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Analysis of students' mathematical problem solving ability in solving minimum competency assessment questions on algebra content

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Abstract: Problem solving ability is a mathematical ability that students must have in learning mathematics. Mathematical problem solving in algebraic material is a problem that must be solved using algebraic methods, in solving it there are many obstacles that cause students to make mistakes in the problem solving process. This study aims to analyze the mathematical problem solving ability of VIII grade students in solving Minimum Competency Assessment questions on algebra content. This research uses qualitative research methods. The research instruments used test questions and interviews. The test questions given were AKM with algebra content. The test questions given to class VIII students at SMP Negeri 1 Mandastana totaling 44 people. Furthermore, with the *purposive sampling* method, 2 students who had different answers were taken to be interviewed as validation of the answers that had been done. The results of this study on question number 1 student A was able to fulfill stages (1), (2), (3), and (4) while student B only fulfilled stages (1), (3), and (4), then on question number 2 student A only fulfilled stages (1), (3) and (4) while student B was only able to fulfill stages (3) and (4).

Keywords: problem solving abilities, algebra content.

Introduction

In this modern era, problem-solving skills are not only important in an academic context, but also in everyday life where analytical and problem-solving skills are the key to success in various fields (La'ia & Harefa, 2021). Without realizing it, many things in our daily lives require problem-solving skills, for example resolving conflicts in friendships or resolving problems in the family. Therefore, problem solving skills are important for everyone to have.

Problem solving ability is a person's ability to solve various problems by applying problem solving strategies (Gumanti et al., 2022). Problem solving ability is a mathematical ability that students must have in learning mathematics. Problem solving is something that is mandatory in learning mathematics, therefore solving the resulting mathematical problems can be a solution to other problems (Hanggara et al., 2022). Mathematical problem solving is an attempt to find solutions to mathematical problems by applying the concepts or methods that have been studied (Fauziah et al., 2022). This opinion is also in line with (Nurmeidina et al., 2021) who say that every student must have problem-solving abilities, which are very important for understanding and applying

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mathematics. From these several definitions, it can be concluded that mathematical problem solving ability is a person's ability to solve a problem using strategies or methods that have been studied previously, especially in learning mathematics.

The mathematical problem solving abilities of students in Indonesia are relatively low, as revealed in the 2018 Trends in International Mathematics and Science Study (TIMSS) research results. Indonesia is ranked 73rd out of 79 countries participating in TIMMS, with an average score of around 397. The Program for International Student Assessment (PISA) also shows that Indonesian students' mathematics scores remain below 400 without significant improvement. This shows the need for improvements in the Indonesian education system, especially in developing students' mathematical problem solving abilities (Fauziah et al., 2022). The conditions above are in accordance with the interview we conducted with the class VIII mathematics teacher at SMPN 1 Mandastana who stated that the students' mathematical problem solving abilities at this school were still relatively low. Several things that cause students' low mathematical problem solving abilities are questions that are too long, students not knowing the benefits of learning mathematics in everyday life, students' lack of skills in translating problems into mathematical form, especially in algebra material, and students' lack of understanding about how mathematics can be used to solve problems.

A person's ability to solve problems often depends on the teaching-learning process in general, because the ability to overcome the challenges faced can be influenced by mathematical understanding (Latifah & Luritawaty, 2020).Polya suggested that there are four stages that students do in solving problems, namely (1) understanding the problem, (2) planning a problem-solving strategy, (3) implementing the problem-solving strategy, and (4) re-evaluating the solution obtained (Rambe & Afri, 2020).

In 2021, the Ministry of Education and Culture officially replaced the National Exam (UN) with the National Assessment. This policy change is based on survey results and consultation with various stakeholders in education, including teachers, parents and students. The National Assessment includes Minimum Competency Assessment (MCA) and character survey as its components. AKM refers to basic competencies that must be met, which are used to map schools and drive improvements in the quality of learning and student learning outcomes as part of efforts to improve education evaluation. AKM is really minimum competencies. AKM results enable mapping of schools to improve the quality of learning and student learning outcomes through improved education evaluation systems (Ariyanti et al., 2023). AKM consists of two types, namely AKM Numeracy and AKM Literacy. In AKM Numeracy, questions are grouped into several contexts (personal, socio-cultural, and scientific), cognitive levels (knowing, applying, and reasoning), domain content (numbers, algebra and functions, geometry, and data analysis and opportunities), and learning progress. This study will focus on students' problem solving ability in solving AKM problems on algebra content.

Algebra is one of the mathematical sciences that is closely related to symbols and variables (Utami et al., 2020). Students' success in learning algebra in junior high school is very influential on subsequent materials, because algebra is the basis of other materials such as calculus, analytic geometry, and statistics (Syarah et al., 2023). Mathematical problem solving in algebraic material is a problem that must be solved using algebraic methods, in solving it there are many obstacles that cause students to make mistakes in the problem solving process (Sumartini et al., 2023). Therefore, analyzing students' mathematical problem solving skills on algebra content is very suitable to do.

This study aims to analyze the mathematical problem solving ability of VIII grade students in solving AKM problems on algebra content. This research is in line with research conducted by (Fauziah et al., 2022) with the title "Mathematical Problem Solving Ability of Students in AKM Numeration Type Problem Solving" with the results of mathematical problem solving ability is still relatively low, namely with an average value of 5.47. However, his research was only limited to the level of students' mathematical problem solving ability and only used 1 description question. Therefore, researchers want to develop more specifically about each stage of problem solving

proposed by Polya by using 2 description questions in the form of objective questions. So that it leads to an explanation of how the mathematical problem solving ability of VIII grade students based on Polya's stages in solving AKM questions on algebra content.

Method

This research uses qualitative research methods. The research instrument used test questions and interviews. The test questions given were in the form of AKM from the Center for Educational Assessment of the Ministry of Education, Culture, Research and Technology (Pusmendik Kemendikbudristek) as many as 2 questions with algebraic content. The test questions were given to class VIII students at SMP Negeri 1 Mandastana, totaling 44 people. Furthermore, with the purposive sampling method, 2 students who have different answers are taken to be interviewed as validation of the answers that have been done.

Result and Discussion

In this study, the data obtained was an analysis of students' mathematical problem solving skills using AKM questions on algebra content. The questions were given in the form of AKM questions from the Education Assessment Center of the Ministry of Education, Culture, Research and Technology (Pusmendik Kemendikbudristek) as many as 2 questions with algebraic content. Then the two questions were given to 44 class VIII students at SMPN 1 Mandastana.
Here is the instrument question number 1

Freight Forwarding Services

Mr. Joko is one of the employees who works to offer services in the form of goods delivery services using a small "ready to deliver" box car.

The "ready to deliver" small box truck is one of the most popular small trucks due to its versatility and excellence for city and neighborhood use. SME customers often use this type of delivery truck for deliveries to their customers or use it for personal deliveries. The small box car that Mr. Joko drives can carry no more than 1,000 kg (including the weight of the driver). Mr. Joko's body weight is 76 kg.

1. Mr. Joko will send ceramics for the needs of housing construction. It is known that the weight of 1 ceramic box containing 5 ceramics is no more than 7 kg. The shipment uses a small box car "ready anatar" to transport an order of 497 ceramic boxes.
   Determine whether each of the following statements about the order is true or false!

Statement	**Answer**	
Ceramic boxes that fit in a car box in one transport are no more than 132 boxes	○Correc	○Wrong
The trip to deliver 497 boxes can be done in 3 intervals.	○Correc	○Wrong
The maximum weight of 1 ceramic is 1.4 kg	○Correct	○Wrong

Problem number 1 was answered by choosing the right or wrong answer from 3 statements. This is complemented by writing down the steps of completion in order to get the right answer. The following are student A's solution steps for question number 1 presented in Figure 1.

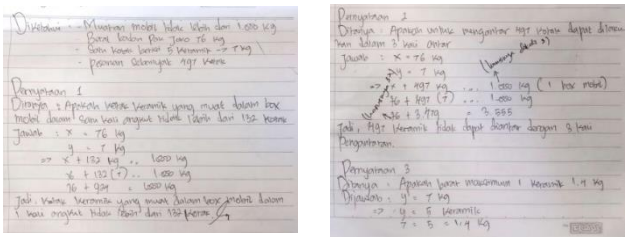

Figure 1. Student A's solution steps for problem number 1

To find out how the problem solving done by student A in solving problem number 1. The following are the results of the interview with student A:

P: *"Yesterday you were given two problems, let's go to question number one first. You were asked to write the procedure for working on the problem, namely writing known, asked, answer, and conclusion. So for problem number one, what can be known?"*

A: "*What is known is the weight of one ceramic box containing five ceramics, one ceramic box is no more than 7 kg. Mr. Joko's body weight is 76 kg. the small box car that Mr. Joko drives can only lift no more than 1,000 kg."*

P: *"Okay, then we are asked to prove three statements, we start from statement one. From statement one, what is the question?"*

A: *The question is that the ceramic boxes loaded in one transport are no more than 132 boxes."*

P: "*Okay that's the question, so how do you answer it?"*

A: *How to answer, it is known that the ready-to-deliver box car can only carry 1,000 kg including the driver who weighs 76 kg. So 1,000 kg minus 76 kg equals 924 kg while one ceramic box weighs 7 kg so 924 kg divided by 7 kg equals 132 boxes while this question is that the ceramic boxes that fit in one transport are no more than 132 boxes and the final result is 132 boxes so the statement is true."*

P: "*Okay so statement one is true, move on to statement two."*

A: "*It is known that the ready-to-deliver box car can only deliver 132 boxes once, asked if it can deliver 479 boxes in three deliveries, the answer is wrong because one delivery can only carry 132 boxes so if in three deliveries, 132 boxes multiplied by 3 equals 396 so the second statement is wrong because 479 is more than 396."*

P: *"Proceed to the third statement."*

A: "*It is known that one ceramic box contains five ceramics, the weight of one ceramic box is 7 kg. So 7 kg divided by 5 ceramics equals 1.4 kg so the third statement is true because the maximum weight of one ceramic is 1.4 kg.*"

Based on the answer sheet and the results of the interview with student A for question number 1, it is found that student A has used all stages of problem solving according to Polya, namely (1) understanding the problem, (2) planning a problem-solving strategy, and (3) implementing the problem-solving strategy and (4) re-evaluating the solution obtained.

Student B's solution steps for problem number 1 are presented in Figure 2.

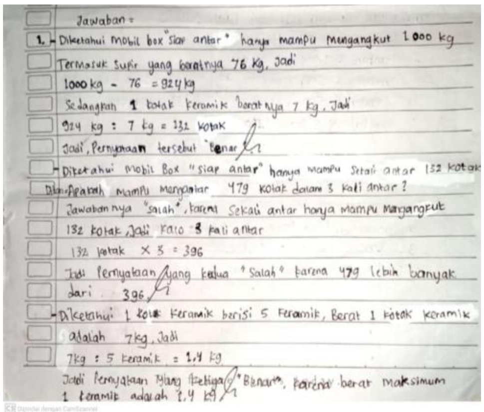
Jawaban :
1. Diketahui mobil box "siap antar" hanya mampu mengangkut 1.000 kg
Termasuk supir yang beratnya 76 kg, Jadi
1000 kg - 76 = 924 kg
Sedangkan 1 kotak keramik beratnya 7 kg, Jadi
924 kg : 7 kg = 132 kotak
Jadi, Pernyataan tersebut "Benar"
Diketahui mobil Box "siap antar" hanya mampu sekali antar 132 kotak
Ditanya Apakah mampu mengantar 479 kotak dalam 3 kali antar ?
Jawabannya "salah", karena sekali antar hanya mampu mengangkut
132 kotak Jadi kalo 3 kali antar
132 kotak × 3 = 396
Jadi pernyataan yang kedua "salah" karena 479 lebih banyak
dari 396
Diketahui 1 kotak keramik berisi 5 keramik, Berat 1 kotak keramik
adalah 7kg, Jadi
7kg : 5 keramik = 1,4 kg
Jadi pernyataan yang ketiga "Benar", karena berat maksimum
1 keramik adalah 1,4 kg

Figure 2. Student B's solution steps for question number 1

To find out how the problem solving done by student B in solving problem number 1. The following are the results of the interview with student B:

P: *"For the two problems here, what can be known, starting from the first problem?"*

B: *"The car's load is not more than 1,000 kg, pak joko's weight is 76 kg, one box of 5 ceramics equals 7 kg in weight, and the order is 497 boxes."*

P: *"For the first problem, what is being asked?"*

B: *"Can no more than 132 ceramic boxes fit in a car in one transport?"*

P: *"How to answer?"*

B: *"So X equals 76 kg, 76 kg is Mr. Joko's weight. Y is 7 kg, let's assume that one box contains five ceramics. Then X plus 132 kg is the equation for 1,000 kg."*

P: *"So what's the result?"*

B: *"The result is 924+ 76= 1,000 kg In conclusion, so the ceramic boxes that can fit in the car box in one transportation are no more than 132 boxes."*

P: *"Does that mean statement 1 is true or false?"*

B: *"That's right, because one transport can be no more than 132 boxes."*

P: *"Moving on to the second statement, what is known and what is asked?"*

B: *"So the X is the same, 76 kg is also Mr. Joko's weight. Y is also the same, 7 kg equals 5 ceramics. So take from X + 497 kg, the equation remains 1000 kilograms. The same as one car box, then 76 is added to 497 multiplied by 7, the equation is again 1,000 kg. So the result of 467 times 7 is 3479. 3479 plus 76 is 3555. In conclusion, so 497 ceramics cannot be delivered with 3 deliveries because the result is more. Because one car box can only fit 1,000 kg. So the second statement is wrong because it cannot be delivered in 3 times."*

P: *"Let's move on to the third statement."*

B: *"The third statement asked if the maximum weight of 1 ceramic is 1.4 kg, so the answer is the same as we just use Y. Y equals 7 kg, equals 5 ceramics. So 7 equals 5, equals 1.4 kg."*

P: *"So is the third statement true or false?"*

B: *"In conclusion, the maximum weight of 1 ceramic is 1.4 kg. The third statement is true."*

Based on the answer sheet and the results of the interview with student B for problem number 1, it was found that student B had used several steps of problem solving according to Polya, namely (1) understanding the problem, and (3) implementing the problem solving strategy and (4) re-evaluating the solution obtained but the student did not use stage (2) planning the problem solving strategy.

Here is the instrument for question number 2.

Ms. Lina's Photocopying Business

Ms. Lina owns a house in the school area. Ms. Lina wants to open a photocopy business because it is considered quite promising.

Because it is still new, Mrs. Lina's photocopying business only provides photocopying and printer services at the following rates.

Jenis	Harga per lembar
Fotokopi	Rp. 300,00
Fotokopi warna	Rp. 1.000,00
Printer laser	Rp. 300,00
Print hitam putih	Rp. 500,00
Print warna	Rp. 1000,00
Scan	Rp. 2.500,00

Ms. Lina recorded her sales results for a week.

Ms. Lina's Photocopy Acquisition (sheets)

Jenis	Senin	Selasa	Rabu	Kamis	Jum'at	Sabtu
Fotokopi	25	75	145	325	228	575
Fotokopi warna	-	-	2	-	5	-
Printer laser	-	20	220	-	-	200
Print hitam putih	6	1	20	31	8	37
Print warna	-	-	-	-	-	5
Scan	-	-	1	-	-	2

2. Based on the record of Ms. Lina's photocopy sales for a week, how many rupiahs does she earn each day?

The following are the steps of student A's solution to problem number 2 presented in figure number 3.

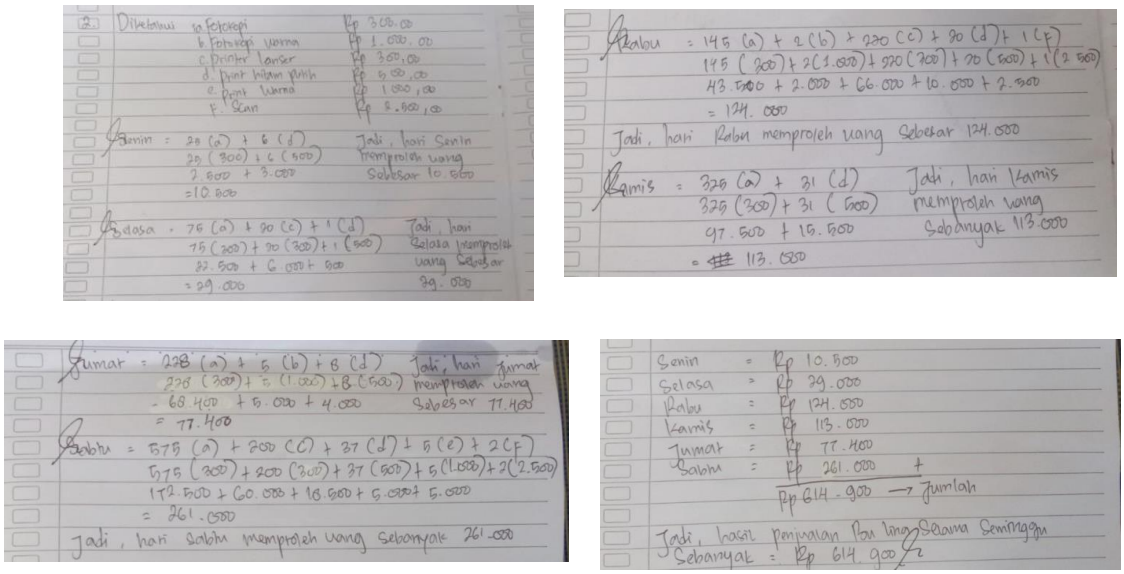

Figure 3. Student A's solution steps for problem number 2

To find out how problem solving is done by student A in problem number 2. The following are the results of the interview with student A:

P: *"What does problem number 2 cover?"*

A: *"About Mrs. Lina's sales for 1 week."*
P: *"What can we know from the problem?"*
A: *"The sales service values at Mrs. Lina's photocopy shop. Photocopy price 300, color photocopy 1,000, laser print 300, black and white print 500, color print 1,000, scan 2,500."*
P: *"Let's start discussing Mrs. Lina's income every day starting from Monday. How much did Ms. Lina earn on Monday?"*
A: *"Those who use 25 photocopies plus 6 black and white prints, we let a be the photocopy price and d be the black and white print price. So, 25 times the unit photocopy price plus 6 times the unit black and white print price. 25(300)+6(500)=7,500+3,000=10,500. So, on Monday Mrs. Lina earned 10,500."*
P: *"Next Tuesday"*
A: *"On Tuesday, the photocopying service was 75 plus 20 laser printers plus 1 black and white print. 75(300)+20(300)+1(500)=29,000. So, on Tuesday Ms. Lina earned 29,000."*
P: *"Moving on to Wednesday"*
A: *"On Wednesday, there were 145 photocopies plus 2 color photocopies plus 220 laser prints plus 1 scan. 145(300)+ 2(1,000)+ 220(300)+ 20(500)+ 1(2,500)= 43,500+ 2,000+ 66,000+ 10,000+ 2,500= 124,000. So, Wednesday earned 124,000."*
P: *"Let's move on to Thursday"*
A: *"On Thursday there were 325 photocopying services plus 31 black and white prints. 325(300)+31(500)=97.500+15.500=113.000. So, we earned 113,000 on Thursday."*
P: *"Continue to Friday"*
A: *"On Friday 228 photocopying services plus 5 color photocopying services plus 8 black and white printing services. 228(300)+5(1.000)+8(500)=77.400. So, on Friday I earned 77,400."*
P: "*Then Saturday"*
A: *"Saturday 575 photocopy services plus 200 laser print services plus 37 black and white prints plus 5 color prints plus 2 scans. 575(300)+200(300)+37 (500)+5(1.000)+2(2.500)=261.000. So, Saturday earned 261,000."*
P: "*So, how much money did Ms. Lina earn during the week?"*
A: "*We add up all the money that Ms. Lina earned from Monday to Saturday and get the result of 614,900. So, Ms. Lina's sales result for the week is 614,900."*

Based on the answer sheet and the results of the interview with student A for question number 2, it is known that student A did 3 stages of problem solving put forward by Polya, namely (1) understanding the problem, (3) implementing the problem solving strategy, and (4) re-evaluating the solution obtained. The stage that students do not do is (2) planning the problem solving strategy.

Student B's solution steps for number 2 are presented in Figure 4.

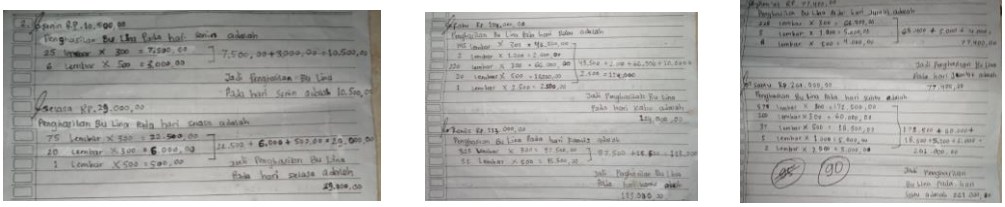

Figure 4. Student B's solution steps for number 2

To find out how the problem solving done by student B in solving problem number 2. The following are the results of the interview with student B:
P: *"What is discussed in question number 2?"*
B: *"About Ms. Lina's photocopy business"*
P: *"Looking at the problem, what can we know?"*

B: *"What can be known is the type and then the price per sheet. Photocopies are priced at Rp. 300, color photocopies at Rp. 1,000, laser prints at Rp. 300, black and white prints at Rp. 500, color prints at Rp. 1,000, and scans at Rp. 2,500. It is asked how many rupiah the amount earned each day. Monday was Rp. 10,500. Mrs. Lina's income on Monday is 25 photocopies multiplied by Rp. 300 equals Rp. 7,500, then 6 black and white prints multiplied by Rp. 500 equals Rp. 3,000. So, Rp. 7,500 plus Rp. 3,000 equals Rp. 10,500. So, Ms. Lina's income on Monday was Rp. 10,500. Tuesday, Ms. Lina's income was Rp. 29,000. Ms. Lina's income on Tuesday is 75 photocopies multiplied by Rp. 300 equals Rp. 22,500, 20 laser prints multiplied by Rp. 300 equals Rp. 6,000, and 1 black and white print multiplied by Rp. 500 equals Rp. 500. So, Rp. 22,500 + Rp. 6,000 + Rp. 500 = Rp. 29,000. So, Ms. Lina's income on Tuesday was Rp. 29,000. Wednesday Mrs. Lina's income is Rp. 124,000. Ms. Lina's income on Wednesday is 145 photocopies times Rp. 300 equals Rp. 43,500, 2 color photocopies times Rp. 1,000 equals Rp. 2,000, 220 laser prints times Rp. 300 equals Rp. 66,000, 20 sheets of black and white print multiplied by Rp. 500 equals Rp. 10,000, 1 sheet of scan multiplied by Rp. 2,500 equals Rp. 2,500. So, Rp. 43,500 + Rp. 2,000 + Rp. 66,000 + Rp. 10,000 + Rp. 2,500 = Rp. 124,000. So, Mrs. Lina's income on Wednesday was Rp. 124,000. On Thursday, Ms. Lina's income was Rp. 113,000. Ms. Lina's income on Thursday was 325 photocopies multiplied by Rp. 300 equals Rp. 97,500, then 31 black and white prints multiplied by Rp. 500 equals Rp. 15,500, Rp. 97,500 + 15,500 = Rp. 113,000. So, Mrs. Lina's income on Thursday was Rp. 113,000. On Friday Mrs. Lina earned Rp. 77,400, Mrs. Lina's income on Friday was 228 sheets for photocopies multiplied by Rp. 300 equals Rp. 68,400, then 5 sheets for color photocopies multiplied by Rp. 1,000 equals Rp. 5,000, 8 sheets of black and white prints multiplied by Rp. 500 equals Rp. 4,000 so Rp. 68,400 + Rp. 5,000 + Rp. 4,000 = Rp. 77,400 so Mrs. Lina's income on Friday was Rp. 77,400. Saturday Mrs. Lina earned Rp. 261,000. Mrs. Lina's income on Saturday was 575 sheets of photocopies multiplied by Rp. 300 equal to Rp. 172,500, 200 sheets for laser prints multiplied by Rp. 300 equal to Rp. 60,000, 37 sheets of black and white prints multiplied by Rp. 500 equal to Rp. 18,500, 5 sheets for color prints multiplied by Rp. 1,000 equal to Rp. 5,000, 2 sheets for scans multiplied by Rp. 2,500 equal to Rp. 5,000. So, Rp. 172,500 + Rp. 60,000 + Rp. 18,500 + Rp. 5,000 + Rp. 5,000 = Rp. 261,000. So, Ms. Lina's income on Saturday is Rp. 261,000."*

P: "Okay, thank you for taking the time to interview me."

Based on the answer sheet and interview results of student B for question number 2, it is found that student B has carried out 2 stages of problem solving proposed by Polya, namely (3) implementing the problem solving strategy and (4) re-evaluating the solution obtained, and students do not use the other 2 stages, namely (1) understanding the problem and (2) planning the problem solving strategy.

Stage 1: Understanding the problem

At this stage, students are expected to be able to understand what problems are asked, and be able to mention what is known and asked from the problem. From the answers of the two students in question number 1, student A fulfills stage 1 because she knows and is able to write what is known from the problem, while for student B also fulfills stage 1, it's just that she doesn't write what is known completely at once but writes what is known for the purposes of each statement.

For question number 2, student A generally fulfills stage 1 because she is able to write what is known in the form of the types of Mrs. Lina's photocopying services even though it is not equipped with the word "suppose" but she does not write how many sheets each of Mrs. Lina's photocopying services earns every day. Meanwhile, student B did not fulfill stage 1 because she did not mention what was known from the problem. This situation is also in line with research (Astutiani, 2019) which obtained the results of students in group 0 not understanding the problem well so that these students did not write what was known and what was asked from the problem.

Stage 2: Planning the problem-solving strategy

At this stage, students are expected to be able to plan problem solving by writing down the formulas that will be used. From the answers of the two students in question number 1, student A

fulfills stage 2 because she is able to plan problem solving by writing down the formula she will use to answer each statement, but there is an error in the second statement formula. She only wrote

$$x + 479\ kg \ldots 1.000\ kg.$$

While the formula that should be used is

$$3x + 497v \ldots 3.000\ kg.$$

Meanwhile, student B did not fulfill stage 2 because he did not write down the formula he would use, besides that he also did not use the concept of algebra to answer question number 1 because he did not use any symbols or variables. Meanwhile, algebra is one of the mathematical sciences that is closely related to symbols and variables (Utami et al., 2020).

For problem number 2, student A did not fulfill stage 2 because she did not write down how many sheets Mrs. Lina's photocopying service gets every day so that it cannot be used to plan a problem solving strategy. Meanwhile, student B did not fulfill this stage because she did not write down what mathematical strategy or model she would use, besides that in problem number 2, student B also did not use the concept of algebra. In line with the results of research (Rambe & Afri, 2020) which says at the stage of planning problem solving, students with moderate ability cannot write a plan to solve the problem.

Stage 3: Implementing the problem-solving strategy

At this stage, students are expected to be able to carry out the plan that has been written previously. From the answers of the two students in question number 1, student A fulfills stage 3 because she already has a plan to solve the problem. As for student B, she also fulfilled stage 3 because she solved the problem in her own way even though she did not use algebraic concepts.

For question number 2, student A fulfilled stage 3 because she was able to solve the problem by calculating the acquisition of Mrs. Lina's photocopying services every day. As for student B, she also fulfills stage 3 because she solves the problem well even though she does not use the concept of algebra. This is in line with the results of research conducted by (Damayanti, 2022) that most students already understand what is asked of the problem, it's just that some students go straight to the calculation without writing the formula at all.

Stage 4: Re-evaluate the solution obtained

At this stage, students are expected to re-read the answers that have been completed and write conclusions from each answer to emphasize that the answer is correct. From the answers of the two students in question number 1, student A fulfills stage 4 because she is able to write conclusions from each statement in the problem. Likewise with student B, she also fulfilled stage 4 because she wrote conclusions for each statement.

For question number 2, student A fulfilled stage 4 because she wrote the conclusion of Bu Lina's income every day and even Bu Lina's total income for a week. Likewise with student B who also fulfills stage 4 because she is able to write the conclusion of Bu Lina's income every day. This is in line with research (Saputra et al., 2023) which states that both subjects with high problem solving ability are able to write answers to the final stage and get the correct answer.

Conclusion

Based on the results and discussion, it can be concluded that students' mathematical problem solving skills based on Polya's stages, namely: (1) at the stage of understanding the problem students are expected to be able to understand what problems are asked, and be able to mention what is known and asked from the problem. Student A fulfills stage 1 in both problems, but in problem number 2 the student does not write completely what is known. While student B, fulfills stage 1 in problem number 1, it's just that she doesn't write down what is known completely, in problem number 2 student B does not fulfill stage 1 because she doesn't mention what is known from the problem; (2) the stage of planning a problem solving strategy, it is expected that students are able to plan problem solving by writing down the formula/formula to be used. In question

number 1, student A fulfills stage 2 because she is able to plan problem solving by writing down the formula she will use to answer each statement, but there is an error in the formula for the second statement, while in question number 2 student A does not fulfill stage 2 because she does not write down how many sheets each photocopy service Bu Lina gets every day so that it cannot be used to plan a problem solving strategy. For student B, she did not fulfill stage 2 because she did not write down the formula she would use, besides that she also did not use the concept of algebra to answer questions number 1 and 2; (3) the stage of implementing the problem solving strategy, students are expected to be able to implement the plan that has been written before. Student A fulfills stage 3 because she already has a plan to solve problem number 1, as well as problem number 2, student A was able to fulfill stage 3 because she was able to solve the problem even though she did not write a problem solving strategy. Meanwhile, student B fulfills stage 3 to solve problems number 1 and 2 even though she solves the problem in her own way and does not use algebraic concepts; (4) the stage of re-evaluating the results obtained, students are expected to re-read the answers that have been completed and write the conclusion of each answer to confirm that the answer is correct. Student A fulfilled stage 4 because she was able to write the conclusion of each answer in questions number 1 and 2. Likewise with student B, she was also able to fulfill stage 4 because she wrote conclusions for each answer.

Based on the conclusions that have been obtained, for future researchers who want to conduct similar research can conduct research on AKM questions on other content and can also conduct research comparing the problem solving abilities of students who go to school in the village and students who go to school in the city.

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