1. INTRODUCTION:

Mathematics is the oldest of all sciences that have developed through the ages having a direct impact on the quality of human life on our planet.

The events in India have proved that a subject like mathematics is not left untouched by the general degradation of the educational atmosphere. Millions have developed dislike for mathematics. The society is in the grip of Mathematics Phobia like mathematics is a dry and difficult subject. Not only in India, in most parts of the world there has been increasing concern about the much publicised dislike and the fear of mathematics among high school students. The Education Commission (1964-65) recommended mathematics as a compulsory subject for students of school level.

Hence, crores of school children are directly influenced by mathematics education. Therefore, the first step to upgrade mathematics education in the country is to upgrade school mathematics education. In a developing country like India, to increase the efficiency of the learning process of mathematics in school stage, is absolutely necessary, when resources are limited.

Percentage of failure of students in High School Leaving Certificate Examination is very high. But every student who wants to go for study of physics, chemistry or engineering has to study mathematics. Not only this, in the areas of Science & Technology, Biological Science, Management Science, Computer Science and in some disciplines of Humanities group we need persons with sound mathematical knowledge.
2. SIGNIFICANCE OF THE STUDY:

It is the need of the hour to investigate the factors responsible for:

a) high percentage of failure in mathematics in schools' internal examination, as well as schools' final examination (High School Leaving Certificate Examination);
b) creating difficulties in learning mathematics;
c) creating negative attitude towards mathematics;
d) creating mathematics anxiety etc.

In the present study, the investigator wants to investigate some of the problems in learning mathematics in the secondary stage in relation to

i) Interest of the pupil in mathematics
ii) I.Q. of the pupil
iii) Basic Arithmetical concept of the pupil
iv) Area of difficulties in Course content for the pupil
v) Sex of the pupil.

To investigate these problems the topic of the research project is selected as "A STUDY ON SOME PROBLEMS OF LEARNING MATHEMATICS AT SECONDARY STAGE WITH RELATION TO HIGH SCHOOLS IN GREATER GUWAHATI".

3. OBJECTIVES OF THE PROJECT:

The objectives of the study are as follows:

i) To enquire into the interest of the pupil in mathematics
ii) To investigate the basic concepts in arithmetic
iii) To find I.Q. of the students
iv) To enquire about the area of difficulties in the course content.
v) To find out the achievement of the pupil in school examination (Annual Examination from class IX to X)
vi) To find out the relationship between the dependant variable - Achievement In Mathematics (AIM) and the independent variables - Interest In Mathematics (IIM), Achievement In Arithmetic (AIA), Intelligence Quotient (I.Q.) and Sex.

4. HYPOTHESES:

The investigator formulated the following hypotheses:

There is no relationship between:

I) Interest in mathematics and achievement in mathematics.
II) Sex and Achievement in Mathematics
III) I.Q. and Achievement in Mathematics
IV) Achievement In Arithmetic and Achievement in Mathematics

5. RESEARCH DESIGN AND METHODOLOGY:

a) Selection of samples

The Normative Survey method is chosen for the present study. For this purpose a sample of 250 girls and 250 boys of standard X from 10 Assamese Medium Secondary schools of Greater Guwahati is selected at random, from the population of standard X students of Secondary schools of Greater Guwahati.

b) Collection of Data

The investigator approached the heads of all the selected schools personally, for necessary permission and with the co-operation of the Principals and Class teachers (Mathematics) and the students, the required data were collected. The collected data are being statistically analysed.
c) **Tools used in the collection of data:**

To measure the variables undertaken and to collect the data for the study, the following tools are used:

- i) **Interest Inventory (standardised)** - to measure the interest of the pupil in Mathematics
- ii) **I.Q. Inventory (standardised)** (MPIT- Dr. Madhukar Patel Intelligence Test) - to measure the I.Q. of the pupil
- iii) A questionnaire constructed by the investigator to assess the basic concepts in arithmetical operation.
- iv) A questionnaire constructed by the investigator to measure the level of difficulties in course content.
- v) To assess the achievement in mathematics, the marks attained by the pupils in mathematics in annual examination from IX to X are collected.

6. **SYSTEM OF ANALYSIS OF DATA:**

The scores of Arithmetical Ability Test, Questionnaire on course content, Mathematical Interest Inventory, M.P.I.T. were analysed quantitatively with the help of computer. The 't' test was applied to determine the significance of the difference between the means of two independent groups. To inquire about the nature of the dependent variable viz. achievement in mathematics among the different groups of different independent variables the entire sample was divided into the following four groups:

- i) Arithmetical Ability group
- ii) Interest group
- iii) Intelligence group and
- iv) Sex group
7. A SUMMARY OF THE FINDINGS OF THE INVESTIGATION:

a) Relation between AIM and AIA:

It is observed that 't' value of the mean of AIM between high arithmetic ability group and average arithmetic ability group is 18.17. With the given degree of freedom at 414 it is highly significant at .01 and .05 level of significance. This implies that the performance of pupils of high arithmetic ability group is greatly superior to that of the average arithmetic ability group. Mean difference that equals to 33.56 of the groups is a clear evidence of superior performance in AIM of high arithmetic ability group over those of average arithmetic ability group. A comparison between the means of AIM scores of average arithmetic group and low arithmetic group and of high arithmetic group and low arithmetic group shows that performance of average arithmetic group and high arithmetic group is greatly superior to that of low arithmetic group, calculated 't' values being 28.92 and 10.98 respectively and both the values being highly significant.

A comparison between the means of AIM of the different arithmetical ability groups shows that achievement in mathematics of the pupils of secondary stage is highly influenced by their ability in arithmetic.

b) Relation between AIM and IIM:

The 't' value between high interest group and average interest group is 13.62 at a given degree of freedom of 403, which is highly significant at .01 and .05 level. It was also found that the calculated 't' values between AIM scores of average interest group and low interest group and also between
high interest group and low interest group were found to be 13.99 and 27.66 which are highly significant at .01 and .05 level of significance.

It may be observed, therefore, that children who have more interest in mathematics may achieve more in mathematics than those who have less interest or no interest in mathematics.

c) Relation between AIM and IQ:

The 't' value between high intelligence group and average intelligence group is 10.6 at a given degree of freedom 396 which is highly significant at .01 and .05 level. It is observed also that the 't' value between mean AIM scores of pupils of average and low intelligence groups is 5.15, and the 't' value between AIM scores of High IQ group and low IQ group is 21.53. Both the values of 't' are highly significant at .01 and .05 level of significance. Hence it is evident that highly intelligent pupils achieve more in mathematics than the lowly intelligent pupil does.

d) Relation between AIM and sex group:

The 't' value for AIM scores of boys and girls were found to be 7.26, which is highly significant at .01 and .05 level. The present study also confirms that achievement in mathematics is influenced by the sex factor considerably. The findings of the present study support the findings of studies done by a number of researchers, such as Ethington and Wolf ¹ (1984), Frennema ² (1984), and many others.

Therefore the hypotheses formulated in the present study that there is no relationship between AIM and IIM, between AIM and sex, between AIM and IQ, and between AIM and AIA can be rejected.
From the response of the pupils to the questionnaire about the difficult topics in the course content, it is observed that the topics on shares, stocks and dividends, percentage, decimals and geometrical constructions are observed to be very difficult for them.

After a careful analysis of the findings of the study, the investigator is inclined to believe that the arithmetical ability, interest in mathematics, intelligence and sex of the pupil are some of the prime factors which are highly related to the achievement in mathematics influencing to a great extent the learning process in the class room.

8. ITS LIKELY CONTRIBUTION TO KNOWLEDGE:

The investigator expects that some factors responsible for creating difficulties in learning Mathematics in secondary level can be identified through this study and after the complete analysis of the data collected some remedial steps can be thought with the help of the results of findings of the analysed data to provide large dividends in the form of considerable improvements in Mathematics education of the present and future generations.

---

2: Fennema, E. (1981) Sex related difference in mathematics: Results from the National Assignment, Mathematics Teacher, 74, 554 - 559