

## ANALYZING STUDENTS' LEARNING DIFFICULTIES IN ALGEBRA

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### Abstract:

This study aimed to describe a type of student learning difficulties in algebra that associated with the indicator based on the dimensions of Bloom's Taxonomy Revision. The method used is descriptive qualitative. The subject research is students of class VIII B at SMPN 7 Kota Serang. Data collection techniques used is a diagnostic test and interview. The analysis technique used is collection, reduction, presentation of data, and conclusion. The results showed that some types of students' learning difficulties in algebra. Students have difficulties in identifying the variables, coefficients, constants, and rates similar, the difficulties in simplifying a form of algebra, the difficulties of using the properties of distributive multiplication and arithmetic operations of mathematics, the difficulties in making a mathematical model of a statement or everyday problems, the difficulties in determining the overall value, per unit, and in part, the difficulties of counting based on the unit value, difficulties in resolving problems using the properties of comparative worth, and the difficulties of reflective thinking, as well as difficulty experienced by students, lies in the factual, conceptual, procedural, and metacognitive knowledge.

**Keywords:** Learning Difficulties, Algebra, Revised Bloom Taxonomy

## ANALISIS KESULITAN BELAJAR SISWA PADA ALJABAR

### Abstrak:

Penelitian ini bertujuan untuk mendeskripsikan jenis kesulitan belajar siswa pada aljabar berdasarkan dimensi Revisi Taksonomi Bloom. Metode penelitian yang digunakan adalah deskriptif kualitatif. Subjek penelitian adalah siswa kelas VIII B di SMPN 7 Kota Serang. Teknik pengumpulan data menggunakan tes diagnostik dan wawancara. Teknik analisis yang digunakan adalah pengumpulan, reduksi, penyajian data, dan penarikan kesimpulan. Hasil penelitian menunjukkan jenis kesulitan belajar siswa yaitu kesulitan dalam mengidentifikasi variabel, koefisien, konstanta, dan tingkat yang serupa, kesulitan dalam menyederhanakan bentuk aljabar, menggunakan sifat-sifat perkalian distributif dan operasi matematika aritmatika, membuat model matematika, menentukan nilai keseluruhan, per unit, dan sebagian, kesulitan penghitungan berdasarkan nilai unit, kesulitan menyelesaikan masalah menggunakan sifat-sifat nilai komparatif, dan kesulitan berpikir reflektif, serta kesulitan siswa terletak pada pengetahuan faktual, konseptual, prosedural, dan metakognitif.

**Kata kunci:** Kesulitan Belajar, Aljabar, Revisi Taksonomi Bloom



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## INTRODUCTION

**E**ducation is essential for humans because education can help improve the quality of the nation. After all, the future of the nation is safe in the hands of an educated community. According to Tias & Wutsqa (2015), through mathematics education, students are expected to become human beings who can think logically, thoroughly, carefully, critically, creatively, innovatively, imaginatively, and work hard. Therefore, improving quality in mathematics is needed.

Through the results obtained from the studies conducted by Trends in International Mathematics and Science Studies (TIMSS) and the Program for International Student Assessment (PISA), it can be seen how the quality of mathematics education in Indonesia. Every three years, the PISA Program measures the quality of mathematics education in each country. In 2003, of the 40 countries that participated in this program, Indonesia was ranked 38th. In 2009, of the 65 countries involved, Indonesia was ranked 61st with an average score of 371, while the average international score was 496. Then in 2012 Indonesia continued to decline, namely that Indonesia was only able to rank 64 with an average value of 375 and was still below the international average value of 494 (OECD, 2014).

In Ciltas & Tatar (2011), Tall and Razali said that realizing student learning at the highest level is the goal of mathematics education. However, the truth is that there are still many students complaining and having difficulties. As explained by Ciltas & Tatar (2011), which is "at this time, mathematics is a nightmare for many students and is among the lessons that are considered difficult to learn first." The statement has similarities with Abdurrahman's statement in Novferma (2016), namely that mathematics is the most difficult field of study based on the views of the people who experience it.

Kumalasari & Sugiman (2015) explained Cooney and Cotton's views on differences in students' perceptions of mathematics. On the one hand, students think mathematics is something interesting, and on the other hand, consider mathematics is something boring. Not agree with this, according to the students' views expressed by Hoyles in Kumalasari & Sugiman (2015), they considered

mathematics as a topic that caused fear, anxiety, and invited anger during the lesson.

Basically, through the communication process, we can move or transfer an attitude, knowledge, and skills from one person to another. Kumalasari & Sugiman (2015) explained Hock's opinion that in mathematics class, a fundamental thing that must be considered is communication. Also, three areas must be considered in communication, namely the values and objectives in communication, oral communication, and written communication. Because through communication, educators and students can interact with each other and exchange information and can convey a goal well and clearly. By using verbal language, students can express ideas in their minds, express their opinions, and be able to capture explanations about mathematical concepts clearly expressed by educators. Besides, using the written language of students can easily express their arguments and thought processes about mathematical elements while learning activities are taking place. In this study, researchers saw that students utilized students' communication skills in the area of written and oral communication. Students can express assumptions and arguments related to the results and process of their work when solving problems using their written communication skills. Then students can clarify the results and process of their work through interviews using their verbal communication skills.

In line with that, Nasution in Syahrir, Kusnadin, & Nurhayati (2013) states that the main learning objectives of what is meant are useful in the future, which is to help us to be able to continue learning in an easier way, which is known as the transfer of learning, namely the transfer of general concepts and concepts which constitute the basis for recognizing a problem as a specific problem. Therefore, learning at the beginning must be carried out seriously because learning difficulties experienced by students at the beginning will influence learning at the next time.

In learning mathematics, algebra material will be taught to students because it is beneficial and is often applied to problems in daily life. Algebra is an essential subject matter to help students learn mathematics material at the next level. This is in line with Sugiarti (2017), who argues that students' ability to master algebra will have an impact on the use of algebra in daily life. Algebra material has a relationship with other mathematical content. Students begin to learn algebra when students are in class VII junior high school and algebra itself will become more complicated at higher levels of education because it will be associated with other mathematical material. Therefore, if in learning algebra in

class VII students experiences difficulties, it will allow students to experience difficulties again when studying algebra material at the next level. This opinion is in line with Hasibuan (2015), namely that algebra is material that was introduced in the 7th grade of junior high school and had an important role both in advanced mathematics or in an application in daily life. The benefits of learning algebra to the maximum extent possible improve one's analytical abilities. Thus, the knowledge of algebraic concepts is important as a basis for understanding other mathematical material concepts. However, not a few students still find it difficult to learn algebra. More specifically, Blanco and Garrote inside Kumalasari & Sugiman (2015) categorizing two types of learning difficulties against algebraic inequality, namely arithmetic difficulties and the lack of meaning.

Then, Hafid, Kartono, & Suhito (2016) argued that difficulty is a specific condition that is encountered by the existence of obstacles in the activity of achieving a goal so that it requires further action to handle it. The inability of students to solve a mathematical problem marked by an error illustrates that the student has difficulty in solving the problem. Agree with that, Soedjadi deeply Permatasari, Setiawan, & Kristiana (2015) argue that difficulties experienced by students pose the potential for an error when answering test questions. That was supported by Silverius inside Suwanto (2013), which states that the process of the occurrence of a student learning difficulty can be identified through errors contained in the answers to the test questions presented by students. Therefore, mistakes in answering questions done by students are proof of the difficulties students have experienced so that we can find out the location of students' difficulties in learning algebra through the answers students give when answering algebra material tests.

In a book called *A Taxonomy for Learning, Teaching, and Assessing; A revision of Bloom's Taxonomy of Education* written by Anderson & Krathwohl stated that Bloom's Taxonomy in the field of education is used to classify the instructional goals into two dimensions, namely dimensions of cognitive (remember, understand, apply, analyze, evaluate, and create) and dimensions of knowledge (factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge) (Gunawan & Palupi, 2012). Kumalasari & Sugiman (2015) argue that the students' mathematical learning difficulties is sourced from the knowledge dimension, as has been described in the revised bloom taxonomy. The researcher chose this revised Bloom's Taxonomy because the dimensions of the cognitive process and the dimensions

of the knowledge contained therein were considered following the mindset of students who would be the subject of the study. So through the dimension of knowledge type, we can find out the location of difficulties experienced by students. Meanwhile, to find out the difficulty type that students get from the relationship of the location of the difficulties, namely through cognitive processes. All categories listed in the dimension of cognitive processes are considered except the creating category because, in this study, students were not making a discovery.

Difficulties that will be explored in this study are the difficulties that occur during the learning process, i.e., the learning difficulties in algebra material. Based on this explanation, it can be seen that studying algebra becomes an interest. Nevertheless, not a few students approached the difficulty in learning it. Research on student difficulties is useful for finding learning following the conditions of these students (Syamsuri, Marethi, & Mutaqin, 2018; Syamsuri & Santosa, 2017). Therefore, research is needed to study and analyze students' difficulties in learning algebra so that educators can find out the type and source of students' learning difficulties in algebra material and assist educators in developing new strategies to help students overcome these algebraic learning difficulties.

## **RESEARCH METHOD**

This research uses a qualitative descriptive approach. The study was conducted at SMPN 7 Kota Serang. The time of data collection was from January 13 to January 16, 2020. The subjects of this study were 40 students of class VIII B at SMPN 7 Kota Serang and were enrolled in the even semester of the 2019/2020 academic year and had difficulty in completing diagnostic test problems in learning algebra. Students who experience learning difficulties are students who score less than 70 diagnostic tests and are also considered input from subject teachers. Of the 40 students, 36 students who had difficulty learning algebra were obtained.

The procedure in this study is to collect data that is by algebraic diagnostic tests for students. After diagnostic tests are conducted, the researcher groups students into groups that have difficulty and have no difficulty learning algebra. Students who experience difficulties have then analyzed the type and location of the difficulty based on diagnostic tests. Then students were interviewed to clarify the types of algebraic learning difficulties experienced by

the student. The data obtained is the type and location of students' algebraic learning difficulties.

The instrument used to analyze the type and location of difficulties is a diagnostic test, and the instrument used to confirm the type and location of students' algebra learning difficulties is the interview guide. The diagnostic test instrument can be seen in table 1. Data collection techniques in this study are to validate the diagnostic test instruments and interview guidance instruments. Data analysis was carried out during and after data collection so that the data obtained were arranged systematically and more easily interpreted according to the following stages: (1) collecting and formulating all data obtained from the field, (2) analyzing the type and location of students' algebraic learning difficulties in each item and overall, (3) conclude. The diagnostic test instrument using in this research is:

1. Answer the following questions briefly and correctly!  
Pay attention to the form of algebra  $5y - 2x + 2y + 3x$   
Determine if:
  - a. Variables of the 3rd and 4th terms
  - b. The coefficient of the variable  $x$
  - c. A constant
  - d. Similar tribes
2. Change the following problem into the simplest form of algebra and its steps!  
 $2(-8a - 3b) - 4a + 9b$
3. Change the following problem into algebraic form, then finish with the steps!  
The price of 2 ballpoints and 3 pencils does not exceed Rp. 21,000.00. If the price of a pen is twice the price of a pencil, determine the highest price of a pen and the highest price of a pencil.
4. Please answer the following questions briefly and correctly!  
"A number minus 3 produces a number greater than or equal to one."
  - a. Express the above sentence in a mathematical sentence.
  - b. Determine the solution
5. Determine the following problem solving along with the steps - steps!  
For the needs of the stall, a trader needs 1.5 quintals of rice for 3 days. On March 8, 2010, he bought 3.5 quintals of rice from a supplier for Rp 1,750,000.00. On what date did the trader have to go back to buy rice to meet the needs of his stall? If the rice is sold at Rp. 5500.00 per kg, what is the profit gained by the trader?

## RESULTS AND DISCUSSION

Diagnostic tests were carried out on 40 students, after being corrected obtained as many as 4 students who scored 70 and 36 students who scored below 70, which means students have not been able to reach the Minimum Mastery Standards (MMS) set by the school in complete the algebra diagnostic test. Then to explore the difficulties of students in solving algebraic problems based on bloom revised taxonomy, 36 students were subjected to conducting interviews. The data obtained are then analyzed to determine the learning difficulties experienced by students.

Based on the results of diagnostic tests of students' mathematical learning difficulties on algebra material consisting of 5 questions and given to 40 students, we can find out the student's value criteria through the percentage in figure 1.

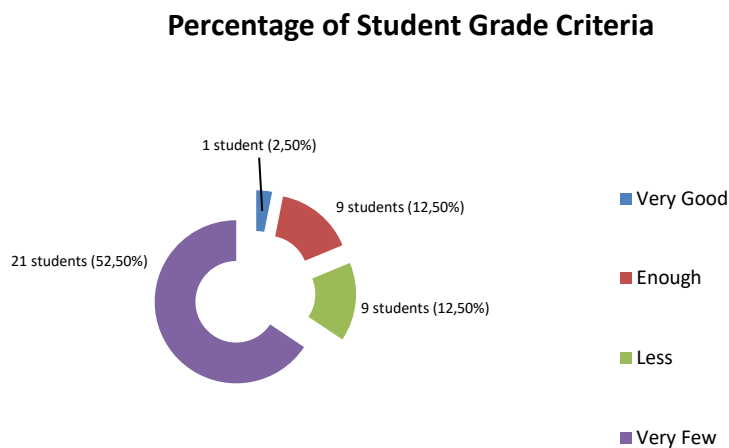


Figure 1. Percentage of Student Value Criteria

The results of the diagnostic tests provide information that students have difficulties in solving problems. These obstacles can be seen from the errors in the students' answers, the students work but are not finished, some even do not. Each question done by 40 students consists of 40 jobs so that from 5 questions worked by 40 students, a total of 200 jobs are obtained. Based on the 200 students' work, the following information is obtained.

Table 1. Percentage of Results of Students' Diagnostic Test Answers

Question Item	Answers			
	Correct	Wrong	Not Completed	Not Answered
1	5 12.5%	35 87.5%	0 0%	0 0%
2	31 77.5%	9 22.5%	0 0%	0 0%
3	1 2.5%	34 85%	4 10%	1 2.5%
4	18 45%	18 45%	1 2.5%	3 7.5%
5	5 12.5%	19 47.5%	6 15%	10 25%
Total	60 30%	115 57.5%	11 5.5%	14 7%

To determine the type of students' learning difficulties in algebra material can be seen from the mistakes of students in answering the algebra questions. The subjects used in analyzing each of the mistakes made by students on each item were 36 students who are students scored below 70 (MMS scores).

According to diagnostic tests and interviews related to determining the variables listed in question number 1a, we can know that there are still many students difficulty in determining variables in the form of algebra because students are hesitant, wrong and do not remember algebraic concepts and principles well. Besides, students are also not able to remember algebraic facts and concepts properly marked by students assuming coefficients are variables, and students have no idea at all in determining variables on specific terms. Therefore, it is assumed that the causes of students' difficulties in determining variables are as follows: (1) do not know the definition of variables, (2) do not understand the definition of variables, (3) do not do reflective thinking, so hastily answer. After that, based on the results of diagnostic tests and interviews related to determining the coefficients listed in question number 1b, we can know that there are still many students have difficulty in determining the coefficients in an algebraic form because students are fooled by negative numbers, wrong in writing, not careful, not remembering facts and not understanding the basic concepts of algebra are well marked by students who cannot distinguish which are variables and which are coefficients. Therefore, the alleged cause of students' difficulties in determining the coefficients is as



follows: (1) not knowing the coefficient definition, (2) not understanding the definition of the coefficient, (3) not careful in writing the answers, (4) not doing reflective thinking so that it is rushed answer quickly. Then, based on the results of diagnostic tests and interviews related to determining the constants listed in question number 1c, we know that many students have difficulty in determining constants in an algebraic form because students do not remember the facts and do not understand the basic concepts of algebra. Students mistakenly interpret and understand constants, inverted in interpreting constants are coefficients, and coefficients are constants. Therefore, it is assumed that the causes of students' difficulties in determining constants are as follows: (1) not knowing the definition of a constant, (2) not understanding the definition of a constant, (3) not doing reflective thinking so hastily answer. Based on previous data, related to the identification of similar tribes listed in problem number 1d, there are still many students struggling to determine similar tribes in the form of algebra because students do not remember the facts and concepts of algebra well or do not understand what a type of ethnicity is, as well as a misinterpretation by students. So, it occurs the transferor exchanges of meaning between algebraic elements. Therefore, it is assumed that the causes of students' difficulties in determining the same ethnic terms are as follows: (1) not knowing the definition of similar ethnic groups, (2) not understanding the definitions of similar ethnic groups, (3) not careful in writing answers, (4) not doing reflective thinking so hastily answer.

Based on diagnostic tests and interview results concerning the conversion of an algebraic form to the simplest form of algebra described in problem number 2, many students have difficulty remembering the implicit concepts of the problem, in particular, algebraic material and distributive multiplication. Besides, students have difficulty understanding the concept of simplifying algebraic types because students cannot use arithmetic operations and multiplication distributive properties. Students have difficulty analyzing and implementing procedures because they cannot establish and implement steps to solve problems. Students have difficulty evaluating procedures because students cannot explain and evaluate the errors of the procedures they used. Therefore, it is assumed that the cause of students' difficulties in changing an algebraic form into the simplest form of algebra is as follows: (1) not remembering and understanding the basic concepts of algebra on the part of similar tribes, (2) unable to use the distributive nature of multiplication properly, (3) inaccurate in writing answers, (4) unable to perform multiplication,

addition and subtraction operations, (5) not focusing on doing, (6) not doing reflective thinking so hastily answer.

The results of diagnostic tests and interviews are related to stating daily problems in mathematical sentences and in knowing PLSV or PtLSV in various forms of variables and can determine the equivalent form in the solution listed in problem number 3. Many students still have difficulty in understanding and applying student-marked concepts, not mastering the concept of changing daily sentences into mathematical expressions, and not mastering algebraic material and PLSV or PtLSV material. Students have difficulties in analyzing and applying student-specified procedures, unable to determine and implement the problem-solving steps due to students are afraid to make mistakes, thus triggering students seeking information from their classmates. Students' difficulties in assessing procedures are shown by not being able to evaluate the mistakes of the procedures used by students and the difficulties of students in expressing metacognitions because students do not know the causes and reasons for the students' responses. (Wildana, Mustamin, & Nur, 2016). Therefore, the alleged cause of students' difficulties in changing a daily sentence form into a mathematical sentence form and its completion is as follows: (1) do not understand the concept of changing everyday sentences into mathematical sentence form properly and in determining the right notation, (2) unable to apply the concepts and procedures of algebra properly, (3) unable to analyze the purpose and objectives of the problem, (4) not mastering basic algebraic material and prerequisite material (PLSV or PtLSV), (5) not confident, so choose to see the answers of friends, (6) do not do reflective thinking, so hurry in answering.

Also, the diagnostic tests and interviews related to making a mathematical model of a statement, understanding PLSV or PtLSV in various forms of variables and in determining the equivalent form and its completion and using the mathematical calculation properties listed in question number 4, we know that there are still many students have difficulty in analyzing and applying concepts and procedures marked by the inability of students to interpret the points in the questions, do not understand the question questions, forget to use the notation used and do not master algebraic material and PLSV or PtLSV, difficulty in evaluating concepts and the procedure shown by students who cannot evaluate the errors of the procedures used by students due to student inaccuracy, haste and lack of understanding of students in using the properties of mathematical counting operations, as well as difficulties in

communicating the metacognitive shown by bro, students cannot explain the answers students write, especially to students who get answers from classmates. Therefore, it is assumed that the cause of students' difficulties in converting a statement into a mathematical sentence form and determining its completion as follows: (1) not understanding the concept of converting a statement into a mathematical sentence form properly, (2) unable to analyze and apply concepts and procedures problem solving, (3) inaccurate and hasty in writing, (4) lack of understanding of the properties of mathematical arithmetic operations, (5) not understanding various mathematical notations, (6) not confident so choose to see the answers of friends, (7) do not do reflective thinking so hurry in answering.

Based on the results of diagnostic tests and interviews related to determining the overall value, per unit, and part, using the properties of mathematical operations, calculate based on unit value; and solve the problem by using the comparative properties worth listed in problem number 5. We can know that there still many students' difficulties in understanding and applying the concepts and procedures shown by students unable to identify the information contained in the problem so that students do not know how the steps in problem-solving and students' lack of understanding of the unit weight concept.

The properties of mathematical calculation operations and the concept of comparative worth are the causes of obstacles for students to solve problems. Difficulties in analyzing procedures are shown by students who not being able to make problem-solving plans, difficulties in evaluating procedures are shown by the inability of students to evaluate mistakes made by students in solving problems, and difficulties in communicating metacognitive shown by students who can not explain the answers students get well and correctly. Therefore, it is assumed that the cause of students' difficulties in determining the overall value, the value per unit and the partial value; in using the properties of mathematical operations; in calculating based on unit values; in solving problems using comparative properties worth in the story problem as follows: (1) can not understand the problem and identify the things listed in the problem, (2) cannot make a problem-solving plan, (3) cannot analyze and apply the concept and procedure of problem-solving, (4) do not understand the concept and procedure of comparative value, (5) do not understand the concept of the unit of weight, (6) lack of understanding of the properties of mathematical calculation

operations, (7) not confident so choose to see the answers friends, (8) do not do reflective thinking so in a hurry and not careful in answering.

The description above has explained the relationship between the source of students' mathematical learning difficulties with cognitive processes that produce the types of students learning difficulties in mathematics. Percentage of types of student learning difficulties based on the relationship between the dimensions of knowledge with the dimensions of cognitive processes as follows.

Table 2. Percentage of Types of Student Learning Difficulties

Dimensions of Cognitive Process	Dimensions of Knowledge				Total
	K <sub>1</sub>	K <sub>2</sub>	K <sub>3</sub>	K <sub>4</sub>	
CP <sub>1</sub>	67 7.66%	72 8.24%	- 0%	- 0%	139 15.9%
CP <sub>2</sub>	67 7.66%	146 16.7%	- 0%	- 0%	213 24.38%
CP <sub>3</sub>	- 0%	100 11.44%	108 12.36%	- 0%	208 23.80%
CP <sub>4</sub>	- 0%	- 0%	84 9.61%	- 0%	84 9.61%
CP <sub>5</sub>	- 0%	50 5.72%	89 10.18%	- 0%	139 15.9%
CP <sub>6</sub>	- 0%	- 0	- 0%	91 10.41%	91 10.41%
Total	134 15.33%	368 42.11%	281 32.15%	91 10.41%	874 100%

Based on the results of students' diagnostic tests information, students' learning difficulties in answering question number 1 lies in factual knowledge and conceptual knowledge. When viewed from the type of learning difficulties, students know 134 difficulties lie in factual knowledge (67 difficulties in remembering facts and 67 difficulties in understanding facts) and 141 difficulties that lie in conceptual knowledge (71 difficulties in remembering concepts and 70 difficulties in understanding concepts).

Students' learning difficulties in answering question number 2 lies in conceptual knowledge and procedural knowledge. When viewed from the type of student learning difficulties, there are 13 difficulties found in conceptual knowledge (2 difficulties in remembering concepts, 1 difficulty in understanding concepts and 10 difficulties in applying concepts) and 14

difficulties that lie in procedural knowledge (10 difficulties in implementing procedures, 1 difficulty in analyzing procedures and 3 difficulties in evaluating procedures).

Students' learning difficulties in answering question number 3 lies in conceptual knowledge, procedural knowledge, and metacognitive knowledge. When viewed from the type of student learning difficulties, 53 difficulties lie in conceptual knowledge (23 difficulties in understanding concepts and 30 difficulties in applying concept), 101 difficulties that lie in procedural knowledge (35 difficulties in implementing procedures, 32 difficulties in analyzing procedures and 34 difficulties in evaluating procedures) and 35 difficulties that lie in metacognitive knowledge (communicating metacognitive).

Students' learning difficulties in answering question number 4 lies in conceptual knowledge, procedural knowledge, and metacognitive knowledge. When viewed from the type of student learning difficulties, there are known 76 difficulties that lie in conceptual knowledge (25 difficulties in understanding concepts, 33 difficulties in applying concepts, and 18 evaluating concepts), 80 difficulties that lie in procedural knowledge (37 difficulties in implementing procedures, 25 difficulties in analyzing procedures and 18 difficulties in evaluating procedures) and 20 difficulties that lie in metacognitive knowledge (communicating metacognitive).

Students' learning difficulties in answering question number 5 lies in conceptual knowledge, procedural knowledge, and metacognitive knowledge. When it is viewed from the type of student learning difficulties, 85 difficulties are found in conceptual knowledge (26 difficulties in understanding concepts, 27 difficulties in applying concepts, and 32 evaluating concepts), 86 difficulties in procedural knowledge (26 difficulties in implementing procedures, 26 difficulties in analyzing procedures and 34 difficulties in evaluating procedures) and 36 difficulties in metacognitive knowledge (communicating metacognitive).

The description above has explained the source of students' mathematics learning difficulties. The percentage of students learning difficulties lies as follows.

Table 3. Percentage of Class Students Difficulty Per Each Problem

Location of Difficulties	Question				
	1	2	3	4	5
Factual	134	0	0	0	0
Knowledge	48.72%	0%	0%	0%	0%
Conceptual	141	13	53	76	85
Knowledge	51.28%	48.15%	28.04%	43.19%	41.06%
Procedural	0	14	101	80	86
Knowledge	0%	51.85%	3.44%	45.45%	41.54%
Metacognitive	0	0	35	20	36
Knowledge	0%	0%	18.52%	11.36%	17.40%
Total	275	27	189	176	207
	100%	100%	100%	100%	100%
Total	874				

## CONCLUSION

The results showed that some types of students' learning difficulties in algebra. Students have difficulties in identifying the variables, coefficients, constants, and rates similar, the difficulties in simplifying a form of algebra, the difficulties of using the properties of distributive multiplication and arithmetic operations of mathematics, the difficulties in making a mathematical model of a statement or everyday problems, the difficulties in determining the overall value, per unit, and in part, the difficulties of counting based on the unit value, difficulties in resolving problems using the properties of comparative worth, and the difficulties of reflective thinking, as well as difficulty experienced by students, lies in the factual, conceptual, procedural, and metacognitive knowledge.

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