/ sf]7fsf] e"Osf] If]qkmn $100m^2$ 5 o;sf] e"Odf Knf:6/ ubf{ k|lt ju{ ld6/ ? 6 sf b/n] slt vr{ nfU5 <

a. Rs. 500 b. Rs. 25 c. Rs. 150 d. Rs. 400

Q.N.13. Pp6f cfoftsf/ v]tsf] aflx/L If]qkmn lgsfNg] z'q s] xf] <

a. 2t(l+b-2t) b. 2t(lxb-2t) c. 2t(l-2t) d. 2t(l+b+2t)

Q.N.14. 6.3m nfdf] / 5.7m rf}8fO{ ePsf] sf]7fdf 1.33m km/flsnf] sfk{]6 laR5fpbf slt nfdf] sfk{]6 rflxPnf <

a. 25cm b. 20cm c. 27cm d. 22m

Q.N.15 Pp6f j[Qsf] Jof; 14 cm 5 eg] o;sf] kl/lw slt x'G5 <

a. 40cm b. 44cm c. 88cm d. 44m

Q.N.16 . $a^3+b^3$ sf] u'0fgv08x? tnsf dWo] s'g xf]nf<

a. $(a+b)(a^2+ab+b^2)$ b. $(a+b)(a^2+2ab+b^2)$

c. $(a+b)(a^2-ab+b^2)$ d. $(a-b)(a^2+ab+b^2)$

Q.N.17. $\frac{a^m}{a^{-n}}$ sf] ;/n ?k tnsf dWo] s'g xf] <

a. $a^{m-n}$ b. $a^{m+n}$ c. $a^{mxn}$ d. $a^{\frac{m}{n}}$

Q.N.18. olb $\frac{2}{4}=\frac{x}{20}$ eP x sf] dfg slt x'G5 <

a. 10 b. 40 c. 80 d. 20

Q.N.19. $a^2+5a+6$ sf u0fg'v08x? tnsf dWo] s'g xf] <

a. (a+2) (a-3) b. (a+2)(a+3) c.(a-3)(a-2) d.(a+3)(a-2)

Q.N.20. $\sqrt[3]{64}$ a/fa/ slt x'G5 <

a. 3 b. 8 c. 16 d. 4

Q.N.21 $(x^{a+b})^{a-b} \times (x^{b+c})^{b-c} \times (x^{c+a})^{c-a}$ sf] dfg slt x'G5 .

a. 2 b. $a^2-b^2$ c. $b^2c^2$ d. 1

Q.N.22. $a^2+b^2$ z'q s] x'G5 <

a. (a+b) (a-b) b. $(a+b)^2-2ab$ c. $a^2+2ab+b^2$ d. $(a+b)^2$

Q.N.23. $ax^2+bx+c=0$ eP x sf] dfg slt x'G5 .

**a.** $\frac{-b+\sqrt{b^2-4ac}}{2a}$ **b.** $\frac{-b\pm\sqrt{b^2-4ac}}{2a}$

**c.** $\frac{-b\pm\sqrt{b^2+4ac}}{2a}$ **d.** $\frac{-b+\sqrt{b^2+4ac}}{2}$

Q.N 24. olb 2x=3y, x+y= 5, eo x / y sf] dfg slt x'G5 <

a. (3, 2) b. (2, 3) c. (3, 1) d. (2, 1)

Q.N.25. $a^4-b^4$ sf u'0fgv08x? tnsf dWo] s'g xf] <

a $(a^2+b^2)(a^2+b^2)$ b. $(a^2+b^2)(a-b)(a+b)$

c. $(a^2+b^2)^2$ d. $(a^2-b^2)^2$

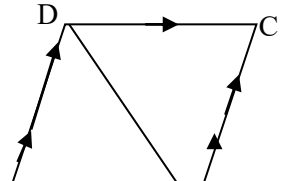
Q.N.26. $9^{\frac{x}{2}}=3$ eP x sf] dfg slt x'G5 <

a. 1 b. 2 c. 0 d. -1

Q. N.27 $\sqrt[4]{\frac{512x^7y^5z^3}{2x^3yz^{-1}}}$ sf] dfg slt x'G5 <

a.$4xy^2z$ b. $4x^2yz$ c.$4xyz^2$ d.4xyz

Q.N.28 olb $\Delta ABD$ sf] If]qkmn 22 $cm^2$ eP $\square ABCD$ sf] If]qkmn slt xf]nf <



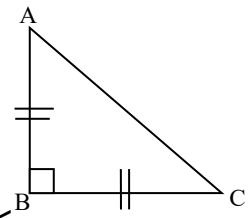
a. $22cm^2$ b. 22cm

c. $44cm^2$ d. 44cm

Q.N.29. $\left(\frac{27}{8}\right)^{-\frac{2}{3}}$ sf] dfg slt xf]nf <

a. $\frac{4}{9}$ b. $\frac{2}{3}$ c. $\frac{3}{2}$ d. $\frac{9}{4}$

Q.N.30 ∠BAC sf] dfg slt x'G5 <



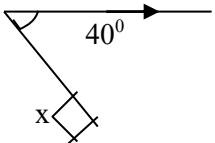

a. $45^0$ b. $90^0$

c. $30^0$ d. $60^0$

Q.N.31. ;dafx' Δ sf] lf]qkmn lgsfNg] z'q s] xf] <

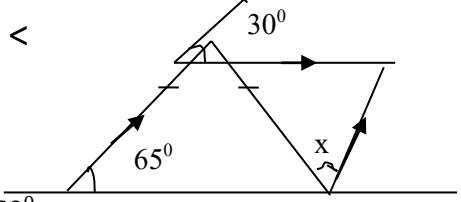
a. $\frac{\sqrt{3}}{2}a^2$ b. $\frac{\sqrt{3}}{4}a^2$

Q.N.32 lbOPsf] lrqdf x sf] dfg slt xf]nf<



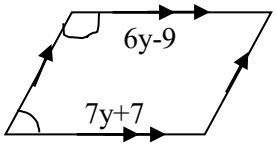

a. $40^0$ b. $70^0$ c. $30^0$ d. $10^0$

Q.N. 33. tnsf] lrqcg';f/ x sf] dfg slt x'G5 <



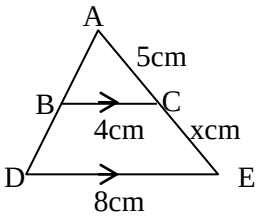

a. $30^0$ b. $40^0$ c. $50^0$ d.$60^0$

Q.N.34. y sf] dfg slt x'G5 <



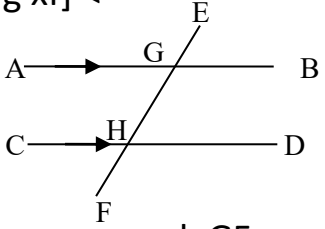

a. $15^0$ b.$12^0$ c.$14^0$ d. $17^0$

Q N.35. bfofFsf] lrqdf x sf] dfg slt x'G5 <




a. 6 b. 7 c. 9 d. 10

Q.N.36. lbOPsf] lrqdf ∠AGH sf] ;+utsf]0f s'g xf] <




a. ∠AGH b. ∠AGE

c. ∠CHG d. ∠CHF

Q.N.37. j[Qsf] s]Gb|af6 uPsf] lhjfnfO ========== elgG5 .

a. Jof; b. cw{Jof; c. s]Gb|ljGb' d. kl/lw

Q.N.38. j}olQms tyof•sf] $Q_3$ lgsfNg] z'q s] xf] <

a. $\frac{N+1}{4}$ cf} kb b. $\frac{3(N+1)}{4}$ cf} kb c. $\frac{3N}{4}$ cf} kb d. $\frac{N}{4}$ cf} kb

Q.N.39. tnsf] tYofÍsf] dWos 26 eP a sf] dfg slt xf]nf <

13,19,24,a,29,33,37

a. 27 b. 26 c.24 d. 29

Q.N. 40 tnsf] tYofÍaf6 $Q_1$ slt x'G5 <

17, 59, 29, 35, 63, 27, 44

a. 44 b.35 c.13 d. 27

Q.N.41 Tan $30^0$ sf] dfg slt x'G5 <

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

Q.N.42 ;dafx' lqe'hsf k|To]s sf]0f slt l8lu|sf x'G5g\

a. $30^0$ b.$40^0$ c.$50^0$ d.$60^0$

Q.N.43 olb $\angle A=30^0$ $B=0^0$ eP. $4\sin^2 A \times \cos^2 B$ sf] dfg slt x'G5 <

a. 1 b. 2 c. 3 d. 0

Q.N.44 Ps hgf ue{jtL dlxnfn] ;f]daf/ g} aRrfnfO{ hGd lbg] ;DefJotf slt x'G5 <

a. $\frac{1}{2}$ b. $\frac{2}{7}$ c. $\frac{1}{7}$ d . $\frac{1}{7}$

Q.N.45. Pp6f tf;sf] Kofs]6af6 gx]/Lsg Pp6f kQf lgsfNbf ;f] tf; lrq ePsf] kg]{ ;DefJotf slt x'G5<

a. $\frac{3}{5}$ b. $\frac{3}{13}$ c. $\frac{4}{13}$ d. $\frac{1}{13}$

# APPENDIX - VII

## Final Answer Key of Achievement Test

| Q.N | Answer | Q.N. | Answer |
|---|---|---|---|
| 1 | c | 24 | a |
| 2 | c | 25 | d |
| 3 | a | 26 | b |
| 4 | c | 27 | a |
| 5 | a | 28 | c |
| 6 | b | 29 | c |
| 7 | d | 30 | a |
| 8 | a | 31 | b |
| 9 | b | 32 | b |
| 10 | a | 33 | c |
| 11 | a | 34 | c |
| 12 | a | 35 | d |
| 13 | b | 36 | c |
| 14 | c | 37 | a |
| 15 | b | 38 | b |
| 16 | c | 39 | a |
| 17 | b | 40 | a |
| 18 | a | 41 | b |
| 19 | b | 42 | d |
| 20 | d | 43 | c |
| 21 | d | 44 | c |
| 22 | b | 45 | b |
| 23 | a | | |

## APPENDIX -VIII

## B. Final Specification of Achievement Test

| S.N. | Areas | k | C | S | A | Total | Percentage |
|---|---|---|---|---|---|---|---|
| 1 | Set | 1 | 1 | - | - | 2 | 4.44 |
| 2 | Arithmetic | 2 | 2 | 2 | 1 | 7 | 15.56 |
| 3 | Mensuration | 3 | 1 | 1 | 1 | 6 | 13.33 |
| 4 | Algebra | 3 | 3 | 2 | 4 | 12 | 26.67 |
| 5 | Geometry | 3 | 2 | 2 | 2 | 9 | 20.00 |
| 6 | Statistics | 1 | 2 | 1 | - | 4 | 8.89 |
| 7 | Trigonometry | 1 | 2 | - | - | 3 | 6.67 |
| 8 | Probability | - | 1 | - | 1 | 2 | 4.44 |
| | Total | 14 | 14 | 9 | 8 | 45 | 100 |

## APPENDIX - IX

## ljBfyL{ k|ZgfjnL gd"gf

ljBfyL{sf] gfd
M==========
==

cljefjssf] gfd
M==========

7]ufgfM
==========
==========

lnËM==========
==========

!= ltd|f] kl/jf/ slt hgf ;b:o x'g'x'G5 <

k'?if ☐ dlxnf ☐ hDdf ☐

@= ltd|f] kl/jf/ s:tf] lsl;dsf] xf]<

;+o'Qm☐ ☐

#= ltd|f] kl/jf/af6 slt hgf ljBfno hfG5g\ <

s]6f ☐ s]6L ☐ hDdf ☐

$= tnsf JolQmx?sf] zf}lIfs of]Uoftf pNn]v u/ .

| a'af | cfdf |
|---|---|
| ;fIf/ ☐ | ;fIf/ ☐ |

| | |
|---|---|
| lg/lf/ | lg/lf/ |
| sIff | sIff |

cGosf] eP pNn]v

u/==========

## APPENDIX - X

## cljefjs k|ZgfjnL gd'gf

cljefjssf] gfd

M==========

ljBfyL{sf] gfd

M==========

7]ugf

M==========

!= tkfO{sf] d'Vo k]zf s]] xf] <

s[lif ☐ Jofkf/ ☐ gf]s/L ☐

cGo eP pNn]v ug]{

@= ljleGg lzif{s cg';f/ tkfOsf] kl/jf/sf] hDdf cfDbflg pNn]v ug'{xf]; .

!_ s[lif ?

@_ Jofkf/ ?

#_ gf]s/L ?

$_ cGo ?

hDdf ?

#= tkfO{sf] kl/jf/sf] d"Vo k]zf s'g xf] <

| a'af | cfdf |
|---|---|
| s[lif ☐ | s[lif ☐ |
| Jofkf/ ☐ | Jofkf/ ☐ |
| gf]s/L ☐ | gf]s/L ☐ |

| | |
|---|---|
| cGo  | cGo  |

cGosf] k]zf eP pNn]v

ug]{==========

==========

# APPENDIX - XI

**Sampled Schools**

| S.N. | Name of School | No. of Students | | Total |
|---|---|---|---|---|
| | | Boys | Girls | |
| 1 | Shree Gauri Shankar Higher Secondary | 2 | 3 | 5 |
| 2 | Shree Bindhya Bashini Higher Secondary School | 3 | 4 | 7 |
| 3 | Shree Bishnu Paduka Higher Secondary School | 1 | 2 | 3 |
| Total | | 6 | 9 | 15 |

## APPENDIX- XII

## Raw Score of Sampled Students

### A. According to Father's Education Status

| Educated | Literate | Illiterate |
|---|---|---|
| 24, 30, 28, 35, | 27, 25, 13, 24, 22, 21, 22 | 18, 24, 12, 20 |

### 2. According to Father's Occupation

| Job | Trade | Agriculture |
|---|---|---|
| 27, 13, 24, 30, 21, 12, 35 | 25, 24, 22, 18 | 24, 22, 28, 20 |

### 3. According to family size

| Small size | Middle size | Large size |
|---|---|---|
| 24, 24, 30, 21 | 27, 25, 13, 18, 22, 24, 22, 28, 35 | 12, 20 |

### 4. According to Family Income

| High income | Middle income | Low income |
|---|---|---|
| 24, 22, 21 | 27, 25, 13, 24, 30, 24, 28, 25, 20 | 18, 22, 12 |

### 5. According to Sex of Child

| Boys | Girls |
|---|---|
| 27, 25, 24, 30, 21, 28 | 13, 18, 24, 23, 24, 23, 12, 35, 20 |

## APPENDIX - XIII

### Statistically Formulae Used in this Analysis

1. Reliability co-efficient ($r_{tt}$)= $1-\frac{Dd^2}{ds^2}$

2. Level of difficult (P) = $\frac{U_R + L_R}{T}$ x100

3. Power of discrimination (D)= $\frac{U_R - L_R}{\frac{T}{2}}$

4. Mean ($\overline{X}$) = $\frac{\sum fx}{N}$

5.Standard Deviation ($\sigma$)= $\sqrt{\frac{\sum(x-\bar{x})^2}{N}}$

6. Correlation (r) = $\frac{n\sum xy - \sum x \times \sum y}{\sqrt{n\sum x^2 - (\sum x)^2}\ \sqrt{n\sum y^2 - (\sum y)^2}}$

7. T = $\frac{(\overline{x_1} - \overline{x_2}) - (\mu_1 - \mu_2)}{S_P\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$

Where, $S_p = \sqrt{\frac{(n_1-1)S_1^{\ 2} + (n_2-1)S_2^{\ 2}}{n_1 + n_2 - 2}}$