Macrothink Institute™

Education and Linguistics Research
ISSN 2377-1356
2023, Vol. 9, No. 1

Impact of Teacher Home Visit Tutoring on High School Students' Mathematics Performance: Basis for Adopting an Intervention Program for Struggling Learners During the Pandemic

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Received: April 25, 2023 Accepted: June 16, 2023 Published: June 26, 2023

doi:10.5296/elr.v9i1.21006 URL: https://doi.org/10.5296/elr.v9i1.21006

Abstract

Amidst the risk brought by the COVID-19 pandemic in the Philippines, the country's educators, students, and schools managed to continue education through distance learning. This study explored the effects of teacher home visit tutoring on improving high school

students' performance in mathematics. A researcher-constructed pre-test and post-test and a modified adopted survey questionnaire were personally administered to the respondents. Through the use of MS 365 Excel and Jeffrey's Amazing Statistical Program or JASP software, it was found that there was a significant difference between the respondents' scores before and after the home visitation tutoring. Further, respondents perceived an improvement in their performance after being home tutored by their teachers, and positively perceived the suitability and timeliness of the tutoring strategy.

Keywords: home visitation tutoring, mathematics performance, students' perceptions of learning

I. Introduction

1.1 Background of the Study

SARS-CoV-2, is the official name given by the World Health Organization (WHO) to the 2019—novel coronavirus which causes the Corona Virus Disease (COVID-19). This disease has dispersed extensively worldwide as a pandemic in a short period of time (Guo et al., 2020). The COVID-19 did not only bring health crises around the world, but it also affected all aspects of the life of the people, which includes the field of education (Lapada, Robledo, Miguel, & Alam, 2020).

The pandemic suspended the face-to-face setting of education globally, resulting in the paradigm shift to distance learning from the classroom setting; from the conventional classroom—oriented mode of learning, it adapted the alternative mode of learning. The WHO, as cited by Lapada et al. (2020), recommended that alternative learning should be adapted by educators to make the cancellation of classes easier by making some online materials available by providing a list of resources from the World Bank's Edtech teams. This program aimed to address the loss of learning during the pandemic and to create chances for remote learning. Moreover, the mandate establishes guiding principles for the delivery of online lessons and techniques that stakeholders such as teachers and parents should use. Thus, educators turned to internet venues to communicate with pupils; webinars became a makeshift classroom; parents were called for monitoring purposes, and children were denied social engagement with their peers.

According to World Bank (2020b), as cited by Lapada et al. (2020) Philippines, like many other nations throughout the world, responds to WHO's request through the Department of Education. YouTube, learning management systems (LMS), digital libraries, internet streaming or broadcast, repositories like Open Educational Resources (OER), and other educational platforms were used depending on the availability in each part of the country.

The existing threat of getting infected by the virus banned the face-to-face interaction between teachers and students. Hence, monitoring students' engagement in the learning activities has become a challenge for teachers. However, for kids, families, and instructors, home visiting is a tool to bridge the gap between school and home. A rising body of evidence suggests that parents should promote their children's learning at home. Home visits, according to Coleman (2012), are a good approach to interacting and forming healthy family-teacher relationships.

1.2 Home Visits

As the COVID-19 pandemic caused a lot of changes in people's way of life and brought us into a new normal situation, still, education must continue. With students staying at home and learning simultaneously, home visits have become a crucial task or activity for teachers. Junco (2021) listed 5 advantages of doing a home visit during a pandemic: 1) acquaints teachers with their students; 2) helps teachers assess the needs and status of their learners; 3) allows teachers to create room for communication and builds rapport with the students and their family; 4) increases parents' involvement in their child's education; and 5) strengthens

home-school partnership.

According to the study by Kelly, Gaylor and Spiker (2022), the new progress in program designs, assessment, and financing has aided the implementation of home visitation as a feasible intervention to enhance the health, safety, and education of children and their families. The home visit not only allows a teacher to have a better knowledge of a student's home life and how it impacts academic achievement, it also has the ability to bridge any cultural barriers that may be preventing a student from succeeding (Lynch, 2019).

1.3 Tutoring Programs and Students' Academic Success

Since the beginning of the pandemic, educational institutions have faced unprecedented challenges in delivering education and meeting the students' academic needs. Health safety and the need for physical and social distancing have declined the role of traditional classroom set up which is physical in nature. As a result, remote learning was utilized to make education continue. However, some modalities of remote learning posed a great challenge for both students and teachers which includes the lack of resources and the technical know-how in using them (Nickow et al., 2020).

Tutoring is a useful tool teacher could utilize to help improve the academic performance of students in failed subjects (Guerra-Martin et al., 2017). Tutoring-defined as one-on-one or small-group instructional program, always comes to mind in terms of doing interventions that would help students do better in their academic studies. Nickow, Oreopoulos and Quan (2020), stated that "tutoring ranks among the most widespread, versatile, and potentially transformative instruments within today's educational toolkit".

1.4 Students' Perception on Tutoring Program

Several studies have shown results of students' assessment of the tutoring program. For instance, in the study of Guerra, Lima and Lima (2017), results have shown that the tutoring program was positively responded by the students, by having a rating on all of the statements above four. These statements were categorized into three: suitability of the strategy; timing; and program effectiveness in terms of perceived improvements. In addition, students believe that private tutoring and private tutors are more successful at providing examination help than traditional schools and professors (Zhan et al., 2013)

Generally, this research aims to identify the effects of home visitation tutoring in improving high school students' performance in Mathematics that will serve as a basis for an institutional policy. Specifically, it seeks answers to the following questions:

1) What is the level of performance in Mathematics of the respondents before and after the home visitation tutoring in the following lessons:

a. problems involving linear inequalities in two variables;

b. problems involving systems of linear inequalities in two variables; and

c. problems involving linear functions?

2) Is there a significant difference between the students' score before and after the home visitation tutoring?

3) What is the level of perception of the respondents on the effects of home visitation tutoring in terms of:

a. suitability of the strategy;

b. tutoring timing; and

c. improvements perceived?

2. Methodology

2.1 Research Design

This study employed one-group (no control group) pretest—intervention—posttest design to determine the effects of home-visitation tutoring in improving the students' performance in mathematics and determined the students' perceptions about the effects of home visitation tutoring. The respondents used was a single group of subjects with the same characteristics (struggling learners in Mathematics 8) and was given the same treatments, assessments, and innovations. In addition, this design has linear ordering that requires the assessment of a dependent variable before and after a treatment (home visitation tutoring) is implemented. From this design, the effect of a treatment (home visitation tutoring) is determined by calculating the difference between the pretest and posttest. If the pretest and posttest scores differ significantly, then the difference may be attributed to the independent variable (Glen, 2022).

2.2 Participants and Setting

Relevant data were collected from the students enrolled in Grade 8 from three different public high schools in the Schools Division of Palawan. The population of this study was the entire Grade 8 students of Sandoval National High School, Liminangcong National High School, and Brooke's Point National High School of the province of Palawan, in the Philippines, for the school year 2021–2022. The students and their parents signed a consent form and before they participated in the study. Out of 606 students from Brooke's Point National High School, only 253 confirmed their participation in the study, 76 out of 90 students from Sandoval National High School, and 79 out of 185 students from Liminangcong National High School participated in the selection of the respondents of the study. Purposive sampling was used to determine the respondents of this study. Each of the three researchers purposely selected 6 respondents from their respective schools. The selected respondents were the students who least performed in the pretest. Six students from Sandoval National High School, Liminangcong National High School, and Brooke's Point National High, a total of eighteen grade 8 students, comprise the respondents of the study. This strategy was used to enable the researchers to focus on the students who have great difficulty in mathematics.

2.3 Data Gathering Procedure

To collect relevant qualitative and quantitative data, the following tools were used: (1) a

researcher-constructed pre-test and post-test and (b) a modified version of an adopted survey questionnaire from the study of Guerra-Martin et al. (2017) on effectiveness of tutoring to improve academic performance of nursing students at the University of Seville to determine the perception of the students on home-visitation tutoring.

Before conducting the intervention, the researchers first, identified the lessons in Quarter 2 of Grade 8 Mathematics that involve problem solving. It was believed that these lessons are perceived to be difficult by the students. Problems involving linear inequalities in two variables; problems involving systems of linear inequalities in two variables; and problems involving linear functions were the identified lessons. After identifying the lessons, the researchers, then prepared the Table of Specifications to specify the allotted time for each topic in tutoring and constructing Pretest and Posttest. Tests were submitted to the scrutiny of a panel of experts for face and content validity. The suggestions of the expert panel such as Master Teacher I in Mathematics, Head Teacher III in Mathematics and other certified mathematics teachers from the three (3) different high schools were incorporated in the final version of the pre and posttests. To ensure the reliability of the pre-test and posttest instrument, the researchers administered the test once to a total of 30 randomly selected grade 8 students from Brooke's Point National High School, Liminangcong National High School, and Sandoval National High School. Kuder-Richardson test of reliability in terms of internal consistency revealed a Cronbach's alpha that is interpreted as a "Good" measure ($\alpha = 0.826$).

Thus, the proponents were confident that the pretest and posttest questionnaires would yield reliable results. Furthermore, modules provided by the Department of Education-Central Office were used as learning materials in the home visitation tutoring.

2.4 The Tutoring Program

Each tutor had a maximum of 6 students from their respective schools. A one-to-one academic and traditional tutoring model was employed in which the expert-researchers served as the instructors, directors, evaluators and feedback providers to achieve a positive outcome in mathematics performance and perception towards home visitation tutoring.

The tutoring program lasted from December 15, 2021 to February 2022. The tutoring was done in person and virtually through chats and text. Since, tutors were all regular DepEd employees, they all have duties and responsibilities in their respective station. Virtually, students could raise questions regarding the given module or topic at their own pace and time, so continuous personal contact was provided.

The following were done during in-person meeting. First, meeting was carried out at different times by the researchers due to the typhoon Odette that hit Palawan, as well as the succeeding sessions. The first meeting was to get-to-know each other, to know the short-comings, preferred methods by the student, as well as the time they needed for each lesson were discussed. The researchers also explained further why such a study was conducted.

The succeeding meetings were dependent on the skills and capability of the respondents. Different techniques and software applications were used and were applied in tutoring. At the

time when there was no internet connection, the application such as offline version of Desmos and Graphmatica were used to illustrate graphs of the different equations and inequalities included in the given module.

2.5 Evaluation of the Effectiveness of the Tutoring Program

The data obtained was analyzed using Data Analysis in MS 365 Excel and Jeffrey's Amazing Statistical Program or JASP software. After the tutoring, the respondents were given a 40-item multiple-choice posttest together with the survey questionnaire about their perception on the effects of home visitation tutoring in terms of (a) suitability of the strategy, (b) tutoring timing, and (c) improvements perceived.

2.6 Data Analysis

Mean, percentage, and standard deviation were employed to get the results of the level of performance in Mathematics of the respondents before and after the home visitation tutoring. Scaling Descriptor used in describing the level of performance was based from DepEd Order No. 8 s. 2015 (DepEd, 2015).

T-test was used to find if there is a difference between the respondents' scores before and after the home visitation tutoring and to find if significant difference exists between the test scores.

Likert Scale was used to assess the students' perceptions about the effects of home visitation tutoring to their mathematics learning. Verbal Interpretation was adopted and was modified from Likert Scale to Interpret perception used by Samosa (2021) on CoSIM (Comics Cum Sim): An Innovative Material in Teaching Biology.

Range of Mean	Scale	Verbal Interpretation
4.20–5.00	5	Strongly Agree
3.40–4.19	4	Agree
2.60–3.39	3	Neutral
1.80–2.59	2	Disagree
1.00–1.79	1	Strongly Disagree

3. Results and Discussion

3.1 Performance Level in Mathematics

Table 1 shows the level of performance in Mathematics of the respondents before and after the home visitation tutoring in the following lessons: (a) problems involving linear inequalities in two variables; (b) problems involving systems of linear inequalities in two variables; and (c) problems involving linear functions.

Table 1. Descriptive statistics for level of performance in mathematics (n = 18)

Topic/Lesson	Before Tutoring			After Tutoring			
	Mean Percentage Score (MPS)	Standard Deviation (SD)	Description	Mean Percentage Score (MPS)	Standard Deviation (SD)	Description	Mean Percentage Score Difference
Lesson 1: *Problems involving linear inequalities in two variables*	29.91%	12.90	*Did Not Meet Expectation*	49.57%	20.81	*Did Not Meet Expectation*	–19.66%
Lesson 2: *Problems involving systems of linear inequalities in two variables*	20.74%	9.94	*Did Not Meet Expectation*	41.11%	12.99	*Did Not Meet Expectation*	–20.37%
Lesson 3: *Problems involving linear functions*	41.67%	30.38	*Did Not Meet Expectation*	64.81%	19.50	*Fairly Satisfactory*	–23.14%

Scaling: MEAN PERCENTAGE SCORE

84.00–100	Outstanding
76.00–83.99	Very Satisfactory
68.00–75.99	Satisfactory
60.00–67.99	Fairly Satisfactory
00.0–59.99	Did Not Meet Expectation

Note. *Scaling Descriptor was based on DepEd Order No. 8 s. 2015.

Table 1 shows that before the conduct of home visitation tutoring, the respondents had a mean percentage score of 29.91% with a standard deviation of 12.90 in Lesson 1 (*Problems involving linear inequalities in two variables*), mean percentage score of 20.74% with a standard deviation of 9. 94 in Lesson 2 (*Problems involving systems of linear inequalities in two variables*), and mean percentage score of 41.67% with a standard deviation of 30.38 in Lesson 3 (*Problems involving linear functions*). These mean percentages scores have a descriptive value of "Did Not Meet Expectation".

On the other hand, the results on respondents' level of performance after the conduct of home visitation tutoring are as follow: mean percentage score of 49.57% with a standard deviation of 20.81 in Lesson 1; mean percentage score of 41.11% with a standard deviation of 12.99 in Lesson 2; and mean percentage score of 64.81% with a standard deviation of 19.50 in Lesson 3. The respondents' level of performance after the home visitation tutoring in Lessons 1, 2,

and 3 had a descriptive value of "Did Not Meet Expectation", "Did Not Meet Expectation", and "Fairly Satisfactory", respectively.

The data also show that there is an increase in the mean percentage scores of the respondents in all lessons. A 19.66% increase in the MPS in Lesson 1, 20.37% increase in Lesson 2, and 23.14% increase in Lesson 3. This implies that the home visitation tutoring, though did not make the respondents get a passing grade in posttest in the first two lessons, but had helped them better their performance in Mathematics. It is evident in the in the mean percentage score difference.

3.2 Difference in the Means Between Pretest and Posttest Level of Performance

Table 2 shows significant difference between the students' score before and after the home visitation tutoring.

Table 2. Dependent sample t-test on the students' scores before and after home visitation tutoring (n = 18)

Measure 1	Measure 2	T	df	p	Mean Difference	SE Difference	Cohen's d
Pretest Level of Performance	- Posttest Level of Performance	-9.670	17	< .001	-20.972	2.169	-2.279

Cohen's d: <0.2	*Trivial effect*
0.2	*Small effect*
0.5	*Medium effect*
0.8	*Large effect*

As can be seen, a dependent sample t-test was used to determine if significant difference in the mean percentage scores of the respondents in the pretest and posttest exists. A test of normality was first used to determine if the set of data pairs follow a normal distribution. Moreover, Shapiro-Wilk's test revealed a result stating a non-deviation of data from normality. Thus, a parametric test in comparing mean percentage scores was used.

The two dependent measures (Pretest and Posttests' level of performance) had a mean difference of -20.972. This implies that the second measure has a greater value than the first measure. The mean difference was tested for significance at 0.05 and revealed a p-value < 0.001 that is statistically significant ($t(17) = -9.670, p < 0.001$). Hence, the null hypothesis was rejected and the alternative hypothesis was accepted.

Although a significant difference was found in the level of performance of the respondents before and after the home visitation tutoring, it was also important to examine the effect size of this difference. This significance only considers the likelihood of getting the sample result by random; it does not show the magnitude of the difference (practical significance), and

neither can it be used to compare between research (Goss-Sampsom, 2018). The effect size was calculated by the researchers using the Cohen's *d* ($d = -2.279$). Cohen's d suggests that this is a large effect.

These results imply that the home visitation tutoring conducted has resulted in an improvement in the test scores of Grade 8 students in Mathematics. This finding is consistent with the findings of previous research and help to reinforce the positive impact home visits have been shown to have on students (Wright et al., 2018). Specifically, the study's findings emphasize the effect of home visitation and tutoring in improving the performance of the students. Furthermore, Nickow, Oreopoulos and Quan (2020) maintain that tutoring is significantly effective at helping students learn by claiming that 80% of the 96 studies have recorded a statistically significant effect.

3.3 Perception on the Effects of Home Visitation Tutoring

Table 3 reveals the responses to the survey questionnaire for assessment of the level of perception of the respondents on the effects of home visitation tutoring in terms of: (a) suitability of the strategy; (b) tutoring timing; and (c) improvements perceived.

Table 3. Average mean weight of the students' perception on the effects of home visitation tutoring (n = 18)

ITEM	Mean	SD	Verbal Interpretation
SUITABILITY OF THE TUTORING STRATEGY			
1. Naniniwala ako na natanggap ko ang mga tamang impormasyon sa "turoring." (*I found the information received before starting the tutoring is adequate.)*	4.4444	0.6157	Strongly Agree
2. Ang nilalaman ng "tutoring" ay naayon sa aking pangangailangan bilang estudyante. (*Tutoring content is adapted to my needs.*)	4.611	0.502	Strongly Agree
3. Naniniwala akong ibinigay ng guro ang lahat nang makakaya niya upang matulungan ako. (*I consider the teacher has made a great effort to help me.)*	4.5	0.786	Strongly Agree
4. Naniniwala akong pinaghandaan ng guro ang pagbibigay sa akin ng "tutoring activity" na ito. (*I consider that the teacher has the proper preparation to carry out this activity.)*	4.5	0.786	Strongly Agree
5. Naniniwala akong dapat ding ibigay sa ibang estudyante ang "tutoring" na natanggap ko. *(I would recommend the use of home tutoring to other students.)*	4.333	1.029	Strongly Agree
6. Sa kabuuan ay kuntento ako sa "tutoring". *(In general I am satisfied with the tutoring.)*	4.111	1.278	Agree
Total Mean Weight	4.417	0.833	Strongly Agree
TUTORING STRATEGY TIMING			
7. Naniniwala ako na ang mga oras na itinakda sa mga "tutoring" ay tama at naangkop para sa akin. (*The timetable of the tutoring was adequate*.)	4.167	0.857	Agree
8. Ang bilang ng "tutoring activities" ay akma lamang para sa akin. (*The number of tutoring sessions was adequate*.)	3.556	1.294	Agree
Total Mean Weight	3.861	1.076	Agree

IMPROVEMENTS PERCEIVED BY THE STUDENTS			
9. Naniniwala akong may nabagong maganda sa paggamit ng aking oras sa pag-aaral. (*I have improved the use of my time*.)	4.222	0.943	Strongly Agree
10. Naniniwala akong "nag-improved" ang "priorities" ko sa pag-aaral. (*I have improved my organization related to my studies*.)	4.3333	0.686	Strongly Agree
11. Ang "tutoring" ay nakatulong sa akin na mapili ko ang mga bagay na dapat kong pahalagahan sa pag-aaral ko. (*It has helped me to better choose my objectives regarding my opportunities*.)	4.8333	0.3835	Strongly Agree
12. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "translation of statements into mathematical expressions." (*I have learned study skills in translation of statements into mathematical expressions*.)	4.6667	0.4851	Strongly Agree
13. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "solving problems involving linear inequalities in two variables." (*I have learned study skills in solving problems involving linear inequalities in two variables*.)	4.4444	1.0416	Strongly Agree
14. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "graphing systems of Linear Inequalities in two variables." (*I have learned study skills in graphing systems of linear inequalities in two variables*.)	4.5556	0.7838	Strongly Agree
15. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "Solving Problems Involving Systems of Linear Inequalities in Two Variables." (*I have learned study skills in solving problems involving systems of linear inequalities in two variables*.)	4.6667	0.5941	Strongly Agree
16. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "identifying independent and dependent variables." (*I have learned study skills in identifying independent and dependent variables.*)	4.2778	0.7519	Strongly Agree
17. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag-aaral sa "steps in solving problems involving linear functions." (*I have learned study skills in steps in solving problems involving linear functions*.)	4.3333	1.0847	Strongly Agree
18. Nakatulong sa akin ang "tutoring" na mapag- isipang mabuti o makapag-reflect tungkol sa mga bagay na ginagawa ko na may kinalaman sa aking pag-aaral. (*It has helped me to reflect on my academic activity.)*	4.6111	0.6077	Strongly Agree
19. Nakatulong sa akin ang "tutoring activity" para makita ko ang mga bagay kung saan dapat ako "mag-improved". (*I have been able to analyze the aspects in which I must improve.)*	4.5	0.9852	Strongly Agree
Total Mean Weight	4.4949	0.7588	Strongly Agree

Legend: *4.20–5.00 –Strongly Disagree* *1.80–2.59 –Disagree*
3.40–4.19 –Agree *1.00–1.79 –Strongly Disagree*
2.60–3.39 –Neutral

3.4 Perception on the Effects of Home Visitation Tutoring

Table 4 shows the summary of student's perceptions on the effects of home visitation tutoring towards mathematics learning.

Table 4. Overall mean weight of the students' perception on the effects of home visitation tutoring (n = 18)

Perception	Weighted Mean	Verbal Interpretation
Suitability of the strategy	4.417	Strongly Agree
Tutoring timing	3.861	Agree
Improvements perceived	4.495	Strongly Agree
Overall	**4.258**	**Strongly Agree**

Based on the data collected from the respondents, the respondents ***strongly agreed*** on most of the items about the home visitation tutoring program with respect to the *suitability of the tutoring strategy* and *improvements perceived by the students*. Consequently, most of the respondents ***agreed*** to the statements referring to the *tutoring strategy timing*.

In fact, 15 out of 19 items in the Likert scale were perceived by the respondents as "Strongly Agree" while the remaining 4 statements were perceived by the respondents as "Agree". The statement *"Ang "tutoring" ay nakatulong sa akin na mapili ko ang mga bagay na dapat kong pahalagahan sa pag-aaral ko."* (*It has helped me to better choose my objectives regarding my opportunities*.) got the highest mean weight of 4.8333. This implies that the home visitation tutoring had helped the respondents realize their priorities in their studies. It was followed by the statements *"Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "translation of statements into mathematical expressions."* [*I have learned study skills in translation of statements into mathematical expressions*] and "*Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "Solving Problems Involving Systems of Linear Inequalities in Two Variables."* [*I have learned study skills in solving problems involving systems of linear inequalities in two variables*] that both had a mean weight of 4.6667. A positive perception of the respondents in these two statements that talks about the study skills learned indicates that the home visitation tutoring improved their study skills.

On the other hand, the statement *"Ang bilang ng "tutoring activities" ay akma lamang para sa akin." [The number of tutoring sessions was adequate],* although positively perceived by respondents, received the lowest mean weight of 3.556. This suggests that the challenge of learning from the program was related to the number of tutoring activities or the attendance of the subject tutors in addressing the difficulties of the students. This is supported by the findings of the previous studies, that we need to consider tutoring programs and its regular meetings as it contributes positively on the learning process, and completion of the learners' academic success. (Arbizu et al., Guerra-Martin, 2005; Dobinsons, 2006, as cited in Guerra-Martin et. al, 2017).

Generally, the home visitation tutoring in terms of the suitability of the strategy used, tutoring timing, and improvements it gives were all positively perceived by the respondents with an overall weighted mean of 4.258, interpreted as "Strongly Agree". This suggests that home visitation tutoring has a positive impact on the learning process of the students.

4. Conclusion and Recommendations

This study is intended to identify the impact of teacher home visit tutoring in improving high school students' performance in Mathematics. Data have shown that students' scores have increased significantly after the implementation of the program. Tutoring in a right amount of time is a useful tool to improve the students' academic performance in difficult subjects such as Mathematics. The effectiveness of home visit tutoring program is supported by the improvement in learners' performance.

The respondents' positive perception on the tutoring suggests the potential use of home visit tutoring in Mathematics during the pandemic as the Philippines is still implementing the limited face to face classes. It is recommended that the Department of Education adopts the use of home visitation tutoring for far flung areas where schools may not be ready for the face-to-face class this school year.

It is further recommended to school administration to craft a regular schedule for the home visit tutoring to ensure ample time as the teacher discusses the identified lessons for the students.

It will also be an advantage if there will be parent line communication or a portal (Miguel & Abulon, 2016) for the interest of completion, progress, and mental health monitoring at home. Furthermore, continued monitoring and evaluation of the program would be a great help to enhance the system of delivering education

Furthermore, to ensure teachers' readiness on the conduct of home visitation tutoring, it is recommended by this study that the Department of Education (DepEd) provides adequate trainings or series of webinar to equip teachers with knowledge and skills needed in carrying out the said program.

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Appendix A

Title of Research: "Effects Of Home Visitation Tutoring In Improving High School Students Performance In Mathematics: Implications For An Institutional Policy"

Purpose of the study: This research aims to identify the effects of Home Visitation Tutoring in improving high school students' performance in Mathematics that will serve as a basis for an institutional policy. Specifically, we aim to answer the following questions:

1. What is the level of performance in Mathematics of the respondents before and after the home visitation tutoring in the following lessons:

a. problems involving linear inequalities in two variables;

b. problems involving systems of linear inequalities in two variables; and

c. problems involving linear functions?

2. Is there a significant difference between the students' scores before and after the home visitation tutoring?

3. What is the level of perception of the respondents on the effects of home visitation tutoring in terms of:

a. suitability of the strategy;

b. tutoring timing; and

c. improvements perceived?

Findings from this study will be helpful in improving high school students' performance in Mathematics that will serve as a basis for an institutional policy.

Procedures to be followed: The researchers request that you answer a number of test questions in Mathematics 8 given to your parents by your adviser and a survey questionnaire about your perceptions about the home visitation tutoring. You are free to return your answer anytime this week when you are done answering them.

Discomforts and risks: As with any research study, the only possible discomfort you might experience from participation in this study is that you might not want to share experiences which you might like to keep to yourself. For this reason, you may decline to answer any or all of the questions, or you may stop participating at any time. However, we strongly encourage you to participate since we guarantee anonymity and confidentiality of your answers. Besides, you will only share the experiences which you are confident about sharing.

Benefits: This is an opportunity for a youth like you to participate in presenting your own standpoints regarding the issue of identity especially ethnic identity.

Statement of confidentiality: Your participation in this research is confidential. Only the researchers will have access to the responses information that discloses your identity in this

research. All these materials will be stored at the researcher's residence/office. No identifying labels will be attached to the data from your responses (the data will not be associated with your identity). Also, in the event of publication of this research, no personally identifying information will be disclosed. Your name will be changed to an alias in any publications or reports, and any details which might identify you will also be removed.

Right to ask questions: You may ask questions about the research. Please contact Ms. Red Gel Linn V. Castillo, Mr. Jorge P. Fabonan, or Ms. Arvee Grace S. Magdayao for inquiries.

Voluntary participation: Your participation is completely voluntary. You may refuse to answer any questions you do not wish to answer. You may end your participation at any time without penalty by telling the researcher. You are at the appropriate age to consent to participation in this research. If you consent to participate in this research and to the terms above, please sign your name and indicate the date below. You will be given a copy of this consent form to keep for your records.

Participant (Please affix your complete name and signature above)

The Researchers:

(SGD) TERESITA D. TAJOLOSA, Ph.D.

Associate Professor

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(SGD) MS. ARVEE GRACE S. MAGDAYAO

Teacher I

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(SGD) MR. JORGE P. FABONAN

Special Science Teacher I

Liminangcong National High School

(SGD) MS. RED GEL LINN V. CASTILLO

Teacher I

Brooke's Point National High School

Appendix B

COVERAGE FOR THE SUMMATIVE TEST (PRETEST and POSTTEST)

Note: *The Content Standard, Performance Standard and essential learning competencies were lifted from the Most Essential Learning Competencies provided by the DepEd.*

COURSE LEARNING OUTCOMES:

CONTENT STANDARD: The learner demonstrates key concepts of linear inequalities in two variables, systems of linear inequalities in two variables and linear functions.

PERFORMANCE STANDARD: The learner is able to formulate and solve accurately real-life problems involving linear inequalities in two variables, systems of linear inequalities in two variables, and linear functions.

Most Essential Learning Competencies	**Classification of Outcomes**
1. solves problems involving linear inequalities in two variables.	Understanding, Applying
2. solves problems involving systems of linear inequalities in two variables.	Understanding, Applying
3. solves problems involving linear functions.	Understanding, Applying

TABLE OF SPECIFICATIONS

Topic	**Specific Objective**	Time Frame	**Classification: Revised Taxonomy of Objectives**					Number of Points/ Items
			Remembering	Understanding	Applying	Analyzing	Evaluating	
Module 3: Solving Problems Involving Linear Inequalities in Two Variables	1. translate statements into mathematical expressions. a. Illustrate verbal inequality statements to mathematical statements; a.1 with >; a.2 with <; a.3 with ≤; a.4 with ≥	1	1	2	3	4		4
	2. solve problems involving linear inequalities in two variables; and a. Identify the words needed to be represented with variables/symbols. b. Translate the statement into mathematical expression. c. Identify what is asked in the problem and solve for what it ask and state the answer.	2	5,6,7	8,9,10	11	12	13	9
Module 4: Problems involving systems of linear inequalities in two variables.	1. Graphing Systems of Linear Inequalities in Two Variables 1.a Sketch the graph of Linear Inequalities in Two Variables with; a. "<" b. ">" c. "≤" d. "≥"	2	14, 15	16, 17	18	19	20	7
	2. Solving Problems Involving Systems of Linear Inequalities in Two Variables	2	21, 22, 23	24, 26	25	27	28	8

	a. Identify the important parts of the problem. b. Find the unknown and assign variables to represent them. c. Write the system of linear inequalities in two variables described in the problem. d. Follow the steps in graphing system of linear inequalities in two variables to find the solution set.							
Module 8: Solving Problems Involving Linear Functions	1. Identify independent and dependent variables 2. Follow the steps in solving problems involving linear functions 2.1 Understand the problem. Read and analyze the situation. 2.2 Devise a plan. List down all the given data. Determine the unknown and what is asked in the problem. 2.2 Carry out the plan. Write the function that describes the relationship between the variables and solve the function. 2.3 Look back. Verify if the solution obtained is meaningful to the problem solved.	3	29, 30, 31,	32, 33, 34,	35, 36	37, 38	39, 40	12
	Total	10 hours	12	11	6	6	5	40

Prepared by:

(SGD) MS. ARVEE GRACE S. MAGDAYAO

Researcher

(SGD) MR. JORGE P. FABONAN

Researcher

(SGD) MS. RED GEL LINN V. CASTILLO

Researcher

Appendix C

Pretest/Posttest Questionnaire

Dear student,

Thank you for participating in this research. Please answer the questions below as patiently as you can by writing the letter of your answer on the blank before the number. Data from this pre-test will be helpful in determining the level of your performance in Mathematics 8 in selected topics.

NAME: _____ SCORE: _____

1. Which inequality represents “the sum of x and y is at most 15”?

A. $x + y \geq 15$ B. $x + y > 15$ C. $x + y \leq 15$ D. $x + y < 15$

2. The statement “the sum of two numbers is at least 29” can be expressed as:

A. $x + y > 29$ B. $x + y < 29$ C. $x + y \geq 29$ D.$x + y \leq 29$

3. Which of the following inequalities is the same as “the sum of $2x$ and y is at least 20”?

A. $2x + y \geq 20$ B. $2\ x + y > 20$ C. $2x + y \leq 20$ D. $2x + y < 20$

4. Which inequality represents “A number x decreased by a number y is less than 24.”?

A. $x - y > 24$ B. $x - y < 24$ C. $x - y \geq 29$ D.$x - y \leq 29$

5. Lian’s age is four less than Cita’s age. The sum of twice Cita’s age and thrice Lian’s age is at most 18. How old is Lian?

A. at most 2 years old C. at most 18 years old

B. at most 6 years old D. at most 21 years old

6. The total amount Shobie paid for two kilos of beef and three kilos of fish is less than $P\square p$ 700. Suppose a kilo of beef costs $P\square p$ 250. What will be the maximum cost of a kilo of fish? Round-off the answer to the whole number.

A. Php 60 B. Php 65 C. Php 66 D. Php 67

7. Jasmine plans to sell hotdogs for $P\square p$ 6 and hard-boiled eggs for $P\square p$ 10. If she sells 15 hard-boiled eggs, what is the maximum number of hotdogs she should sell to have total sales of at least $P\square p$ 260?

A. 15 B. 16 C. 17 D. 18

8. The electric bill of Santos family for this month is at most $P\square p$ 110 lower than the previous bill. If the previous bill marked $P\square p$ 1, 230, at most how much does the present bill cost?

A. $P\square p$ 1, 100 B. $P\square p$ 1, 110 C. $P\square p$ 1, 120 D. $P\square p$ 1, 130

9. Bonin gave the fish vendor $P\square p$ 1, 000− $bill$ for 1.2 kg of bangus and 1 kg of tilapia which cost less than $P\square p$ 300. Suppose a kilogram of bangus costs $P\square p$ 180, which of the following could be the cost of a kilogram of tilapia?

A. $P\square p$ 84 C. $P\square p$ 85

B. below $P\square p$ 84 D. between $P\square p$ 84 to $P\square p$ 85

10. William bought 3 thick washable face masks and 4 thin washable face masks and paid a total amount of at most $P\square p$ 200. If the thick washable face mask costs $P\square p$ 30 each, what could be the maximum price of the other type of face mask?

A. P□p 27 B. P□p 27.25 C. P□p 27.50 D. P□p 27.75

11. Mark goes to the store to buy pens and pencils. He has P□p 38 in his pocket, and he's planning to buy pens for P□p 6 each and pencils for P□p 8 each. If he buys 2 pens, what is the maximum number of pencils he can buy to the nearest whole number?

A. 2 B. 3 C. 4 D. 5

12. Alice is selling bread and pudding to earn money. Each bread costs P□p 2 and each pudding costs P□p 3. She needs to sell at least 50 pieces of bread and needs to earn at least P□p 500. Let x be the number of bread she needs to sell and y be the number of pudding. At least how many breads and puddings can Alice sell?

A. 50 breads and 50 puddings C. 100 breads and 100 puddings

B. 50 breads and 100 puddings D. 75 breads and 50 puddings

13. Rhea is buying burger and pizza for snacks with her friends. Each burger costs P□p 35 and each box of pizza costs P□p 100. Rhea wanted to spend no more than P□p 500, but she needs at least 3 burgers and 2 boxes of pizza. Let x be the number of burger and y be the number of boxes of pizza. Which of the following could NOT the possible number of burgers and boxes of pizza Rhea can buy?

A. 3 burgers and 2 boxes of pizza C. 4 burgers and 4 boxes of pizza

B. 3 burgers and 3 boxes of pizza D. 5 burgers and 3 boxes of pizza

14. In graphing linear inequalities that involve two variables, when will a solid line be used?

A. When the inequality sign used is "less than"

B. When the inequality sign used is "greater than"

C. When the inequality sign is "less than or equal" or "greater than or equal"

D. Any inequality sign uses solid line

15. A linear inequality of the form $y \geq 2x + 1$ is graphed on a cartesian plane, which part of the graph will be shaded?

A. The upper region of the line that represents $y \geq 2x + 1$

B. The lower region of the line that represents $y \geq 2x + 1$

C. The upper and lower regions of the line that represents $y \geq 2x + 1$

D. The right part of the cartesian plane from which the graph passes through the y-axis

16. Which of the following inequalities will be represented by a dashed or broken line?

A. $y \leq -3x - 2$ C. $y > x + 5$

B. $y \leq 2x - 5$ D. $y \geq \frac{-1}{3}x + 1$

17. The following inequalities will have a graph that is shaded on the region below the line. Which is an EXEMPTION?

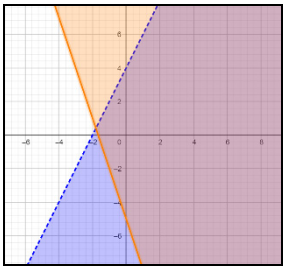
A. $y < \frac{1}{2}x + 2$ C. $y \leq \frac{1}{3}x - 1$

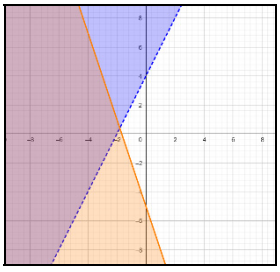
B. $y \leq \frac{-2}{5}x - 5$ D. $y \geq \frac{-1}{5}x+3$

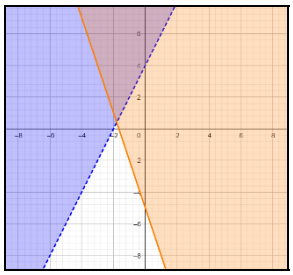
For items 18 to 20, please refer to the given system of linear inequality.

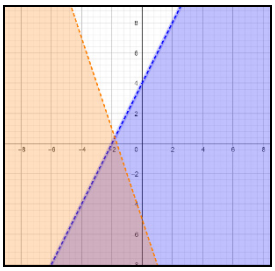
Given: $\begin{cases} -2x + y < 4 \\ y \geq -3x - 5 \end{cases}$

18. Which of the following represents the graph of the given system of linear inequality?

A. 

C. 

B. 

D. 

19. Referring to the graph, which part represents the solution to the given system of linear inequality?

A. The region in white C. The region in orange

B. The region in red D. The region in violet

20. Considering the graph, which of the following is true about the point $(2,0)$?

A. It is part of the solution of $-2x+y<4$ but not of $y \geq -3x-5$

B. It is part of the solution of $y \geq -3x-5$ but not of $-2x+y<4$

C. It is part of the solution of $y \geq -3x-5$ and $-2x+y<4$

D. It is not part of the solution of $y \geq -3x-5$ and $-2x+y<4$

Use this situation to answer the questions in numbers 21 to 25:

Edwin sells *pan de sal* and *pan de coco* to earn money during vacation. Each *pan de sal* costs P□p 2 and each *pan de coco* costs P□p 3. Edwin needs to earn at most P□p 200 per day, so he needs to sell at least 20 pieces of *pan de sal* and at least 40 pieces of *pan de coco*. Assuming x is the number of *pan de sal* and y be the number of *pan de coco* Edwin needs to sell.

21. Which of the following inequalities represents the number of *pan de sal* that needs to be sold?

A. $x > 20$ B. $x \geq 20$ C. $x < 20$ D. $x \leq 20$

22. Which of the following inequalities represents the number of *pan de coco* that Edwin needs to sell?

A. $y > 40$ B. $y \geq 40$ C. $y < 40$ D. $y \leq 40$

23. Which of the following inequalities represents Edwin's earning in selling pan de sal and pan de coco?

A. $2x+3y \geq 200$ C. $2x+3y \leq 200$

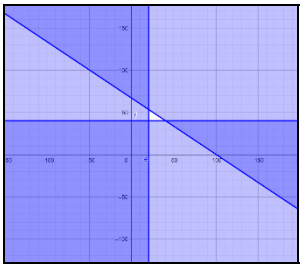
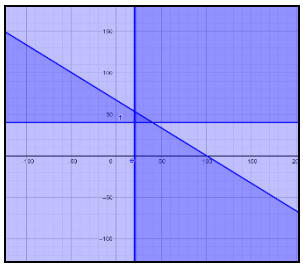
B. $2x+3y > 200$ D. $2x+3y < 200$

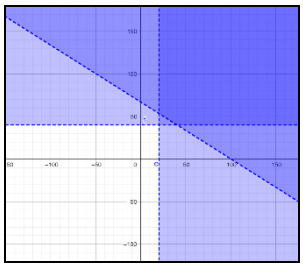
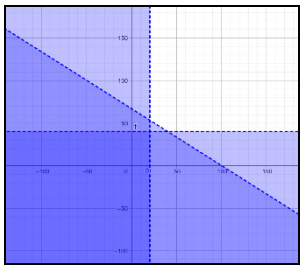
24. Which systems of linear inequalities in two variables represents Edwin's situation?

A. $\begin{cases} 2x+3y \geq 200 \\ x \leq 20 \\ y \leq 40 \end{cases}$ C. $\begin{cases} 2x+3y \leq 200 \\ x \geq 20 \\ y \geq 40 \end{cases}$

B. $\begin{cases} 2x + 3y > 200 \\ x > 20 \\ y > 40 \end{cases}$ D. $\begin{cases} 2x + 3y < 200 \\ x < 20 \\ y < 40 \end{cases}$

25. Based on the given situation, which of the following graphs best describes the solution of the system of linear inequalities in two variables?

A.  C. 

B.  D. 

Use the situation below to answer the questions in numbers 26 to 27:

Joseph wants to prepare dessert for his birthday. A can of fruit cocktail costs $P\square p$ 135 while a can of condensed milk costs $P\square p$ 45. He wants to buy at least 2 cans of fruit cocktails and 4 cans of condensed milk with costs no more than $P\square p$ 1, 000. Let x be the number of cans of fruit cocktails and y be the number of condensed milk.

26. Which ordered pair represents the possible numbers of fruit cocktails and condensed milk Joseph bought?

A. (3, 1) B. (-1, 2) C. (2, 4) D. (2, -5)

27. Which of the following situations is NOT possible for Joseph to buy?

A. 3 cans of fruit cocktail and 5 cans of condensed milk

B. 4 cans of fruit cocktail and 4 cans of condensed milk

C. 5 cans of fruit cocktail and 4 cans of condensed milk

D. 6 cans of fruit cocktail and 5 cans of condensed milk

28. Jack wanted to buy pairs of shoes and socks. Each pair of shoes is sold at $P\square p$ 500 and each pair of socks costs $P\square p$ 100. How many pairs of shoes and pairs of socks that will maximize the $P\square p$ 100?

A. A pair of shoes and 2 pairs of socks C. 2 pairs of shoes and a pair of socks

B. A pair of shoes and 5 pairs of socks D. 2 pairs of shoes and 2 pairs of socks

29. Myka reads 15 chapters in Wattpad in 3 hours. At the same rate, find the number of hours it will take her to read the remaining 105 chapters.

A. 45 hours B. 21 hours C. 1 hour and 20 minutes D. 180 minutes

30. Clara receives a commission of Php25.00 for every potted flower she sells. Aside from her commission, she receives a monthly salary of Php6, 000.00. Compute her commission if she sells 30 potted flowers.

A. Php750.00 B. Php6, 000.00 C. Php6,750.00 D. Php500.00

31. Referring to problem no. 30, how many potted flowers should she sells to make a commission of Php1,250.00?

A. Php7,250.00 B. Php750.00 C. Php1,250.00 D. Php6,750.00

32. Al John spent Php1,200 on N95 facemasks because of pandemic. Each facemask costs Php100. How many facemasks did he buy?

A. 10 B. 12 C. 15 D. 95

33. Jun Mark used 15 m of copper wire which weighs 1 kg. If a copper wire weighs 3.5 kg, how many meters is it?

A. 50 m B. 52.5 m C. 53.5 m D. 54 m

34. Ranie worked in the store for 5 hours. He earned a total of Php1,500. How much does he earn each hour?

A. Php300 B. Php400 C. Php500 D. Php600

35. Puto balanghoy or steamed cassava cake is traditionally made in the Visayas region using basic ingredients such as cassava, brown sugar and grated coconut. Marvin is selling a puto balanghoy in the function of $f(x) = 10x$, how much is Marvin's income if a customer wants to buy a total of 50 pieces?

A. Php450 B. Php500 C. Php550 D. Php600

36. JC works as a salesman in a company that distributes top brands and latest model of cellular phones. He receives a commission of Php1,500 for every cellular phone unit he sells. On top of the commission, he receives a monthly salary of Php12,000. What is his commission if he sells 25 cellphones in a month?

A. Php 27,000 B. Php37,500 C. Php46,500 D. Php47,500

37. Mr. Nilo, a mathematics teacher, charges Php200 per hour for tutorial service to a junior high school student. If he spends 3 hours tutoring per day, how much would he receive in 12

days?

A. Php6,300 B. Php7,200 C. Php7,300 D. Php8,100

38. Maria wants to earn money from garbage. She collected 20 kg of cans to recycle. She wants to collect an additional 5 kg each week. The linear function describing the total weight of cans is given by the function $f(x) = 5x + 20$. What is the total weight of cans Maria will be collected in 10 weeks?

A. 60 kg B. 70 kg C. 80 kg D. 90 kg

39. A furniture store charges a fee on all items delivered from the store to the customer. The delivery fee $f(x)$ is computed by a linear function $f(x) = 0.06x + 50$, where x denotes the amount purchased. How much is the delivery fee if the customer will purchase Php8,000 worth of furniture?

A. Php450 B. Php470 C. Php530 D. Php540

40. Beauty is a saleslady who sells VIVO android phone. She is paid Php5,000.00 per month plus Php100.00 commission for each android phone she sells. Find Beauty's earnings if she sells 3 android phone.

A. Php5,300.00 B. Php4,700.00 C. Php15,100.00 D. Php14,900.00

Appendix D

Sample Accomplished Pretest/Posttest Questionnaire

Dear student,

Thank you for participating in this research. Please answer the questions below as patiently as you can by writing the letter of your answer on the blank before the number. Data from this pre-test will be helpful in determining the level of your performance in Mathematics 8 in selected topics.

NAME: SCORE:

C 1. Which inequality represents "the sum of x and y is at most 15"?
A. $x + y \geq 15$ B. $x + y > 15$ C. $x + y \leq 15$ D. $x + y < 15$

C 2. The statement "the sum of two numbers is at least 29" can be expressed as:
A. $x + y > 29$ B. $x + y < 29$ C. $x + y \geq 29$ D. $x + y \leq 29$

A 3. Which of the following inequalities is the same as "the sum of $2x$ and y is at least 20"?
A. $2x + y \geq 20$ B. $2x + y > 20$ C. $2x + y \leq 20$ D. $2x + y < 20$

B 4. Which inequality represents "A number x decreased by a number y is less than 24."?
A. $x - y > 24$ B. $x - y < 29$ C. $x - y \geq 29$ D. $x - y \leq 29$

B 5. Lian's age is four less than Cita's age. The sum of twice Cita's age and thrice Lian's age is at most 18. How old is Lian?
A. at most 2 years old C. at most 18 years old
B. at most 6 years old D. at most 21 years old

C 6. The total amount Shobie paid for two kilos of beef and three kilos of fish is less than *Php* 700. Suppose a kilo of beef costs *Php* 250. What will be the maximum cost of a kilo of fish? Round – off the answer to the whole number.
A. Php 60 B. Php 65 C. Php 66 D. Php 67

D 7. Jasmine plans to sell hotdogs for *Php* 6 and hard-boiled eggs for *Php* 10. If she sells 15 hard-boiled eggs, what is the maximum number of hotdogs she should sell to have total sales of at least *Php* 260?
A. 15 B. 16 C. 17 D. 18

C 8. The electric bill of Santos family for this month is at most *Php* 110 lower than the previous bill. If the previous bill marked *Php* 1, 230, at most how much does the present bill cost?
A. *Php* 1, 100 B. *Php* 1, 110 C. *Php* 1, 120 D. *Php* 1, 130

B 9. Borin gave the fish vendor *Php* 1, 000– bill for 1.2 *kg* of bangus and 1 *kg* of tilapia which cost less than *Php* 300. Suppose a kilogram of bangus costs *Php* 180, which of the following could be the cost of a kilogram of tilapia?
A. *Php* 84 C. *Php* 85
B. below *Php* 84 D. between *Php* 84 to *Php* 85

A 10. William bought 3 thick washable face masks and 4 thin washable face masks and paid a total amount of at most *Php* 200. If the thick washable face mask costs *Php* 30 each, what could be the maximum price of the other type of face mask?
A. *Php* 27 B. *Php* 27.25 C. *Php* 27.50 D. *Php* 27.75

B 11. Mark goes to the store to buy pens and pencils. He has *Php* 38 in his pocket, and he's planning to buy pens for *Php* 6 each and pencils for *Php* 8 each. If he buys 2 pens, what is the maximum number of pencils he can buy to the nearest whole number?
A. 2 B. 3 C. 4 D. 5

C 12. Alice is selling bread and pudding to earn money. Each bread costs *Php* 2 and each pudding costs *Php* 3. She needs to sell at least 50 pieces of bread and needs to earn at least *Php* 500. Let x be the number of bread she needs to sell and y be the number of pudding. At least how many breads and puddings can Alice sell?
A. 50 breads and 50 puddings C. 100 breads and 100 puddings
B. 50 breads and 100 puddings D. 75 breads and 50 puddings

C 13. Rhea is buying burger and pizza for snacks with her friends. Each burger costs *Php* 35 and each box of pizza costs *Php* 100. Rhea wanted to spend no more than *Php* 500, but she needs at least 3 burgers and 2 boxes of pizza. Let x be the number of burger and y be the number of boxes of pizza. Which of the following could NOT the possible number of burgers and boxes of pizza Rhea can buy?

A. 3 burgers and 2 boxes of pizza
B. 3 burgers and 3 boxes of pizza
C. 4 burgers and 4 boxes of pizza
D. 5 burgers and 3 boxes of pizza

C 14. In graphing linear inequalities that involve two variables, when will a solid line be used?

A. When the inequality sign used is "less than"
B. When the inequality sign used is "greater than"
C. When the inequality sign is "less than or equal" or "greater than or equal"
D. Any inequality sign uses solid line

D 15. A linear inequality of the form $y \geq 2x + 1$ is graphed on a cartesian plane, which part of the graph will be shaded?

A. The upper region of the line that represents $y \geq 2x + 1$
B. The lower region of the line that represents $y \geq 2x + 1$
C. The upper and lower regions of the line that represents $y \geq 2x + 1$
D. The right part of the cartesian plane from which the graph passes through the y-axis

C 16. Which of the following inequalities will be represented by a dashed or broken line?

A. $y \leq -3x - 2$
B. $y \leq 2x - 5$
C. $y > x + 5$
D. $y \geq \frac{-3}{2}x + 1$

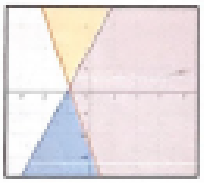
A 17. The following inequalities will have a graph that is shaded on the region below the line. Which is an EXEMPTION?

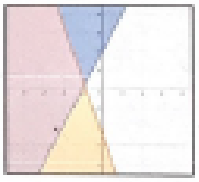
A. $y < \frac{1}{2}x + 2$
B. $y \leq \frac{-2}{5}x - 5$
C. $y \leq \frac{1}{3}x - 1$
D. $y \geq \frac{-3}{2}x + 3$

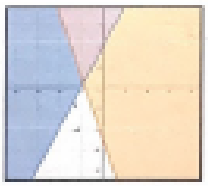
For items 18 to 20, please refer to the given system of linear inequality.

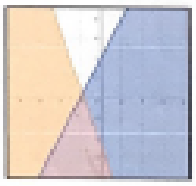
Given: $\begin{cases} -2x + y < 4 \\ y \geq -3x - 5 \end{cases}$

B 18. Which of the following represents the graph of the given system of linear inequality?

A.


C.


B.


D.


B 19. Referring to the graph, which part represents the solution to the given system of linear inequality?

A. The region in white
B. The region in red
C. The region in orange
D. The region in violet

B 20. Considering the graph, which of the following is true about the point $(2, 0)$?

A. It is part of the solution of $-2x + y < 4$ but not of $y \geq -3x - 5$
B. It is part of the solution of $y \geq -3x - 5$ but not of $-2x + y < 4$
C. It is part of the solution of $y \geq -3x - 5$ and $-2x + y < 4$
D. It is not part of the solution of $y \geq -3x - 5$ and $-2x + y < 4$

Use this situation to answer the questions in numbers 21 to 25:

Edwin sells *pan de sal* and *pan de coco* to earn money during vacation. Each *pan de sal* costs *Php* 2 and each *pan de coco* costs *Php* 3. Edwin needs to earn at most *Php* 200 per day, so he needs to sell at least 20 pieces of *pan de sal* and at least 40 pieces of *pan de coco*. Assuming x is the number of *pan de sal* and y be the number of *pan de coco* Edwin needs to sell.

B 21. Which of the following inequalities represents the number of *pan de sal* that needs to be sold?
A. $x > 20$ B. $x \geq 20$ C. $x < 20$ D. $x \leq 20$

B 22. Which of the following inequalities represents the number of *pan de coco* that Edwin needs to sell?
A. $y > 40$ B. $y \geq 40$ C. $y < 40$ D. $y \leq 40$

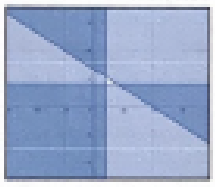
C 23. Which of the following inequalities represents Edwin's earning in selling pan de sal and pan de coco?
A. $2x + 3y \geq 200$ C. $2x + 3y \leq 200$
B. $2x + 3y > 200$ D. $2x + 3y < 200$

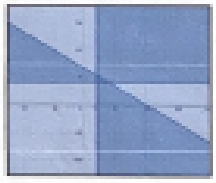
C 24. Which systems of linear inequalities in two variables represents Edwin's situation?

A. $\begin{cases} 2x + 3y \geq 200 \\ x \leq 20 \\ y \leq 40 \end{cases}$ C. $\begin{cases} 2x + 3y \leq 200 \\ x \geq 20 \\ y \geq 40 \end{cases}$

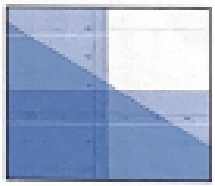
B. $\begin{cases} 2x + 3y > 200 \\ x > 20 \\ y > 40 \end{cases}$ D. $\begin{cases} 2x + 3y < 200 \\ x < 20 \\ y < 40 \end{cases}$

C 25. Based on the given situation, which of the following graphs best describes the solution of the system of linear inequalities in two variables?

A. 

C. 

B. 

D. 

Use the situation below to answer the questions in numbers 26 to 27:

Joseph wants to prepare dessert for his birthday. A can of fruit cocktail costs *Php* 135 while a can of condensed milk costs *Php* 45. He wants to buy at least 2 cans of fruit cocktails and 4 cans of condensed milk with costs no more than *Php* 1, 000. Let x be the number of cans of fruit cocktails and y be the number of condensed milk.

C 26. Which ordered pair represents the possible numbers of fruit cocktails and condensed milk Joseph bought?
A. (3, 1) B. (-1, 2) C. (2, 4) D. (2, -5)

D 27. Which of the following situations is NOT possible for Joseph to buy?
A. 3 cans of fruit cocktail and 5 cans of condensed milk
B. 4 cans of fruit cocktail and 4 cans of condensed milk
C. 5 cans of fruit cocktail and 4 cans of condensed milk
D. 6 cans of fruit cocktail and 5 cans of condensed milk

B 28. Jack wanted to buy pairs of shoes and socks. Each pair of shoes is sold at *Php* 500 and each pair of socks costs *Php* 100. How many pairs of shoes and pairs of socks that will maximize the *Php* 1, 00?
A. A pair of shoes and 2 pairs of socks C. 2 pairs of shoes and a pair of socks
B. A pair of shoes and 5 pairs of socks D. 2 pairs of shoes and 2 pairs of socks

B 29. Myka reads 15 chapters in Wattpad in 3 hours. At the same rate, find the number of hours it will take her to read the remaining 105 chapters.
A. 45 hours B. 21 hours C. 1 hour and 20 minutes D. 180 minutes

A 30. Clara receives a commission of Php25.00 for every potted flower she sells. Aside from her commission, she receives a monthly salary of Php6, 000.00. Compute her commission if she sells 30 potted flowers.
A. Php750.00 B. Php6, 000.00 C. Php6,750.00 D. Php500.00

? 31. Refer to problem no. 6, how many potted flowers should she sells to make a commission of Php1,250.00?
A. Php7,250.00 B. Php750.00 C. Php1,250.00 D. Php6,750.00

B 32. Al John spent Php1,200 on N95 facemasks because of pandemic. Each facemask costs Php100. How many facemasks did he buy?
A. 10 B. 12 C. 15 D. 95

B 33. Jun Mark used 15 m of copper wire which weighs 1 kg. If a copper wire weighs 3.5 kg, how many meters is it?
A. 50 m B. 52.5 m C. 53.5 m D. 54 m

A 34. Ranie worked in the store for 5 hours. He earned a total of Php1,500. How much does he earn each hour?
A. Php300 B. Php400 C. Php500 D. Php600

? 35. Puto balanghoy or steamed cassava cake is traditionally made in the Visayas region using basic ingredients such as cassava, brown sugar and grated coconut. Marvin is selling a puto balanghoy in the function of , how much is Marvin's income if a customer wants to buy a total of 50 pieces?
A. Php450 B. Php500 C. Php550 D. Php600

? 36. JC works as a salesman in a company that distributes top brands and latest model of cellular phones. He receives a commission of Php1,500 for every cellular phone unit he sells. On top of the commission, he receives a monthly salary of Php12,000. What is his commission if he sells 25 cellphones in a month?
A. Php 27,000 B. Php37,500 C. Php46,500 D. Php47,500

B 37. Mr. Nilo, a mathematics teacher, charges Php200 per hour for tutorial service to a junior high school student. If he spends 3 hours tutoring per day, how much would he receive in 12 days?
A. Php6,300 B. Php7,200 C. Php7,300 D. Php8,100

B 38. Maria wants to earn money from garbage. She collected 20 kg of cans to recycle. She wants to collect an additional 5 kg each week. The linear function describing the total weight of cans is given by the function $f(x) = 5x + 20$. What is the total weight of cans Maria will be collected in 10 weeks?
A. 60 kg B. 70 kg C. 80 kg D. 90 kg

C 39. A furniture store charges a fee on all items delivered from the store to the customer. The delivery fee $f(x)$ is computed by a linear function $f(x) = 0.06x + 50$, where x denotes the amount purchased. How much is the delivery fee if the customer will purchase Php8,000 worth of furniture?
A. Php450 B. Php470 C. Php530 D. Php540

A 40. Beauty is a saleslady who sells VIVO android phone. She is paid Php5,000.00 per month plus Php100.00 commission for each android phone she sells. Find Beauty's earnings if she sells 3 android phone.
A. Php5,300.00 B. Php4,700.00 C. Php15,100.00 D. Php14,900.00

Appendix E

Questionnaire on Students' Perceptions on Home Visitation Tutoring

Republic of the Philippines

PALAWAN STATE UNIVERSITY

Graduate School

Puerto Princesa City

Dear respondent:

Good day!

We, the students in ED202: Research Methods, are currently conducting a study entitled "Effects of Home Visitation Tutoring in Improving High School Students' Performance in Mathematics: Implications for an Institutional Policy".

In this regard, we would like you to answer the survey questionnaire on your perceptions on the Home Visitation Tutoring. We assure you that your honest answers/perceptions will be kept confidential and will be used only on the purpose of the study. Moreover, this will not in any way affect your academic standing as a student.

Thank you in advance for your cooperation.

The Researchers

Name (Optional): _____

This survey questionnaire contains statements about your Perceptions on Home Visitation Tutoring. Kindly rate each statement according to how much you personally agree or disagree by putting a checkmark (/). Please use the following scale:

1- Strongly Disagree (SD)

2- Disagree(D)

3- Neutral (N)

4- Agree (A)

5- Strongly Agree (SA)

Students' Perceptions on Home Visitation Tutoring

ITEM	Strongly Disagree(SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree(SA)
SUITABILITY OF THE TUTORING STRATEGY					
1. Naniniwala ako na natanggap ko ang mga tamang impormasyon sa "turoring." (*I found the information received before starting the tutoring adequate.)*					
2. Ang nilalaman ng "tutoring" ay naayon sa aking pangangailangan bilang estudyante. (*Tutoring content is adapted to my needs.*)					
3. Naniniwala akong ibinigay ng guro ang lahat nang makakaya niya upang matulungan ako. (*I consider the teacher has made a great effort to help me.)*					
4. Naniniwala akong pinaghandaan ng guro ang pagbibigay sa akin ng "tutoring activity" na ito. (*I consider that the teacher has the proper preparation to carry out this activity.)*					
5. Naniniwala akong dapat ding ibigay sa ibang estudyante ang "tutoring" na natanggap ko. *(I would recommend the tutoring to other students.)*					
6. Sa kabuuan ay kontento ako sa "tutoring". *(In general I am satisfied with the tutoring.)*					
TUTORING STRATEGY TIMING					
7. Naniniwala ako na ang mga oras na itinakda sa mga "tutoring" ay tama at naangkop para sa akin. (*The timetable of the tutoring was adequate.*)					
8. Ang bilang ng "tutoring activities" ay akma lamang para sa akin. (*The number of tutoring sessions was adequate.*)					
IMPROVEMENTS PERCEIVED BY THE STUDENTS					
9. Naniniwala akong may nabagong maganda sa paggamit ng aking oras sa pag- aaral. (*I have improved the use of my time.*)					
10. Naniniwala akong "nag-improved" ang "priorities" ko sa pag-aaral. (*I have improved my organization related to my studies.*)					
11. Ang "tutoring" ay nakatulong sa akin na mapili ko ang mga bagay na dapat kong pahalagahan sa pag-aaral ko. (*It has helped me to better choose my objectives regarding my opportunities.*)					
12. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "translation of statements into mathematical expressions." (*I have learned study skills.*)					
13. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "solving problems involving linear inequalities in two variables." (*I have learned study skills.*)					
14. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "graphing systems of Linear Inequalities in two variables." (*I have learned study skills.*)					
15. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "Solving Problems Involving Systems of Linear Inequalities in Two Variables." (*I have learned study skills.*)					
16. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "identifying independent and dependent variables." (*I have learned study skills.*)					
17. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "steps in solving problems involving linear functions." (*I have learned study skills.*)					
18. Nakatulong sa akin ang "tutoring" na mapag- isipang mabuti o makapag- reflect tungkol sa mga bagay na ginagawa ko na may kinalaman sa aking pag-aaral. (*It has helped me to reflect on my academic activity.)*					
19. Nakatulong sa akin ang "tutoring activity" para makita ko ang mga bagay kung saan dapat ako "mag- improved". (*I have been able to analyze the aspects in which I must improve.)*					

Adapted from the study of Guerra, J., Lima, M., & Lima, J. S. (2017).

Modified by Castillo, R., Fabonan, J., & Magdayao, A. (2021).

Appendix F

Sample Accomplished Questionnaire on Students' Perception

Republic of the Philippines
PALAWAN STATE UNIVERSITY
Graduate School
Puerto Princesa City

Dear respondent:

Good day!

We, the students in ED202: Research Methods, are currently conducting a study entitled "Effects of Home Visitation Tutoring in Improving High School Students' Performance in Mathematics: Implications for an Institutional Policy".

In this regard, we would like you to answer the survey questionnaire on your perceptions on the Home Visitation Tutoring. We assure you that your honest answers/perceptions will be kept confidential and will be used only on the purpose of the study. Moreover, this will not in any way affect your academic standing as a student.

Thank you in advance for your cooperation.

The Researchers

Name (Optional):

This survey questionnaire contains statements about your Perceptions on Home Visitation Tutoring. Kindly rate each statement according to how much you personally agree or disagree by putting a checkmark (/). Please use the following scale:

1- **Strongly Disagree (SD)**
2- **Disagree(D)**
3- **Neutral (N)**
4- **Agree (A)**
5- **Strongly Agree (SA)**

Students' Perceptions on Home Visitation Tutoring

ITEM	Strongly Disagree(SD)	Disagree (D)	Neutral (N)	Agree (N)	Strongly Agree(SA)
SUITABILITY OF THE TUTORING STRATEGY					
1. Naniniwala ako na natanggap ko ang mga tamang impormasyon sa "turoring." (*I found the information received before starting the tutoring adequate.)*					✓
2. Ang nilalaman ng "tutoring" ay naayon sa aking pangangailangan bilang estudyante. (*Tutoring content is adapted to my needs.*)					✓
3. Naniniwala akong ibinigay ng guro ang lahat nang makakaya niya upang matulungan ako.					✓

(I consider the teacher has made a great effort to help me.)					
4. Naniniwala akong pinaghandaan ng guro ang pagbibigay sa akin ng "tutoring activity" na ito. *(I consider that the teacher has the proper preparation to carry out this activity.)*					✓
5. Naniniwala akong dapat ding ibigay sa ibang estudyante ang "tutoring" na natanggap ko. *(I would recommend the tutoring to other students.)*					✓
6. Sa kabuuan ay kontento ako sa "tutoring". *(In general I am satisfied with the tutoring.)*					✓
TUTORING STRATEGY TIMING					
7. Naniniwala ako na ang mga oras na itinakda sa mga "tutoring" ay tama at naangkop para sa akin. (*The timetable of the tutoring was adequate.*)					✓
8. Ang bilang ng "tutoring activities" ay akma lamang para sa akin. (*The number of tutoring sessions was adequate.*)					✓
IMPROVEMENTS PERCEIVED BY THE STUDENTS					
9. Naniniwala akong may nabagong maganda sa paggamit ng aking oras sa pag- aaral. (*I have improved the use of my time.*)					✓
10. Naniniwala akong "nag-improved" ang "priorities" ko sa pag-aaral. (*I have improved my organization related to my studies.*)					✓
11. Ang "tutoring" ay nakatulong sa akin na mapili ko ang mga bagay na dapat kong pahalagahan sa pag-aaral ko. (*It has helped me to better choose my objectives regarding my opportunities.*)					✓
12. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "translation of statements into mathematical expressions."					✓

(*I have learned study skills.*)					
13. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "solving problems involving linear inequalities in two variables." (*I have learned study skills.*)					✓
14. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "graphing systems of Linear Inequalities in two variables." (*I have learned study skills.*)					✓
15. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "Solving Problems Involving Systems of Linear Inequalities in Two Variables." (*I have learned study skills.*)					✓
16. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "identifying independent and dependent variables." (*I have learned study skills.*)					✓
17. Naniniwala akong dahil sa "tutoring" natutunan ko ang tamang paraan ng pag- aaral sa "steps in solving problems involving linear functions." (*I have learned study skills.*)					✓
18. Nakatulong sa akin ang "tutoring" na mapag-isipang mabuti o makapag-reflect tungkol sa mga bagay na ginagawa ko na may kinalaman sa aking pag-aaral. (*It has helped me to reflect on my academic activity.*)					✓
19. Nakatulong sa akin ang "tutoring activity" para makita ko ang mga bagay kung saan dapat ako "mag-improved". (*I have been able to analyze the aspects in which I must improve.*)					✓

Adapted from the study of Guerra, J., Lima, M., & Lima, J. S. (2017).

Modified by Castillo, R., Fabonan, J., & Magdayao, A. (2021).