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September 2013

Parental Involvement, Students' Achievement and Attitude in Mathematics

Leahni F. Sulabo

Philippine Normal University

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PARENTAL INVOLVEMENT, STUDENTS' ACHIEVEMENT AND ATTITUDE IN MATHEMATICS

**A Seminar Paper
Presented to the
Faculty of the College of Graduate Studies
Philippine Normal University
Manila**

**In Partial Fulfillment
of the Requirements for the Degree
Master of Arts in Teaching Mathematics**

**by
Leahni F. Sulabo
September 2013**

APPROVAL SHEET

This seminar paper entitled **"PARENTAL INVOLVEMENT, STUDENTS' ACHIEVEMENT AND ATTITUDE IN MATHEMATICS"** prepared and submitted by **LEAHNI F. SULABO** in partial fulfillment of the requirements for the degree, **MASTER OF ARTS IN TEACHING MATHEMATICS** has been examined and recommended for acceptance.

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A C K N O W L E D G M E N T

The researcher would like to express her sincerest gratitude and appreciation to the following:

To Dr. Rene R. Belecina, professor of Philippine Normal University, who served as research adviser, for his untiring support, patience, guidance, constructive comments and valuable suggestions to accomplish and complete the study;

To Dr. Elisa S. Baccay, professor of Philippine Normal University, for her time in serving as panelist;

To Mr. Samuel C. Bulan, principal of Bangkal High School, for his much-needed support and approval to conduct the study;

To Dr. Jose Rizal Sanchez, Dr. Peter Howard Obias and Dr. Jose Jr. M. Ocampo, professors of Philippine Normal University, for their precious time and expertise in validating the Parental Involvement Scale;

To her colleagues, especially to the Mathematics Department; for their generous assistance, valuable support, patience and understanding during the preparation of this study;

To the selected third year students of Bangkal High School and to their parents, for being the respondents; for the time shared and cooperation given to make this study possible and successful;

To her beloved family and friends, for their motivation, continuous support, kindness and prayers given that inspired the researcher to move forward;

And above all, The Almighty God, for the wisdom, strength and all the limitless blessings that He gave.

L.F.S.

DEDICATION

This paper is dedicated to all the people, who in the beginning of the task, have inspired and motivated me to complete this study.

This achievement is lovingly dedicated to all my family members who served as my inspiration and strength to accomplish this work.

For all the students and parents who appreciate parental involvement in the educational advancement of the learners, I devote this academic output to them.

I also dedicate this paper to all my friends and colleagues, who have given me valuable support, knowledge and ideas in accomplishing this task.

I would like also to dedicate this work to my professors and mentors for their immeasurable and priceless contributions.

Finally, this paper is dedicated to everyone who does not stop to learn and appreciate the matchless prize of education.

ABSTRACT

TITLE : Parental Involvement, Students' Achievement and Attitude in Mathematics

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DEGREE : Master of Arts in Teaching

SPECIALIZATION : Mathematics

KEY CONCEPTS : Parental Involvement
Students' Achievement
Attitude in Mathematics

ADVISER : Dr. Rene R. Belecina

The study aimed to describe parental involvement, students' achievement and attitude in Mathematics of third year high school students in Bangkal High School, Makati City during the school year 2012-2013. The descriptive-correlational research design was employed in this study. Seventy-three third year high school students and their parents were the respondents. Three research instruments were utilized in the study. These are the Parental

Involvement Scale, the Mathematics Attitude Scale, and the Mathematics Achievement Test.

It was found out that most of the students have below average achievement in mathematics. However, it was noted that they have a moderately positive attitude in mathematics.

On the other hand, perceptions of parents and students on parental involvement showed that there was a significant relationship between their perspectives. Most of parents and students who served as respondents perceived that parents are occasionally or moderately involved in schoolwork and class work. But they believed that parents are regularly or highly involved in the provision of resource materials related to mathematics learning and the giving of parental guidance to their children.

The results of the study revealed that parental involvement is significantly related to students' mathematics achievement and attitude. Moreover, a significant relationship was established between students' mathematics achievement and attitude in mathematics.

TABLE OF CONTENTS

	Page
Title Page	I
Approval Sheet	Ii
Acknowledgment	Iii
Abstract	Vi
Table of Contents	Viii
List of Tables	Xi
List of Appendices	Xiii
List of Figures	Xiv
 Chapter	 Page

I. THE PROBLEM AND ITS BACKGROUND	1
Introduction	1
Conceptual Framework	5
Statement of the Problem	10
Scope and Delimitation	12
Significance of the Study	13
Definition of Terms	15
 II. REVIEW OF RELATED LITERATURE	 19
Importance of Parental Involvement	19
Parental Involvement and Students'	
Achievement	23

Parental Involvement and Students'	
Attitude in Mathematics	25
Involvement with the Students	
and for Their School	28
.	
Basic Responsibility of	
Mathematics Teacher	30
Synthesis	33
III. RESEARCH METHODOLOGY	37
Research Design	37
Participants of the Study	38
Research Instruments	40
Data Gathering Procedure	48
Data Analysis Procedure	50

IV. PRESENTATION, ANALYSIS AND

INTERPRETATION OF DATA 52

Research Question # 1 52

Research Question # 2 56

Research Question # 3 68

Research Question # 4 70

Research Question # 5 72

V. SUMMARY OF FINDINGS, CONCLUSIONS

AND RECOMMENDATIONS 74

Summary of Findings 74

Findings 75

Conclusions 76

Recommendations 77

BIBLIOGRAPHY	79
APPENDICES	84

LIST OF TABLES

Table		Page
1	Sample Distribution of Third Year High School Students in Bangkal High School, Makati City	39
2	The Interpretation of the Parental Involvement Scale in Each Category	42
3	The Interpretation of the Mathematics Attitude Scale in the Positive and	
4	Level of Achievement of the Students in Mathematics	52
5	Students' Attitude in Mathematics	55
6	Level of Parental Involvement in School Work as Perceived by the Respondents.	57

7	Level of Parental Involvement in Class Work as Perceived by the Respondents . . .	60
8	Level of Parental Involvement in Provision of Resource Materials Related to Mathematics Learning as Perceived by the Respondents	63
9	Level of Parental Involvement in. Parental Guidance and Support as Perceived by the Respondents	66
10	Summary of Parental Involvement as Perceived by the Respondents	68
11	Correlation Between the Perceptions of Parents and Students on Parental Involvement	69
12	Correlation of Parental Involvement on Mathematics Achievement and Attitude in Mathematics	70

13	Correlation Between Students' Mathematics Achievement and Their Attitudes in Mathematics
----	--

73

LIST OF APPENDICES

Appendix		Page
A	Letter to the Validators	84
B	Letter to the Principal	85
C	Sample Questionnaire on Parental Involvement as Perceived by Student	86
D	Sample Questionnaire on Parental Involvement as Perceived by Parent	92
E	Test Result on Division Achievement Test in Mathematics of Student Respondents	96
F	SPSS Output on Students Attitude in Mathematics	97

G	Summary on Students' Attitude in Mathematics	98
H	SPSS Output on Students' Perception on Parental Involvement	100
I	SPSS Output on Parents' Perception on Parental Involvement	102
J	Summary on Parental Involvement as Perceived by the Respondents	104
K	SPSS Output for Correlation and T-test	107
L	Achievement Test in Mathematics III	108

LIST OF FIGURE

Figure		Page
1	Conceptual Paradigm	9

CHAPTER I

The Problem and Its Background

Introduction

Observations reveal that some students lack the necessary interest in mathematics. An early and persistent belief that mathematics is a tedious subject creates among students the tendency to immediately dislike it. Some of them believe that they are not basically good in numbers, thereby losing the necessary confidence in solving problems and exercises that involve numbers. These common negative attitudes of students result into poor overall performance in mathematics all throughout their academic years.

School administrators, teachers and mentors have ventured to find solutions to address the foregoing concerns but have made small gains in doing so. The concept of involving parents in the growing concern for students' performance in mathematics came into view. Parents exert a potential influence in changing the negative attitude of their child towards the subject. Aside from the mathematics teacher, parents can provide valuable encouragement and

assistance to help explain the relevance of mathematics subject as the child advances in his/her studies.

Parental involvement in a child's learning is positively related to his/her achievement. The first teachers of our children are the adults in the home where the children learn attitudes and values that are engraved in them for the rest of their lives. When the family as a whole, participate in the child's education in positive ways, this will result to noticeable changes and marked improvements in his or her test scores, attendance records, quality of works, attitudes and behavior, graduation rates, and the increased number of enrolment in higher education. The level of parental involvement is often questioned by the parents; however research suggests that more intensive parents' involvement in their children's learning means more beneficial effects in the child's achievement (Berger, 1995).

In spite of their hectic time in work or at home, parents could help their children in coping with the difficulties and challenges in mathematics subject by showing them constant support and guidance and giving them

an access to mathematics resource materials and managing to afford a quality scheduled time for mathematics assignments, review and other exercises. Parenting is a round-the-clock job. One important parenting demand is spending precious time with the children, despite domestic and work-related pressures. High pupil achievement and self-esteem are closely related to positive parental participation in education. Parents are the children's first and most important teachers who have important knowledge about their likes and dislikes, needs and problems that the school may not be aware (Sinalo, 2001). The home is the cradle of learning and nourishment; thus, parents know their children's strengths and weaknesses and may have brilliant ideas on how to improve their learning styles and academic performance.

Quality time spent by the parents with the child could lead to dealing with doubts and uncertainties regarding the subject. Parcel (2012) said that parents need to be aware of how important they are, and invest time in their children - checking homework, attending school events and letting kids know school is important. The result of their research revealed that students with high family social

capital and low school social capital generally had better grades than students with high school social capital but low family social capital. In other words, while both school and family involvement are important, the role of family involvement is stronger when it comes to academic success, Parcel said in a statement.

Indeed, having positive attitude in learning mathematics subject by the student is not only the responsibility of every mathematics teacher. Parents should also express their commitment and show active participation in the school and with the teacher and the student. According to Keith, et. al. (1993) as cited in Vilbar (2005), parental involvement includes parents' expectations of school performance, verbal encouragement or interactions regarding school works, direct reinforcement of improved academic performance, general academic guidance and students' perceptions of the parents influence. By having this involvement, parents are also helping their child to solve the negative attitudes and to display a better performance in mathematics subject.

Premised on the foregoing discussion, this study tried to find out the influence of parental involvement on student's academic achievement and attitude in mathematics.

Conceptual Framework

Parents can exert a potential influence in changing the negative attitude of their child towards the subject. Aside from the mathematics teacher, parents can provide valuable encouragement and assistance to help explain the relevance of mathematics subject as the child advances in his/her studies.

According to Goldberg (1997), parents are the most important influence in the child's education. They have the key role in the success of their children. They should not consider the school as a mere structure where children learn ideas all by themselves with the aid of teachers. It simply tells that parents are the most influential persons in the academic life of the students. They could dramatically influence their children to improve their academic performance and to have positive attitudes towards the subject.

Lev Vygotsky (1978) cited by Saul McLeod (2007), stressed the fundamental role of social interaction in the development of cognition. Vygotsky believed strongly that community plays a central role in the process of "making meaning" where the young children are curious and actively involved in their own learning for the discovery and development of new understandings/schema. Social influence on cognitive development occurs through social interaction with a skillful tutor. The tutor may model behaviors and/or provide verbal instructions for the child. Vygotsky refers to this as co-operative or collaborative dialogue. The child seeks to understand the actions or instructions provided by the tutor (often the parent or teacher) then internalized the information, using it to guide or regulate his or her own performance. Adults act as mentors and teachers, leading the child into zone of "proximal development". Vygotsky used the term of proximal development to describe the range of skills that the child cannot perform unaided but can master with adult assistance. The fundamental role of social interaction in the development of cognition was also described by Ermituno (2009), cites that children have developed skills with the

aid of adults especially with parents. A parent may encourage simple number concepts, for example, by counting beads with the child or measuring cooking ingredients together, filling in the numbers that the child cannot remember. As children participate in such experiences daily with parents, teachers, and others, they gradually learn the culture's practices, skills and values.

Albert Bandura (1991) about self-efficacy discussed by Ananda (2006), discussed that people decide on how to behave based more on their belief in their own capabilities of accomplishment rather than in their knowledge or skills. Bandura identifies four main sources of self-efficacy, two of which involve parents, the observation of models similar to the individual who are achieving success (vicarious learning) and verbal encouragement provided by others (social persuasion). Parents could be a good source of self-efficacy to their children.

Maslow's (1943) about hierarchy of needs described by Giray (2008) is also used to guide this study. It contends that as humans meet "basic needs", they seek to satisfy successively "higher needs". It is often represented as a

pyramid consisting of five levels with the more primitive needs at the bottom. In this study, it focuses on the third layer about love/belonging/social needs. This layer involves emotionally-based relationships such as friendship and underscores a supportive and communicative family.

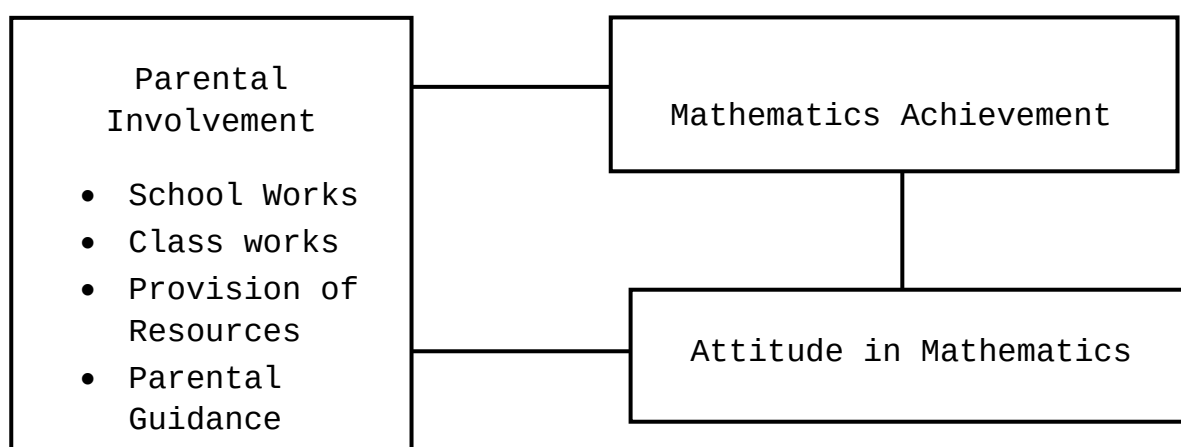
Furthermore, the research shows that the more intensively parents are involved in their children's academic learning, the more helpful it is in the achievement and development of positive attitudes in the subject.

This study sought to determine how parental involvement in the student's work influences the student's academic achievement and attitudes in mathematics subject. Student outcomes in mathematics achievement and mathematics attitudes could be also correlated to this study. Parental involvement in this research denotes involvement in class/school activities and the significance of providing an access for resource materials related to mathematics learning, guidance and support for their child's schoolwork.

Mathematics achievement as referred to in this study could be measured in terms of the students' performance in achievement test in mathematics. Attitudes of students in mathematics subject could be described using twenty (20) statements, with ten (10) positively oriented statements and ten (10) negatively oriented statements. Statements about positive attitudes of students in mathematics were described in terms of the beliefs that it is a fun subject and one in which a student can be comfortable and secure with it, liking the subject for it is not boring but an interesting and enjoyable one, mathematics is a worthwhile subject that could generate active participation among the learners. The ten (10) negative statements were described as having an attitude of being not interested in the subject, unable to think clearly when working with numbers that make it least enjoyable and boring, the feeling of being insecure in the subject, lack of confidence in solving number problems and only appreciate mathematics if it is not so hard or difficult for the students.

The conceptual framework showing the relationship among variables in the study is shown in Figure 1. In the diagram, "parental involvement" acts as the independent

variable. It presents the idea that parental involvement is a factor that directly influences students' attitude in mathematics and the students' scores in mathematics achievement test. The dependent variables with respect to the independent variable "parental involvement" are the "scores in mathematics achievement test" and "students' attitudes in mathematics".



**Conceptual Paradigm
Figure 1**

Statement of the Problem

The study aimed to describe parental involvement, students' achievement and attitude in mathematics among third year high school students in Bangkal High School, Makati City.

Specifically, it sought to answer the following questions:

1. How can students be described in terms of the following?
 - 1.1 Mathematics achievement
 - 1.2 Attitude in mathematics
2. What is the level of parental involvement as perceived by the students and parents in terms of the following?
 - 2.1 school work
 - 2.2 class work
 - 2.3 provision of resource materials related to mathematics learning
 - 2.4 parental guidance and support
3. Is there a significant relationship between the perceptions of the students and parents on the level of parental involvement?
4. Is there a significant relationship between parental involvement and the following variables?
 - 4.1 Mathematics achievement
 - 4.2 Attitude in mathematics

5. How do students' mathematics achievement relate to their attitude in mathematics?

Hypotheses of the Study

The following hypotheses were tested in this study.

1. There is no significant relationship between parental involvement and the following:
 - a. Mathematics achievement
 - b. Attitude in mathematics
2. There is no significant relationship between mathematics achievement of students and attitude in mathematics.

Scope and Delimitation of the Study

This study focused mainly on the relationship between parental involvement and the students' mathematics achievement and also the attitude towards mathematics among third year high school students of Bangkal High School for school year 2012-2013.

Eighty-four (84) parents and eighty-four (84) third year high school students were the respondents of this study. Parental involvement was delimited to their involvement in class/school activities, provision of an access for resource materials related to mathematics learning, guidance and support for their child's schoolwork. The scores in mathematics achievement test of the students-respondents were used in this study. Indicators of Mathematics attitudes of the students were delimited using twenty (20) statements with ten (10) positively-oriented statements and ten (10) negatively-oriented statements.

Significance of the Study

This is beneficial to the following sectors in education:

- **Administrators.** The results of this study will give information to the administrators about parents' involvement and support for improvement of students' achievement and attitude in mathematics. It may encourage them to develop a teaching-parenting program

to strengthen parents' involvement in their children's educational activities.

- **Teachers.** This study will help mathematics teachers to reflect on their classroom practices and strategies. This will provide an insight that they can use to help their students achieve better in mathematics subject by regularly communicating their students' progress and attitude to parents. They may recommend activities that will enable parents to be more involved in the betterment of their children's achievement and attitude in mathematics.
- **Parents.** The results of this study will help increase parents' awareness that as partners of the school in the educational progress of their children, they too, have a great role to play in improving their children's achievement and attitude in mathematics. Parents will be enlightened of their duties and responsibilities toward their children.
- **Students.** The students will be the direct beneficiaries of the findings of this study. They are the ultimate recipients and benefactors of the program

about strengthening parents' involvement in their educational activities. The results of this study will motivate and inspire students to appreciate their parents' involvement in their education.

- **Researcher.** This will provide an insight on how parental involvement is directly related to mathematics achievement and attitude. This may also provide the researcher benchmark data, which may be valuable to his/her studies.

Definition of Terms

The following terms which are consistently used throughout this study are defined conceptually and operationally to help the readers understand this study.

- **Attitude in Mathematics.** Refers to the favorable or unfavorable reactions of student in mathematics (Tabajonda, 2006). In this study, it refers to students' positive and negative attitude in mathematics.
- **Class Work.** Class work refers to the work done jointly in a classroom by the students and teachers

(www.thefreedictionary.com/classwork). In this study, it refers to parents' involvement in mathematics subject of their children such as helping them in answering their assignments and projects, personally conferring when called upon by teacher and doing follow-up with teacher regarding their children's progress and behavior.

- **Mathematics Achievement.** This refers to the degree of mastery skills, fundamental concepts, processes and general knowledge in mathematics (Lucero, 1999). In this study, it refers to the students' mathematics score in the Division Achievement Test.
- **Parent.** Parent refers to the father or mother; somebody's mother, father or legal guardian (Ermituno, 2009). In this study, parent refers to the father, mother or legal guardian of third year high school students at Bangkal High School, Makati City during the school year 2012-2013, who are responsible for their care and upbringing.
- **Parental Guidance.** Parental guidance is the part of the parent in helping their child in dealing with lots

of issues by giving their constant guidance and support (Sangeeta Sanjay Chaubal, 2011). In this study, parental guidance refers to the characteristics of the parents by giving advice, encouragement, appreciation and helping their children to have good study habits and develop self confidence in solving number problems.

- **Parental Involvement.** Parental involvement refers to the interaction between parents and their children's schoolwork. It includes parents' expectations of school performance, verbal encouragement or interactions regarding school works, direct reinforcement of improved academic performance, general academic guidance and students' perceptions of the parents' influence (Vilbar, 2005). In this study, it refers to the interaction between parents and their children's academic work such as their participation in school and class activities, provision of learning resources at home and the guidance they can extend to their children.

- **Provision of Resources.** Provision of resources in mathematics learning is the part of the parent in supplying all the materials needed by their children. In this study, provision of resources refers to the characteristics of parents and their commitment to show support by providing enough allowance and sufficient materials like books, notebooks, pen, papers, foods, medicines and equipment like computer and calculator that are needed by their children in learning mathematics subject.
- **School Work.** School work refers to the contacts between parents and the school. These contacts may be formal or informal, programmed or instructed, regular or irregular (Castañeda,1997). In this study, school work refers to the school activities sponsored by school such as PTA meetings; fund drive; outreach programs; field trips; school projects; compliance with the policies of the school in terms of payment of fees and other school obligations; conferences and work assigned by a teacher or other school officials.

CHAPTER II

Review of Related Literature

This chapter deals with a review of some related literature and studies relevant to the study. The review of studies on parental involvement, students' achievement and attitude in mathematics have opened an avenue of understanding that would lead to the solution of the problems set in the study.

Importance of Parental Involvement

Lagdameo (2002) stated that parents must accept and recognize their parental duties and role in the raising of their children. Parenting is a vocation that we will carry for as long as there is life in us.

Nolledo (1990) cited in his book, The Education Act of 1982 Annotated, that the state shall aid and support the natural right and duty of parents in rearing the youth through the educational system, promote and safeguard the welfare and interest of the students by defining their rights and obligations, according their privileges, and encountering the establishment of sound relationships

between them and other members of the school community, promote the social, economic status of all school personnel, uphold their rights, define their obligations and improve their living and working conditions and career prospects; extend support to promote viability of those institutions through which parents, students and school personnel seek to attain their educational goal.

Leler (1998) cited in Giray study (2008), that it is worth noting that research reveals many benefits for school systems and for parents themselves when parents become involved in their children's learning. School personnel benefit from the improved rapport that generally accompanies increased parental involvement. This rapport is often expressed in parent's willingness to support schools with their labor and resources during fund raising activities or special projects. And certainly, the many ways in which parental involvement benefits students' achievement, attitudes and behavior have a positive impact on school staff. The research also reveals that improved parent attitudes toward the school and improved parent self-concepts characteristically result when parents become involved in their children's learning. Parents often begin

their participation wondering whether or not their involvement can make much difference, and they are generally very gratified to discover what an important contribution they are able to make. In this connection, it is important for school people and parents to be aware that parent involvement supports students' learning, behavior and attitudes regardless of factors such as parents' income, educational level, and whether or not parents are employed. That is, the involvement of parents who are well-educated, well-to-do, or have larger amounts of time to be involved has not been shown to be more beneficial than the involvement of less advantaged parents. All parent involvement works and works well.

According to Sangeeta Sanjay Chaubal (2011), parents' involvement in their children's education is definitely important. It creates a big difference in their children's performance and academic evaluation. Parents are known to be the role models for kids. Kids also look after their parents as a guide, a source and an important advisor. Parents can help their children deal with lots of issues through their constant guidance and support. Parents actively involved in their children's physical development,

growth, feeding and overall health concerns. The same involvement should be applied to their child's academic development. If a parent successfully allots a specified time every day to his child's studies, then the child is definitely going to score better. Education is not just related to academic performance but also to various other arenas which include overall development of a child, extracurricular activity, sports, physical education and mental education. If parents successfully and actively involve them in these arenas, they would help their children grow and develop into better persons. A parent's involvement can be an accelerating factor for a child's development. His / her academic performance will improve and so would be his/her confidence in various other aspects of life.

The committee on Education (EDCOM), according to Juan Ponce Enrile (1991) strongly endorses family involvement in education as a matter of state policy, assigning them distinct roles in planning and decision making in the barangay up to the higher levels. EDCOM believes that the revitalization of the PTA is imperative so they can serve as venues for consultation on pressing problems that

confront the youth today, such as drug addiction and sexual exploitation.

Parental Involvement and Students' Achievement

Smith and Hausafus as cited in the study of Lucero (1999), found out that students have higher test scores if parents help them see the importance of taking advance science and mathematics courses, emphasize the importance of mathematics in today's careers, set limits , visit science/math exhibits and fairs with their child.

Sagay(1993) expressed that parental attitudes have strong impact not only in a family relationship but also in the child's learning achievement. Many educators assume that environmental factors especially of the home do play a large role in the child's assimilation of a set of values regarding education and successful performance.

According to Fehrmann, et. al. (1987), as cited in Arzagon study (1997), increased parental involvement contributes to higher grades. Parents may help their high school children achieve higher grade through monitoring the children's daily activities.

Shaffer (1999) states that over the years researcher have identified three especially potent home influences on children's mastery/achievement motivation and actual achievement behavior. First, is the quality of the child's attachments. Children apparently need the secure base provided by loving, responsive parents to feel comfortable about taking risks and seeking challenges. Second, is the character of the home environment. The child's tendency to explore, acquire new skills and solve problems also depends as the kind of challenges the home environment provides. Third, are the child rearing practices that parents use, which can either foster or inhibit a child's will to achieve.

According to Castillon as cited by Peralta (2011) study, parents' responsive behaviors and encouragement are strongly correlated to the academic achievement of the pupils. She identified specific behavior patterns of parents that were very helpful in the cognitive development of the children. There had to be communication and emotional connection, direct participation, and motivation from parents.

In the study of Lucero (1999), she found out that there was a significant relationship between grade V pupils' achievement in mathematics and their attitudes towards mathematics.

Parental Involvement and Students' Attitude in Mathematics

According to Aquino and Razon (1993), attitudes are acquired. A child is not born with a set of attitudes toward his environment. The individual develops a generalized pattern of response which we call an attitude. One startling, unusual or traumatic experience can influence an individual's attitude for the rest of his life. Other attitudes are built up over a period of time; the individual has a new experience and integrates them into ways of thinking and feeling. The process of acquiring an attitude, such as positive attitudes towards school, is complex. A pleasant school environment may or may not offset the influence of a parent who continually rewards expressions of his own negative school attitude.

Bustos and Espiritu (1996), declares that the experiences which an individual acquires in his contact with his physical and social environment at home and in the

community causes him to be different in his attitude towards learning and in his demonstrated environment. They also stated that the learning experiences in which a child engages or has engaged in his home or in the neighborhood environment influence his interest, his attitude towards school, and his habits of cooperation or non-cooperation.

George and Kaplan as cited in the study of Lucero (1999), provide concrete empirical evidence that parents play a very important role in the development of attitudes of students.

Tamayao (2006) stated that parents are always the most influential of all factors in a child's development. Often, parents are in hurry to see development in their children. Sometimes, they unwittingly force their children to learn things they are not yet capable of comprehending. If a child is suffering from "math disorder", it helps that he is stimulated to learn some basic concepts in counting through play and leisure at home. Parents can stimulate their children by playing with them. While playing, they can incorporate and teach their children some basic math concepts that they can learn. Parents who don't recognize

the innate problem in their child often blame other factors such as the schools, the teachers, the curriculum, the teaching methodologies and a whole lot more. The child is perceived as a burden by the parents. Other siblings mock him. Parents should be aware of these things and must always be on guard not to put more pressure on their child.

Hindi A. M. Hammouri (2004) as cited in Monticado (2006) study, discussed that Bandura also found out that student's positive attitudes toward learning have a great impact on their motivation, thus enhancing their academic achievement. Fraser and Butts also found out little correlation between achievement and attitudes while Arnold noted pupils' positive attitudes towards mathematics with their performance, whereas, Klas found different effects of attitudes towards mathematics in different countries. Jarwan discovered a positive attitude towards mathematics in different countries. Jarwan found out that a positive attitude towards mathematics was a highly significant factor in determining mathematics achievement of Jordanian 8th graders.

Involvement with the Students and for their Schools

Albano makes the following observations as cited in the study of Castaneda (1997), "the school plays an important role in motivating parents to be involved with their child's school affairs. The contacts between parents and the schools do not end after the child is enrolled and the tuition fees are paid. Parents have at their disposal varied opportunities to get better acquainted with the school. These contacts maybe formal or informal, programmed or instructed, regular or irregular. Regardless of the frequency, manner, or nature of these contacts, parents are aware of what is going on in the school even if only through what is reported to them. As the child stays longer in the school, the parents correspondingly acquire greater knowledge about the school".

According to Lunsteen and Tarrow as cited in Vilbar (2005) study, they discussed that volunteering is the participation and support of parents in planning projects and programs that will benefit the students in school. The variety of jobs that a volunteer can perform is extensive. Some of the vulnerable ways the parents and community

members can assist the educational process are as follows: tutoring sub-teaching task; clerical and housekeeping tasks; preparation of instructional materials and advisory committees.

Villaflor (1993) suggested some practical steps for the parents to help the children to become successful in school.

1. Praise their achievements and make them feel good about a work well done.
2. Show to the children that education is important. Talk to them about their classes, assignments and school activities.
3. Make sure they do their homework. Help them where they need it, but don't do it for them.
4. Don't over react to a bad report card.
5. Get to know the children's teacher.
6. Encourage the children to master the basic skills on the 3R's.
7. Make sure children get enough playtime and recreation, but keep extracurricular activities in balance so that grades and academic learning won't suffer.

Basic Responsibility of Mathematics Teacher

Posamentier and Jaye(2006) give some suggestions on how mathematics teachers should reach out to parents to enhance their involvement and develop a partnership for their children's education. They observe that many parents are unaware that they have the ability to have an impact on their children's education even if they are not well educated themselves. According to them, teachers can explain and illustrate for parents how a parent can function as an educational manager and/or teacher. Some examples of the ways a parent can act as a manager are given below:

- Provide a favorable time, quiet place, and adequate light for studying. Help the child determine the best time and place to work.
- Each night ask if there is a homework assignment and look to it when it has been completed.
- Each night ask about what happened in school.
- Have a dictionary accessible and encourage the child to use it.

- Find out when tests are to be given and make sure the child has a good night's sleep and breakfast during the test.
- Visit the school to discuss the child's progress and to find out what can be done at home.
- Communicate positive attitudes and expectations about the child's school performance.
- Avoid letting a child's household responsibilities assume more importance than school work. Teachers can prepare a handout for parents so they have some idea about what they can do at home to support this partnership.

Cotton and Wikelund (1989) tells that research has established that the most successful parent participation efforts are those which offer parents a variety of roles in the context of a well-organized and long-lasting program. Parents will need to be able to choose from a range of activities which accommodate different schedules, preferences, and capabilities. As part of the planning process, teachers and administrators will need to assess their own readiness for involving parents and determine how they wish to engage and utilize them.

Some of the guidelines include:

- Communicate to parents that their involvement and support makes a great deal of difference in their children's school performance, and that they need not be highly educated or have large amounts of free time for their involvement to be beneficial. Make this point repeatedly.
- Develop parent involvement programs that include a focus on parent involvement in instruction--conducting learning activities with children in the home, assisting with homework, and monitoring and encouraging the learning activities of older students
- Give parents a voice in decisions. Parents' viewpoints should be considered in making decisions about their children's schooling. Programs can open options for families to become involved individually and collectively in making decisions about goals and standards for their children.
- Plan ahead for parent/teacher conferences. Communicate to parents at the beginning of the school year or semester about school policies and services. Inform

them about classroom goals and give a few examples of what the children will be learning.

- Foster good communication during parent/teacher conferences. When meeting with family members, create a comfortable environment in which parents feel free to share information, ask questions, and make recommendations. Point out the projects that involved their child and share information in a way that encourages respectful two-way communication. Be careful not to make assumptions about a family member's level of knowledge, understanding, or interest. Schedule an adequate amount of time for the conference so that parents do not feel rushed.

Synthesis

The foregoing literature provided a concrete background and solid bases for pursuing this study. The studies laid down evidences concerning relationships of parental involvement in students' achievement and attitudes in mathematics.

The importance of parental involvement was underscored in the literatures of Lagdameo (2002), Nolledo (1990),

Leler (1998) as cited in Giray (2008), Sangeeta Sanjay Chaubal (2011) and Enrile (1991). Of those literatures, the most influential which corresponded to the objectives of the study at hand was that of Sangeeta Sanjay Chaubal (2011). It described that an array of parents' involvement in the school had a positive results in student's learning and attitude. More so, it highlighted the optimum benefits of the school in parents' involvement.

On other dimension, parental involvement and students' achievement in the literatures were clearly noted by Smith and Hausafus in Lucero (1999), Sagay (1993), Fehrman, et. al. (1987) in Arzagon (1997), Shaffer (1999), Castillon in Peralta (2011) and Lucero (1999). However, among those studies that served to be very helpful in this study were cited in Shaffer (1999). The three potent home influences to child's mastery/achievement motivation and actual achievement behavior that were enumerated by Shaffer were the quality of the child's attachment; character of the home environment; and the child's rearing practices that parent's use.

Meanwhile, the domain of parental involvement and student's attitudes toward mathematics were presented in the works of Aquino and Razon (1993), Bustos and Espiritus (1996), George and Kaplan in Lucero (1999), Tamayao (2006) and Hindi A. M. Hammouri (2004) in Monticado (2006). The best work that had been consolidated along parental involvement to student's attitudes towards mathematics was that of Hammouri (2004) as cited in Monticado (2006). Hence, the different effects of attitudes towards mathematics in different countries were found out.

Albano in Castaneda (1997) stated that the school plays an important role in motivating parents to be involved with their child's school affair. Lunsteen and Tarrow in Vilbar (2005) and Villaflor (1993) suggested some steps for parents to become successfully involved in their children's school and academic works.

Posamentier and Jaye (2006) cited some suggestions on how mathematics teachers should reach out to parents to enhance their involvement and develop a partnership for their children's education. Similarly also the study of Cotton and Wikelund (1989) suggested also some guidelines

for teachers and administrators to make parents actively involved in their child's learning.

In support to the foregoing findings, the study presented dealt partially with parents' involvement in students' achievement and attitude in mathematics. The role of parents and the basic responsibility of mathematics teacher were also presented to make partnership of parents and teachers continuous and successful.

As a whole, the interrelationships of the presented literatures and studies provided an insight into the main focus of the study about the relationship of parents' involvement in students' achievement and attitude in mathematics. The said relationship pointed out improvement in terms of student academic achievement and attitude in the subject.

CHAPTER III

Research Methodology

This chapter presents the methodology of the study. It outlines the process in which the study was conducted. This provides information about research design, the respondents, sampling procedure, research instrument and statistical tool.

Research Design

This study used the descriptive research design method. Descriptive method of research is a fact-finding study with adequate and accurate interpretation of the findings. It is concerned with conditions of relationships that exist; practices that prevail; beliefs, processes that are going on; effects that are being felt, or trends that are developing (Calderon, et al. 2006).

The study is descriptive because it described the level of parents' involvement, students' achievement and attitude in mathematics. On the other hand, it is also correlational because it aimed to answer whether there

exists a relationship between parental involvement and the students' achievement and attitude in mathematics.

Participants of the Study

The participants of this study were the third year high school students of Bangkal High School. There were five hundred sixteen (516) third year high school students. Of these, two hundred eighteen (218) are male and two hundred ninety eight (298) are female. The desired number of participants was computed using the Slovin's formula utilizing 10% marginal error. Of the total number of students, eighty-four (84) were taken as samples of the study. These students were selected randomly from the nine sections. Parents of these students were also participants of the study. Thus, there were also eighty-four (84) parent respondents.

To determine the number of participants from each section, stratified random sampling was used. Table 1 shows the distribution of the students according to section.

Table 1
Sample Distribution of Third Year High School Students
in Bangkal High School, Bangkal, Makati City

Section	Total Number of Students in Each Section	Percent(%)	Sample Size in Each Section
III - Charity (1)	57	16	9
III - Joy (2)	65	16	10
III - Peace (3)	57	16	9
III - Patience (4)	54	16	9
III - Kindness (5)	55	16	9
III -Generosity (6)	55	16	9
III - Gentleness (7)	54	16	9
III - Faith (8)	56	16	10
III - Hope (9)	63	16	10
Total	516		84

After determining the desired sample size for each section, the lottery method was used to determine the actual respondents of the study. This was done by assigning a number to each student for each section. The assigned number was written on a piece of paper, rolled and placed in a box. The lottery box was thoroughly shaken before the piece of paper was picked from the box.

The desired number of respondents for this study was eighty-four (84). However, only seventy-three (73) respondents were included in the analysis of data because eleven respondents failed to turn the survey questionnaires.

Research Instrument

The following research instruments were used in this study:

- **Parental Involvement Scale**
- **Mathematics Attitude Scale**
- **Mathematics Achievement Test**

Parental Involvement Scale

This instrument was used to measure the level of parental involvement. This instrument consists of four parts. First part was about the involvement of parents on their child's school work. For the second part, it was about the involvement of parents on their child's class work especially in mathematics subject. Third part was the statements about the provision of resource materials for mathematics learning. The fourth and last part was about the statements for parental guidance and support. Each part consisted of ten statements. There were a total of forty statements for parental involvement scale (Part III of Appendices C and D) that measure the perception of parents

and students on the level of parental involvement. The development and validation of the parental involvement scale followed the following procedures:

Development of the Parental Involvement Scale

The statements in the parental involvement scale were made by including statements from books, unpublished theses, informal interviews and observations. Parents and students respondents had similar statements. The words "my parent/guardian" was changed into the word "I". The statements in parental involvement scale were in the Likert Scale presented in a multiple choice format where the student and parent/guardian respondents were required to check a mark for the desired column. Each choice of a response was given weight based on the frequency of parents' involvement: 3 for "regularly", 2 for "Occasionally" and 1 for "not involved". The mean for each item was computed and converted to a description using a measuring instrument devise based on Guildford Frequency Distribution Table. The lowest rating which is one (1) was subtracted from the highest rating of three (3). The difference of two (2) which is called the range was divided

by three (3) since there were three categories of responses. The quotient which is 0.70 is called the step interval which was used to come up with the scale that is shown on table 2.

Table 2 shows the interpretation of average scores of the participants in each category.

Table 2
The Interpretation of the Parental Involvement Scale
in Each Category

Frequency of Involvement	Scale	Range	Descriptive Interpretation
Regularly	3	2.4 – 3.0	Highly Involved
Occasionally	2	1.7 – 2.3	Moderately Involved
Not at All	1	1.0 – 1.6	Not Involved

The range of mean score was used to describe the level of parental involvement whether the parents were highly involved, moderately involved or not involved in the academic works of their children especially in mathematics subject.

The Parental Involvement Scale was validated by experts in Educational Management and Psychology. They were given a copy of Parental Involvement Scale. Each statement

had four columns. The first three columns contained the criteria for evaluating the items to be retained, revised, or deleted. The last column contained the space where experts wrote their comments and suggestions.

The mean of the scores given by the experts to each statement was computed. No items were discarded because most of the experts suggested that some statements need little improvement or minor revision.

Mathematics Attitude Scale

The purpose of Mathematics attitude scale is to measure the students' attitude in mathematics. It consists of twenty (20) statements, with ten (10) positively oriented statements and ten (10) negatively oriented statements. Statement numbers 1, 5, 6, 7, 11, 13, 16, 18, 19 and 20 are all positive-oriented while the remaining ten statements are all negative-oriented. Statements about positive attitudes of students in mathematics were described in terms of the beliefs that it is a fun subject and one in which a student can be comfortable and secure with it, liking the subject for it is not boring but an interesting and enjoyable one, math is a worthwhile subject

that could generate active participation among the learners. The ten (10) negative statements were described as having an attitude of being not interested in the subject, unable to think clearly when working with numbers that make it least enjoyable and boring, the feeling of being insecure in the subject, lack of confidence in solving number problems and only appreciate mathematics if it is not so hard or difficult for the students. The development and validation of the mathematics attitude scale followed the following procedures:

Development of the Mathematics Attitude Scale

The Mathematics Attitude Scale (Part IV of Appendix C) was adopted from Casquejo (2012). The statements presented to the student participants asked them to choose one from six choices in the scale: (6) Strongly Agree, (5) Agree, (4) Slightly Agree, (3) Slightly Disagree, (2) Disagree and (1) Strongly Disagree. The mathematics attitude scale of the participants was determined by getting their average score in each statement. The mean score was based on the students' responses in the six-point scale and the numerical description was adopted from Casquejo (2012). The

word “range’ was changed into mean score on this study and also the word “interpretation” was changed into description. Additional two columns were added and these were columns for interpretation in the positive and negative statements. Students’ mean score in each category was used to describe students’ attitude in mathematics, if they were highly positive, positive, moderately positive, moderately negative, negative and highly negative in studying mathematics subject. To identify less familiar words for unlocking, the attitude test was administered to small group for revalidation.

Table 3 shows the interpretation of mean scores of the participants in the positive and negative statements.

Table 3
The Interpretation of the Mathematics Attitude Scale
in the Positive and Negative Statements

Scale	Mean Score	Description	Interpretation	
			Positive Statement	Negative Statement
6	5.50 - 6.00	Strongly Agree	Highly Positive	Highly Negative
5	4.50 - 5.49	Agree	Positive	Negative
4	3.50 - 4.49	Slightly Agree	Moderately Positive	Moderately Negative
3	2.50 - 3.49	Slightly Disagree	Moderately Negative	Moderately Positive
2	1.50 - 2.49	Disagree	Negative	Positive
1	1.00 - 1.49	Strongly Disagree	Highly Negative	Highly Positive

Mathematics Achievement Test

This instrument was used to measure the level of achievement of the students in mathematics. This instrument consists of forty (40) items but teachers in mathematics III did not consider item number twenty-seven (27) because of no answer in the choices. For that reason, the test had only 39 items. By getting the 75% of 39-item test, the result was 29 and it should also be the score of the students to have class mastery or to pass the test. In this study, students who had rating of below 75% were described as below average students. Students who had a score of 29-31 or with a range rating of 75-79% were described as average students. For above average, the students must have a score of 32-39 or with a range rating of 80% and above.

The heading written in test paper was fourth periodical test but it was also considered as the achievement test of the students. The test had ten (10) items taken from first to third grading topics and thirty (30) items from fourth grading topics. Topics from first to third grading were assigned to item numbers 1, 10, 11, 14,

16, 24, 28, 29, 31 and 40. These were topics about undefined terms, conditional statement, SSS Congruence Postulate, measurement, Pythagorean Theorem, area of trapezoid, parallelogram and its' properties, parallel lines and transversal, right triangle similarity and polygon. Topics from fourth grading period included in the test were circles and coordinate geometry. The development and validation of the mathematics achievement test followed the following procedures:

Development of the Mathematics Achievement Test

The Mathematics Achievement Test (Appendix K) was created by the Division Supervisor in mathematics and the mathematics coordinators from different high schools in Makati. The Division Achievement Test was in a multiple choice format and the students were asked to choose and write the best correct answer in their answer sheet. The test was valid and reliable since it was validated by the Division Supervisor in mathematics and the mathematics coordinators from different high schools in Makati.

Data Gathering Procedure

The study followed two stages, namely, (1) preparation stage and (2) the administration stage. The procedures on each stage are presented as follows.

I. Preparation Stage

A letter of permission was prepared and given to the principal of Bangkal High School to allow the conduct of study among selected third year high school students.

The validation form of separate questionnaires for student and parent respondents were distributed during first week of March to two (2) Educational Management teachers and one (1) psychology teacher of Philippine Normal University. After two (2) weeks, the validation forms were collected.

II. Administration Stage

Parental Involvement Scale and Mathematics Attitude Scale were administered to the students last March 21, 2013 and it was also the first day of the Division Achievement Test. The researcher informed the advisers and mathematics teachers a week before the administration of the

instruments. The respondents were instructed by the researcher to go to room 27A before 11:30am after they finished their tests. The researcher gathered respondents in a well-ventilated and well-lighted classroom. There was a short lecture about students' attitude in mathematics and the different ways on how the parents were involved in the studies of their children before the questionnaires were distributed to the student respondents. The administration was started at exactly 11:45am. Those questionnaires for students have the following important data: student's profile, parental involvement and student's attitude in mathematics. The student respondents were assisted by the researcher for verifications and clarifications on some questions. The respondents' replies were not influenced by the researcher since these came from their own free will. The questionnaires were retrieved as soon the students have completed answering the questionnaires. Each student respondent was also given a copy of another questionnaire that needs to be filled in by their parent/guardian. The questionnaire for parent included the following important information: parent's profile, parental involvement in school work and class work; provision of resource materials

related to mathematics learning; and parental guidance and support. The parent's copy of questionnaire was retrieved a day after the questionnaire was given.

The Mathematics Achievement Test was scheduled on the second and last day of Division Achievement Test. It was given last March 22, 2013. After three days, the scores of the students' participants in Mathematics Achievement Test were gathered from their mathematics teachers.

Data Analysis Procedure

The following statistical tools were used to analyze the data gathered in this study:

- **Mean.** This was used to describe the level of students' achievement, attitude in mathematics, and parental involvement.
- **Pearson product moment correlation.** This was used to determine if there exists a significant relationship between parental involvement and students' achievement in mathematics as well as parental involvement and students' attitudes in mathematics. This was also used

to determine the relationship between students' attitudes in mathematics and students' mathematics achievement. The significance of the correlation coefficient was tested at 0.05 level.

All statistical analyses were processed using IBM SPSS Statistics and Microsoft Excel 2010.

CHAPTER IV

Presentation, Analysis and Interpretation of Data

This chapter contains the presentation, analysis and interpretation of the data gathered. It presents the answers to the research questions of this study.

Problem 1. How may the students be described in terms of the following?

1.1 Mathematics achievement

1.2 Attitude in mathematics

Table 1 shows the level of achievement of students in mathematics.

Table 4
Level of Achievement of the Students in Mathematics

Achievement Scores	Range Rating	Descriptive Rating	Number of Students	Percent
32- 39	80% and above	Above Average	19	26.03
29 - 31	75 - 79 %	Average	11	15.07
below 29	Below 75%	Below Average	43	58.90
Total			73	100%

The table shows that majority of the students have below average level of achievement in mathematics. Of the 73 students, 58.90% belongs to below average level of student. It can be noted that only 15.07% got an average rating and 26.03% were classified above average. This means that majority of the students have difficulty in mathematics.

These findings further imply that greater efforts should be made by mathematics teachers on how to improve the academic level of the students. But this effort must not only be done by mathematics teachers alone. School administrators should also help mathematics teachers to solve this kind of problem by providing them more training to upgrade their strategies in teaching. Teachers in mathematics must also seek a partnership to the parents of students, by helping their children to have a better academic performance. In the study of Torno (2004), it has been pointed that the teachers play a vital role in the education of the children. They are the ones directly involved in the instructional process. But the responsibility of educating the children does not solely depend on the teachers. They ought to have counterparts;

they need the involvement and support of the parents. The educational development of the children may highly depend on the degree of support their parents give them. It simply tells that the greater the involvement of parents in their children's academic work, the better result it will yield in their academic performance.

Table 2 shows the attitude of the student in mathematics. It can be seen from the table that statement number six (6) got the highest mean of 4.95. This implies that most of the students had a positive attitude in mathematics. Most of them agreed that mathematics is very interesting to them. It could be noticed that item number two (2) obtained the lowest mean rating. This means that the students have never liked mathematics at all and that they do not agree that mathematics is the most dreaded subject. It shows also that the students had a positive attitude in mathematics.

By getting the mean of ten positive statements, the result was 4.09. It means that the students slightly agreed on the positive statements, hence they have moderately positive attitude in mathematics. For the ten negative statements, the obtained mean was 3.25. It shows that the

students slightly disagreed on the negative statements. This means that they have moderately positive attitude in mathematics (Appendix G).

Table 5
Students' Attitude in Mathematics

Indicators	Mean	Description	Interpretation
1. I am happier in mathematics than in any subject.	4.63	Agree	Positive
2. I have never like mathematics and it is my most dreaded subject.	2.21	Disagree	Positive
3. I like textbook in science, English and social studies a lot more than the textbook in mathematics.	3.44	Slightly Disagree	Moderately Positive
4. The subject that I enjoy least is mathematics.	2.99	Slightly Disagree	Moderately Positive
5. Mathematics makes me feel secure.	4.30	Slightly Agree	Moderately Positive
6. Mathematics is very interesting to me.	4.95	Agree	Positive
7. Mathematics is a mentally stimulating subject.	4.64	Agree	Positive
8. Mathematics makes me feel as though I am lost in a jungle of numbers and I can't find my way out.	3.53	Slightly Agree	Moderately Negative
9. I find mathematics boring.	4.27	Slightly Agree	Moderately Negative
10. When I hear the word mathematics, I have a feeling of dislike.	2.60	Slightly Disagree	Moderately Positive
11. I feel at ease in my mathematics class.	3.33	Slightly Disagree	Moderately Positive
12. It makes me nervous to solve mathematics.	3.53	Slightly Agree	Moderately Negative
13. Mathematics is a subject in school, which I have always enjoy studying.	4.58	Agree	Positive
14. Mathematics makes me feel insecure.	3.40	Slightly Disagree	Moderately Positive
15. No matter how hard I try, I can't understand mathematics.	2.60	Slightly Disagree	Moderately Positive
16. I find mathematics less difficult to understand than any other subject.	3.62	Slightly Agree	Moderately Positive
17. I would like mathematics better if it was not made so hard in class.	3.97	Slightly Agree	Moderately Negative
18. I find mathematics useful to problems in everyday life.	3.62	Slightly Agree	Moderately Positive
19. I really like mathematics.	3.62	Slightly Agree	Moderately Positive
20. I feel definite positive reaction to mathematics.	3.62	Slightly Agree	Moderately Positive

These findings were similar in the study of Lucero (1999). She concluded that grade V pupils have positive beliefs regarding mathematics. They believe that mathematics helps them outside the school and they need to know mathematics in order to get good job someday.

Problem 2. What is the level of parents' involvement as perceived by the students and parents in terms of the following:

2.1 school work

2.2 class work

2.3 provision of resource materials related to mathematics learning

2.4 parental guidance and support

Table 6 presents the level of involvement of parents in students school work. Most of the indicators had a result of moderately involvement. Only indicator number four (4) gave the same result that the parents and students were both agreed about "parents/guardian regularly complied with the policies of the school in terms of payment of fees and other school obligation".

Table 6
Level of Parental Involvement in School Work as
Perceived by the Respondents

Indicators	Parent		Student		Over-all	
	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation
1. My parents/guardian participate actively in the different school activities.	2.05	Moderately Involved	1.82	Moderately Involved	1.94	Moderately Involved
2. My parents/guardian attend PTA meetings.	2.30	Moderately Involved	2.10	Moderately Involved	2.20	Moderately Involved
3. My parents/guardian personally confer with school officials when called upon.	2.41	Highly Involved	2.10	Moderately Involved	2.26	Moderately Involved
4. My parents/guardian comply with the policies of the school in terms of payment of fees and other school obligations.	2.56	Highly Involved	2.48	Highly Involved	2.52	Highly Involved
5. My parents/guardian is very much willing to share their significant time, talent and effort	2.27	Moderately Involved	1.75	Moderately Involved	2.01	Moderately Involved
6. My parents/guardian are very supportive of the different wholesome activities.	2.36	Moderately Involved	2.26	Moderately Involved	2.31	Moderately Involved
7. My parents/guardian show awareness of the different school activities.	2.47	Highly Involved	2.23	Moderately Involved	2.35	Moderately Involved
8. My parents/guardian support the fund drive and other projects in school by giving donations or rendering services.	2.12	Moderately Involved	2.04	Moderately Involved	2.08	Moderately Involved
9. My parents/guardian attend school-sponsored events such as math exhibits and math quiz.	1.67	Not Involved	1.30	Not Involved	1.49	Not Involved
10. My parents/guardian volunteer in some math related activities.	1.82	Moderately Involved	1.42	Not Involved	1.62	Not Involved
Over-all Mean	2.20	Moderately Involved	1.95	Moderately Involved	2.08	Moderately Involved

Table 6 also revealed the perceptions of the respondents that the parents were not involved on attending school-sponsored events such as math exhibits and math quiz; and parents did not also volunteer in some math related activities.

To sum up, the over-all mean given by the parents and students was 2.08. It indicates that the parents were moderately involved in the school work of their child.

Findings suggest that there must be a greater involvement of parents in the children's schoolwork or activities. Doing this could enrich students' positive attitudes towards schooling that could result into better achievement of students and good attitudes towards mathematics.

According to Rejuso (2009), school should encourage and invite the parents to actively participate in all school activities. On the other hand, parents should support and actively participate in all school activities so that the academic performance of the children could improve.

Table 7 presents the parental involvement to students' class work as perceived by the parents and students' respondents. As reflected, parents and students had the same perceptions that parents were highly involved on showing concern to the studies of their children as well as encouraging them to participate in math class. The over-all mean on the said statements were 2.82 and 2.60.

The lowest mean on that category was observed on indicator number three (3). The lowest mean obtained were 2.00 given by the parents and 1.90 by the students' respondents. It revealed that the two groups of respondents believed that parents were moderately involved in discussing with their children some mathematics difficulties.

To sum up the involvement in class work given by the two groups of respondents, the data shown was 2.33, indicating that parents were moderately involved on that category.

Table 7
Level of Parental Involvement in Class Work as Perceived by the Respondents

Indicators	Parent		Student		Over-all	
	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation
1. My parents/guardian help me with my school assignments and projects.	2.27	Moderately Involved	2.23	Moderately Involved	2.25	Moderately Involved
2. My parents/guardian discuss with me some of my assignments in mathematics.	2.08	Moderately Involved	2.08	Moderately Involved	2.08	Moderately Involved
3. My parents/guardian discuss with me some of my mathematics difficulties.	2.00	Moderately Involved	1.90	Moderately Involved	1.95	Moderately Involved
4. My parents/guardian make a follow-up with my teachers regarding my studies and behavior in school.	2.38	Moderately Involved	2.29	Moderately Involved	2.34	Moderately Involved
5. My parents/guardian personally confer with teachers when called upon.	2.55	Highly Involved	2.33	Moderately Involved	2.44	Highly Involved
6. My parents/guardian are very much concerned with my studies.	2.78	Highly Involved	2.86	Highly Involved	2.82	Highly Involved
7. My parents/guardian encourages me to participate in my math class.	2.56	Highly Involved	2.64	Highly Involved	2.60	Highly Involved
8. My parents/guardian ask me about the lessons that I have learned in mathematics.	2.19	Moderately Involved	2.00	Moderately Involved	2.10	Moderately Involved
9. My parents/guardian know most of my classmates and friends in school.	2.33	Moderately Involved	2.45	Highly Involved	2.39	Moderately Involved
10. My parents/guardian appreciate my originality and creativity in making my project in mathematics subject.	2.37	Moderately Involved	2.33	Moderately Involved	2.35	Moderately Involved
Over - all Mean	2.35	Moderately Involved	2.31	Moderately Involved	2.33	Moderately Involved

Findings imply that parents should be greatly involved in their children's classwork. The importance of parent involvement in class work of their children was being supported by Bangot (1996) on his study and he revealed that parental involvement activities were significantly related to the children's academic performance. Some of Bangot's findings: (1) School activities directly supportive of instruction were frequently carried out as perceived by parents. The highest rating was given to the task of following up home works, assignments and projects; (2) Parents also frequently involved in projects of the students; and (3) Students whose parents actively involved in educational activities were the ones with higher academic performance.

Table 8 presents the degree of parental involvement in the provision of resource materials related to mathematics learning. As shown, the two groups of respondents had the same result on the frequency of involvement. Only indicator number one (1) had a moderately involvement and the rest had a result of regular involvement. Indicator number one

(1) had a lowest mean of 2.06 given by parents and students' respondents. It described that the parents were moderately involved in the provision of books in mathematics subject. Findings imply that parents should provide their children the needed books to supplement their learning in mathematics subject.

As shown, the highest mean given by the two groups of respondents were observed on indicator number five (5). The resulting mean was 2.86 and it indicates that parents were highly involved in providing sufficient learning materials such as pen, paper, notebooks, etc.

The over-all mean given by the students' and parents' respondents was 2.63. It described that the parents were highly involved in the provision of resource materials related to mathematics learning.

Table 8
Level of Parental Involvement in Provision of Resource
Materials Related to Mathematics Learning as Perceived by
the Respondents

Indicators	Parent		Student		Over-all	
	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation
1. My parents/guardian provide me with books in Mathematics.	2.23	Moderately Involved	1.88	Moderately Involved	2.06	Moderately Involved
2. My parents/guardian provide me at home with materials and equipment such as calculator, computer, etc.	2.60	Highly Involved	2.51	Highly Involved	2.56	Highly Involved
3. My parents/guardian provide me with a good place to study.	2.63	Highly Involved	2.52	Highly Involved	2.58	Highly Involved
4. My parents/guardian provided me with my school needs such as books, school supplies, etc.	2.81	Highly Involved	2.78	Highly Involved	2.80	Highly Involved
5. My parents/guardian provide me with sufficient learning materials such as pen, paper, notebooks, etc.	2.86	Highly Involved	2.85	Highly Involved	2.86	Highly Involved
6. My parents/guardian provide money for my school needs.	2.81	Highly Involved	2.81	Highly Involved	2.81	Highly Involved
7. My parents/guardian give me enough allowance for my study.	2.64	Highly Involved	2.55	Highly Involved	2.60	Highly Involved
8. My parents buy me the things that I need in school.	2.77	Highly Involved	2.67	Highly Involved	2.72	Highly Involved
9. My parents/guardian provide me at home with equipment I need in accomplishing my school work.	2.68	Highly Involved	2.64	Highly Involved	2.66	Highly Involved
10. My parents/guardian make sure that I am physically fit by attending to my food, medicine/supplement, rest and play.	2.77	Highly Involved	2.63	Highly Involved	2.70	Highly Involved
Over - all Mean	2.68	Highly Involved	2.58	Highly Involved	2.63	Highly Involved

The importance of provision of resource materials in the learning of the students was supported by Torno (2004) on her study. She found out that the parents' support in terms of food, material and financial was always done by the parents with an over-all mean of 3.73. Tutelage or tutorial was found to be done occasionally which has a mean of 3.13. Home-school collaboration was found to be done always with a mean of 3.5. She also concluded that parents' support which include food, material and financial, tutelage and home-school collaboration are perceived by the parents, teachers and administrators to be of great influence on pupils' grades and believed to be significantly related to the academic performance of the pupils.

Table 9 presents the level of parental involvement in parental guidance and support. The highest mean observed given by student respondents was shown on number five (5) with a mean of 2.58, which indicates that parents were highly involved in developing good study habits to their children. But the highest mean given by the parents' respondents on table 9 was observed on number three (3), with a mean of 2.79, which indicates that parents were

highly involved in appreciating the efforts of their child for improving their academic performance in mathematics. The lowest mean observed in the two groups of respondents were 2.01 given by the students' respondents and 2.26 given by the parents' respondents. Those lowest means shows that parents were moderately involved in encouraging their child to join in a mathematics club or to any program in mathematics and parents were also moderately involved in giving some reward to their children if they receive good grade in mathematics.

To sum up the perceptions of parents and students' respondents in table 9, the over-all mean was 2.46 indicating that the parents were highly involved in giving guidance and support to their children.

Parental involvement in terms of parental guidance and support was also reflected in the study of Amazona (2010) and she found out that the parents involvement in their children's education in terms of attitudinal/moral support was to a great extent, shown by a composite mean of 4.02.

Table 9
Level of Parental Involvement in Parental Guidance and Support as Perceived by the Respondents

Indicators	Parent		Student		Over-all	
	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation
1. My parents/guardian listen to my ideas and opinions in relation to my studies.	2.62	Highly Involved	2.36	Moderately Involved	2.49	Highly Involved
2. My parents/guardian give some encouragement to develop my talents and skills in mathematics.	2.53	Moderately Involved	2.37	Moderately Involved	2.45	Highly Involved
3. My parents/guardian appreciate my efforts to improve my academic performance in mathematics.	2.79	Highly Involved	2.60	Highly Involved	2.70	Highly Involved
4. My parents/guardian are aware of my daily activities in school.	2.59	Highly Involved	2.44	Highly Involved	2.52	Highly Involved
5. My parents/guardian help me to develop good study habits.	2.73	Highly Involved	2.58	Highly Involved	2.66	Highly Involved
6. My parents/guardian give me some reward if I receive goodgrade in mathematics.	2.26	Moderately Involved	2.10	Moderately Involved	2.18	Moderately Involved
7. My parents/guardian give some valuable opinions and suggestions in order to develop my self - confidence in solving number problems.	2.36	Moderately Involved	2.26	Moderately Involved	2.31	Highly Involved
8. My parents/guardian consult me regarding issues which affect my studies.	2.56	Moderately Involved	2.34	Moderately Involved	2.45	Highly Involved
9. My parents/guardian encourage me to join in a mathematics club and any program in mathematics like MTAP Saturday classes.	2.41	Moderately Involved	2.00	Moderately Involved	2.21	Moderately Involved
10. My parents/guardian encourage me to learn mathematics.	2.70	Highly Involved	2.51	Highly Involved	2.61	Highly Involved
Over - all Mean	2.55	Highly Involved	2.36	Moderately Involved	2.46	Highly Involved

Table 10 presents the summary of parental involvement in the children's academic work. As shown, the two groups of respondents believed that the parents were moderately involved in school work/activities and in class work. It also shows that provision of resource materials related to mathematics learning and giving parental guidance got a high involvement or the parents were regularly involved on these categories.

To sum up, the over-all mean given by the parents and students' respondents was 2.38 indicating that parents of students' respondents were moderately or occasionally involved in their children's academic work.

This implies that parents should be more involved in their children's academic learning. They should show support and active participation in all school activities of their children. They should also encourage their children to learn mathematics so that the attitudes and achievements of their children in mathematics will improve.

Table 10
Summary of Parental Involvement as Perceived by the Respondents

Category	Parents		Students		Over-all	
	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation	Mean	Descriptive Interpretation
Involvement in School Work/ Activities	2.20	Moderately Involved	1.95	Moderately Involved	2.08	Moderately Involved
Involvement in Class Work	2.35	Moderately Involved	2.31	Moderately Involved	2.33	Moderately Involved
Provision of Resource Materials Related to Mathematics Learning	2.68	Highly Involved	2.58	Highly Involved	2.63	Highly Involved
Parental Guidance and Support	2.55	Highly Involved	2.36	Moderately Involved	2.46	Highly Involved
Over-all Mean	2.45	Highly Involved	2.31	Moderately Involved	2.38	Moderately Involved

Problem 3. Is there a significant relationship between the perceptions of the parents and students on parental involvement?

Table 11 shows the extent and significance of the relationship between the perceptions of the parents and students on parental involvement at 0.05 level of significance.

The computed Pearson Product Moment Coefficient (r) determines the relationship between the perceptions of the parents and students on parental involvement.

Table 11
Correlation Between the Perceptions of the Parents and Students on Parental Involvement

Statistics	Values	Verbal Interpretation
Correlation coefficient	0.408	Moderate Correlation
t-value	3.789	Significant

Critical Value = 1.99
 $\alpha = 0.05$

There is a moderate correlation between the perceptions of the parents and students on parental involvement. This illustrates a direct relation between two variables. Since the computed t-value 3.789 exceeds the critical value of 1.99, it shows a significant relationship between the perceptions of the parents and students on parental involvement.

The students-respondents, as well as their parents, mutually perceive that parental support and reinforcement in their academic endeavors, especially in mathematics has been evident.

Problem 4. Is there a significant relationship between parental involvement and the following variables?

4.1 Mathematics achievement

4.2 Attitude in mathematics

Table 12 presents the relationship of parental involvement on mathematics achievement and attitudes in mathematics at 0.05 level of significance.

Table 12
Correlation of Parental Involvement on Mathematics Achievement and Attitudes in Mathematics

	Parental Involvement	Verbal Interpretation
Mathematics Achievement	0.330** (p-value = 0.004)	Low Correlation (significant)
Attitude in Mathematics	0.398** (p-value = 0.000)	Low Correlation (significant)

** significant at $\alpha = 0.05$

The computed Pearson Product Moment Coefficient (r) determines the relationship of parental involvement on mathematics achievement and attitudes in mathematics

There is a low correlation between parental involvement on mathematics achievement as well as the attitudes in mathematics. This illustrates a direct relation between two variables.

As shown on Table 12, the obtained p-values were 0.004 for mathematics achievement and 0.000 for attitude in mathematics. The observed p-values were smaller than into 0.01 level of significance, the null hypotheses were rejected. It concluded that there were significant relationships between parental involvement and mathematics achievement as well as to the attitudes in mathematics. It indicates that mathematics achievement and attitudes in mathematics of the students' respondents were dependent on the involvement of their parents. Thus, this implies that the parental involvement had influence on the students' achievement and attitude in mathematics.

The findings are similar in Ermituno (2009) and stated that parental involvement influenced the academic achievements of intermediate pupils. The chi-square was used to determine the independence of parental involvement to the grade V and grade VI pupils' academic achievement. The obtained p-value of 0.000 for grade V and 0.006 for grade VI which is lower than the set level of significance which is 0.05, indicates that the academic achievement of both grade V and grade VI pupils was dependent on the involvement of their parents. It implies that the parental

involvement had influenced the intermediate grade pupils' academic achievement.

On the attitudes in mathematics, the resulted interpretation was similar in Lucero (1999) and discussed that there is a significant relationship between parental involvement and pupils attitudes towards mathematics. She also used the correlation analysis to determine if there were significant relationships among parental involvements and pupils' attitude towards mathematics. The obtained correlation coefficient was 0.30 indicating a low or slight relationship. The t stat value computed on her study was 3.93 and it was greater than the t-critical value of 1.960 at 0.05 level of significant.

Problem 5. How do students' mathematics achievement does correlate with their attitude?

Table 13 shows the extent and significance of the relationship between students' mathematics achievement and their attitudes in mathematics.

Table 13
Correlation Between Students' Mathematics Achievement and Their Attitudes in mathematics

Statistics	Values	Verbal Interpretation
Correlation	0.688**	Moderate Correlation
p-value	0.000	Significant

** Correlation is significant at the 0.01 level

The computed Pearson Product Moment Coefficient (r) determines the relationship between students' mathematics achievement and their attitudes in mathematics.

There is a moderate correlation between students' mathematics achievement and their attitudes in mathematics. This illustrates a direct relation between two variables. Since the computed p-value 0.000 was smaller into the level of significance of 0.01, it shows a significant relationship, the null hypothesis was rejected. It concluded that there was a significant relationship between students' mathematics achievement and their attitudes in mathematics.

The resulted interpretation was also similar in the study of Balaoro as cited in the study of Chapaap (1997), which discussed that the attitude towards the subject affected the academic performance of the freshman college students, particularly in mathematics.

CHAPTER V

Summary of Findings, Conclusions, and Recommendations

This chapter provides the summary of the findings, conclusions and the recommendations.

Summary

This study aimed to describe the level of parental involvement as perceived by the parents and students. The study was also attempted to describe the students' achievement and attitudes in mathematics. The relationship of parental involvement on students' achievement and attitude in mathematics was also described in this study.

The descriptive research design was utilized to achieve the objectives of the study. The research instruments were used to measure the variables of the study. A likert-scale instrument was used to measure the level of parental involvement.

To describe the level of parental involvement, students' attitude and achievement in mathematics, mean scores were computed.

To describe the relationship among the parental involvement, mathematics achievement and attitude in mathematics, Pearson-product moment correlation coefficient was used.

Findings

Based on the data gathered and analyzed, the study yielded these finding:

1. Most of the students have below average in achievement in mathematics.
2. Most of the students agreed that mathematics is very interesting and disagreed the common notion that it is the most dreaded subject. It was found out that they have a moderately positive attitude in mathematics.
3. On parental involvement to students' academic work, most of the parents and students' respondents perceived that parents are occasionally or moderately involved in school work and class work. But they believed that parents are regularly or highly involved in the provision of resource materials related to

mathematics learning and in giving parental guidance or support to their children's education.

4. There is a significant relationship between the perceptions of the students and parents on parental involvement.
5. There is a significant relationship between parental involvement and students' achievement in mathematics.
6. There is a significant relationship between parental involvement and students' attitudes in mathematics.
7. There is a significant relationship between students' achievement in mathematics and their attitudes in mathematics.

Conclusions

Consistent with the results of this study, the following conclusions were drawn.

1. Students have a rating of below average in mathematics achievement test.

2. Students have a moderately positive attitude in mathematics.
3. Parents are moderately involved in school work and class work. On the other hand, they are regularly involved in the provision of resource materials related to mathematics learning and in giving parental guidance or support to their children's education.
4. Parents' and students' perceptions on parental involvement are positively correlated.
5. Parental involvement is a factor that affects students' achievement in mathematics.
6. Parental involvement is a factor that affects students' attitudes in mathematics.
7. Students' achievement and attitudes in mathematics are positively correlated.

Recommendations

From the findings and conclusions, the following are recommended.

1. Teachers should regard parental involvement as an important factor for students to help them to improve their attitudes in mathematics and to acquire a better result in achievement test.
2. Schools and teachers should provide opportunities for parents to be actively involved in the academic works of their children.
3. Strong relationship between the parents and school should be encouraged through programs and activities in mathematics. This kind of partnership could result into positive attitudes and better result in achievement test of the students in the subject.
4. This study should be replicated using the research instrument to gauge the effectiveness of parental involvement in the achievement and attitudes in mathematics.

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Appendix A
Letter to the Validators

March 4, 2013

Philippine Normal University
Taft Avenue, Metro Manila

Dear _____:

Greetings!

I am presently working on my paper entitled "Parental Involvement, Students' Achievement and Attitude in Mathematics.

In this connection, may I request your assistance in validating the items in the separate questionnaires for students and questionnaires for parents hereto attached.

Kindly check the appropriate column of categories: retain, revise or delete. A space is also provided for your corrections and suggestions. Please feel free to write for your comments and suggestions for the improvement and refinement of these questionnaires.

Thank you very much!

Very truly yours,

LEAHNI F. SULABO
Researcher

Appendix B
Letter to the Principal

March 18, 2013

Mr. Samuel C. Bulan
Principal
Bangkal High School
Bangkal, Makati City

Dear Mr. Bulan:

I am presently working on my paper entitled "Parental Involvement, Students' Achievement and Attitude in Mathematics" as a requirement for the degree in Master of Arts in Teaching Mathematics at Philippine Normal University.

In this regard, may I respectfully request permission from your good office to administer my research instruments among third year students in your school.

I am hoping for your favorable action regarding this request.

Thank you very much!

Very truly yours,

LEAHNI F. SULABO
Researcher

Approved by:

MR. SAMUEL C. BULAN
Principal

Appendix C
Sample Questionnaire on Parental Involvement
as Perceived by the Students

S#_____

Parental Involvement, Students' Achievement and Attitude in
Mathematics

QUESTIONNAIRE
 For Third Year High School Students

I. Background: This is a research study about **"Parental Involvement, Students' Achievement and Attitude in Mathematics"**. The purpose of this study is to determine if there is a significant relationship between parental involvement and students' achievement and attitude in mathematics among third year high school students. Please read each item carefully and answer each item by filling in the blank or by checking as required. Do not hesitate to answer frankly and honestly. All answers will be held confidential.

II. Student's Profile

Name:	Contact Number:			
Year /Section:		Age:		Gender :
Adviser:				
Home Address:				
Father/Guardian's Name:		Age :		Occupation:
Mother/Guardian's Name:		Age :		Occupation:
Father/Guardian's Educational Attainment:	Estimated Household Monthly Income :			
Mother/Guardian's Educational Attainment:		Below P 5,000		P15,001-P20,000
Household Size:		P5,001-P10,000		P20,001-P25,000
Sibling Position:		P10,001- P15000		Above P25,000
Religion:				

III. Parental Involvement

Directions:

After each statement, place check mark in the column which you feel most describes the truth in your case now.

LEGEND:

3 - Regularly

2- Occasionally

1 - Not at all

A. Involvement in School Work

Statement	3	2	1
1 .My parents/guardian participate actively in the different school activities.			
2. My parents/guardian attend PTA meetings.			
3. My parents/guardian personally confer with school officials when called upon.			
4. My parents/guardian comply with the policies of the school in terms of payment of fees and other school obligations.			
5. My parents/guardian are very much willing to share their significant time, talent and effort for the welfare of the school.			
6. My parents/guardian are very supportive of the different wholesome activities.			
7. My parents/guardian show awareness of the different school activities.			
8. My parents/guardian support the fund drive and other projects in school by giving donations or rendering services.			
9. My parents/guardian attend school-sponsored events such as math exhibits and math quiz.			
10. My parents/guardian volunteer in some math-related activities.			

B. Involvement in Class Work

Statement	3	2	1
1. My parents/guardian help me with my school assignments and projects.			
2. My parents/guardian discuss with me some of my assignments in mathematics.			
3. My parents/guardian discuss with me some of my mathematics difficulties.			
4. My parents/guardian make a follow-up with my teachers regarding my studies and behavior in school.			
5. My parents/guardian personally confer with teachers when called upon.			
6. My parents/guardian are very much concerned with my studies.			
7. My parents/guardian encourage me to participate in my math class.			
8. My parents/guardian ask me about the lessons that I have learned in mathematics.			
9. My parents/guardian know most of my classmates and friends in school.			
10. My parents/guardian appreciate my creativity and originality in making my project in mathematics subject.			

C. Provision of Resource Materials Related to Mathematics Learning

Statement	3	2	1
1. My parents/guardian provide me with books in Mathematics.			
2. My parents/guardian provide me at home with materials and equipment such as calculator, computer, etc.			
3. My parents/guardian provide me with a good place to study.			
4. My parents/guardian provided me with my school needs such as books, school supplies, etc.			
5. My parents/guardian provide me with sufficient learning materials such as pen, paper, notebooks, etc.			

6. My parents/guardian provide money for my school needs.			
7. My parents/guardian give me enough allowance for my study.			
8. My parents buy me the things that I need in school.			
9. My parents/guardian provide me at home with equipment I need in accomplishing my school work.			
10. My parents/guardian make sure that I am physically fit by attending to my food, medicine/supplement, rest and play.			

D. Parental Guidance and Support

Statement	3	2	1
1. My parents/guardian listen to my ideas and opinions in relation to my studies.			
2. My parents/guardian give some encouragement to develop my talents and skills in mathematics.			
3. My parents/guardian appreciate my efforts to improve my academic performance in mathematics.			
4. My parents/guardian are aware of my daily activities in school.			
5. My parents/guardian help me to develop good study habits.			
6. My parents/guardian give me some reward if I receive good grade in mathematics.			
7. My parents/guardian give some valuable opinions and suggestions in order to develop my self -confidence in solving number problems.			
8. My parents/guardian consult me regarding issues which affect my studies.			
9. My father/mother encourage me to join in a mathematics club and any program in mathematics like MTAP Saturday classes.			
10. My parents/guardian encourage me to learn mathematics.			

IV. Students' Attitude in Mathematics

Attitudes of students in mathematics subject is being described below using twenty (20) statements, with ten (10) positively oriented statements and ten (10) negatively oriented statements. The framework of students' attitude in mathematics wants to find out if it has a significant relationship between parental involvement and students' achievement in mathematics among third year high school students. Please rate yourself, how strongly you disagree or agree with each of the following statements by placing a check mark in the appropriate box.

Indicators	Strongly Disagree 1	Disagree 2	Slightly Dis agree 3	Slightly Agree 4	Agree 5	Strongly Agree 6
1.I am happier in mathematics than in any subject						
2.I have never liked mathematics and it is my most dreaded subject.						
3.I like textbook in science, English and social studies a lot more than the textbook in mathematics.						
4.The subject that I enjoy least is mathematics.						
5.Mathematics makes me feel secure.						
6.Mathematics is very interesting to me.						
7.Mathematics is a mentally stimulating subject.						
8.Mathematics makes me feel as though I am lost in a jungle of numbers and I can't find my way out.						
9.I find mathematics boring.						
10.When I hear the word mathematics, I have a						

feeling of dislike.						
11.I feel at ease in my mathematics class.						
12.It makes me nervous to solve mathematics problems.						
13.Mathematics is a subject in school, which I have always enjoyed studying.						
14.Mathematics makes me feel insecure.						
15.No matter how hard I try, I can't understand mathematics.						
16.I find mathematics less difficult to understand than any other subject.						
17.I would like mathematics better if it was not made so hard in class.						
18.I find mathematics useful to problems in everyday life.						
19.I really like mathematics.						
20.I feel definite positive reaction to mathematics.						

Thank You.

Prepared by:

Ms. LEAHNI F. SULABO
Researcher

Appendix D
Sample Questionnaire on Parental Involvement as Perceived
by the Parent

P#_

Parental Involvement, Students' Achievement and Attitude in
Mathematics

QUESTIONNAIRE
 For Parent/Guardian of Third Year High School Students

I. Background : This is a research study about " **Parental Involvement, Students' Achievement and Attitude in Mathematics**" .The purpose of this study is to determine if there is a significant relationship between parental involvement and students' achievement and attitude in mathematics among third year high school students. Please read each item carefully and answer each item by filling in the blank or by checking as required. Do not hesitate to answer frankly and honestly. All answers will be held confidential.

II. Parent/Guardian's Profile

Name of Parent/Guardian:					
Home Address:		Age:		Gender :	
Contact Number:		Estimated Household Monthly Income :			
Educational Attainment:		Below P 5,000		P15,001 - P20,000	
Household Size:		P5,001 - P10,000		P20,001 - P25,000	
Religion:		P10,001- P15000		Above P25,000	
Relationship to the student:					

III. Parental Involvement

Directions:

After each statement, place check mark in the column which you feel most describes the truth in your case now.

LEGEND:

3 - Regularly

2- Occasionally

1 - Not at all

A. Involvement in School Work

Statement	3	2	1
1 .I participate actively in the different school activities of my child's school.			
2. I attend PTA meetings regularly.			
3. I personally confer with school officials when called upon.			
4. I comply with the policies of my child's school by paying financial dues and other related matters on time.			
5. I am very much willing to share my time, talent and effort for the welfare of my child as well as the school.			
6. I am very much supportive of the different wholesome school activities.			
7. I am aware of the different school activities in my child's school.			
8. I support fund drive or any projects in my child's school by giving donations or rendering services.			
9. I attend in my child's school-sponsored events such as math exhibits and math quiz.			
10. I volunteer in my child's math related activities.			

B. Involvement in Class Work

Statement	3	2	1
1. I help my child to his/her school assignments and projects.			
2. I discuss with my child his/her assignments in mathematics.			

3. I discuss with my child his/her mathematics difficulties.			
4.I make a follow-up with my child's teachers regarding his/her studies and behavior .			
5. I personally confer with my child's teachers when called upon.			
6. I am very much concerned with my child's studies.			
7. I encourage my child to participate in his/her math class.			
8. I always ask my child for the lessons that he/she learns in mathematics.			
9. I know most of my child's classmates and friends in school.			
10.I praise the creativity and originality exhibited by my child in his/her mathematics project .			

C. Provision of Resource Materials Related to Mathematics Learning

Statement	3	2	1
1. I provide my child with books in Mathematics.			
2. I provide my child with materials and equipment such as calculator, computer, etc.			
3. I provide my child with a good place to study.			
4.I provide my child with his/her school needs such as books, school supplies, etc.			
5.I provide my child with sufficient learning materials such as pen, paper, notebooks, etc.			
6. I provide my child with money for his/her school needs.			
7. I give my child enough allowance for his/her needs.			
8. I provide my child with things that he/she needs in school.			
9. I provide my child at home with equipment that he/she needs in accomplishing in his/her school work.			
10. I make sure that my child is physically fit by providing his/her food, medicine/supplement, rest and play.			

D. Parental Guidance and Support

Statement	3	2	1
1. I listen to my child's ideas and opinions in relation to his/her studies.			

2. I give my child encouragement to develop his/her talents and skills in mathematics.			
3. I appreciate the efforts of my child in improving his/her academic performance in mathematics.			
4. I am aware of my child's daily activities in school.			
5. I help my child to develop good study habits.			
6. I give my child some reward if he/she receives good grade in mathematics.			
7. I give some valuable pointers and suggestions in order to develop the self -confidence of my child in solving number problems.			
8. I discuss with my child issues which affect his/her studies.			
9. I encourage my child to join in a mathematics club and any programs in mathematics like MTAP Saturday classes.			
10. I encourage my child to learn mathematics.			

Thank You.

Prepared by:

Ms. LEAHNI F. SULABO
Researcher

Appendix E
Test Result for Division Achievement Test in Mathematics of
Students' Respondents

N	Score	N	Score	N	Score	N	Score
S1	36	S21	31	S41	26	S61	19
S2	36	S22	30	S42	26	S62	19
S3	36	S23	30	S43	26	S53	18
S4	35	S24	30	S44	25	S64	18
S5	35	S25	30	S45	25	S65	18
S6	35	S26	29	S46	25	S66	18
S7	33	S27	29	S47	24	S67	16
S8	33	S28	29	S48	24	S68	16
S9	33	S29	29	S49	24	S69	15
S10	33	S30	29	S50	23	S70	14
S11	32	S31	28	S51	23	S71	13
S12	32	S32	28	S52	23	S72	11
S13	32	S33	28	S53	22	S73	10
S14	32	S34	28	S54	21	Sum	1899
S15	32	S35	28	S55	21	Mean	26.01
S16	32	S36	27	S56	21	SD	5.60
S17	32	S37	27	S57	21	HS	36
S18	32	S38	27	S58	20	LS	10
S19	32	S39	27	S59	20		
S20	31	S40	26	S60	20		

Note:

32 – 39 Above Average
 29 – 31 Average
 Below 29 Below Average

Appendix F

SPSS Output on Students Attitude in Mathematics

Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation
VAR00001	73	2.00	6.00	4.6301	.80806
VAR00002	73	1.00	6.00	2.2055	1.20138
VAR00003	73	1.00	6.00	3.4384	1.15454
VAR00004	73	1.00	6.00	2.9863	1.39934
VAR00005	73	2.00	6.00	4.3014	.98157
VAR00006	73	3.00	6.00	4.9452	.92632
VAR00007	73	1.00	6.00	4.6438	1.22893
VAR00008	73	1.00	6.00	3.5342	1.39525
VAR00009	73	2.00	6.00	4.2740	1.08347
VAR00010	73	1.00	6.00	2.6027	1.46950
VAR00011	73	1.00	6.00	3.3288	1.26989
VAR00012	73	1.00	6.00	3.5342	1.39525
VAR00013	73	2.00	6.00	4.5753	1.03974
VAR00014	73	2.00	4.00	3.3973	.63987
VAR00015	73	1.00	6.00	2.6027	1.46950
VAR00016	73	1.00	6.00	3.6164	1.20911
VAR00017	73	1.00	6.00	3.9726	1.37409
VAR00018	73	1.00	6.00	3.6164	1.20911
VAR00019	73	1.00	6.00	3.6164	1.20911
VAR00020	73	1.00	6.00	3.6164	1.20911
Valid N (listwise)	73				

Note:

Scale	Mean Score	Description	Interpretation	
			Positive Statement	Negative Statement
6	5.50 - 6.00	Strongly Agree	Highly Positive	Highly Negative
5	4.50 - 5.49	Agree	Positive	Negative
4	3.50 - 4.49	Slightly Agree	Moderately Positive	Moderately Negative
3	2.50 - 3.49	Slightly Disagree	Moderately Negative	Moderately Positive
2	1.50 - 2.49	Disagree	Negative	Positive
1	1.00 - 1.49	Strongly Disagree	Highly Negative	Highly Positive

Appendix G

Summary on Student's Attitude in Mathematics

	Mean on Positive Statements	Interpretation	Mean on Negative Statements	Interpretation
S1	6.00	Highly Positive	2.40	Positive
S2	4.10	Moderately Positive	2.80	Moderately Positive
S3	4.80	Positive	2.60	Moderately Positive
S4	4.80	Positive	2.20	Positive
S5	4.10	Moderately Positive	2.30	Positive
S6	4.80	Positive	2.80	Moderately Positive
S7	4.50	Positive	2.70	Moderately Positive
S8	5.70	Highly Positive	2.70	Moderately Positive
S9	4.40	Moderately Positive	3.60	Moderately Negative
S10	4.40	Moderately Positive	3.00	Moderately Positive
S11	4.00	Moderately Positive	2.30	Positive
S12	5.00	Positive	2.40	Positive
S13	4.50	Positive	2.20	Positive
S14	5.20	Positive	2.60	Moderately Positive
S15	5.50	Highly Positive	3.10	Moderately Positive
S16	5.30	Positive	4.00	Moderately Negative
S17	4.00	Moderately Positive	3.20	Moderately Positive
S18	4.70	Positive	2.80	Moderately Positive
S19	5.70	Highly Positive	2.40	Positive
S20	4.30	Positive	3.00	Moderately Positive
S21	4.10	Moderately Positive	3.20	Moderately Positive
S22	4.00	Moderately Positive	2.80	Moderately Positive
S23	4.20	Moderately Positive	2.70	Moderately Positive
S24	4.20	Moderately Positive	3.40	Moderately Positive
S25	4.00	Moderately Positive	2.10	Positive
S26	4.50	Positive	3.00	Moderately Positive
S27	4.30	Moderately Positive	2.70	Moderately Positive
S28	3.90	Moderately Positive	4.10	Moderately Negative
S29	5.60	Highly Positive	3.00	Moderately Positive
S30	4.50	Positive	2.70	Moderately Positive
S31	3.70	Moderately Positive	3.00	Moderately Positive
S32	3.40	Moderately Negative	3.20	Moderately Positive
S33	4.10	Moderately Positive	3.30	Moderately Positive
S34	3.70	Moderately Positive	4.00	Moderately Negative
S35	3.70	Moderately Positive	3.70	Moderately Negative
S36	3.70	Moderately Positive	2.50	Moderately Positive

S37	4.00	Moderately Positive	3.20	Moderately Positive
S38	3.90	Moderately Positive	3.10	Moderately Positive
S39	2.70	Moderately Negative	2.60	Moderately Positive
S40	5.40	Positive	3.10	Moderately Positive
S41	3.60	Moderately Positive	2.70	Moderately Positive
S42	3.90	Moderately Positive	3.70	Moderately Negative
S43	5.30	Positive	3.60	Moderately Negative
S44	3.70	Moderately Positive	4.20	Moderately Negative
S45	3.60	Moderately Positive	3.60	Moderately Negative
S46	2.90	Moderately Negative	2.70	Moderately Positive
S47	4.50	Positive	3.10	Moderately Positive
S48	4.40	Moderately Positive	3.40	Moderately Positive
S49	3.80	Moderately Positive	4.20	Moderately Negative
S50	3.80	Moderately Positive	4.40	Moderately Negative
S51	2.60	Moderately Negative	4.20	Moderately Negative
S52	4.00	Moderately Positive	3.40	Moderately Positive
S53	3.90	Moderately Positive	3.40	Moderately Positive
S54	3.80	Moderately Positive	3.70	Moderately Negative
S55	4.40	Moderately Positive	3.10	Moderately Positive
S56	3.90	Moderately Positive	3.50	Moderately Negative
S57	3.20	Moderately Negative	3.50	Moderately Negative
S58	3.30	Moderately Negative	4.70	Negative
S59	3.70	Moderately Positive	3.30	Moderately Positive
S60	3.80	Moderately Positive	3.70	Moderately Negative
S61	3.70	Moderately Positive	4.00	Moderately Negative
S62	3.40	Moderately Negative	2.90	Moderately Positive
S63	2.90	Moderately Negative	3.50	Moderately Negative
S64	3.30	Moderately Negative	4.70	Negative
S65	3.90	Moderately Positive	3.10	Moderately Positive
S66	3.60	Moderately Positive	3.60	Moderately Negative
S67	3.60	Moderately Positive	3.30	Moderately Positive
S68	3.30	Moderately Negative	4.50	Negative
S69	3.20	Moderately Negative	3.60	Moderately Negative
S70	3.90	Moderately Positive	3.50	Moderately Negative
S71	3.30	Moderately Negative	4.80	Negative
S72	3.80	Moderately Positive	4.10	Moderately Negative
S73	3.10	Moderately Negative	3.40	Moderately Positive
Mean	4.09	Moderately Positive	3.25	Moderately Positive

Appendix H
SPSS Output on Students' Perceptions on Parental Involvement

Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
VAR00001	73	1.00	3.00	1.8219	.53600
VAR00002	73	1.00	3.00	2.1096	.65747
VAR00003	73	1.00	3.00	2.1096	.71805
VAR00004	73	1.00	3.00	2.4795	.68940
VAR00005	73	1.00	3.00	1.7534	.59584
VAR00006	73	1.00	3.00	2.2603	.64609
VAR00007	73	1.00	3.00	2.2329	.71726
VAR00008	73	1.00	3.00	2.0411	.67574
VAR00009	73	1.00	3.00	1.3014	.49117
VAR00010	73	1.00	3.00	1.4247	.55070
VAR00011	73	1.00	3.00	2.2329	.69763
VAR00012	73	1.00	3.00	2.0822	.59520
VAR00013	73	1.00	3.00	1.9041	.64902
VAR00014	73	1.00	3.00	2.2877	.63420
VAR00015	73	1.00	3.00	2.3288	.68829
VAR00016	73	2.00	3.00	2.8630	.34621
VAR00017	73	1.00	3.00	2.6438	.56199
VAR00018	73	1.00	3.00	2.0000	.66667
VAR00019	73	1.00	3.00	2.4521	.70791
VAR00020	73	1.00	3.00	2.3288	.62483
VAR00021	73	1.00	3.00	1.8767	.78076
VAR00022	73	1.00	3.00	2.5068	.62635
VAR00023	73	1.00	3.00	2.5205	.66895
VAR00024	73	1.00	3.00	2.7808	.44866

VAR00025	73	2.00	3.00	2.8493	.36022
VAR00026	73	2.00	3.00	2.8082	.39643
VAR00027	73	1.00	3.00	2.5479	.66752
VAR00028	73	1.00	3.00	2.6712	.55415
VAR00029	73	1.00	3.00	2.6438	.53670
VAR00030	73	1.00	3.00	2.6301	.54024
VAR00031	73	1.00	3.00	2.3562	.58618
VAR00032	73	1.00	3.00	2.3699	.63480
VAR00033	73	1.00	3.00	2.6027	.52014
VAR00034	73	1.00	3.00	2.4384	.64520
VAR00035	73	1.00	3.00	2.5753	.59902
VAR00036	73	1.00	3.00	2.0959	.76675
VAR00037	73	1.00	3.00	2.2603	.68774
VAR00038	73	1.00	3.00	2.3425	.67122
VAR00039	73	1.00	3.00	2.0000	.79931
VAR00040	73	1.00	3.00	2.5068	.62635

Valid N (listwise) 73

Note:

Frequency of Involvement	Scale	Range	Descriptive Interpretation
Regularly	3	2.4 – 3.0	Highly Involved
Occasionally	2	1.7 – 2.3	Moderately Involved
Not at All	1	1.0 – 1.6	Not Involved

Appendix I
SPSS Output on Parents' Perceptions on Parental Involvement

Descriptive Statistics					
	N	Min Max		Mean	Std. Deviation
VAR00001	73	1.00	3.00	2.0548	.57471
VAR00002	73	1.00	3.00	2.3014	.63868
VAR00003	73	1.00	3.00	2.4110	.70387
VAR00004	73	1.00	3.00	2.5616	.62330
VAR00005	73	1.00	3.00	2.2740	.69242
VAR00006	73	1.00	3.00	2.3562	.65341
VAR00007	73	1.00	3.00	2.4658	.60282
VAR00008	73	1.00	3.00	2.1233	.76277
VAR00009	73	1.00	3.00	1.6712	.78271
VAR00010	73	1.00	3.00	1.8219	.71380
VAR00011	73	1.00	3.00	2.2740	.60691
VAR00012	73	1.00	3.00	2.0822	.59520
VAR00013	73	1.00	3.00	2.0000	.66667
VAR00014	73	1.00	3.00	2.3836	.63749
VAR00015	73	1.00	3.00	2.5479	.52813
VAR00016	73	1.00	3.00	2.7808	.47861
VAR00017	73	1.00	3.00	2.5616	.68691
VAR00018	73	1.00	3.00	2.1918	.54410
VAR00019	73	1.00	3.00	2.3288	.68829
VAR00020	73	1.00	3.00	2.3699	.69735
VAR00021	73	1.00	3.00	2.2329	.69763
VAR00022	73	1.00	3.00	2.6027	.57105
VAR00023	73	1.00	3.00	2.6301	.58942
VAR00024	73	1.00	3.00	2.8082	.46120
VAR00025	73	1.00	3.00	2.8630	.38424

VAR00026	73	1.00	3.00	2.8082	.49039
VAR00027	73	1.00	3.00	2.6438	.63179
VAR00028	73	1.00	3.00	2.7671	.51426
VAR00029	73	1.00	3.00	2.6849	.52379
VAR00030	73	1.00	3.00	2.7671	.48650
VAR00031	73	1.00	3.00	2.6164	.59232
VAR00032	73	1.00	3.00	2.5342	.64726
VAR00033	73	1.00	3.00	2.7945	.49886
VAR00034	73	1.00	3.00	2.5890	.66323
VAR00035	73	1.00	3.00	2.7260	.47901
VAR00036	73	1.00	3.00	2.2603	.62422
VAR00037	73	1.00	3.00	2.3562	.65341
VAR00038	73	1.00	3.00	2.5616	.60061
VAR00039	73	1.00	3.00	2.4110	.68385
VAR00040	73	1.00	3.00	2.6986	.56972
Valid N (listwise)		73			

Note:

Frequency of Involvement	Scale	Range	Descriptive Interpretation
Regularly	3	2.4 – 3.0	Highly Involved
Occasionally	2	1.7 – 2.3	Moderately Involved
Not at All	1	1.0 – 1.6	Not Involved

Appendix J
Summary of Parental Involvement as Perceived
by the Respondents

	Involvement in School Work	Involvement in Class Work	Provision of Resource Materials	Parental Guidance	Over- All Mean		Involvement in School Work	Involvement in Class Work	Provision of Resource Materials	Parental Guidance	Over- All Mean
P1	2.50	2.70	2.70	2.80	2.67	S1	2.30	3.00	3.00	2.40	2.68
P2	2.00	2.70	3.00	2.90	2.63	S2	2.30	2.20	2.70	2.20	2.35
P3	2.50	2.60	2.60	2.90	2.65	S3	2.10	2.70	2.70	2.30	2.45
P4	2.00	2.00	3.00	3.00	2.49	S4	1.40	1.90	3.00	2.90	2.30
P5	2.70	2.20	3.00	2.80	2.68	S5	2.20	2.60	2.90	2.80	2.63
P6	2.00	2.60	3.00	2.90	2.61	S6	2.30	2.40	2.90	2.60	2.55
P7	2.90	2.30	3.00	2.80	2.75	S7	2.20	2.50	2.90	2.80	2.60
P8	2.50	3.00	2.90	3.00	2.84	S8	2.30	2.50	3.00	2.90	2.68
P9	2.50	2.60	2.80	2.90	2.70	S9	2.20	2.40	2.30	2.10	2.25
P10	2.40	2.20	2.80	3.00	2.60	S10	2.20	2.50	2.70	2.50	2.48
P11	2.60	2.50	2.80	2.80	2.67	S11	1.60	2.30	2.40	1.70	2.00
P12	2.30	2.30	2.60	2.70	2.47	S12	2.00	2.50	2.80	2.50	2.45
P13	2.90	2.70	2.80	2.60	2.75	S13	2.20	2.60	2.70	2.50	2.50
P14	2.40	2.40	3.00	2.50	2.57	S14	2.10	3.00	3.00	3.00	2.78
P15	2.30	2.20	2.40	2.20	2.28	S15	1.90	2.30	2.30	1.90	2.10
P16	2.50	2.30	3.00	2.80	2.65	S16	2.20	2.50	2.70	2.50	2.48
P17	2.60	2.70	2.90	2.60	2.70	S17	1.50	2.20	2.70	2.10	2.13
P18	2.90	2.80	3.00	3.00	2.92	S18	1.80	2.00	2.40	2.20	2.10
P19	2.30	2.90	3.00	2.80	2.74	S19	2.50	2.70	2.90	2.40	2.63
P20	2.60	2.60	3.00	2.90	2.77	S20	2.60	2.70	3.00	2.90	2.80
P21	2.80	3.00	2.90	3.00	2.92	S21	2.10	2.60	3.00	3.00	2.68
P22	2.70	2.60	2.90	2.40	2.65	S22	2.30	2.60	2.50	2.30	2.43
P23	3.00	2.50	2.70	2.80	2.76	S23	2.40	3.00	3.00	2.90	2.83
P24	2.60	2.70	2.90	3.00	2.80	S24	2.60	2.60	2.70	2.80	2.68
P25	1.80	2.40	2.80	2.80	2.43	S25	1.60	2.20	2.60	2.90	2.33
P26	2.70	2.70	3.00	3.00	2.85	S26	1.90	2.00	2.20	2.30	2.10
P27	2.70	2.80	3.00	2.90	2.85	S27	2.10	2.30	2.70	2.70	2.45
P28	2.20	2.60	2.70	2.70	2.54	S28	2.10	2.30	2.30	2.10	2.20
P29	2.30	2.80	2.90	2.70	2.67	S29	2.00	2.30	2.50	2.30	2.28

P30	2.20	2.60	2.80	2.60	2.54	S30	2.10	2.50	2.80	2.70	2.53
P31	2.60	2.50	2.60	2.30	2.50	S31	2.20	2.70	2.50	2.70	2.52
P32	2.00	2.40	2.90	3.00	2.56	S32	1.70	2.40	3.00	2.70	2.46
P33	1.90	2.00	1.60	2.30	1.95	S33	1.60	2.20	2.10	1.90	1.95
P34	1.90	2.00	2.50	2.70	2.27	S34	1.60	2.20	2.50	2.00	2.09
P35	2.30	2.60	3.00	2.70	2.64	S35	1.50	2.30	2.70	2.90	2.36
P36	2.30	2.50	2.90	2.90	2.64	S36	1.70	2.00	2.30	1.90	1.98
P37	1.80	1.90	1.90	2.50	2.02	S37	2.00	2.30	2.70	2.00	2.26
P38	2.10	2.20	3.00	2.70	2.49	S38	2.30	2.10	3.00	2.60	2.51
P39	2.30	2.20	2.80	2.10	2.35	S39	2.00	2.40	2.60	2.10	2.28
P40	1.70	2.00	2.20	2.60	2.11	S40	1.80	2.20	2.70	2.40	2.29
P41	1.30	1.10	1.40	1.10	1.23	S41	1.40	1.80	2.00	1.70	1.73
P42	1.60	2.50	2.60	2.20	2.21	S42	1.50	2.20	2.60	1.80	2.04
P43	1.90	2.20	2.50	1.60	2.05	S43	1.80	1.80	2.30	2.00	1.98
P44	2.20	2.20	3.00	2.70	2.52	S44	1.80	2.00	2.80	2.80	2.36
P45	2.10	2.20	1.90	1.90	2.03	S45	1.80	2.00	2.40	2.10	2.08
P46	1.90	1.90	2.40	2.40	2.14	S46	2.00	2.70	2.00	2.70	2.34
P47	2.40	2.60	2.70	2.50	2.55	S47	2.20	2.60	2.70	2.50	2.50
P48	2.30	2.10	2.50	2.10	2.25	S48	2.40	2.90	3.00	2.70	2.76
P49	2.10	2.70	2.90	2.70	2.59	S49	1.40	1.90	2.70	2.50	2.14
P50	2.00	1.80	2.80	2.10	2.17	S50	1.30	2.10	2.70	1.80	1.99
P51	2.10	2.40	2.90	2.70	2.51	S51	1.30	1.90	2.50	1.60	1.84
P52	2.20	2.50	2.90	2.70	2.57	S52	2.20	2.50	2.90	2.70	2.58
P53	1.70	1.40	2.70	1.20	1.75	S53	1.90	2.00	1.70	1.80	1.85
P54	1.80	2.00	2.80	2.60	2.29	S54	1.60	2.30	2.60	2.10	2.16
P55	1.90	2.40	2.90	2.90	2.51	S55	1.60	1.80	2.60	2.50	2.14
P56	1.50	1.60	1.70	1.60	1.60	S56	2.20	2.50	2.30	2.10	2.28
P57	1.80	2.10	2.70	2.30	2.21	S57	1.70	1.80	2.60	2.00	2.04
P58	1.50	1.50	1.90	1.70	1.65	S58	2.60	2.40	2.70	2.80	2.63
P59	2.20	1.90	2.60	2.20	2.22	S59	1.70	1.70	1.90	1.90	1.80
P60	1.80	1.90	2.00	1.80	1.87	S60	2.00	2.30	1.90	2.30	2.12
P61	1.00	2.90	2.90	2.60	2.32	S61	1.10	2.70	2.90	2.70	2.36
P62	2.50	2.40	2.90	2.70	2.62	S62	1.90	1.30	2.40	1.50	1.79

P63	2.00	2.30	2.30	2.20	2.20	S63	1.80	2.40	2.00	2.00	2.05
P64	2.80	2.50	2.40	3.00	2.68	S64	1.40	1.80	2.30	1.80	1.84
P65	2.40	2.60	2.90	2.50	2.60	S65	2.30	2.60	2.90	2.60	2.61
P66	2.10	2.30	2.30	2.40	2.27	S66	2.00	2.20	1.90	1.80	1.97
P67	2.30	2.10	3.00	2.50	2.47	S67	2.00	1.90	2.20	2.10	2.05
P68	2.60	2.70	2.40	2.60	2.58	S68	1.90	2.40	2.80	2.70	2.46
P69	2.40	2.50	2.80	2.70	2.60	S69	1.80	1.90	2.50	3.00	2.30
P70	1.50	2.60	2.80	2.80	2.40	S70	1.30	2.30	2.60	2.10	2.09
P71	1.70	2.20	2.90	2.20	2.24	S71	2.20	2.40	2.80	2.20	2.41
P72	2.30	2.30	2.90	3.00	2.62	S72	2.30	2.30	2.60	2.20	2.36
P73	1.70	2.00	2.10	2.70	2.11	S73	2.70	2.70	2.40	2.40	2.55
Mean	2.20	2.35	2.68	2.55	2.45	Mean	1.95	2.31	2.58	2.36	2.31

Note:

Frequency of Involvement	Scale	Range	Descriptive Interpretation
Regularly	3	2.4 -3.0	Highly Involved
Occasionally	2	1.7 -2.3	Moderately Involved
Not at All	1	1.0 -1.6	Not Involved

Appendix K
SPSS Output for Correlation and T-test

Table 1
Comparison Between the Perceptions of the Students and Parents on Parental Involvement

Group	Mean	Std. Deviation	Mean Difference	t-value	df	p-value	Interpretation
Student	2.45	0.33	.14671	3.789	72	0.000	significant
Parent	2.30	0.28					

Table 2
Correlation Among Parental Involvement, Students' Achievement, and Attitude

	Parental Involvement	Achievement	Attitude
Parental Involvement	1	0.330** p-value = 0.004	0.398** p-value = 0.000
Achievement	0.330** p-value = 0.004	1	0.688** p-value
Attitude	0.398** p-value = 0.000	0.688** p-value = 0.000	1

** . Correlation is significant at the 0.01 level (2-tailed).

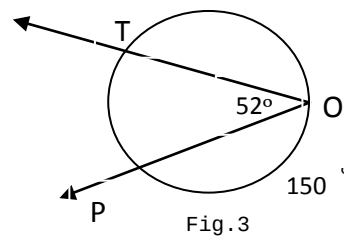
Appendix L
Achievement Test In Mathematics III

DIVISION OF MAKATI
 FOURTH PERIODICAL TEST
 (GEOMETRY) THIRD YEAR
 SY 2012-2013

Directions: Read each item carefully. Write the letter of the correct answer in your answer sheet.

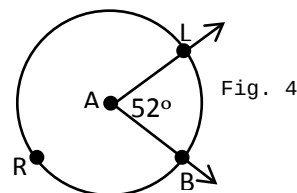
1. Which of the geometric figures extends infinitely in both directions?
 A. line B. circle C. plane D. point
2. Given the figure in no.4, what is the measure of arc BRL?
 A. 52° B. 104° C. 308° D. 360°
3. In figure 5, what is the measure of the arc intercepted by $\angle POT$?

- A. 105°
- B. 104°
- C. 106°
- D. 52°

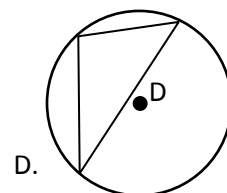
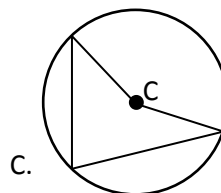
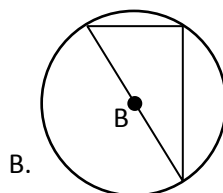
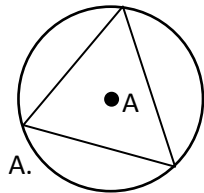


4. In circle A at the right. What is the measure of arc LB?

- A. 360°
- B. 308°
- C. 104°
- D. 52°

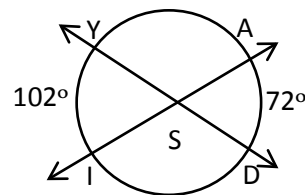


5. What is the chord that divides the circle into two congruent arcs called semi circles?
- A. chord B. diameter C. radius D. secant
6. The centers of the circles below are A, B, C and D. Which of the following triangles formed in the interior of the circle is a right triangle?



7. Find the $m\angle YSI$

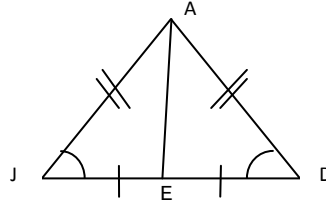
- A. 72°
 B. 87°
 C. 93°
 D. 102°



8. In $\triangle VAL$, $m\angle V = 75$ and $m\angle A = 40$. What is the measure of $\angle L$?
- A. 55° B. 60° C. 65° D. 70°
9. How long is a chord which is 5cm away from the center of the circle with a diameter 26cm?
- A. 48cm B. 24 cm C. 12cm D. 6 cm
10. From the converse of the conditional statement: "If an angle measures 90° , then it is a right angle."
- A. If an angle is a right angle, then it measures 90° .
 B. If an angle does not measures 90, then it is not a right angle.
 C. If it is not right angle then it does not measure 90° .
 D. If it is not a right angle, then it is an acute angle.

11. In the figure at the right, $\overline{JE} \cong \overline{DE}$, $\overline{JA} \cong \overline{DA}$
what other condition will make $\triangle JAE \cong \triangle DAE$ by SSS
Congruence?

- A. $\angle J \cong \angle D$
B. $\angle AEJ \cong \angle AED$
C. $\overline{AC} \cong \overline{AC}$
D. $\overline{AE} \cong \overline{AE}$



12. Find the value of x in figure no. 16

- A. 18
B. 12
C. 19
D. 27

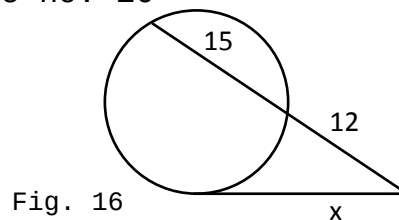
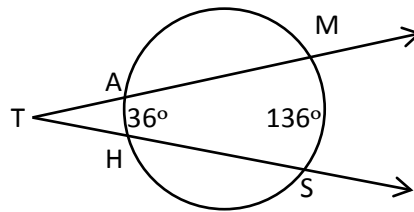


Fig. 16

13. Find the $m\angle T$.

- A. 36°
B. 50°
C. 86°
D. 172°

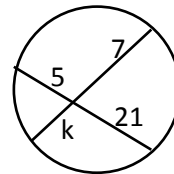


14. What is the diameter of a circle if its radius is 4.5 m?

- A. 2.5 m B. 4.5 cm C. 9 m D. 9.5 m

15. Find the value of k in the figure below.

- A. 15
B. 21
C. 22
D. 26



17. It is an angle that measures half of its intercepted arc

- A. central angle C. right angle
B. inscribed angle D. acute angle

18. Using figure no. 18, what is the value of m ?

A. 112°

C. 78°

B. 110°

D. 70°

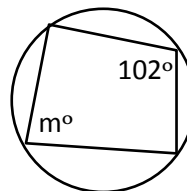


Fig. 18

19. What is the slope of the line passing through $(4, -9)$ and $(13, 6)$?

A. $\frac{15}{10}$

B. $\frac{9}{15}$

C. $\frac{5}{3}$

D. $\frac{15}{9}$

20. What must be the slope of the line so that it is parallel to $5x - y = 10$?

A. 10

B. -10

C. 5

D. -5

21. How far is $(10, 7)$ from $(1, -5)$?

A. 11

B. 13

C. 15

D. 17

22. What are the coordinates of the midpoint a segment whose endpoints are on $(-4, 2)$ and $(-10, 6)$?

A. $(-7, 4)$

B. $(7, -4)$

C. $(7, 4)$

D. $(4, 7)$

23. Which of the following points can be found on the third quadrant?

A. $(0, 9)$

B. $(1, -2)$

C. $(-4, -5)$

D. $(0, 10)$

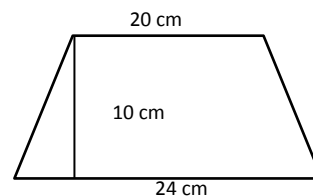
24. Find the area of the quadrilateral below.

A. 220 cm^2

B. 440 cm^2

C. 200 cm^2

D. 240 cm^2



25. What is the equation of the line passing through $(2, -3)$ and has slope -4?

A. $4x + y = -5$

C. $4x - y = -5$

B. $4x + y = 5$

D. $4x - y = 5$

26. Find the value of k in Fig.26

- A. 4
- B. 8
- C. 12
- D. 16

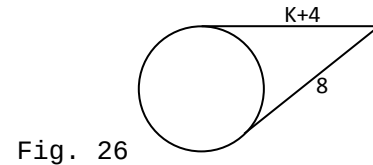


Fig. 26

27. In fig. 27, how long is segment ES?

- A. 25
- B. 18
- C. 15
- D. 8

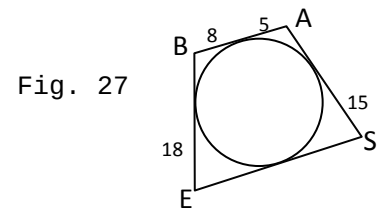


Fig. 27

28. In the figure no.28, LUCK is a parallelogram. Find the measure of $\angle K$.

- A. 146
- B. 57
- C. 34
- D. 17

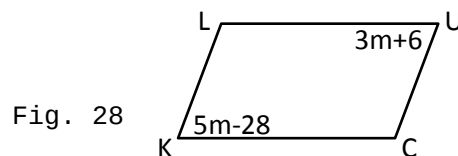
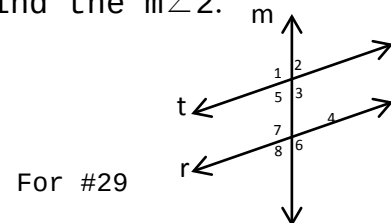


Fig. 28

29. If lines t and r are cut by transversal m as shown in the figure at the right and $m\angle 8 = 72$, find the $m\angle 2$.

- A. 108
- B. 98
- C. 72
- D. 62



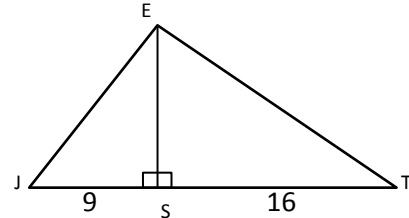
For #29

30. Find the coordinates of the center of the circle defined by the equation $(x+12)^2 + (y+6)^2 = 36$.

- A. (12,6)
- B. (12,-6)
- C. (-12,-6)
- D. (-12,6)

31. In a right $\triangle JET$, $\overline{ES}$ is an altitude. Find the measure of ES using the figure at the right.

- A. 36
B. 12
C. 20
D. 9



32. What is the equation of a circle given the center $(0,0)$ with radius 2?

- A. $x^2+y^2=2$ B. $x^2+y^2=4$ C. $x^2-y^2=2$ D. $x^2-y^2=4$

33. If the slope of the line is $\frac{1}{2}$ and the slope of the line is -2, then what is true about the two lines?

- A. two lines are parallel
B. the two lines coincide
C. the two lines are perpendicular
D. the two lines are intersecting but not perpendicular

34. Express $18-2y+6x=10$ in slope intercept form.

- A. $3x+y=14$ B. $3x+y=-4$ C. $y=-3x-4$ D. $y=3x+4$

35. The intersection of x-axis and y-axis is called _____

- A. origin B. ordinate C. abscissa D. slope

36. What is the length of the radius in item no.30?

- A. 6 B. 12 C. 14 D. 7

What must be the slope of the line so that it is

37. perpendicular to $15x-3y=-10$?

- A. $-\frac{1}{5}$ B. -5 C. $\frac{1}{5}$ D. 5

38. What is the y-intercept of $y=-9x-6$?

- A. -9 B. -6 C. 9 D. 6

39. What is the x-intercept of the line $3x+2y = 24$?

- A. 3 B. 8 C. 12 D. 4

40. Which of the following is a regular polygon?

- A. rhombus C. isosceles trapezoid
B. rectangle D. square

Key to Correction

1.A	11.D	21.C	31.B
2.C	12.A	22.A	32.B
3.B	13.B	23.C	33.C
4.D	14.C	24.A	34.D
5.B	15.A	25.B	35.A
6.B	16.B	26. A	36.A
7.B	17.B	27. No answer	37.A
8.C	18.C	28. B	38.B
9.C	19.C	29. C	39.B
10.A	20.C	30. C	40.D