

## **CHAPTER - IV**

### **ANALYSIS AND INTERPRETATION OF DATA**

- INTRODUCTION
- TABLES, OBSERVATIONS,  
INTERPRETATIONS AND GRAPHS
- ANALYSIS OF TEXT BOOKS
- RESULTS

## CHAPTER - IV

### ANALYSIS AND INTERPRETATION OF DATA

#### INTRODUCTION

The data collected for the dissertation was analysed and the same is presented in the tabular and graphical form, interpreted and results drawn in this chapter.

The present study deals with the critical study and the problems of slow-learners in mathematics of standard VIII and IX in Kolhapur city.

The researcher collected data from fifteen Highschools in Kolhapur city.

#### Table No. 2

**Table No. 2**

List of Schools, Number of Students tested for Group Intelligence  
Test and the Number of Slow Learners Identified in VIII Standards  
and in Mathematics

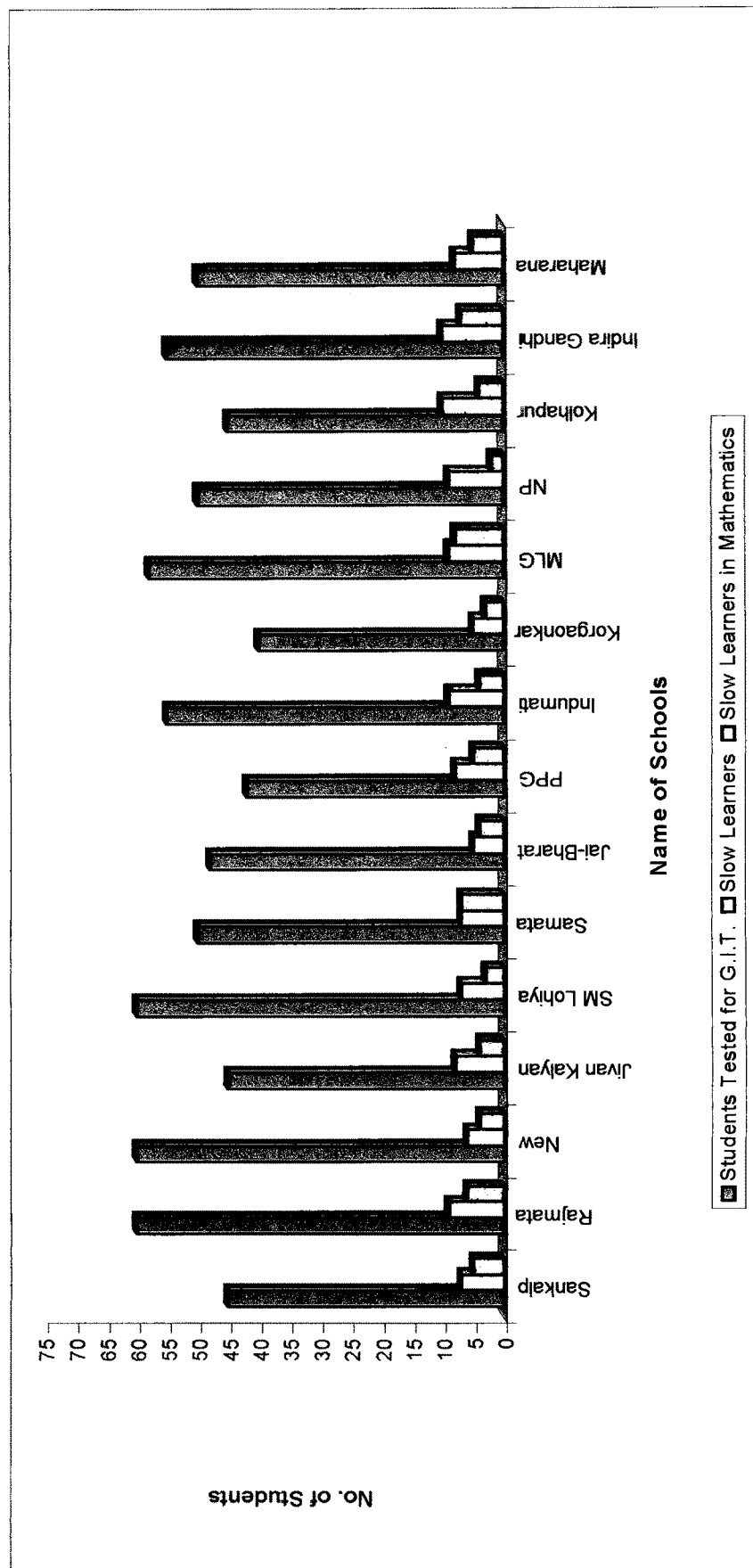
Sr. No.	Name of School	Students Tested for G.I.T.	Slow Learners	Slow Learners in Mathe- matics
1.	Sankalp Highschool	50	7	04
2.	Rajmata Jijabai Girls Highschool	60	9	05
3.	New Highschool	60	8	06
4.	Jivan Kalyan Highschool	40	8	04
5.	Sou S. M. Lohiya Highschool	60	6	02
6.	Samata Highschool	50	9	06
7.	Jai-Bharat Highschool	45	10	06
8.	Prin. Padmaraje Girls Highschool	55	10	04
9.	Indumati Girls Highschool	40	6	02
10.	Korgaonkar Highschool	65	7	05
11.	M.L.G. Highschool	50	6	03
12.	N.P. Highschool	48	8	04
13.	Kolhapur Highschool	60	11	08
14.	Indira Gandhi Vidyaniketan	50	6	06
15.	Maharana Pratap Highschool	45	6	04
	Total	778	117	69

### OBSERVATION

From the above Table, there are 8.86% slow learners in Mathematics in Std. VIII.

**Graph No. 1**

Students Tested for G.I.T. and Slow Learners Found and Slow Learners in Mathematics in Standard VIII in Various Schools



**Table No. 3**

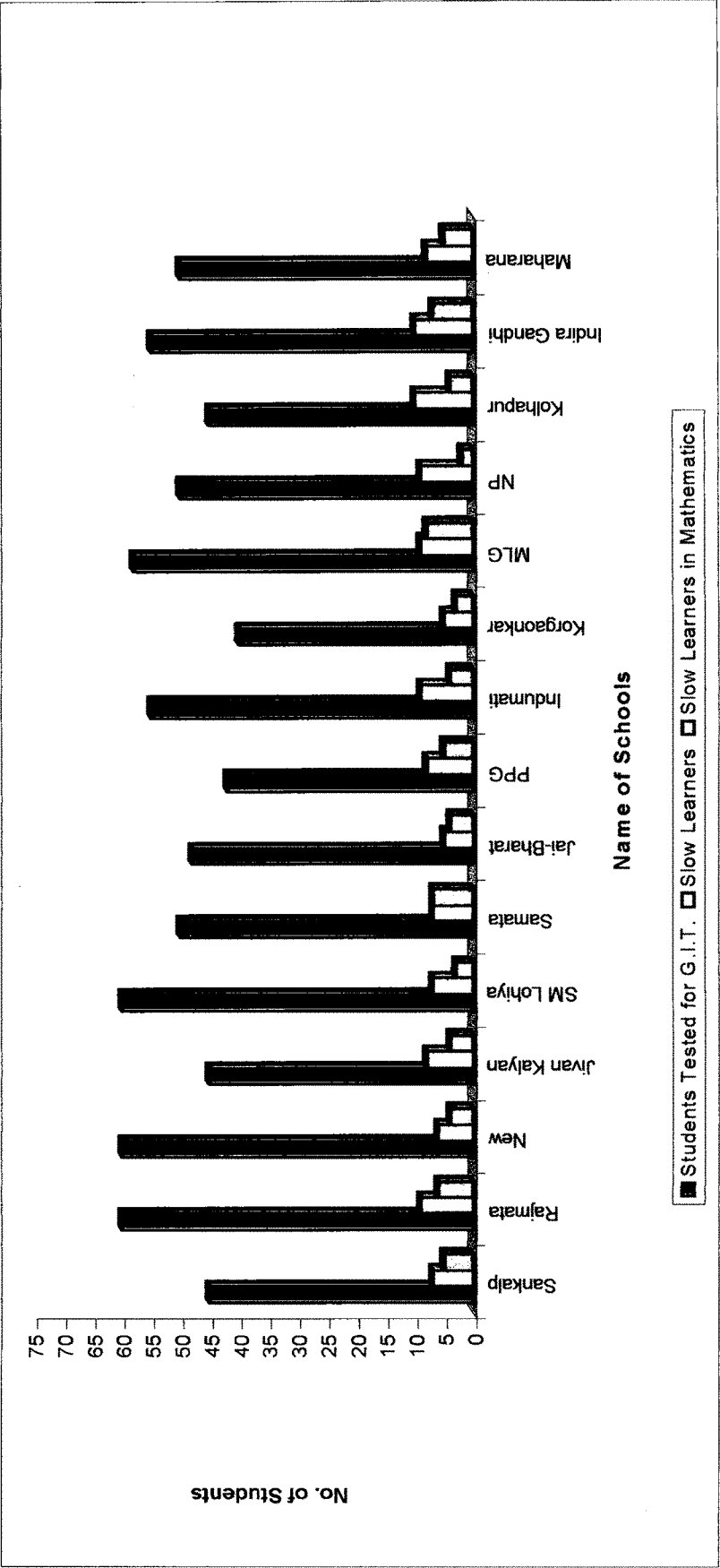
**List of Schools, Number of Students tested for Group Intelligence Test and the Number of Slow Learners Identified in IX Standards and in Mathematics**

Sr. No.	Name	Students Tested for G.I.T.	Slow Learners	Slow Learners in Mathematics
1.	Sankalp Highschool	45	7	05
2.	Rajmata Jijabai Girls Highschool	60	9	06
3.	New Highschool	60	6	04
4.	Jivan Kalyan Highschool	45	8	04
5.	Sou S. M. Lohiya Highschool	60	7	03
6.	Samata Highschool	50	7	07
7.	Jai-Bharat Highschool	48	5	04
8.	Prin. Padmaraje Girls Highschool	42	8	05
9.	Indumati Girls Highschool	55	9	04
10.	Korgaonkar Highschool	40	5	03
11.	M.L.G. Highschool	58	7	08
12.	N.P. Highschool	50	9	02
13.	Kolhapur Highschool	45	10	04
14.	Indira Gandhi Vidyaniketan	55	10	07
15.	Maharana Pratap Highschool	50	8	05
	<b>Total</b>	<b>763</b>	<b>115</b>	<b>71</b>

**OBSERVATION**

From above table, there are 9.30% of slow learners in Mathematic is Std. IX.

**Graph No. 2**  
**Students Tested for G.I.T. and Slow Learners Found in Mathematics in Standard IX in Various Schools**



The Group Intelligence Test was administered on 1541 students and from Std. VIII and IX and total 140 students were found slow learning in Mathematics i.e. 9.085%.

Then with the help of standardised questionnaire all the 140 slow-learners were interviewed.

The researcher classified and collected information regarding the problems of slow learners in four section, under 53 components.

Section A : Personal Information

Section B : Family Background

Section C : Information about School and School Environment

Section D : About Mathematics

**Table No. 4****Analysis of Personal Information of Slow Learners in Mathematics****Section A**

Sr. No.	Component	Total No. of slow learners (%)	%
1.	Backward class	91	65
2.	Pass in All subject in last annual examination	28	20
3.	Promoted in last annual examination	112	80
4.	Disabilities		
	i. Blind	Nil	Nil
	ii. Hearing handicapped	Nil	Nil
	iii. Physically handicapped	5	3.57
5.	Other activities		
	i. Reading	21	15
	ii. Writing	4	2.85
	iii. Drawing	7	5
	iv. Sports	15	10.17
	v. Acting	2	1.42
	vi. Music	2	1.42
	vii. T.V. Watching	84	60
	viii. Catering	3	2.14
6.	Desire for Higher Education	42	30

**Observation and Interpretation**

The table No. 4 shows the personal information of slow learners.

Most of slow learner (65%) comes from backward classes.

Maximum slow learners (80%) are promoted in last annual examination in Mathematics.

Only 3.57% slow learners are found physically handicapped and there are no blind and hearing handicapped students.

In case of other activities, maximum (60%) slow learners waste their time in TV watching and only 15% slow learner keep habit of reading and 2% slow learners have no other activities.

From personal information of slow learners it is seen that

- i. Maximum slow learners are from backward classes.
- ii. Maximum slow learners are promoted in last annual examination
- iii. Maximum slow learners waste their time in TV watching

**Table No. 5**

Analysis of Information about Family Background of Slow Learners

**Section B**

Sr. No.	Component	Number of Slow Learners	Percentage
1.	Home		
	1. Own home	33	23.57
	2. On rent home	107	76.42
2.	Home near		
	a. Industry	20	14.28
	b. Traffic	33	22.85
	c. Shop	18	12.85
3.	Facilities in Home		
	a. Table and chair	20	14.28
	b. Light	140	100
4.	Study at		
	a. Home	36	26
	b. In neighbouring house	32	22.85
	c. In study room	Nil	0

Contd.

Sr. No.	Component	Number of Slow Learners	Percentage
5.	Entertainment instrument		
	a. TV	84	60
	b. Radio	70	50
	c. CD player/ Taperecorder	3	2.14
	d. Music instrument	5	3.57
6.	Helps in study		
	a. Father/ Mother	15	10.71
	b. Brother/ Sister	20	14.28
	c. Grand father/ Mother	14	10
	d. No help in study	92	65.71
7.	Time spend on study		
	a. 1 Hour	20	14.28
	b. 2 Hour	9	7
	c. 3 Hour	2	1.42
	d. 4 Hour	Nil	0
	e. No time for study	Nil	0
8.	Nature of study		
	a. Reading text-book	32	22.85
	b. Exercise	17	12
9.	Time spend on Entertainment		
	a. No entertainment	7	5
	b. 1 Hour	14	10
	c. 2 Hour	18	12.85
	d. 3 Hour	36	26
	e. 4 Hour	79	56.42
10.	Working in		
	a. Home	13	9.28
	b. Outside	6	4.28
11.	How holiday spends		
	a. Go for work	6	5
	b. Study	4	3
	c. TV watching	93	65
	d. Playing	20	15
	e. Nothing	17	12

From the family background of slow learners it is seen that -

Maximum (76.42%) slow learners live in on rent home.

Maximum (14.28) slow learners live near industry or slums.

Some slow learners have basic facility like light in home (100%). But maximum slow learners (86%) have no facility of study space i.e. table and chair at their home.

As they have no study space at home, some of slow learners (22.85%) go for study at neighbours house and no one goes to study room.

About the entertainment facility it is seen that 60% slow learners have TV at their home. 50% have radio at their home and very few i.e. 3% have music instruments at their home and 7% slow learners have no entertainment facility at their home.

In case of slow learners, there are no helping hands in their study at home. 60% slow learners have no any type of help from family. 15% slow learners get help from their brother or sister and only 10% slow learners have help from their mother and father in their study.

Every student must have to spend some time on study every day. But in case of slow learners maximum (77%) slow learners do not spend time on study. Only 23% slow learners spend 1 to 3 hours on study every day.

As some of slow-learners i.e. (48.85%) spend 1 to 3 hours in study, the nature of study is reading textbook (22.85%), and they donot make any exercise.

Maximum (65%) slow learners spend their time on entertainment, mostly in watching TV.

Slow learner girls help their mother in kitchen and

Maximum ( 65%) slow learners spend their holiday in watching T.V. (15%) in playing, 3% in study and 5% go for work as they need to earn and 12% slow learners spend holiday without doing anything.

From the information regarding family background of slow learners it is seen that

The father and mother of maximum (68%) slow learners are illiterate or low literate and maximum slow learners i.e. (76%) come from lower economic class.

The economic backwardness may be one of the reason for their slow learning as their parents do not provide them facilities like study space and proper guidance in study.

As maximum (65%) slow learners spend their time in TV watching daily and in holiday also. Wastage of time in TV watching it maybe one reason for their slow learning.

**Table No. 6**

Analysis of Information about School and School Environment

**Section C**

Sr. No.	Component	No. of Slow Learners	Percentage
1.	Home to school distance		
	a. Nearby	91	65
	b. Far away	49	35
2.	Travel		
	a. Walking	63	45
	b. By bus	42	30
	c. By bicycle	35	25
3.	School timing		
	a. Morning	115	82.14
	b. After noon session	25	17.85
4.	School building		
	a. Very good	0	0
	b. Good	119	85
	c. Not good	21	15
5.	Classrooms		
	a. Very good	0	0
	b. Good	119	85
	c. Not good	21	15
6.	Subjectwise teacher		
	a. Available	126	90
	b. Not available	14	10
7.	Use of Teaching Aid		
	a. All teachers	0	0
	b. Very few	63	45
	c. No one	77	55
8.	Use of example in teaching		
	a. Sometime	42	30
	b. Frequently	63	45
	c. Never	35	25

Contd.

Sr. No.	Component	No. of Slow Learners	Percentage
9.	Personal guidance		
	a. Sometime	35	25
	b. Frequently	35	25
	c. Never	70	50
10.	Understanding		
	a. All	0	0
	b. Some	91	65
	c. Nothing	49	35
11.	Divisions on the basis of clearer and slow learners		
	Yes	0	0
	No	140	100
12.	Extra guidance for slow learners		
	Yes	42	30
	No	98	70
13.	Separate library in school		
	Yes	28	20
	No	112	80
14.	Separate play-ground		
	Yes	35	25
	No	105	75
15.	Which facility do you want		
	a. Study room		
	b. Personal guidance	112	80
		98	70

### OBSERVATION

From the above table information regarding school and school environment of slow learners it is seen that 65% slow learners live near the school and 35% slow learners live far away from school.

Taking into consideration how the student go to school, 45% slow learners go to school by walking, 35% by bus and 25% slow learners go to school by bicycle.

The school timing of maximum (83%) slow learners is in morning session and 17% slow learners school timing is in afternoon session.

School building and classrooms of maximum (85%) slow learners is good and only 15% slow learner have not a good school building and classroom.

Subjectwise teachers are available for maximum slow learners (90%).

Very few (45%) teachers use teaching aids at the time of teaching and 55% never use teaching aids; it is very serious thing.

Maximum (55%) of slow learners are away from personal guidance, 35% slow learners get personal guidance frequently and 10% of slow learners get time to time personal guidance from their teachers.

Taking into consideration the understanding of students, maximum (65%) slow learner understands do some part of teaching. 35% understand, nothing what they are learning and there is not a single slow learner who understand all part which is taught.

There is not a single school which had made divisions on the basis of Intelligence Quotient. All the students, average students and slow learners are treated equally.

There are only 20% schools have separate library facility and 25% schools have separate school ground.

Maximum (80%) slow learners hope for study room in school and (70%) slow learners hope for personal guidance from teachers.

**Table No. 7**

Analysis of Information about Mathematics subject

Sr. No.	Component	No. of slow learners	Percentage
1.	Basic mathematical operation		
	a. Addition	115	82.14
	b. Subtraction	95	67.85
	c. Multiplication	78	56
	d. Division	74	53
	e. Square	16	20
	f. Square root	15	10.71
2.	Mathematics is difficult subject from		
	a. Std. Ist	6	4
	b. Std. 4th	26	18
	c. Std. 7th	109	78
3.	Separate Maths teachers		
	a. Yes	28	20
	b. No	112	80

Contd.

Sr. No.	Component	No. of slow learners	Percentage
4.	Availability of reference book in library		
	a. Yes	Nil	0
	b. No	Nil	0
5.	Help in Mathematics learning at home		
	a. Father/ Mother	17	12
	b. Brother/ sister	11	8
	c Neighbour	18	13
	d. No help	94	67
6.	Private tuition for Maths.		
	a. Yes	28	20
	b. No	112	80

Maximum 83% of slow learners can do basic Mathematical operation like addition, 68% slow learners can perform subtraction, 56% slow learners can perform multiplication, 58% slow learners can do division and only 20% slow learners know how to square and just 10% know how to derive square root.

It means as difficulty level increases the percentage of performing that operation decreases.

Maximum (78%) slow learners says Mathematics is difficult subject from 7th standard, 18% says it is difficult from 4th std. And only 4% says it is difficult from 1st standard.

It means Mathematics is not difficult in early stage.

There are maximum 80% students have separate Maths teacher.

But maximum 90% slow learners have no availability of Reference Book.

Generally every student get help in his/ her study from home and society. But in case of slow learners maximum (67%) slow learners have no help in Mathematics learning from home.

Just 12% father and mother help the slow learners in their Mathematic learning, 8% Brother and sisters help them in Mathematics learning and 13% slow learners take help from neighbours.

**Expectation of slow learners from Government :**

1. To provide trained Maths teacher.
2. Separation of division on the basis of average student and slow learners.
3. Effective teaching for slow-learners.
4. For computer assisted learning, availability of computers and so special softwares for slow learners.

**Expectations of slow learners from School :**

1. Personal guidance from teacher
2. Use of teaching aids in teaching
3. Extra classes of Mathematics
4. Availability of study room
5. Availability of separate school library.

**Expectation of slow learner from Parents :**

1. To make availability of study space
2. Guidance and help in study of Mathematics
3. To provide them text books and guides.
4. Material like exercise books
5. Personal guidance of parents in holidays.

From the analysis of the data about Mathematics subject of slow learner - it is seen that :

Maximum (80%) slow learners are away from private tuitions, their economic condition may be cause for that and 20% slow learners go to private tuition of Maths.

**ANALYSIS OF TEXT BOOKS****Mathematics - Standard VIII**

Syllabus for Primary Education - 1988 was prepared on the basis of the National Policy on Education - 1986. And the new series of Mathematics textbook published serially for Std. I to VII. This textbook emphasis on simple language, child centred method, self study, achievement of minimum ability, enjoyable and interesting education. The exercises at the end of every teaching item are designed to provide additional practice and there is problem set at the end of every section.

Mathematics standard eight divides in four sections :

### **Section One**

This section involves 7 chapters :

1. Square and Square Rate
2. Indices
3. Symmetry
4. Area of a Triangle
5. Identities - Expansion
6. Equations with One Variable
7. Congruence of Triangles

In these chapters every chapter is based on previous chapter. The first chapter is important for the second chapter, like this every chapter is important.

### **Section : Two**

This section involves 7 chapters and one problem set, which have 19 examples for solving. Comparing to first section this section's difficulty level is high.

### **Section : Three**

This section involves 6 chapters and problem set, which have 17 problems. This section also involves one chapter which is based on great Indian Mathematician - Aryabhatt. the name of this chapter is 'Cube and Cube root'.

### **Section : Four**

This Section also involves 6 chapters. But in this section four chapters are difficult for the student. These chapters are 21, 24, 25, 26. the difficulty level of these chapters compare to other chapters is very hard for the student. This section also involves one problem set, which have 13 problems to solve. And also answers of all problem sets.

This textbook provides more examples for the practice. it is also base for the next standard, that is IX standard.

### **Section : Two**

1. Irrational Numbers, Real Numbers
2. Similarity
3. Constructing Quadrilaterals
4. Circle-Tangent
5. Area of a Quadrilateral
6. Identities - Factors
7. Simultaneous Equations

Problem Set - II

### **Section : Three**

1. Cube and Cube Root - A Great Indian Mathematician - Aryabhatt
2. Parallel Lines
3. Area of a Circle
4. Area of a Circle
5. Area of an Irregular Polygon
6. Division of Polynomials Problem Set - III

**Section : Four**

1. Compound Interest
2. Bank Transactions
3. Co-ordinate Geometry
4. Volume and Surface Area
5. Quadratic Equations
6. Statistic

Problem Set - IV

Answers

**Algebra - Standard IX**

This textbook based on National Curriculum Framework 2000 and revised National Curriculum Framework 2005 Maharashtra State Board of Secondary Education textbooks are expected to study the events in the past, compare them with the present and educate for the challenges of the future.

Alongwith the development of knowledge, acquisition of skills, abilities and thereby improve comprehension and application is given importance through a textbook. It is expected that through the subject Mathematics students should develop the skill of accuracy, logical sequencing, analytical skills, positive attitude and aesthetic sense. The textbook blends Mathematics required for professions as well as in the everyday life.

In this textbook 11 chapters are involved. In the end of every chapter there are some problems for the students. And the answers of that problems are in the end of this textbook.

1. Sets
2. Real Numbers
3. Surds
4. Factorisation of Algebraic Expressions
5. Polynomials
6. Ratio and Proportion
7. Linear Equations in one Variable and Graphs
8. Statistics
9. Percentage, Profit and Loss
10. Banking and Currency
11. Discount, rebate and Commission

Answers

Among these eleven units :

Chapter 5 - Polynomials

Chapter 7 - Linear equations in one variable and graphs

Chapter 8 - Statistics

are difficult.

### **Geometry : Standard IX**

This textbook is based on National Curriculum Framework 2000 and revised National Curriculum Framework 2005, Maharashtra State Board of Secondary and Higher Secondary Education.

The textbooks are prepared after serious consideration of the issues like life skills, training, awareness regarding vocations etc.

Textbook are expected to study the events in the past, compare them with the present and educate for the challenges of the future.

This textbook involved eight chapters :

1. Lines and Angles
2. Congruence of Triangles
3. Parallelogram
4. Circle
5. Construction of Triangles
6. Additional properties of Triangles
7. Trigonometry
8. Menstruation

Answers :

In the end of the every chapter, there are some problems in the end of the book answers are presented.

This textbook involves effective problems, the type and printing of this book is very nice and attractive.

## RESULTS

1. It is possible to find out slow learners in mathematics using standardized Group Intelligence Test and school record.
2. The problems of slow learners in Mathematics are :  
Difficulty level of some chapters in standard VIII and IX.
3. The problem of slow learners in Mathematics are :  
Lack of basic knowledge from standard 1st to standard 4th.
4. Poor economic condition of parents
5. Unavailability of study space at home.

6. Lack of educational environment in family.
7. Wastage of time in TV watching and sports.
8. Unavailability of guidance in study from family members.
9. Home to school large distance.
10. No use of teaching aids while teaching from school teachers.
11. Lack of personal guidance from teachers.
12. No separate divisions for slow learners.
13. Same teaching methods for average students and slow learners.
14. Unavailability of separate library in school.
15. They cannot perform basic mathematics like addition, subtraction, division, multiplication.
16. Fear in mind that Mathematics is a difficult subject.
17. There are no much more teaching aids in Mathematics teaching.
18. No extra guidance or extra classes of Mathematics in school.
19. Due to poor economic condition, slow learners cannot attend private coaching classes of Mathematics.
20. There is no any special provision and facility for slow learners in schools.
21. There are special needs of slow learners from family, from school, from teachers and these are not accomplished by them.

22. According to slow learners difficult chapters in standard VIII are Simultaneous Equations, Compound Interest, Volume and Surface Area, Quadratic Equations.
23. According to slow learners difficult chapters in standard IX are Polynomials, Factorisation of Algebraic Expressions, Linear Equations in One Variable and Graphs and difficult chapter in stand IX are Parallelogram, Circle and Additional Properties of Triangles.