

ANALYSIS OF SENIOR HIGH SCHOOL STUDENTS' PROBLEM SOLVING ABILITY ON THREE VARIABLES LINEAR EQUATION SYSTEM

M. Faizal Pratama¹, Nelly Fitriani², Puji Nurfauziah³

¹IKIP Siliwangi, Jl. Terusan Jenderal Sudirman, Cimahi, Indonesia
faizalpratama091@gmail.com

²IKIP Siliwangi, Jl. Terusan Jenderal Sudirman, Cimahi, Indonesia
nhefitriani@gmail.com

³IKIP Siliwangi, Jl. Terusan Jenderal Sudirman, Cimahi, Indonesia
zielazuardi@gmail.com

ARTICLE INFO

Article history:

Received Aug 06, 2024
Revised Aug 14, 2024
Accepted Aug 16, 2024

Keywords:

Problem Solving Ability
Three Variables Linear
Equation System
Senior High School

ABSTRACT

This study aims to analyze students' mathematical problem solving ability on the material of the Three Variable Linear Equation System (SPLTV) in terms of students' initial mathematical abilities. This research was conducted using a qualitative descriptive method, the subjects of this research were 20 students of class X SMA Negeri 1 Cililin who had studied SPLTV material. The data collection technique in this study was to give a written test in the form of a description with a total of four problem solving indicator questions. Before starting the research, the questions were validated first. Based on the results of the study, the percentage of mathematical problem solving ability on the material of the system of linear equations of three variables is 52.23% which is classified in the moderate category. The indicator of understanding the problem is 71.67%, the indicator of planning problem solving is 51.25%, the indicator of solving the problem according to the plan is 48%, and the indicator of making a mathematical model of the problem, solving and re-examining the answer is 38%. The mathematical initial ability of upper group students obtained an average score of 83.3% classified in the high category, the middle group obtained an average score of 74.58% in the high category, and the lower group obtained an average score of 77% which fell into the high category. So it can be concluded that the initial mathematical ability of students is in the high category for mathematical problem solving ability.

Copyright © 2024 IKIP Siliwangi.

All rights reserved.

Corresponding Author:

M. Faizal Pratama,
Department of Mathematics Education,
Institut Keguruan dan Ilmu Pendidikan Siliwangi,
Jl. Terusan Jend. Sudirman, Cimahi, Indonesia
Email: faizalpratama091@gmail.com

How to Cite:

Pratama, M. F., Fitriani, N., Nurfauziah, P. (2024). Analysis of Senior High School Students' Problem Solving Ability on Three Variables Linear Equation System. *JIML*, 7(2), 164-173.

INTRODUCTION

Mathematics will continue to be studied continuously until the highest level of education. According to Johnson and Rising (Rahmi, 2015) mathematics is a pattern of thought, a pattern of organization and logical evidence. Mathematics is a language of terms that are carefully defined, clear and precise, expressed in dense symbols, in the form of a language of symbols that is more about ideas than sounds. Mathematics is a language that symbolizes a set of meanings from statements that want to be conveyed in mathematical symbols that are

artificial which only have meaning after a meaning is given to them (Irawan, 2014). It can be interpreted as knowledge gained through thinking and reasoning. Mathematics also plays an important role in education because it is used as a basic science that also helps solve problems in other scientific fields.

One of the contents of daily math lessons is SPLTV material. According to Sukino (Benyamin et al., 2021) SPLTV is a compulsory subject for grade X high school students. SPLTV solution methods include elimination, substitution, and determinant methods (Cramer's rule). SPLTV material is an additional form of a system of linear equations of two variables (SPLDV), SPLTV is a mathematical equation consisting of three variables in one linear equation. SPLTV can also be defined as a concept in mathematics used to solve problems that cannot be solved by linear equations of one variable and linear equations of two variables. SPLTV problems can be told in the form of daily life stories. According to (Kuswanti et al., 2018), it was found that there are still students who make mistakes in solving problems related to the SPLTV material given. Errors are made, for example, students miss important information in the problem, students make mistakes when making appropriate mathematical models, and students make mistakes in determining solutions.

Initial ability is a learning outcome that students have before getting higher abilities. This initial ability has been owned by all students before following the learning that will be given (Lestari, 2017). This ability illustrates the readiness of students in receiving subject matter delivered by educators. Students who do not master the initial ability will have difficulty in mastering the material. This student's initial mathematical ability has a close correlation with the student's ability to solve math problems. According to (Rahayu & Anggo, 2018) with the existence of good initial mathematical abilities (KAM) of students, it will facilitate students in the learning process including in solving problems and understanding the material presented by the teacher. Conversely, if the student has a low initial mathematical ability (KAM), it will make students find it difficult to understand the subject matter, because actually between one material and another material are interrelated.

One of the abilities that students must master in mathematics is problem solving ability. Mathematics teachers must try to facilitate and support students well so that students are optimal in mastering these abilities. According to Krulik & Rudnick in (Latifah & Widjajanti, 2017), problem solving ability is the ability to solve problems using previously acquired knowledge, skills, and understanding. The nature of problem solving is characterized by the existence of regular stages that students go through in solving problems. According to Polya (Hadi & Radiyatul, 2014) there are 4 stages in solving problems, namely: (1) understanding the problem; (2) developing a solution plan; (3) implementing the solution plan; (4) checking again. In fact, there are still many students who are lacking in mathematical problem solving skills. Based on the findings in the field, there are several facts that there are still many students who do not understand the steps and procedures of problem solving, especially in SPLTV material. Most students have difficulty identifying examples, difficulty translating verbal questions into mathematical models, and students are unable to reason even when solving problems. Based on the findings that occur in the field, the achievement of high school students in learning mathematics is still relatively low, especially in terms of mathematical problem solving skills on SPLTV material. From the data obtained, 73% of students still have relatively poor problem solving skills on SPLTV material. This is caused by several things including students' lack of interest in learning mathematics, a learning process that still relies on the teacher as a provider of information, and learning facilities that are still inadequate.

Based on the above problems, it can be concluded that students' initial mathematical abilities have the potential to affect students' problem solving abilities, therefore researchers examine

students' mathematical problem solving abilities on the material of the system of linear equations of three variables in terms of initial mathematical abilities in students of class X MIPA SMA Negeri 1 Cililin. The indicators of mathematical problem solving ability used in this study use Polya's stages, namely (1) mastering the problem, (2) making a plan, (3) doing the plan, and (4) checking back. The four indicators provide an accurate assessment of students' expertise in solving mathematical problems. Students consistently practice the right mindset with these four indicators. The purpose of this study is to assess and determine students' ability to solve mathematical problems involving the system of linear equations of three variables. The researcher hopes that by conducting this study, teachers can help children develop their ability to solve math problems.

METHOD

The method used in this research is descriptive qualitative method. According to Sumanto (Nurrisbaeni & Setiawan, 2019) descriptive research describes and understands what exists (it can be a situation or relationship that exists, opinions expressed, ongoing processes, results that have occurred, or trends that are developing). Studying about social and social structures and problems in certain situations, including the relationship between activities, attitudes, beliefs, ongoing processes, and the effects of a phenomenon. The purpose of this research is to produce a systematic, factual and accurate picture, description or description of the facts, characteristics and relationships between the phenomena studied.

This research is an attempt to describe, analyze, and explain the situation or problem that occurs. Students' ability to solve SPLTV is a problem in this study. To analyze this ability, data collection techniques were carried out in the form of written test instruments (descriptions) with a total of four questions, with the subject being 20 X MIPA class students who had studied the material of the system of linear equations of three variables, this research was conducted at a high school in West Bandung, namely SMA Negeri 1 Cililin.

RESULTS AND DISCUSSION

Results

1. Problem Solving Ability in View of Students' Mathematical Initial Ability

The data from this study came from the answers of 20 students of class X MIPA. To find out the initial ability of the class students, it was done through an initial ability test by giving 2 description questions, and as a consideration, the mathematical prior knowledge ability score was given by the math teacher in the class. The results were obtained as follows

Table 1. Average and Grouping of Students' KAM

Group	N	Average
Under	5	25
Center	12	56,3
Top	3	90,3
Total	20	

Based on the grouping of initial mathematical abilities, 5 students were in the lower KAM group, 12 students were in the middle KAM group, and 3 students were in the upper KAM group.

2. Problem solving ability on SPLTV material

After knowing the students' initial mathematical abilities, then a problem solving ability test was carried out on the system of linear equations of three variables in the form of description/essay questions. The following table shows the questions given to students, along with the steps of achievement.

Table 2. Mathematical problem solving test grid

Steps of Mathematical Problem Solving	Question Item	Score
Understand the problem	You are given the following system of equations $\begin{cases} x - y + z = 4 \\ -2x + y - z = 1 \\ 3x - 2y + z = 3 \end{cases}$ Is the known data enough if we are going to determine the value of z?	15
Planning to solve the problem	It is known that five years ago, Faiz's age was equal to 2 times Izal's age. while three years from now, twice Faiz's age is equal to Izal's age plus 35 years. How can you find out Faiz's age?	20
Solve the problem according to the plan	The average gestation period (days) for cattle, horses and buffaloes is 975 days in total. Buffalo gestation period is 85 days longer than cattle. Twice the gestation period of a cow plus the gestation period of a buffalo is equal to three times the gestation period of a horse minus 65. Can you determine the average number of pregnancies for each of these animals?	25
Create a mathematical model of the problem, solve it and check the answer	You are given a system of linear equations of three variables as follows $\begin{cases} \frac{1}{x} + \frac{2}{y} + \frac{4}{z} = 4 \\ -\frac{1}{x} + \frac{4}{y} + \frac{12}{z} = 7 \\ \frac{2}{x} + \frac{8}{y} + \frac{4}{z} = 8 \end{cases},$ determine the value of $\frac{1}{x}$ and $\frac{1}{z}$, and substitute the value into the equation $\frac{1}{x} + \frac{1}{z}$	30
Sum of scores		90

The results of the student answer scores will be interpreted by referring to the analysis guidelines (Sumarmo 2016) as in table 3 below:

Table 3. Data Criteria

No	Achievements	Category
1	68% - 100%	High
2	34% - 67%	Medium
3	0% - 33%	Low

Based on the research findings from the student test data on problem solving ability, the percentage of steps of problem solving ability is obtained as in table 4 below

Table 4. Percentage of Mathematical Problem Solving Ability

No	Steps	Average %	Interpretation
1	Understand the problem	71,67%	High
2	Planning to solve the problem	51,25%	Medium
3	Solve the problem according to the plan	48%	Medium
4	Create a mathematical model of the problem, solve it and check the answer.	38%	Medium
Total mathematical problem solving ability		52,23%	Medium

Using student test results, additional analysis was conducted to determine the types of errors students made when working on SPLTV problems. Figures 1, 2, 3, and 4 illustrate students' problem solving results

Figure 1. Students' answers to question number 1

In the results of working on problem number 1, there are still middle and lower group students who do not write a mathematical model of a problem. Students did not understand the problem well based on their answers, because many of the 20 students were looking for the x , y , and z values even though what was asked in the problem was only the z value, so they could not distinguish what information was known and asked in the question.

Figure 2. Students' answers to question number 2

In the results of working on problem number 2, there are still some middle and lower group students who make mistakes when formulating plans because they do not formulate the process to overcome difficulties correctly so that students directly answer the questions in the

given problem. This can happen because students do not understand the problem and the steps needed to solve the problem.

Diketahui : sapi = x
 kuda = y
 kerbau = z
 $x + y + z = 975 \dots (1)$
 $2x + z = 345 - 65 \dots (2)$
 $2x + z = 280 \dots (3)$
 Substitusikan (2) ke (1)
 $x + y + 975 - x = 975$
 $y = 0$
 Substitusikan (2) ke (3)
 $2x + 975 - x = 345 - 65$
 $x + 975 = 280$
 $x = 280 - 975$
 $x = -695$
 Eliminasi (4) dan (5)
 $2x + y = 800$
 $x - y = -60$
 $3x = 740$
 $x = 246.67$
 Substitusikan x ke (5)
 $246.67 - y = -60$
 $-y = -60 - 246.67$
 $-y = -306.67$
 $y = 306.67$
 Substitusikan x ke (2)
 $2x + z = 280$
 $2(246.67) + z = 280$
 $493.34 + z = 280$
 $z = 280 - 493.34$
 $z = -213.34$
 jadi khamilah sapi 246.67, khamilah kuda 306.67 dan khamilah kerbau 365.

Figure 3. Students' answers to question number 3

In the results of working on problem number 3, it can be seen that there are still students who make mistakes in completing and implementing the plan. Among the mistakes made by students in carrying out the plan, there are still those who do not record the information and questions made, and immediately respond to questions with their own abilities.

Misal : a = a
 b = b
 c = c
 $a + 2b + 4c = 9 \dots (1)$
 $2a + 9b + 12c = 7 \dots (2)$
 $2a + 8b + 9c = 8 \dots (3)$
 Eliminasi Pers (2) dan (1)
 $2a + 9b + 12c - 2a - 4b - 8c = 7 - 18$
 $5b + 4c = -11 \dots (4)$
 Eliminasi Pers (3) dan (2)
 $2a + 9b + 12c - 2a - 8b - 9c = 7 - 8$
 $b + 3c = -1 \dots (5)$
 Eliminasi Pers (4) dan (5)
 $5b + 4c - 5b - 15c = -11 - (-5)$
 $-11c = -6$
 $c = \frac{6}{11}$
 Substitusikan c ke (5)
 $b + 3(\frac{6}{11}) = -1$
 $b + \frac{18}{11} = -1$
 $b = -1 - \frac{18}{11}$
 $b = -\frac{29}{11}$
 Substitusikan b ke (1)
 $a + 2(-\frac{29}{11}) + 4(\frac{6}{11}) = 9$
 $a - \frac{58}{11} + \frac{24}{11} = 9$
 $a - \frac{34}{11} = 9$
 $a = 9 + \frac{34}{11}$
 $a = \frac{133}{11}$
 jadi a = $\frac{133}{11}$, b = $-\frac{29}{11}$, c = $\frac{6}{11}$

Figure 4. Students' answers to question number 4

In the results of working on problem number 4, it can be seen that there are still mistakes made by upper, middle and lower group students in re-examination. The mistake is that students fail to re-examine the results of their answers, because students still lack understanding of the problems that have been given so that the answers they have obtained are still wrong.

Discussions

1. Problem Solving Ability in View of Students' Mathematical Initial Ability

Based on initial research conducted on 20 class X students, it was found that 3 students were included in the upper KAM group with a score of 250 with an average of 83.3%. Based on the data criteria in table 3, the average student who is included in the upper KAM group is classified as a student who has high mathematical problem solving ability. In line with research (Purnamasari & Setiawan, 2019). overall, students with this upper KAM group have been able to solve problems well, seen from these students can understand the problem, plan

and solve problems well and can re-examine the problems and answers they have done so that they get good results.

In the middle KAM group, there were 12 students who entered this group, with a score obtained of 895 with an average of 74.58%, although the average score obtained by the middle group was much different from the upper group, based on the data criteria in table 3, the average student who entered the upper KAM group was classified as a student who had high mathematical problem solving ability. In line with research (Suryani et al., 2020) that overall there are still students' mistakes in answering questions, especially in the indicators of planning, solving problems, it can be seen in the scores obtained, even so students in this group have high mathematical problem solving ability.

Furthermore, in the lower KAM group, 5 students were included in this group, with a score obtained of 385 with an average of 77%. Based on the data criteria in table 3, the average student who is included in the upper KAM group is classified as a student who has high mathematical problem solving ability. The score obtained by the lower group is higher than the middle class, it means according to (Firmansyah, 2017) that the lower class is more able to solve problems well in accordance with the steps of mathematical problem solving ability.

It can be concluded that students who are included in the upper, middle or lower KAM do not necessarily have problem solving skills according to their group, it could be that the lower KAM group has better problem solving skills than other groups. This is in line with research conducted by (Rahayu & Anggo, 2018) that students who have high KAM do not necessarily have high student problem solving skills, on the other hand students who have low KAM do not necessarily have low student mathematical problem solving skills.

2. Problem solving ability on SPLTV material

In analyzing the problem solving ability on SPLTV material seen from the results of students' answers to problem solving skills, it was found that students on the indicator of understanding the problem obtained an average value of 71.67%, which means that some students can solve the problem well, shown in figure 1, that students have been able to solve the problem well and correctly, but there are still students who cannot understand the problem properly. This is in line with (Purnamasari & Setiawan, 2019) that students have difficulty in understanding a problem. According to (Puadi, 2017) errors made by students when solving a problem related to mathematical problem solving ability are errors due to carelessness or inaccuracy, errors in replacing information, errors in processing, and errors in understanding the problem.

In the indicator of planning problem solving, the average student of 51.25% is in the moderate category, shown from the students' answers in Figure 2, there are still some students who still make mistakes when planning the solution, because students do not understand what they will do, so students cannot solve the problem properly. This is in accordance with (Utami & Wutsqa, 2017) Students cannot analyze information about the questions posed to solve problems, and many cannot assess the relevance of information about the problem. This error can occur because students confuse some information as said (Rachmawati & Adirakasiwi, 2021) that students often make mistakes when writing formulas or steps so that all the work processes become less precise.

In the indicator of solving problems according to the plan, the average student is 48%, although the average on this indicator is smaller than the previous indicator according to the criteria in table 3, it is included in the moderate category, it is shown from the students' answers in figure 3 that there are still students who make mistakes in solving problems so that students cannot solve the problem correctly. According to (Hidayah et al., 2016) in this phase, students develop the framework set at the problem solving planning stage, the ability to

understand the subject matter and the ability to perform mathematical calculations help students solve story problems. The reason students make this mistake is because students are not accustomed to writing down the plans that students use to solve problems, such as not writing down the variable memorization that will be used in making mathematical models, not writing down the methods and steps that will be used in solving the mathematical models they have made so that misconceptions occur.

It is not much different from the previous indicator, that in the indicator of checking back the student's average is 38%, this indicator is the smallest of the previous indicators but based on the data criteria in table 3 it is still classified as a moderate category, this is shown by the students' answers in figure 4, there are still students who make mistakes in re-examination due to students' poor understanding of the problems given. This is in line with the research of (Rambe & Afri, 2020) that students do not understand the problem well so that in the process of solving problems and checking back there are still errors. Errors in re-examining the results obtained are also caused by students not being careful in reading the questions so that there are many wrong answers. As in the statement of (Nurul Farida, 2015), errors in re-examining the results are caused by students who do not pay close attention to what is asked and errors in hasty and careless calculations. According to (Martin & Kadarisma, 2020) that this error can occur because students feel there is no need to check back. Even though checking back is very important to solve a problem. Thus, students must be able to re-examine their work to be able to solve problems.

Based on students' answers on the problem solving ability test, there are several factors that can affect students' problem solving ability, including students' understanding of the problems given is still lacking so that students are unable to plan a solution strategy and find the right solution. This is in line with research (Sulistiyorini & Setyaningsih, 2016) that students have difficulty understanding problems because students are not used to working on story problems with problem solving steps with indicator stages according to Polya.

CONCLUSION

Based on the results obtained from the research conducted, there are still students who have not been able to understand the problem, there are still students who are confused in planning problem solving and solving problems according to the plan, and there are also students who are not careful about their answers so that they make mistakes because they are not in accordance with the question, so that with these four indicators, class X students have mathematical problem solving skills that are classified in the moderate category. The initial mathematical ability of students is not a benchmark for students in improving problem solving skills, it is found that lower grade students get a high category in their mathematical problem solving skills. For further research, it can be done to develop test instruments that can dig deeper for mathematical problem solving skills in students, and find solutions that can be implemented to reduce errors made by students.

ACKNOWLEDGMENTS

Thank you to all parties involved in helping me complete this research, including the 4th ISAMME committee for providing space and direction, as well as SMAN 1 Cililin for giving permission to conduct this research, and not forgetting the students of class X. Hopefully this research can be useful for readers and other researchers.

REFERENCES

- Benyamin, B., Qohar, A., & Sulandra, I. M. (2021). Analisis Kemampuan Berpikir Kritis Siswa SMA Kelas X Dalam Memecahkan Masalah SPLTV. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 5(2), 909–922. <https://doi.org/10.31004/cendekia.v5i2.574>

- Firmansyah, M. A. (2017). Peran Kemampuan Awal Matematika Dan Belief Matematikaterhadap Hasil Belajar. *Prima: Jurnal Pendidikan Matematika*, 1(1), 55. <https://doi.org/10.31000/prima.v1i1.255>
- Hadi, S., & Radiyatul, R. (2014). Metode Pemecahan Masalah Menurut Polya untuk Mengembangkan Kemampuan Siswa dalam Pemecahan Masalah Matematis di Sekolah Menengah Pertama. *EDU-MAT: Jurnal Pendidikan Matematika*, 2(1), 53–61. <https://doi.org/10.20527/edumat.v2i1.603>
- Hidayah, S., Studi, P., Pendidikan, M., Universitas, M., & Malang, N. (2016). *Analisis Kesalahan Siswa dalam Menyelesaikan Soal Cerita SPLDV Berdasarkan Langkah Penyelesaian Polya*. 1(2010), 182–190. <https://repository.unikama.ac.id/840/22/182-190.pdf>
- Irawan, A. (2014). Pengaruh Kecerdasan Numerik dan penguasaan konsep matematika terhadap kemampuan berpikir kritis mahasiswa. *Jurnal Formatif*, 4(1), 46–55. <https://media.neliti.com/media/publications/234833-pengaruh-kecerdasan-numerik-dan-penguasa-708f2fd5.pdf>
- Kuswanti, Y., Sudirman, & Nusantara, T. (2018). Deskripsi Kesalahan Siswa pada Penyelesaian Masalah Sistem Persamaan Linear Tiga Variabel (SPLTV). *Jurnal Pendidikan: Teori, Penelitian, Dan Pengembangan*, 3(7), 865–872. <http://journal.um.ac.id/index.php/jptpp/article/view/11286>
- Latifah, U. H., & Widjajanti, D. B. (2017). Pengembangan bahan ajar statistika dan peluang berbasis multiple intelligences berorientasi pada prestasi, pemecahan masalah, dan rasa ingin tahu. *Jurnal Riset Pendidikan Matematika*, 4(2), 176. <https://doi.org/10.21831/jrpm.v4i2.13083>
- Lestari, W. (2017). Pengaruh Kemampuan Awal Matematika dan Motivasi Belajar terhadap Hasil Belajar Matematika. *Jurnal Analisa*, 3(1), 76. <https://doi.org/10.15575/ja.v3i1.1499>
- Martin, I., & Kadarisma, G. (2020). *Analisis kemampuan pemecahan masalah matematis siswa sma pada materi fungsi*. 3(6), 641–652. <https://doi.org/10.22460/jpmi.v3i6.641-652>
- Nurrisbaeni, N., & Setiawan, W. (2019). Analisis Kemampuan Pemecahan Masalah Matematik Siswa Kelas X Pada Materi Persamaan Dan Pertidaksamaan Nilai Mutlak. *Journal On Education*, 1(3), 327–336. <https://doi.org/10.22460/jpmi.v5i6.1607-1618>
- Nurul Farida. (2015). *Analisis Kesalahan Siswa SMP Kelas VIII dalam Menyelesaikan Masalah Soal Cerita Matematika*. 4(2), 42–52. <http://dx.doi.org/10.24127/ajpm.v4i2.306>
- Puadi, E. F. W. (2017). Analisis Peningkatan Kemampuan Koneksi Matematis Mahasiswa Ptik Melalui Pembelajaran Berbasis Masalah. *Jurnal Pendidikan Matematika STKIP Garut*, 5. <http://jurnal.upmk.ac.id/index.php/jumlahku/article/view/139>
- Purnamasari, I., & Setiawan, W. (2019). Kemampuan Pemecahan Masalah Matematis Siswa SMP pada Materi SPLDV Ditinjau dari Kemampuan Awal Matematika (KAM). *Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang*, 3(2), 207–215. <https://doi.org/10.31331/medivesveteran.v3i2.771>
- Rachmawati, A., & Adirakasiwi, A. G. (2021). *Analisis kemampuan pemecahan masalah matematis siswa sma*. 4(4), 835–842. <https://doi.org/10.22460/jpmi.v4i4.835-842>
- Rahayu, O., & Anggo, M. (2018). Pengaruh Pembelajaran Berbasis Masalah Dengan Pendekatan Metakognisi Terhadap Kemampuan Pemecahan Masalah Matematika

- Ditinjau Dari Kemampuan Awal Matematika Siswa SMPN 2 Kendari. *Jurnal Pendidikan Matematika*, 9(2), 150–161. <http://dx.doi.org/10.36709/jpm.v9i2.5865%0A>
- Rahmi, R. (2015). Menciptakan Pembelajaran Matematika yang Kreatif dan Menyenangkan. *Jurnal Pelangi*, 6(1). <https://doi.org/10.22202/jp.v6i1.292>
- Rambe, A. Y. F., & Afri, L. D. (2020). *Analisis Kemampuan Pemecahan Masalah Matematis Siswa dalam Menyelesaikan Soal Materi Barisan dan Deret*. 09(2), 175–187. <http://dx.doi.org/10.30821/axiom.v9i2.8069>
- Sulistiyorini, & Setyaningsih, N. (2016). Analisis Kesulitan Siswa dalam Pemecahan Masalah Soal Cerita. *Seminar Nasional Pendidikan Matematika*, 1–9.
- Suryani, M., Jufri, L. H., & Putri, T. A. (2020). Analisis Kemampuan Pemecahan Masalah Siswa Berdasarkan Kemampuan Awal Matematika. *Mosharafa: Jurnal Pendidikan Matematika*, 9(1), 119–130. <https://doi.org/10.31980/mosharafa.v9i1.605>
- Utami, R. W., & Wutsqa, D. U. (2017). Analisis kemampuan pemecahan masalah matematika dan self-efficacy siswa SMP negeri di Kabupaten Ciamis. *Jurnal Riset Pendidikan Matematika*, 4(2), 166. <https://doi.org/10.21831/jrpm.v4i2.14897>