

STUDENTS' CRITICAL THINKING SKILLS IN SOLVING MINIMUM COMPETENCY ASSESSMENT PROBLEMS ON SOCIAL ARITHMETICS TOPICS**Rama Dina**

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Email : rooselynaekawati@unesa.ac.id**Abstrak**

Asesmen Kompetensi Minimum saat ini digunakan sebagai tolak ukur kelulusan siswa karena dinilai lebih inovatif dan menuntut siswa untuk berpikir kritis, termasuk dalam mengerjakan persoalan aritmatika sosial yang melibatkan kehidupan sehari-hari dan perhitungan rasio serta presentase. Penelitian ini bertujuan untuk mengidentifikasi kemampuan siswa dalam menyelesaikan persoalan aritmetika sosial dengan pola pikir kritis. Subjek penelitian ini adalah satu kelas siswa kelas 8 yang diberikan tes matematika dasar kemudian dari hasil tes mereka, diambil 10 siswa untuk mengikuti tes AKM. Sepuluh siswa dipilih dari hasil tes matematika mereka yang dikategorikan, dimana diambil dua siswa dengan nilai tertinggi dan terendah dari setiap kategori. Peneliti juga melakukan wawancara untuk memperkuat data yang dimiliki peneliti. Wawancara yang dilakukan adalah semi terstruktur, dimana peneliti menyiapkan pertanyaan seputar mengapa kesalahan dapat terjadi pada hasil pekerjaan siswa. Data kemudian dianalisis setelah pengumpulan data, reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan pengelompokan siswa dalam tiga tingkatan yaitu rendah, medium, dan juga tinggi. Indikator berpikir kritis yang paling sering ditemui dari ketiga kategori ini adalah clarity dan overview. Sementara yang paling jarang dikuasai oleh siswa adalah focus dan reason. Hasil penelitian ini dapat digunakan sebagai acuan dalam memberikan model pembelajaran sekaligus strategi dalam meningkatkan kemampuan numerasi siswa.

Kata kunci: AKM, kemampuan berpikir kritis, kemampuan numerasi, aritmetika sosial**Abstract**

The Minimum Competency Assessment is employed as a standard for student graduation since it is more innovative and pushes students to think critically, including social arithmetic problem that involves everyday life and the calculation of ratios and percentages. This study aims to identify students' abilities in solving social arithmetic problems with a critical thinking pattern. The subject of this study was a class of 8th graders who were given a basic mathematics test, and then from their test results, ten samples were taken to take the AKM test. The ten samples were taken from each category of predetermined values, with two students with the highest and lowest scores in each category. Additionally, the author conducted interviews to strengthen the author's data. The interview conducted is a semi-structured interview, where the author prepares questions about why errors occur in student work. Data analysis steps are collecting data, reducing it, presenting it, and drawing conclusions. The results of the study show that students are categorized into three levels, namely, low, medium, and high. The most frequently observed signs of critical thinking skills from these three categories are clarity and overview. While students rarely master focus and reason. The findings of this study can be used as a guide for developing instructional models and strategies for improving students' numeracy skills.

Keywords: AKM, critical thinking skills, numerical skills, social arithmetics.

INTRODUCTION

One of the most significant changes in the world of education occurred when the National Examination (UN) was replaced by a National Assessment (AN) in 2021 (Aisah et al., 2021). The National Assessment (AN) will consist of a Minimum Competency Assessment (AKM), Character Survey, and Learning Environment Survey. This change is intended to show that grades are not a measure of student achievement. Schools that have been taken for three years cannot be determined solely by the four-day National Examination. Despite the fact that there were specific pros and cons, this move was ultimately authorized after careful review. According to others, switching to AKM makes it harder for students because the types of problems are more complex than the National Examination. Students must be meticulous, cautious, and intelligent when completing the problems, as they are dependent on literacy-numeracy.

Mathematics itself continues to be a critical component in the implementation of AKM. The mathematics material tested in the AKM includes numbers, measurement and geometry, data and uncertainty, algebra which aims to test students' level of understanding, application, and reasoning. Graphs, tables, and diagrams are examples of problems that are related to numeracy problems, and they are presented mathematically in the form of a graphical representation of the data. Not only that, but the problems that have been presented are of the type that is HOTS, or high order thinking problems. It is expected that students will be able to apply critical thinking skills in order to solve existing problems. The solution to the problem should not be arbitrary. The steps are as follows: 1) Identifying the problem; 2) Planning problem solution; 3) Carrying out problem-solving planning; and 4) Re-examination of the problem (Sanvi & Diana, 2022).

Topic in mathematics that has never been taught with jumping task-based problems is social arithmetic. Social arithmetic materials are related to story problems, so to be able to solve these problems requires a high critical thinking ability to be able to understand, analyze, and determine solutions systematically and correctly. Thus, social arithmetic material has aspects that support students to think critically (Hobri et al., 2020)

Social arithmetic is one of the materials that are tested in numeracy examinations. Commonly, social arithmetic is being studied in class VII of Junior High School (Nurhayati & Aripin, 2020). The same

research explained that social math is one of the chapters in mathematics at school and is very directly related to everyday life, examples are buying and selling activities where profits and losses are the concepts taught, especially in junior high school math learning. In this situation, students have to calculate various ratios and percentages, which are relevant to everyday life. Social arithmetic, in specific ways, is a mathematical science that investigates social life (Nisa & Manoy, 2022). Social arithmetic is usually encountered in several activities, like buying, selling, and banking (Abadi, Pudjiastuti, Assaat, 2017; Fauzan et al, 2018 in Rahayu, Prahmana, Istiandaru, 2021). In social arithmetic, the issues are usually given in shape of word issues (Kurnia & Retnowati, 2019) because in solving social arithmetic, students are required to recognize and to resolve the problems, in addition to interpret the solutions (Emanuel & Kirana, 2021). Therefore, when attempting to answer social arithmetic problems, students must employ critical thinking abilities. Additionally, social arithmetic is a field of study that looks at how math is used in everyday life for things like sales, purchases, profits, losses, interest, taxes, gross, net, and tare. Solving social arithmetic material questions requires good critical thinking skills. Students need to be able to analyze questions, figure out what they are, and find the right answers in a systematic way (Syafuruddin & Pujiastuti, 2020). Moreover, critical thinking is defined as considering intentionally while examining and understanding thoroughly a problem concept that has been presented in a learning environment (Arif et al., 2022). Richard Paul and Linda Elder (2006) in Widana et al (2018) defines critical thinking as artwork for enhancing questioning competencies in analyzing and comparing precise problem-solving. Paul (1995) in Arisoy & Aybek (2021) defines critical thinking as a disciplined and self-directed gaining knowledge of procedure exemplifying the perfections of wondering according with a particular kind of subject of critical thinking. It means that critical thinking necessitates a significant amount of work to assess each belief or assumption of knowledge in light of the supporting facts and the subsequent conclusions (Rachmantika & Wardono, 2019). Critical thinking in mathematics is important due to the reality that critical thinking is a form of wondering advanced as a way to remedy problems, formulate conclusions, gather opportunities, and

make choices appropriately (Maulidiya & Nurlaelah, 2019).

However, research conducted by TIMSS, which stands for Trends in International Mathematics and Science Study, revealed that Indonesian students continue to rank lower than students from other nations when it comes to critical thinking skills (Rahayu & Dewi, 2022). This is demonstrated by Indonesia, which despite using high-level cognitive-level problems to measure its performance in 2015, managed to earn the 44th position out of 49 countries. The ability to think critically can improve learning outcomes, which indirectly becomes one of the factors supporting the success of the learning process (Amijaya et al., 2018). Therefore, the author is interested in learning how students solve AKM issues using social arithmetic material. This is because critical thinking in solving mathematical problems can minimize the occurrence of errors when solving problems, so that in the end a solution will be obtained with the right conclusion (Sulistiani & Masrukan, 2017).

RESEARCH METHODS

This is descriptive research using qualitative approaches that aims to describe the critical thinking skills when attempting to solve AKM problems of the social arithmetic type. The authors conducted tests and direct interviews with several students to support the findings in this study. Initially, the author conducted tests on all students in one class, then classified them into several classifications, called high, medium, and low, based on the results of the tests that had been carried out. The test carried out is a basic mathematics test, which aims to take ten students as a sample in the levels that have been divided earlier. Following that, an AKM problem test was conducted using the same category, namely low, medium, and high. For the mathematic test, the category is separated into five subcategories based on their point accumulation: very good for students who 0earn a score of $81 \leq \text{score} < 100$, good for students who get a score of $60 \leq \text{score} < 80$, enough for students who get a score $40 \leq x < 60$, less for student who earn a score of $20 \leq x < 40$ and very less low for students who earn a score of $0 \leq \text{score} < 40$ (Syarifah & Usodo, 2019). The following table summarizes these categories.

The research instruments used were test questions and interview guidelines. The instrument that was made was then validated by the validators.

Analysis of the data was the analysis of students' work and interviews. Data obtained from test results were analyzed to describe the students' critical thinking skills. The results of the interview also been analyzed to obtain the descriptive data as a complement to the test result data.

The next was an assessment of the relationship between test results and interviews. This connection was used to draw conclusions about students' critical thinking processes. The data obtained from the results of the test were analyzed to describe the students' creative thinking skill. The results of the interview were also analyzed to get the data descriptively as the supporting data of the result of the test. Then, a study about the relationship between the result of the test and interview was conducted. This relationship was used to draw conclusion about the students' critical thinking

Table 1. Student's Score Conversion of Achieving the Indicators (Syarifah & Usodo, 2019)

Score	Category
$80 \leq x \leq 100$	Very good
$60 \leq x < 80$	Good
$40 \leq x < 60$	Enough
$20 \leq x < 40$	Low
$0 \leq x < 20$	Very Low

After they took the mathematic quiz, ten students were taken to take the AKM, with two students as the representative for each category. The two students selected were the students with the best and worst scores according to **Table 1**.

The AKM test was then given using the FRISCO critical thinking indicators, including focus, reason, inference, situation, clarity, and overview. Ennis proposed this measure of critical thinking in 1996 and was later modified by people. The following is a modified version of Ennis' method by Cahyono (2017), with the author adjusting the points to fit the topic.

Table 2. Indicator of Critical Thinking

No	Critical Thinking Criteria	Indicators of Critical Thinking
1	Focus (F1)	a. Students are capable of comprehending and writing content in terms of their prior knowledge and the information requested.

		b. Students are capable to narrow their emphasis on a particular problem and analyze or phrase it.
2	Reason (R1)	a. Students are capable to solve problems by presenting justifications for their actions based on facts or relevant data from each employees in the decision process. b. Students are capable to work through problems in a predefined order by providing detailed justifications.
3	Inference (I1)	a. Students are capable to draw inferences from properly provided reasoning. b. Students can justify their conclusions.
4	Situation (S1)	Students can use what they've learned in the past to help solve problems.
5	Clarity (C1)	Students can discuss the methods used to solve the problem step by step.
6	Overview (O1)	a. Students may analyze the answer. b. Students can devise alternate solutions to the problem.

These indicators then be seen in the results of student work, according to how students work on the problem. that is, the steps of students in working on the problem are observed, both right and wrong. The results of the work were strengthened by interviews conducted with students, by asking how they worked on the questions, where the researcher would allude to the criteria for critical thinking implicitly.

Next, after the AKM test is conducted, students' scores was classified by the author as follows.

Table 3. Student's Level of Achieving the Critical Thinking Indicators

Level	Indicator
High	Students reach 5-6 criteria
Medium	Students reach 3-4 criteria
Low	Students reach 1-2 criteria

This categorization is designed by the researcher to ease the construction of courses based on students' critical thinking skills after working on the AKM problems about social arithmetic. The indicator is based on how many students meet the requirements outlined in Table 2 randomly, either for low, medium, and high. This classification aims to make it easier for the author to conclude the concerns listed above. Working on problems and doing direct interviews with students were used to obtain data. Interviews were conducted to validate data and compare test results from one student to another. The interview was semi-structural, and the researcher has prepared some questions regarding how the student work their problem. Questions asked included:

1. Where do students find it difficult to do the questions?
2. What causes students' mistakes in doing the questions?
3. How do students work on these questions?
4. Do students understand the questions given?
5. How do students step in answering questions?

6. Do students know the correct answer in the question?

The researcher asked them how they did that and what's their difficulties while doing their problem. From the results of the problems and interviews conducted, conclusions can be drawn regarding students' critical thinking skills in three classes, namely high, medium, and low.

RESULTS AND DISCUSSION

Based on the results of a fundamental mathematics test given to one class of eighth-graders, ten samples with three categories were chosen to run the AKM test. And Permendikbud No. 35 of 2018, mathematics is one of the general subjects of group A that aims to improve affective aspects, cognitive aspects, and psychomotor aspects as the basis and strengthening skills in life. Literacy in mathematics is an effort to learn so that learning becomes more meaningful and not only focuses on the competence of knowledge but there is a change in self-attitude or affective aspects in order to develop skills so that it can communicate well in uncovering mathematical ideas, ideas and meanings. These ten samples were chosen from several categories in order to assess students' critical thinking abilities (Hidayah., et al 2021). Two students with the highest and lowest scores based on **Table 1** categories were chosen to be the ten samples. They will then be required to complete three fundamental social arithmetic problems, such as numbers 1, 2, 3, and 4. The chosen student has been adjusted to the indicators of critical thinking skills in Table 2. After working on the AKM problems, an analysis is carried out on the criteria achieved by students.

Student with Low Critical Thinking Skill (SLT)

In accordance with the indicators in Table 3, students with low critical thinking skills only achieve 1-2 criteria out of 6 indicators. This means that students have not been able to solve social

arithmetic math problems with a critical mindset. This can be seen in the student's answer sheet in solving the given problem.

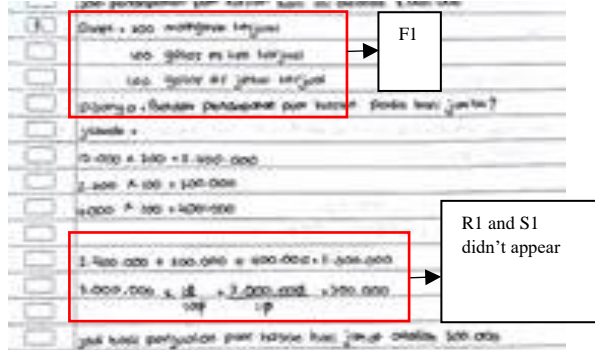


Figure 1. SLT Answer's Sheet for Problem Number 2

SLT could not comprehend the information provided in the problems, particularly the percentage issue. This means that students fulfill the focus criteria for critical thinking skills. Students could effectively identify the problem but could not provide an accurate response. The student only passed the focus requirement if the SLT could clearly articulate the problem information. According to Sari et al. (2018), one of the reasons for student mistakes is that students are too quick while answering problems. The following are the results of interviews with SLT.

Table 4. Interview with SLT for Problem Number 2

T	: "Do you understand the problems given?"
SLT	: "Yes I understand. We were asked to look for the profits that Pak Hasan made on Friday, where there was a discount for buying meatballs."
T	: "Then why did you make a mistake in calculating the meatballs price after discount?"
SLT	: "I don't know how to position the percent multiplication."

Based on interviews conducted at SLT, students were able to understand the problems and translate the information contained in the problems. However, students have not performed multiplication operations on discount percentages on social arithmetic problems. In the next problem, SLT also still made mistakes in placing the multiplication of the discount percentage and was not careful in doing the problems. According to Simon et. al (2018), lack of understanding is one of the reasons why student can't solve multiplication problem. Students could not calculate the price of the meatballs sold on Friday, whereas Mr. Hasan gave a 10% discount for the purchase of meatballs. Students do the calculations by adding up all the

items sold, even though the only discount is meatballs.

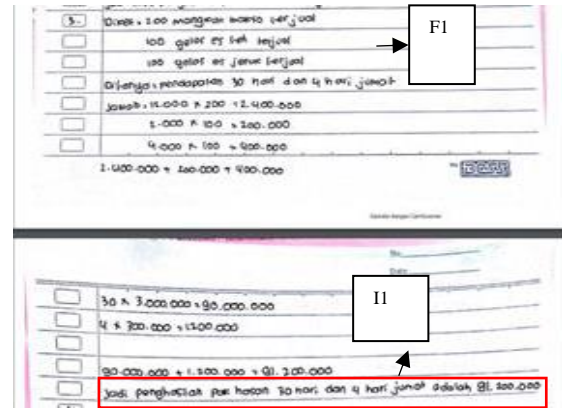


Figure 2. SLT Answer's Sheet for Problem Number 3

In problem number 3, SLN made the same mistake as the previous problem, which is an error calculating the percent. SLN calculated the percent after totaling all items sold, whereas only one item was discounted, namely meatballs. Not only that, but SLN was also not careful in reading the information provided in the problem. The problem said that there are 4 Fridays in one month, not sales for one month and four days. This causes calculation errors made by SLT, and one of the factors is an inaccuracy in reading problems (Solfitri & Roza, 2015).

Table 5. Interview with SLT for Problem Number 3

T	: "How did you solve this problem?"
SLT	: "I know this problem is still related to the previous problem. Meanwhile, I could not complete the percent operation in the previous problem and repeated this problem."
T	: "Then do you understand the problem given?"
SLT	: "Yes, but I wasn't careful enough in reading the information in the problems, so I made a mistake."

From the interview, students could read the information in the problem but not be careful in translating it. In addition, students still have difficulty positioning the discount percentage on one item. Nevertheless, SLT could draw conclusions and write neatly even though the results obtained were wrong. That means that the student fulfilled the inferences criteria quite well.

Student with Medium Critical Thinking Skill (SMT)

According to the indicators in Table 3, students with medium critical thinking skills only achieved 3-4 criteria out of 6 indicators. Students were less able to solve social arithmetic math problems with critical thinking skills. This can be

seen in the student's answer sheet solving the given problem.

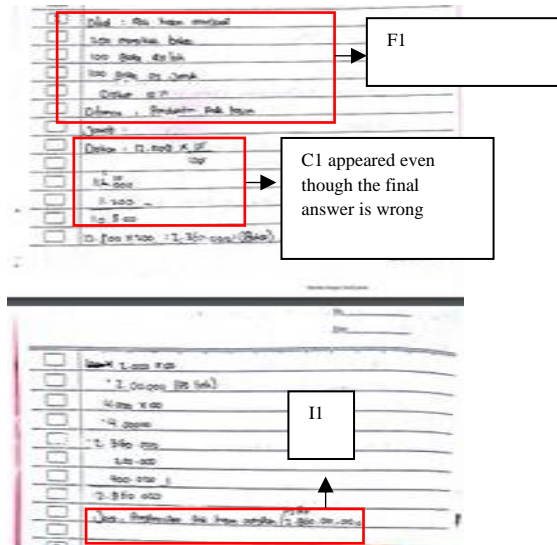


Figure 3. SMT Answer's Sheet for Problem Number 2

Based on the answer sheet above, it could be seen that students could identify problems well. Not only that, but students could also provide step-by-step problems coherently and correctly. This means that students fulfilled critical thinking skills' focus, clarity, inferences, and overview criteria. However, students made a calculation error in the multiplication of thousands. That was because they were less careful in understanding the problem (Simon et al., 2018). One mistake at the beginning ultimately affects the final answer.

Table 6. Interview with SMT for Problem Number 2

T	: "Do you know what this problem means?"
SMT	: "Yes, I know the meaning of this problem and know the steps in finding a solution."
T	: "Then why did you make a mistake in the multiplication calculation?"
SMT	: "I didn't double check after counting and was too hasty in calculating."

Quoted from Amir (2015), not re-checking the calculation process carried out to find answers is one of the causes of student errors in giving conclusions. SMT was able to understand the problem well and provide a coherent explanation of the steps in the process.

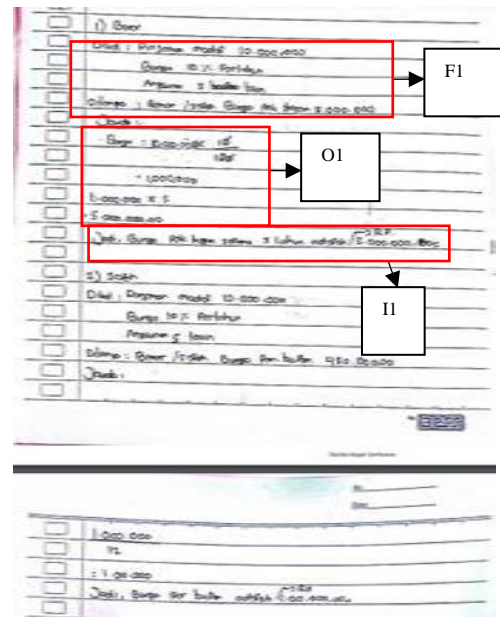


Figure 4. SMT Answer's Sheet for Problem Number 4

The calculation error was made again by SMT in the next problem. This time, SMT made a calculation error in the dividing, as shown in point b in problem number 4. In fact, SMT has shown the correct calculation of bank interest in point A but made a calculation error in point B, where the distribution should be done according to the number of months, i.e., 12.

Table 7. Interview with SMT for Problem Number 4

T	: "Do you know the working steps of this problem?"
SMT	: "Yes, I understand the steps for working on this problem."
T	: "Then why did you make a mistake in calculating the division in point b?"
SMT	: "I didn't double check after counting and was too hasty in counting."
T	: "Do you know what the correct answer is?"
SMT	: "Yes, it should be divided by 12 but instead I divided it by 1."

SMT admitted that they were too hasty in doing calculations from interviews conducted. In fact, the formula they use is correct and has written the number 12 as the divisor of the annual interest. However, the final result is still wrong. But, the students can remember the formula that has been taught by the teacher and fulfill the focus, inferences, overview, and clarity criteria for critical thinking skills. This is in accordance with Anugrah & Pujiastuti's (2020) explanation, where one of the students' mistakes in working on problems is being too hasty, so they are not careful in writing answers. **Student with High Critical Thinking Skill (SHT)**

According to the indicators in Table 3, students with high critical thinking skills achieved 5-6 criteria out of 6 indicators. This means that students can solve social arithmetic math problems with a critical mindset. This can be seen in the student's answer sheet in solving the given problem.

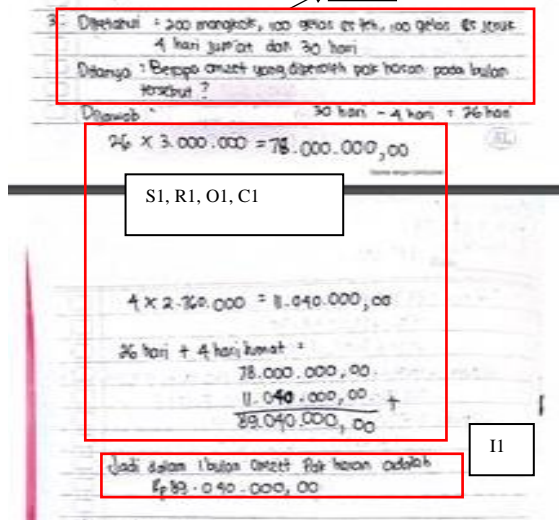


Figure 4. SHT Answer's Sheet for Problem Number 3

Based on the answer sheet above, it can be seen that students can identify problems well. Not only that, students can also provide step-by-step problems coherently and correctly. This means that students fulfill the focus, clarity, inferences, situation, overview, and reason criteria for critical thinking skills. Finally, student got the right answer.

Table 8. Interview with SHT for Problem Number 3

T	: "Do you know the meaning of this problem?"
SHT	: "Yes, I know, Miss. This problem relates to numbers 1 and 2."
T	: "How do you calculate it?"
SHT	: ""First, subtract 30 days from 4 Fridays, then multiply with the answers that have been obtained from the previous number."
T	: "After that?"
SHT	: "Sum all the data to get the final answer."

From the interviews conducted, students seemed to understand the meaning of the problems in the problems. SHT was able to perform percentage multiplication operations and translate problems well. SHT also explained the answer coherently and correctly. This means that students fulfilled the clarity, situation, reason, inference, and overview criteria for critical thinking skills.

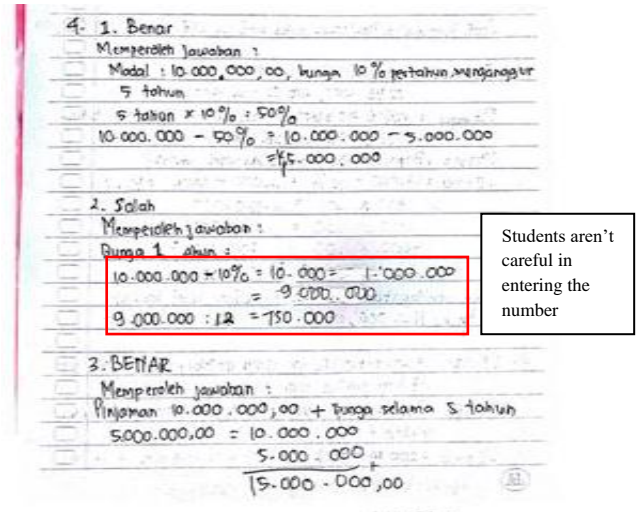


Figure 6. SHT Answer's Sheet for Problem Number 4

In the next problem, SHT made a calculation error at point b, where students also did not include the correct formulation. Many typos made by students too.

Table 9. Interview with SHT for Problem Number 4

T	: "Do you know the meaning of this problem?"
SHT	: "Yes I know, but I don't know the formula for calculating point b."

From the interviews conducted, it appears that the SHT did not include the correct formulation. SHT stated that they did not know the formula for the problem in point 4b. This is because students only memorize without understanding the formula given by the teacher, so students easily forget (Farida, 2015). The results of the analysis of critical thinking patterns from each indicator will be described here. For the low category, the students are capable enough of writing content but can't put the right formulas based on the percentage table. That's mean that they couldn't solve the problem and describe them step by step. Next, students in the low category can conclude even if the final answer was wrong. Some of the students could not analyse the final answer because they couldn't understand and remember what their teachers thought.

Next is for the medium category, student could understand and comprehend the contents. They could remember the formula, so they could work the problem easily. Some students in this category could analyse the final answer, but some of them got the wrong answer.

Last, for the high category, the student could understand and translate the problem. They also can give a little explanation in their conclusion.

STUDENTS' CRITICAL THINKING SKILLS IN SOLVING...

They remember the formula, so they got the right answer.

The result of students' critical thinking on the social arithmetic problem can be seen in this table.

Not only that, but they also could use the right method (step by step) and did the task easily.

Table 10. Results of Students' Critical Thinking Skills on Social Arithmetic Problem

Category	Indicators of Critical Thinking		
	Focus	Reason	Inference
Low	Students are capable enough of comprehending and writing content also can't put the right formula for percentage problems.	Students are not capable to solve problems due to wrong formula.	Students are capable to draw conclusion but the final answer is wrong.
	Situation Students are capable enough to stated what they've learned about social arithmetic in the past to help solve problems.	Clarity Students are not capable to solve problems step-by-step	Overview Students can analyse the final answer, but some of them got wrong answer. Some of them didn't give the conclusion about the problems.
Medium	Focus Students are capable enough of comprehending and writing content.	Reason Students are capable to solve problems but some students can't remember the right formula.	Inference Students are capable to draw conclusion but the final answer is wrong.
	Situation Students can use what they've learned about social arithmetic in the past to help solve problems. Some of them still can't put the right formula for percentage problems.	Clarity Students know the methods to solve the social arithmetic problems. They can put the percentage of discount formula in the right place.	Overview Students can analyse the final answer, but some of them got wrong answer.
High	Focus Students are capable enough of comprehending and writing content. They can use the right formula to decide the discount and the total income. Some of them still got the wrong answer due to hurry and not careful when solve the problem.	Reason Students are capable to solve problems and put the right formula.	Inference Students are capable to draw conclusion with the right answer and little explanation
	Situation Students can use what they've learned about social arithmetic in the past to help solve problems.	Clarity Students know the methods to solve the social arithmetic problems. They know how to translate the information given to solve the problem and write the answer step-by-step.	Overview Students can analyse the final answer even just a short explanation with the right formula.

By examining student class categorization, the critical thinking abilities that practically all classes possess were situation and clarity. According to the teacher's teaching, students could employ social arithmetic formulae. Furthermore, students could grasp the topics of the problems as well as the information presented in the problems. Not only that, but students were quite effective at assessing responses drawn based on the inference and overview criteria. However, there were still a significant number of students who made mistakes by failing to accurately enter the discount calculation. That's because they were not careful

while counting the operation (Prayitno et. al., 2020). They understood the problems' content but struggled to memorize the formula. This is because students tend to memorize, not understand formulas (Fauzi et. al., 2020). Finally, situation and reason were critical thinking qualities that only a few students possess. This was because many students were still less careful and in a rush to complete the problems (Nurussafa'at et. al., 2016). If the words were too many for them, they skipped the instruction (Atmojo & Nugroho, 2020). Students in the low group often just have focus and inferences abilities when further examined. Students in the medium group, on the

other hand, show good focus, clarity, inference, and overview abilities. Finally, students in the high category mastered 5-6 criteria for critical thinking skills, namely clarity, situation, inference, overview, focus, and reason. These data also show that inaccuracy is the leading cause of students' errors when working on problems. Students from the three groups were still working too quickly on the problems; thus, they did not re-check their written responses (Purnama et al., 2021).

CONCLUSION

Based on research that has been carried out by conducting the AKM test on social arithmetic in 8th-grade students, the results show that the most critical thinking skills possessed are focus and inferences criteria. The results showed that students were able to understand the problems given and apply the formulas of social arithmetic that the teacher had taught. However, there are still many errors that occur due to the lack of thoroughness of students in doing the problems. There are still many students who make mistakes in calculating the price after a discount. Then, many students still do not write their answers using the information provided in the problems. However, students can apply their critical thinking skills to the problems given. Students in the low category can understand the problems given, but some of them are unable to remember the correct calculation formulations. Students in this category make a lot of discount calculation errors which means they have not been able to analyze the problems given.

Furthermore, students in the medium category can also translate the problems and information provided. They can also remember a given calculation formula. Students in this category can provide conclusions from the problems they are working on. Therefore, the critical thinking skills they master are focus, clarity, inference, and overview. However, they still make small mistakes, such as not being careful in calculating multiplication and division.

Meanwhile, students in the high category have critical thinking skills on all six criteria. However, the situation criterion is the skill that most students have. Students in the high category correctly answered almost all problems and only made a few mistakes, such as incorrectly entering the formula. Students in this category can provide a detailed explanation of the information provided and

provide a brief conclusion regarding their final answer.

This proves that critical thinking skills are needed in working on AKM problems, especially social arithmetic. One way to practice this skill is to provide practice problems with varying difficulty levels and provide a good teaching style. It indeed aims to improve students' ability to think critically, such as the results obtained in this study. It is hoped that this research can be a reference for teachers, especially mathematics teachers, regarding the importance of critical thinking skills for students who work on AKM questions, especially social arithmetic. It is also hoped that teachers can lead students to use critical thinking when solving mathematical problems in the future.

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