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Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net**



## A STUDY OF RELATIONSHIP BETWEEN MATHEMATICS APTITUDE AND ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS

YOGITA VITTHALRAO SONAR AND PRATIBHA S. PATANKAR

Asst.Professor,Smt. R.M.P. Women's college of Education, Akluj.  
Asst.Professor, Department of Education, Shivaji University, Kolhapur.

### Abstract:

*The study of mathematics can satisfy a wide range of interests, power, abilities and skill. It develops the imagination power and skill. Performance of the individual it trains in clear and logical thought, It is a challenge, with varieties of difficult ideas and unsolved problems, because it deals with the questions arising from complicated drive for simplification to find the right concepts and methods to make difficult things easy to explaining why a situation must be as it is. In so doing, it develops a range of language and insights, which may then be applied to make a critical contribution to our understanding and appreciation of the world, and our ability to find and make our way in it.*

### KEYWORDS:

Mathematics , Achievement , Methodology , Analysis .

### INTRODUCTION:

For the conclusion remark we said that mathematics has an important place in human life and his day to day work. Mathematics has it some values also which gives individual more disciplirey, acquiretly in his work. Mathematics is disciplirey of all disciplined, any normal individual should have a common know of mathematics. Hence, there is need to measurement mathematical aptitude of the individual.

### SIGNIFICATION OF THE STUDY

- 1.Students can take benefit to measure their Aptitude in Mathematics. This will help them to boost their confidence and take corrective actions if score is not satisfactory.
- 2.Since such type of aptitude is not available; results of this test will be an eye opener of parents and students who are planning to make carrier in Mathematics oriented subjects, eg. Engineering.
- 3.Institutes who conducts entrance tests can take benefit of this study to check eligibility of participant students by measuring their mathematical aptitude.
- 4.Teachers can take benefit of this study to measure mathematical aptitude of their students. This will help them to take corrective actions for low ranking students. This will also help teachers to measure their performance.

### OBJECTIVES OF THE STUDY

#### MAJOR OBJECTIVES

Title :A STUDY OF RELATIONSHIP BETWEEN MATHEMATICS APTITUDE AND ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS . Source:Indian Streams Research Journal [2230-7850] YOGITA VITTHALRAO SONAR AND PRATIBHA S. PATANKAR yr:2013 vol:3 iss:5

1. To develop a standardized test of Mathematical Aptitude for secondary school students.
2. To study Mathematical Aptitude of secondary school student.

#### **MINOR OBJECTIVES**

- 1 To compare the Mathematical Aptitude of Secondary school students sex wise.
- 2 To compare Mathematical Aptitude of Secondary school students area wise.
- 3 To compare Mathematical Aptitude of boys of Secondary school area wise.
- 4 To compare Mathematical Aptitude of girls of Secondary school area wise.

#### **ASSUMPTION**

1. Every normal student at secondary school level (IXth and Xth) should have Mathematical Aptitude.
2. Mathematical Aptitude can be assessed.
3. Standardized Mathematical Aptitude Test for secondary school students can be developed.

#### **NULL HYPOTHESES**

1. There is no significant difference in Mathematical Aptitude of IXth standard boys and girls.
2. There is no significant difference in Mathematical Aptitude of IXth standard students in urban and rural area.
3. There is no significant difference in Mathematical Aptitude of boys of IXth standard in urban and rural area.
4. There is no significant difference in Mathematical Aptitude of girls of IXth standard in urban and rural area.

#### **SCOPE OF THE STUDY**

1. This study is undertaken in Maharashtra State region.
2. This study involves secondary school students of both sex.
3. The study includes IXth and Xth standard students of Marathi medium Schools.

#### **DELIMITATIONS OF THE STUDY**

1. This study is delimited for IXth and Xth standard of secondary school student only.
2. This study is delimited in Secondary Marathi medium schools of Solapur District.
3. Mathematical Aptitude test was prepared in Marathi language by the Researcher.
4. The relationship between Mathematical Aptitude and achievement in Mathematics of the IXth standard secondary school student was measured.

#### **METHODOLOGY OF RESEARCH**

**METHOD:-** This present study is descriptive type research.

**SAMPLING :-** In probability sampling method stratified sampling is used for this study. There are two sampling method are used for this study one is for the Standardization of the Mathematical Aptitude Test and other for the collection of data for relationship between Mathematical Aptitude of Secondary school students and their Achievement in Mathematics subject. Selection of taluka was purposively selected and the selection of the boys and girls was done by lottery method.

#### **TOOLS OF DATA COLLECTION**

##### **Mathematical Aptitude Test**

Standardized Mathematical Aptitude Test for Secondary school students was be developed by the researcher as per the following steps

- a) Area of Mathematical Aptitude.
- b) Validity of the Mathematical Aptitude Test.

- c) Reliability of the Mathematical Aptitude Test
- d) Discrimination power of the Mathematical Aptitude Test
- e) Norms of the Mathematical Aptitude Test

#### PROCEDURE OF DATA COLLECTION

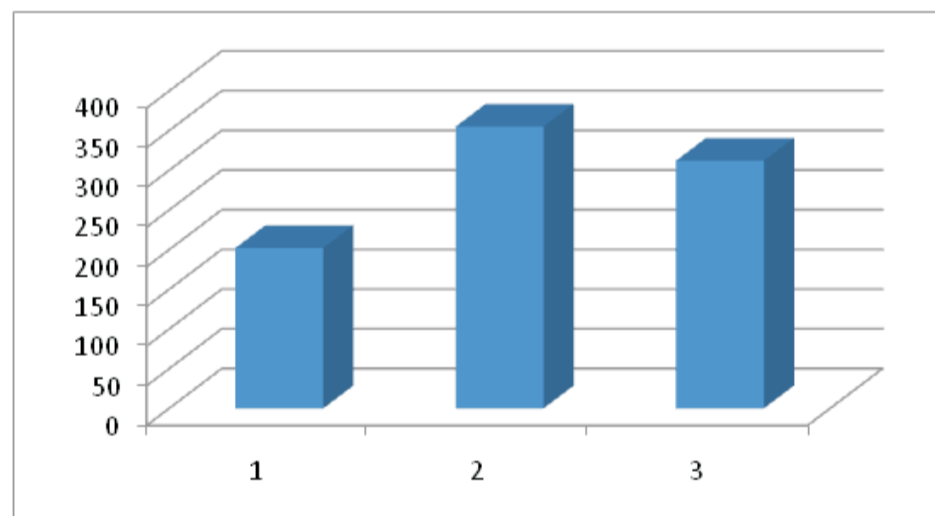
- 4. Objective No.1 of the study was to develop the standardized test of Mathematical Aptitude for secondary school students. For fulfilling this objective the procedure of standardization was followed.
- 5. Objective No.2 was to study Mathematical aptitude of secondary school students. To fulfilling this objective the data regarding the students studied in solapur district from two talukas (Barshi and Solapur)

#### ANALYSIS AND INTERPRETATION OF THE DATA

**Table No. 1: Mathematical Aptitude of IX<sup>th</sup> standard students**

Total No. of students	Level	No. of student as per level	Percentage
869	low (1 to 18)	202	23.24
	middle (19 to 32)	355	40.85
	high (33 to 50)	312	35.90

Graph No. 1: Level wise percentage of Mathematical Aptitude



**Observation :** It is observed from the Table No. 1 and Graph No.1 that about 202 (23.24%) IXth standard students have low level Mathematical Aptitude. About 355 (40.85%) IXth standard students have middle level Mathematical Aptitude. And about 312 (35.90%) IXth standard students have high level Mathematical Aptitude.

**Interpretation:** It is interpreted from the Table No. 1 and Graph No.1 that most of IXth standard students in Marathi medium school have middle level Mathematical Aptitude.

**Null Hypothesis : 1:-** There is no significant difference in Mathematical Aptitude of IXth standard boys and girls

**Table No. 2 : Mathematical Aptitude of IX<sup>th</sup> standard boys and girls**

Variables (Mathematical Aptitude)	Total No. of Students	Mean (M)	SD	Df	Mean difference	Calculated t value	Level of Significance	p Value
Boys	435	26.1	12.9	868	-2.021	-2.26	0.05	0.064
Girls	434	28.2	13.4					

Observation: It is observed from the above Table No. 2 that

- 1) The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard boys is 26.1 and SD is 12.9.
- 2) The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard girls is 28.2 and SD is 13.40.
- 3) There is difference between mean. This difference is tested by using 't' test.
- 4) The calculated 't' value is found to be -2.26 which is less than table value 1.96 at 0.05 level of significance for degree of freedom (df) 868.
- 5) So at 0.05 significance level the Null Hypothesis No. 1 is accepted.

Interpretation: Hence from the above it is interpreted from the above Table No. 2 that Mathematical Aptitude of IX<sup>th</sup> standard boys and girls of Marathi medium schools is not different.

Null Hypothesis : 2 :- There is no significant difference in Mathematical Aptitude of IX<sup>th</sup> standard students in urban and rural area.

**Table No. 3 : Mathematical Aptitude of IX<sup>th</sup> standard students in urban and rural area**

Variables (Mathematical Aptitude)	Total No. of Students	Mean (M)	SD	Df	Mean Difference	Calculated t value	Level of Significance	p value
Urban	435	28.3	13.6	868	2.237	2.50	0.05	0.013
Rural	434	26.0	12.8					

**Observation:** It is observed from the above Table No. 3 that

- 1) The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard students of urban area is 28.3 and SD is 13.6.
- 2) The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard students of rural area is 26.0 and SD is 12.8.
- 3) There is difference between mean. This difference is tested by using 't' test.
- 4) The calculated 't' value is found to be 2.50 which is greater than table value 1.96 at 0.05 level of significance for degree of freedom (df) 868.
- 5) So at 0.05 significance level the Null Hypothesis No. 2 is rejected.

Interpretation: Hence it is interpreted from the above Table No. 3 that Mathematical Aptitude of IX<sup>th</sup> standard Marathi medium students of urban and rural area is different.

**Null Hypothesis : 3 :-** There is no significant difference in Mathematical Aptitude of boys of IX<sup>th</sup> standard in urban and rural area.

**Table No. 4 : Mathematical Aptitude of IX<sup>th</sup> standard boys in urban and rural area**

Variables (Mathematical Aptitude)	Total No. of Students	Mean (M)	SD	Df	Mean Difference	Calculated t value	Level of Significance	P value
Urban	218	25.98	12.98	431	-0.21	1.99	0.05	0.019
Rural	217	26.19	12.87					

**Observation:** It is observed form the above Table No. 4 that

- 1)The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard boys of urban area is 25.98 and SD is 12.98.
  - 2) The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard boys of rural area is 26.19 and SD is 12.87.
  - 3)There is difference between mean. This difference is tested by using 't' test.
  - 4)the calculated 't' value is found to be 1.99 which is greater than table value 1.96 at 0.05 level of significance for degree of freedom (df) 868
  - 5)So at 0.05 significance level the Null Hypothesis No. 3 is rejected.
- Interpretation: Hence it is interpreted from the above Table No. 4 that Mathematical Aptitude of boys of IX<sup>th</sup> standard Marathi medium school in urban and rural area is different.

**Null Hypothesis : 4 :-** There is no significant difference in Mathematical Aptitude of girls of IX<sup>th</sup> standard in urban and rural area.

**Table No. 5 : Mathematical Aptitude of IX<sup>th</sup> standard girls in urban and rural area**

Variables (Mathematical Aptitude)	Total No. of Students	Mean (M)	SD	Df	Mean Difference	Calculated t value	Level of Significance	P value
Urban	217	29.58	13.97	430	3.19	1.97	0.05	0.014
Rural	217	26.38	13.03					

**Observation:** It is observed form the above Table No. 5 that

- 1)The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard girls of urban area is 29.58 and SD is 13.97.
  - 2) The mean value of score of Mathematical Aptitude of IX<sup>th</sup> standard girls of rural area is 26.38 and SD is 13.03.
  - 3)There is difference between mean. This difference is tested by using 't' test.
  - 4)the calculated 't' value is found to be 1.97 which is greater than table value 1.96 at 0.05 level of significance for degree of freedom (df) 430
  - 5)So at 0.05 significance level the Null Hypothesis No. 4 is rejected.
- Interpretation: Hence it is interpreted from the above Table No. 5 that Mathematical Aptitude of girls of IX<sup>th</sup> standard Marathi medium students in urban and rural area is different.

#### CONCLUSION OF THE STUDY

Conclusions have been drawn from the finding of the study keeping in the background of the sample. The sample as stated earlier is drawn from Solapur city.

The conclusions drawn from the finding of the study is presented as

Major objectives

Objective 1:-To develop a standardized test Mathematical Aptitude for secondary school students.

#### CONCLUSION:

- 1)Researcher through the present study, construct a standardized Mathematical Aptitude Test for secondary school students. This Mathematical Aptitude Test was developed as per the steps of standardization of



psychological testing.

2)With the help of item difficulty and discrimination power the item analysis of the test was taking placed.

3)The reliability of the Mathematical Aptitude Test was calculated by test-retest reliability. And at 0.91 the Mathematical Aptitude Test was reliable.

4)The predictive validity of Mathematical Aptitude Test was calculated. Validity of the test was calculated by the Multiple Regression equation.

5)The norms of the Mathematical Aptitude Test was developed by establishing the percentile norms.

The procedure of the standardization is in conformity with the studies of Swain, S.K. (1986), Shukla, D.S. (1987), Prakash, A. (1984), Kolhe, S.P. (1985).

**Objective 2:-**To study the Mathematical Aptitude of secondary school students.

#### CONCLUSION :

1)The Mathematical Aptitude of secondary school boys and girls is not different.

This conclusion is in conformity with study of Khatoon Fareeda (1988) in which his results show that, Mathematical Aptitude for boys and girls is not different.

2)The Mathematical Aptitude of urban and rural secondary school students is different.

The reason that could be attributed to this may be the students in rural area are weak in understanding the basic concepts in Mathematics subject.

#### MINOR OBJECTIVES

Objective 1:- To compare the Mathematical Aptitude of secondary school students sex wise

Conclusion : The Mathematical Aptitude of secondary school boys and girls is not different.

Objective 2:- To compare the Mathematical Aptitude of secondary school students area wise

Conclusion :Mathematical Aptitude of secondary school students of urban and rural area is different.

Objective 3:- To compare Mathematical Aptitude of boys of Secondary school students area wise

Conclusion :Mathematical Aptitude of boys of secondary school in urban and rural area is different.

Objective 4:- To compare Mathematical Aptitude of girls of Secondary school students area wise.

Conclusion :Mathematical Aptitude of girls of secondary school in urban and rural area is different.

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