(JIML) JOURNAL OF INNOVATIVE MATHEMATICS LEARNING
Volume 4, No. 2, June 2021

P-ISSN 2621-4733
E-ISSN 2621-4741

https://dx.doi.org/10.22460/jiml.v4i2,p49-62

ANALYSIS OF STUDENTS' ABILITY TO UNDERSTAND MATHEMATICS CONCEPTS FOR CLASS VIII SMP/MTS

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ARTICLE INFO

Article history:

Received Jun 23, 2021
Revised Jun 28, 2021
Accepted Jun 30, 2021

Keywords:

Mathematics concepts
Mathematics
linear equation system of two variables

ABSTRACT

The ability to understand mathematical concepts is important in learning mathematics. Students are often having difficulty in understanding mathematical concepts when the learning process takes place. The purpose of this study was to describe students' ability to understand mathematical concepts on linear equation system of two variables without given any prior treatment. The linear equation system of two variables materials test was conducted in class VIII.1 of SMPN 7 Tanjungpinang on Thursday, 29 April 2021, to 34 students. The instrument used is a test instrument for the understanding ability of mathematical concepts. Based on the data analysis that has been done, the percentage ability to understand mathematical concepts in question number 1 with the indicator of restating a concept, is 79% with high criteria. In question number 2, the indicator that identifies examples and not examples of a concept shows as much as 89%, which is a very high criteria. In question number 3, the indicator presents the concept in the form of a mathematical representation, which is 68% with high criteria. In question number 4, the indicator applies the concept in an algorithmic manner, which is 86% with very high criteria. In question number 5 with indicators of applying algorithms concept in problem solving as much as 60%, is high criteria. According to these data, it can be concluded that the students' ability to understand mathematical concepts in solving systems of linear equations in two variables questions is categorized as high with the percentage of 76,4%.

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How to Cite:

Afriliziana, L. A., Kartini. 2021. Analysis Of Students' Ability To Understand Mathematics Concepts In SPLDV Materials For Class VIII SMP/MTs. *JIML*, 4(2), 49-62.

INTRODUCTION

Mathematics is a subject that has an important role in science. One of its goals is that students could have the attitude of appreciating the use of mathematics in daily life. Mathematics is the science of systematicaly organized structures. Satoto, et al (2013) suggest that mathematics as a structured science is able to provide a new concept. A new concept is created due to an understanding of the previous concept. The purpose of learning mathematics in schools related to concepts according to Rizka, et al (2014) is to understand mathematical concepts, to

explain the relation between each concepts and applying concepts or algorithms flexibly, accurately, efficiently, and precisely in problem solving.

According to Hudoyono in Susanto (2011), understanding is a phase in the learning process. Meanwhile, according to Mawaddah and Maryanti (2016) understanding is a process consists of ability to explain and interpret something, to provide examples and descriptions and be able to provide descriptions by creative explaining. Comprehension is very important for students to understand the concept. According to the Big Indonesian Dictionary, concept means understanding, mental picture of objects, processes, opinions, designs that have been thought out. According to Depdiknas (2003), concept can be defined as an abstract idea that can be used to classify a set of objects. It can be concluded that understanding the concept is a learning process consist of ability to explain abstract ideas creatively.

Understanding the concept is an important element in mathematics. In accordance with the objectives of learning mathematics according to Kemendikbud No. 58 of 2014 regarding the junior high school curriculum, it is explained that one of the subjects in mathematics is to acknowledge mathematical concepts. According to Rosmawati in Fajar, et al (2018) understanding the concept is the ability of several learning materials, where students not only understand and recognize, but are able to rephrase concepts in an easier way to understand and able to apply.

Knowledge of mathematical concepts is important for useful learning material. In the process of application, the teachers guide students to achieve the expected concept. Teachers long for students' understanding not only to connect things. According to Yulianty (2019) in learning mathematics, students need to understand mathematical concepts first in order to be able to solve problems and apply them in everyday life. This means that the ability to understand concepts is the basis for meaningful learning of mathematics.

According to Skemp in Novitasari (2016), there are two types of understanding of mathematical concepts, namely:

1. Instrumental understanding, which is an acknowledgement where students only know or memorize a formula and use it in solving problems algorithmically.
2. Relational understanding is students’ acknowledgement who only know or memorize a formula, but they can also apply the formula to solve problems related to certain situation.

In the process of learning mathematics, students are often have difficulty in understanding mathematical concepts. According to Amalia and Islami (2017), through understanding students could do better at recognizing the concept of learning material, so the materials learned is not only confined to what students remember or memorize. The research conducted by Hedrayana (2017) shows that the ability to understand mathematical concepts of junior high school students is still not as expected, students were still confused when faced with problem of the area of a parallelogram and literally fail to memorize the formula. This case is in accordance with the results of Kartika's research (2018) which states that the students' activeness to develop and find concepts is remain low. According to sources, it is important to embed the ability to understand concepts for students in order to help them increase their knowledge in mathematical concepts.

Wardani in Suraji et al (2018) explained that the indicators in understanding mathematical concepts are:

1. Restating the concept

2. To classify objects according to certain properties with the concept
3. Giving examples generally but not examples of concepts
4. Presenting concepts in the form of mathematical representations
5. Developing necessary and sufficient conditions for a concept
6. Using, utilizing and selecting certain procedures or operations
7. Applying problem solving concepts or algorithms

According to Ningsih (2016) the indicators of the ability to understand mathematical concepts are:

1. Ability to restate a concept
2. Ability to provide examples and not examples
3. Ability to present concepts in various forms of mathematical representation
4. Ability to use, utilize, and choose certain procedures
5. Ability to apply concepts/algorithms to problem solving

The indicators to understand the concept in this research are:

1. Restate a concept
2. Identifying examples and not examples of a concept
3. Presenting concepts in the form of mathematical representations)
4. Applying the concept algorithmically
5. Applying the concept in problem solving

One of the mathematics lessons that must be mastered by students is the material of linear equation system of two variables. Linear equation system is the kind of a hardly understand material. According to interviews with mathematics teachers who teach VIIIC SMP Negeri 2 Kulisusu, conducted by Bey and Asriani (2013), it is found that students' mastery of mathematics material is still low, especially for linear equation system of two variables. It shows the same result made by Suraji, et al (2018) where students have difficulty in solving linear equation system for two variables.

The concept of linear equation system of two variables in everyday life must be used both consciously and unconsciously, especially for those who have taken education. Based on the description above, the researcher wants to analyze the ability to understand mathematical concepts in the material for the linear equation system of two variables for class VIII students.

METHOD

This research is a qualitative research. The aim was to describe the students ability to understand mathematical concepts in the material for the linear equation system of two variables in everyday life without given any prior treatment. This research was conducted at SMP Negeri 7 Tanjungpinang on Thursday, April 29, 2021 in class VIII.1 even semester of the academic year 2020/2021 with 34 students as the subject of research. The object is the analysis of ability to understand concepts in solving problems in the description of mathematics subjects on the material of the linear equation system of two variables. The research method used is descriptive method and the data is analyzed using data triangulation which consists of three activities, which are data reduction, data presentation and conclusions. The test used is a test of the ability to understand concepts. The type of test used in this study is a description test. The data analysis technique used Anates software version 4.0.5.

The data analysis technique used is descriptive data analysis, qualitatively and quantitatively. The data described quantitatively in the form of the percentage of errors made by students.

Quantitative data analysis was carried out to determine the percentage of students' errors based on the level of students' mathematical abilities in the material with the formula:

$$P = \frac{Student\ Score}{Total\ Score} x100\%$$

Table 1. Percentage of Concept Understanding Ability

Percentage (%)	Criteria
$0 \leq P < 20$	Very Low
$20 \leq P < 40$	Low
$40 \leq P < 60$	Medium
$60 \leq P < 80$	High
$80 \leq P < 100$	Very High

Arikunto (2009)

Note: P is the percentage of students' errors in understanding mathematical concepts

Data on the ability to understand mathematical concepts was obtained based on the value of the evaluation test carried out. The assessment of this test refers to the scoring guidelines. The criteria for scoring each indicator of students' ability to understand mathematical concepts are shown in Table 2 below:

Table 2. Guidelines for Scoring Ability to Understand Mathematical Concepts

Indicators of Understanding Concepts	Description	Score
Restate a concept	Empty answer	0
	Unable to restate concept	1
	Able to restate concept but there are still many errors	2
	Able to restate concept but not yet correct	3
	Able to restate concept with correct answer	4
Identify examples and non-examples of a concept	Empty answer	0
	Unable to identify examples and non-examples	1
	Able to identify examples and non-examples but there are still many errors	2
	Able to identify examples and non-examples but not yet precise	3
	Able to identify examples and non-examples correctly	4
Presenting a	Empty answer	0

concept in the form of a mathematical representation	Unable to present a concept in the form of a mathematical representation	1
	Able to present a concept in the form of a mathematical representation but there are still many errors	2
	Able to present a concept in the form of mathematical representation but not precise	3
	Able to present a concept in the form of mathematical representation correctly	4
Apply the concept algorithmically	Empty answer	0
	Unable to apply formula according to procedure	1
	Able to apply formula according to procedure but there are still many errors	2
	Able to apply formula according to procedure but not yet correct	3
	Able to apply the formula according to the procedure correctly	4
Apply the concept of algorithm in problem solving	Empty answer	0
	Unable to apply the formula according to the procedure in solving problem	1
	Able to apply the formula according to procedure in solving problem but there are still many errors	2
	Able to apply the formula according procedures in solving problem but not yet correct	3
	Able to apply formula according to procedures in solving problem correctly	4

Modifications from Yuni (2018)

RESULTS AND DISCUSSION

RESULT

The initial step taken was to determine the material to be used, develop a concept understanding ability test instrument and then test 34 students. The test results are then processed and analyzed. Based on the results of the analysis of the ability to understand concepts carried out in class VIII SMP Negeri 7 Tanjungpinang. The researcher gives an assessment according to what has been designed by the researcher on the scoring guide which consists of 5 questions. The scores obtained by students on each item are as follows**:**

Table 5. Ability Scores Description Concept Training Students in Each Problem

	Scores for each item on the				
	Problem 1	**Problem 2**	**Problem 3**	**Problem 4**	**Problem 5**
Total	107	121	92	117	82
Average	3,147	3,559	2,706	3,441	2,412

Percentage	79%	89%	68%	86%	60%

Based on Table 5, it can be seen that the percentage of ability to understand mathematical concepts is in question number 1 with the indicator of restating a concept, which is 79% with high criteria. In question number 2, the indicator that identifies examples and not examples of a concept shows as much as 89%, which is a very high criteria. In question number 3, the indicator which presents the concept in the form of a mathematical representation, shows 68% with high criteria. In question number 4, the indicator of applying the concept in an algorithmic manner, shows 86%, is a very high criteria. In question number 5 with indicators of applying algorithms concept in problem solving as much as 60%, is a high criteria. According to these data, it can be concluded that the students' ability to understand mathematical concepts in solving systems of linear equations in two variables questions is categorized as high with the percentage of 76,4%.

DISCUSSION

The following are questions for each indicator of the ability to understand mathematical concepts:

1. Indicator 1 (Restate a concept)

   Question no 1: What does the linear equation system of two variables means?

   Students are expected to be able to restate a concept, the concept in question is to define the material. From the results of the analysis of students' answers for the first indicator, students' ability to restate a concept is categorized as high. The following is a description of the students' ability in the first indicator for question number 1.

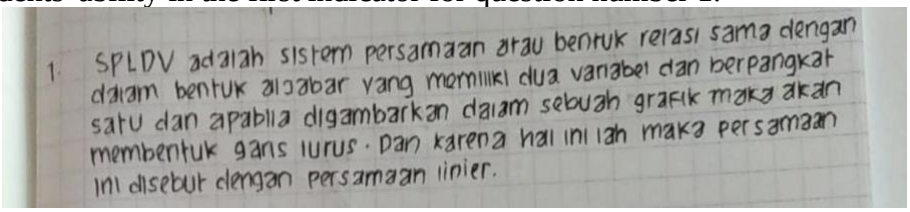
1. SPLDV adalah sistem persamaan atau bentuk relasi sama dengan dalam bentuk aljabar yang memiliki dua variabel dan berpangkat satu dan apabila digambarkan dalam sebuah grafik maka akan membentuk garis lurus. Dan karena hal ini lah maka persamaan ini disebut dengan persamaan linier.

Figure 1. Correct answer

   Students' answer: The linear equation system of two variables is a system of equation or the same as equational to the algebraic form that has two variables and powers of numbers. When depicted in a graph, it forms a straight line which is why it called a linear equation is a system of equation or the same as equational to the algebraic form that has two variables and powers of numbers. When depicted in a graph, it forms a straight line which is why it called a linear equation.

   Following is the answer of a student who meets the indicator. In Figure 1 it can be seen that students are able to restate the concept correctly and completely. From the answer written, it shows capability in describing linear equation system of two variables clearly, without multiple meaning. Based on these answers, it can be said that students are able to restate the given concept.

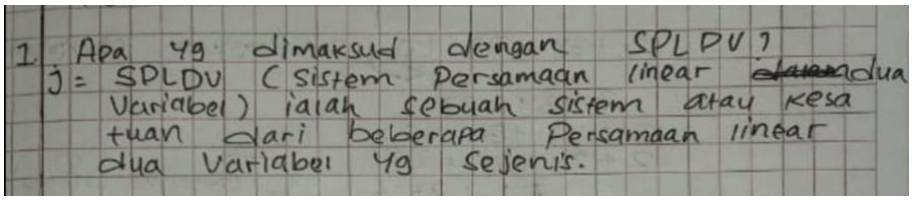
1. Apa yg dimaksud dengan SPLDV?
J = SPLDV (Sistem Persamaan linear ~~dua~~ dua Variabel) ialah sebuah sistem atau kesa tuan dari beberapa Persamaan linear dua Variabel yg sejenis.

Figure 2. Wrong answer

Students' answer: Linear equation system of two variables is a system or a unit of several linear equations of two similar variables

Figure 2 is one of the students' answers that is incomplete because the inability to emphasize that the system of equations has a variable.

In indicator 1, " restate a concept " contained in number 1 are categorized as very good where from the results of the student answer sheets some students have been able to describe the meaning of linear equation system of two variables completely and some other students can describe the meaning of linear equation system of two variables but it is not complete and precisely according to research conducted by Ilham et al (2020) that one of the signs of student error in learning mathematics is due to the difficulty of students in remembering the terms of a concept.

2. Indicator 2 (Identifying examples and not examples of a concept)

Question no 2: Choose the equations below which are the linear equation system of two variables!

I. $x + y = 13$

II. $2x + y = 9$
$x + 3y = 17$

III. $x - y = 1$
$2x + 3y = 27$

IV. $-2a + b = 8$

Students are expected to be able to identify examples and not examples of a concept and be able to give correct answers and clear explanation of a concept in math problems. Based on the analysis of student answers for the second indicator, which identifies examples and non-examples of a concept, categorized as very high. The following is a description of the students' ability in the second indicator for question number 2.

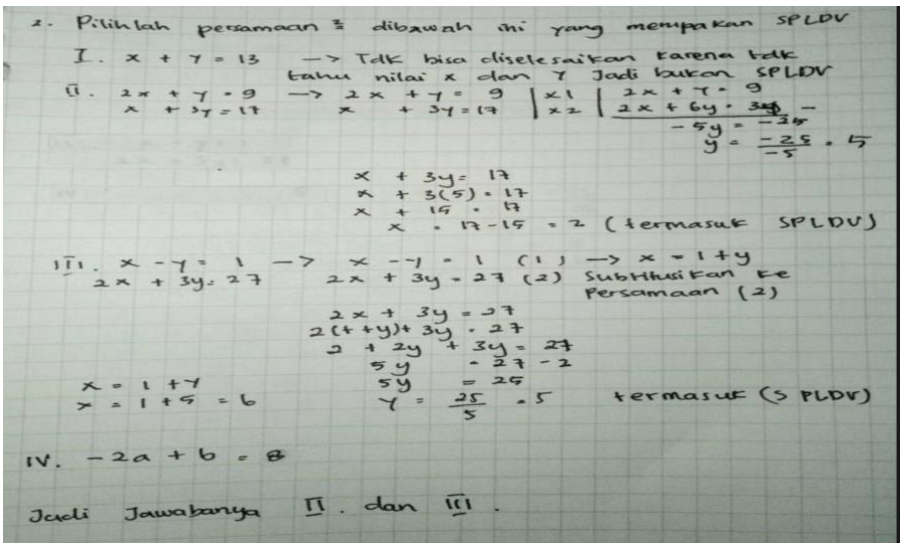

Figure 3. Correct answer

Figure 3 is one of the students' correct answers where students can answer correctly that equations II and III are part of linear equation system of two variable. This means that the student can provide examples and not examples of a given concept. In question number 2, 4 equations are given and students are asked to determine which equation is the SPLDV.

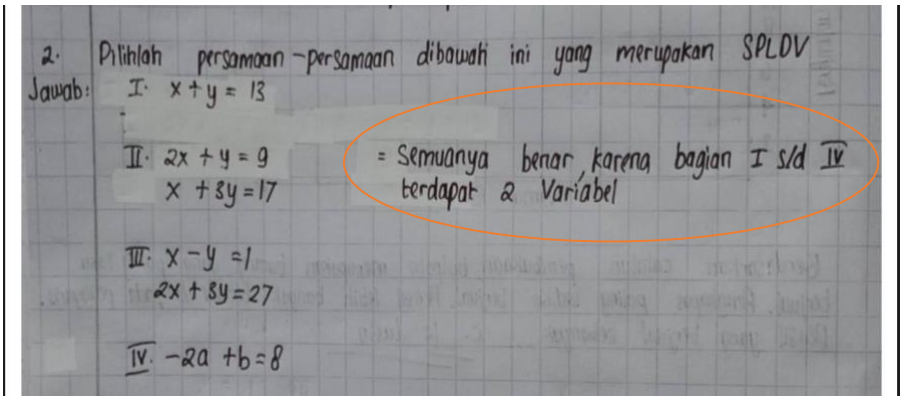

Figure 4. Wrong answer

Figure 4 is one of the students' incorrect answers. According to the answer sheet, it can be seen that the student's answer is wrong where he answered that all of the equations are part of linear equation system of two variables, whereas for equations I and IV are part of linear equation of two variables. Students have not been able to distinguish which equation is the linear equation system of two variables among the four equations given.

In indicator 2, namely "identifying examples and not examples of a concept" students' understanding of concepts is categorized as very good, this is in accordance with the opinion of Hanifah & Abadi (2018) that understanding concepts is the ability to find abstract ideas and group objects in a term, then put into examples and not an example so that students can understand the concept.

3. Indicator 3 (Presenting concepts in the form of mathematical representations)

Problem no 3: Three trucks and two pick-ups can carry 27 cows.
Two trucks and one pick-up car can carry 17 cows.
Write down two mathematical equation representing the information above. Use the letters “a” and “b” for variables!

Students can present concepts in the form of mathematical representations and can provide the right answer to a mathematical problem. From the results of the analysis of student answers for the third indicator, presenting the concept in the form of mathematical representation is categorized as high. The following is a description of students' ability in the third indicator for question number 3.

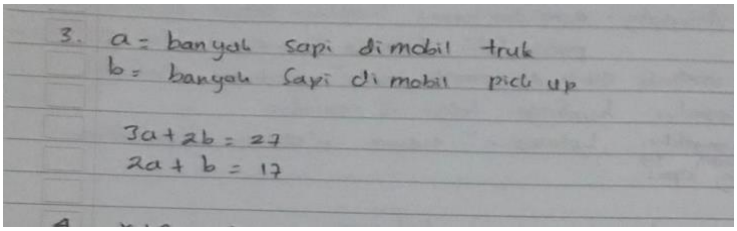

Figure 5. Correct answer

Figure 5 is one of the students' correct answers. Where students are able to present concepts in the form of mathematical representations and can provide the right answer to a mathematical problem.

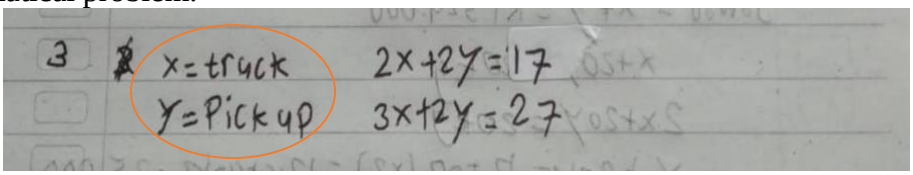

Figure 6. Wrong answer

Figure 6 is one of the students' incorrect answers. Because students are unable to present concepts in the form of mathematical representation. As can be seen in Figure 4, students are not using the right letter to the equation given.

In question number 3 with the "presenting concepts in the form of mathematical representations" indicator, accuracy is needed in understanding and working on this problem. There was only one student who answered correctly where 33 other students were still wrong in assuming variables and some students were wrong in writing down the variables. This is in accordance with the opinion of Annisa & Kartini (2021) which said that mistakes made students unable to design the appropriate formula.

4. Indicator 4 (Applying the concept algorithmically)
Problem no 4: Determine the solution for the the linear equation system of two variables below:

$$x + 3y = 9$$
$$4x + 6y = 28$$

Students are expected to be able to apply the concept or algorithm on problem solving. Students are said to be able to complete the concept if students are able to use the right concept so that they get a mathematical solution. From the results of the analysis of student answers for the fourth indicator of applying the concept to the algorithm is categorized as very high. The following is a description of students' ability in the fourth indicator for question number 4.

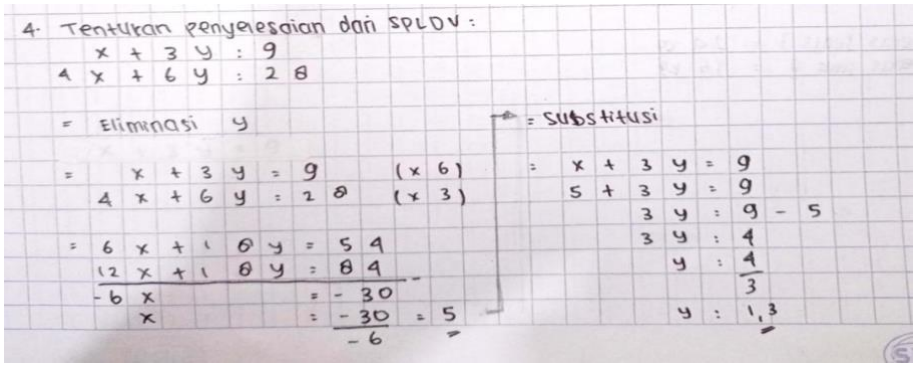

Figure 7. Correct answer

Figure 7 is one of the students' correct answers. Where students are able to apply concepts or algorithms to problem solving appropriately. From the student's answer sheet, it shows the ability to determine the solution to the given linear equation system, which are $x =$

5 & $y = 1{,}3$. It can be seen that students can find the value of x and y correctly without any calculation errors in it.

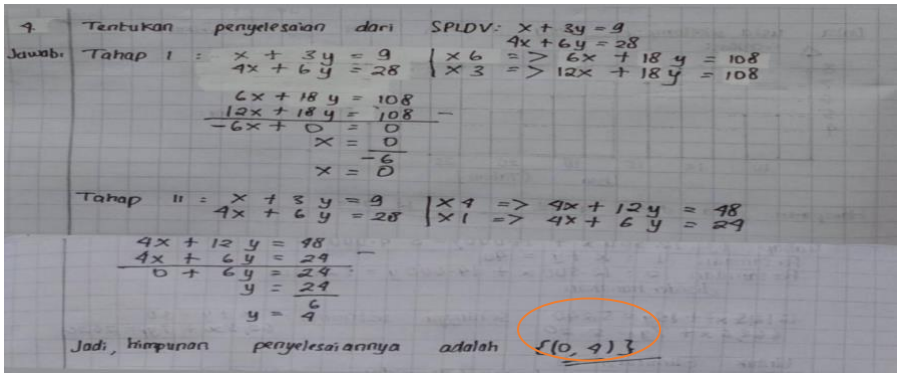

Figure 8. Wrong answer

Figure 8 is one of the students' incorrect answers. Students can actually apply the formula according to the procedure in solving problem, but there are still many errors in the calculations. On the student's sheet, to get the value of x, student multiplies the equation by 6 and multiplies the second equation by 3 but the multiplication 9×6 shows on the student sheet is 108 while the correct result is 54. On the next section where student supposed to multiplies 28×3, came to an answer 108, while the correct result is 84. That explains why student cannot determine the values of x and y correctly.

The "applying the concept algorithmically" indicator at number 4 is categorized as very good where most students are able to use the concept algorithmically, it's just that there are some students who do not find a fixed answer due to lack of accuracy in the calculation process, this is in accordance with the results of research from Ario (Lestari et al. , 2018) that lack of accuracy in understanding the problem and errors in the calculation process.

5. Indicator 5 (Applying the concept of algorithm in problem solving)
Problem no 5: A shop sells 40 kg of two types of rice. Type I rice costs Rp. 12,500.00/kg and type II rice costs Rp. 14.000,00/kg. If all the rice is sold at a price of Rp. 524,000.00. How many kg of rice types I and II were sold?
Students can apply the concept of algorithms in problem solving. Students are said to be able to complete the concept if students are able to use the right concept to obtain a correct mathematical solution. From the results of the analysis of student answers for the fifth indicator, it categorize as high. The following is a description of the students' ability on the fifth indicator for question number 5.

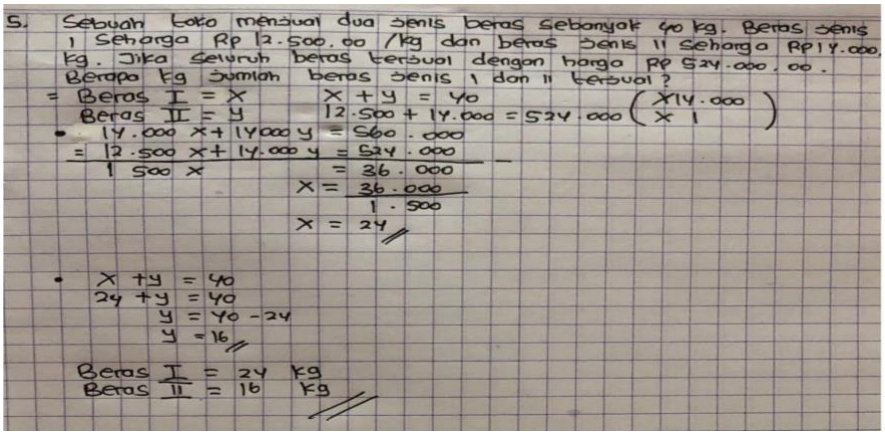

Figure 9. Wrong answer

Figure 9 is one of the incorrect student answers. It can be seen that students can find answers correctly without any calculation errors in it. But students are unable to assume variables which means that they cannot apply concepts or algorithms to problem solving appropriately.

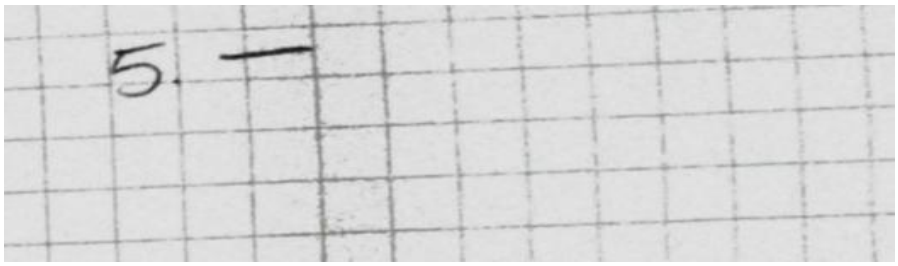

Figure 10. Wrong answer

Figure 10 is one of the students' incorrect answers where students have not been able to apply concepts or algorithms to problem solving appropriately. It can be seen that the student's answer sheet is empty because the student is unable to answer questions in the form of mathematical story such as the question given during the test.

In Indicator 5 "applying the concept of algorithm in problem solving" some students are still confused about understanding the story questions given so that the student answer sheets are blank but some students have been able to determine the results of the questions given, it's just that students are still wrong in assuming variables and some students are still not careful in the process of calculating things. This is in accordance with Zahra's research (2019) that students have not been able to understand the story questions given, so students have not been able to process further to determine the right answer and there are some students who have not been able to complete the calculations correctly.

Based on classical analysis, too often students used to answering questions without demanding deep understanding, besides that students also had difficulty working on questions in the form of stories. This thing mostly happen because of students' inability to highly understand the third and fifth indicators. In the third indicator, applying the concept of algorithm in problem solving presenting the concept in the form of mathematical representation, most students are able to make the form of the equation but there is only one student who assumes the variable correctly. In the fifth indicator, some students are able to determine the variable from the problem correctly but there are no students who are working on the variable example correctly.

The understanding of mathematical concepts about linear equation system of two variables in SMP 7 Tanjungpinang is included as good category. The results of this study shows similarity with previous research conducted by Khairunnisa and Aini (2019) where there were several mistakes made by students in solving questions such as students not being able to write down the meaning of linear equation system of two variables clearly using their own language, also students' failure to calculate thoroughly causing wrong answer. We can see students' ability in understanding linear equation system of two variables is categorized as less with the percentage of 39.71%. Another research that is relevant to this, is the the one conducted by Suraji, et al (2018) where the result shows that students' mathematical concepts acknowledgement about linear equation system of two variables is remain low, especially in applying it to daily life which includes failure in classifying questions, failure in representing the concept, and applying the concept.

CONCLUSION

Based on the results of research on class VIII.1 students of SMP Negeri 7 Tanjungpinang, it can be concluded that students' ability to understand mathematical concepts in solving math problems on the material of the Two Variable Linear Equation System (SPLDV) is categorized as very high. Students' ability to understand mathematical concepts with the indicator of restating a concept is equal to 79% with high criteria. The identifying indicator of examples and non-examples concept, which is 89% with very high criteria. The indicator that presents the concept in the form of a mathematical representation, which is 68% with high criteria. The indicator which applies the concept in an algorithmic manner, which is 86% with very high criteria. The indicator of applying the concept of algorithms in problem solving, which is 60% with high criteria. The analysis of errors in understanding mathematical concepts by students of class VIII.1 SMP Negeri 7 Tanjungpinang seen from the way students solving problems link to linear equation system of two variable. Students were not thorough while working on the questions given and there were also students who has no clue at all when it comes to questions in the form of story. In the third indicator, most students are able to make the form of the equation but there is only one student who assumes the variable correctly. In the fifth indicator, some students are able to determine the variable from the problem correctly but there are no students who are working on the variable example correctly.

Based on the research that has been done, there are several suggestions that can be submitted by researcher based on observations during the research, namely (1) for students it is to be able to maintain the ability to understand mathematical concepts, especially SPLDV material. (2) for teachers in the field of mathematics education, they should continue to train students in working on the problems contained in math problems so that students can get used to doing it. (3) other researchers should do research that would improve students' understanding of mathematical concepts that can be applied to other mathematics learning materials so that researchers would find out the level of knowledge of students' understanding of mathematical concepts.

ACKNOWLEDGMENTS

We would like to thank SMP Negeri 7 Tanjungpinang for participating in this research, and we would also like to thank the University of Riau for giving us the opportunity to conduct this research.

REFERENCES

Amalia, R dan Islami, A.M. 2017. Kemampuan pemahaman konsep kubus dan balok pada siswa kelas VIII SMP Negeri Se Kecamatan Alalak Tahun Pelajaran 2016/2017. *EDU-MAT Jurnal Pendidikan Matematika*, 5(2): 210

Annisa, R., & Kartini, K. 2021. Analisis Kesalahan Siswa dalam Menyelesaikan Soal Barisan dan Deret Aritmetika Menggunakan Tahapan Kesalahan Newman. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 5(1): 522

Bey, A dan Asriani. 2013. Penerapan Pembelajaran Problem Solving untuk Meningkatkan Aktivitas dan Hasil Belajar Matematika pada Materi SPLDV. *Jurnal Pendidikan Matematika*, 4(2): 225

Depdiknas. 2003. *Pedoman Khusus Pengembangan Sistem Penilaian Berbasis Kompetensi SMP*. Jakarta: Depdiknas

Fajar, A.P. Kodirun, Suhar, & Arapu, L. 2018. Analisis Kemampuan Pemahaman Konsep Matematis Siswa Kelas VIII SMP Negeri 17 Kendari. *Jurnal pendidikan matematika*, 9(2): 230

Hanifah, H., & Abadi, A. P. 2018. Analisis Pemahaman Konsep Matematika Mahasiswa dalam Menyelesaikan Soal Teori Grup. *Journal of Medives*, 2(2):229

Hendrayana, A. 2017. Pengaruh Pembelajaran Pendekatan Rigorous Mathematical Thinking (RMT) terhadap Pemahaman Konseptual Matematis Siswa SMP. *Jurnal Riset Pendidikan Matematika*, 4 (2): 187

Ilham, A. S., Fazri, Z., & Yusri, W. 2020. *Analisis Kesulitan Siswa dalam Menyelesaikan Soal Bangun Ruang Sisi Datar Ditinjau dari Gaya Kognitif Siswa Kelas IX SMP Negeri 5 Pariaman.* Universitas Bung Hatta

Kartika, Y. 2018. Analisis Kemampuan Pemahaman Konsep Matematis Peserta Didik Kelas VII SMP Pada Materi Bentuk Aljabar. *Jurnal Pendidikan Tambusai*, 2(4): 778

Kemendikbud. 2014. *Peraturan Menteri Pendidikan dan Kebudayaan, Nomor 58, Tahun 2014, tentang Kurikulum 2013 Sekolah Menengah Pertama (SMP)/ Madrasah Tsanawiyah (MTs)*. Jakarta

Khairunnisa, N.P & Aini, I.N. 2019. Analisis Kemampuan Pemahaman Konsep Matematis dalam Menyelesaikan Soal Materi SPLDV pada Siswa SMP. *Prosiding Seminar Nasional Matematika dan Pendidikan Matematika*, 2(1): 546

Lestari, A. S., Aripin, U., & Hendrian, H. 2018. Identifikasi Kesalahan Siswa SMP dalam Menyelesaikan Soal Kemampuan Penalaran Matematik pada Materi Bangun Ruang Sisi Datar dengan Analisis Kesalahan Newman. *Jurnal Pembelajaran Matematika Inovatif,* 1(4): 439

Mawaddah, S & Maryanti, R. 2016. Kemampuan Pemahaman Konsep Matematis Siswa SMP dalam Pembelajaran Menggunakan Model Pendekatan Terbimbing (Discovery Learning). *EDU-MAT Jurnal Pendidikan Matematika*, 4(1): 77

Ningsih, Y.L. 2016. Kemampuan Pemahaman Konsep Matematika Mahasiswa Melalui Penerapan Lembar Aktivitas Mahasiswa (LAM) Berbasis Teori Apos Pada Materi Turunan. *Edumatica*, 6(1): 5

Novitasari, D. 2016. Pengaruh Penggunaan Multimedia Interaktif Terhadap Kemampuan Pemahaman Konsep Matematis Siswa. *Jurnal Pendidikan Matematika & Matematika*, 2(2): 8

Pusat Pembinaan Bahasa Departemen Pendidikan dan Kebudayaan RI. 1991. *Kamus Besar Bahasa Indonesia*. Jakarta: Bulan Bintang: 13

Rizka, N., Syarifuddin, H., & Suherman. 2014. Pengaruh Penerapan Strategi Relating, Experiencing, Appliying, Cooperating, Transferring Terhadap Kemampuan Pemahaman Konsep Matematika Siswa Kelas X SMAN 2 Payangkumbuh. *Jurnal Pendidikan Matematika*, 3(2): 44

Satoto, S., Sutarto, H., & Pujiastuti, E. 2013. Analisis kesalahan hasil belajar siswa dalam menyelesaikan soal dengan prosedur newman. *Unnes Journal of Mathematics Education*, 1(2)

Suraji, Maimunah, & Saragih, S. 2018. Analisis Kemampuan Pemehaman Konsep Matematis Dan Kemampuan Pemecahan Masalah Matematis Siswa SMP pada Materi Sistem Persamaan Linear Dua Variabel (SPLDV). *Suska Journal of Mathematics Education*, 4(1): 12

Susanto, H.A. 2011. Pemahaman Pemecahan Masalah Pembuktian Sebagai Sarana Berfikir Kreatif. *Prosiding Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA*. Yogyakarta: Universitas Negeri Yogyakarta

Yulianty, N. 2019. Kemampuan Pemahaman Konsep Matematika Siswa dengan Pendekatan Pembelajaran Matematika Realistik. *Jurnal Pendidikan Matematika Raflesia*, 4(1):61

Zahra, S.J.A. 2019. Analisis Kesalahan Siswa dalam Pemahaman Konsep Menyelesaikan Soal Cerita SPLDV dengan Tahapan Newman. *Jurnal Pembelajaran Matematika Inovatif*, 2 (2): 93