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## **Analysis Of Students ' Understanding Of Mathematical Concepts In Class Viii Function Material Smp Negeri Satu Atap Tanjung Balai T.P 2021/2022**

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### **Abstract**

*This study aims to determine the understanding of mathematical concepts of students in the material function in Class VIII SMP Negeri Satu Atap Tanjung Balai T.P 2021/2022. This study is a quantitative descriptive research. The population in this study were all students of Class VIII SMP Negeri Satu Atap Tanjung Balai consisting of two classes, namely VIII-1 and VIII-2 as many as 64 people, and the sample in this study was Class VIII-1 as many as 32 people taken by cluster random sampling technique. The instrument used in this study using a test instrument description form. Based on the analysis of data obtained shows that in the interval  $X > 93$  there is 1 person with a percentage of 3% and very high ability category, interval  $82 < X < 93$  there are 6 people with a percentage of 19% with high ability category, interval  $70 < X < 82$  there are 18 people with a percentage of 56% with medium ability category, interval  $59 < X < 70$  there are 5 people with a percentage of 16% with low category, interval  $X < 59$  There are 2 people with a percentage of 6% with very low category. So, the ability of students in understanding the concept of material function Class VIII SMP Negeri Satu Atap Tanjung Balai T.P 2021/2022 belongs to the medium category in the interval  $70 < X < 82$  as many as 18 people with a percentage of 56%.*

Keywords: *Understanding Of Mathematical Concepts*

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## **INTRODUCTION**

Education is a very important thing in life. Education occurs since a person is born and will continue to develop along with the Times. Education is universal and continues unbroken from generation to generation in this world. With the education that includes values, culture, and knowledge will add insight into thinking provided through formal education in schools. Education as a human resource deserves continuous attention in an effort to improve its quality. Improving the quality of education means improving the pattern of human resources. In education, there should be continuous changes so that education can improve. According to Kamarullah (2017) that : In the world of education there are still many problems in learning, especially in mathematics learning. Mathematics lessons are required at every level of school starting from elementary school (SD) to high school (SMA). Through learning mathematics students are expected to use the power of understanding the concept to solve each problem. Therefore, mathematics is a compulsory subject in education as a handle in everyday life in order to be able to draw logical conclusions, analyze, and be able to find patterns or properties of mathematical symptoms to make generalizations. Mathematics is never separated from human life, in addition to basic science in life, mathematics is also a science that plays an important role in other sciences and the application of technology (Akbar, Chotimah & youngest 2018 : 382). Mathematics is considered an important subject to study, because mathematics is the Queen of science or the parent of other knowledge (Rahmawati 2018:345). The problem of mathematics is a subject that is studied at every level of Education. According to Tambunan (2020: 28) that “a problem in mathematics is a story problem that there are no certain rules to immediately be used to solve it”. In addition, the role of mathematics as a basic science greatly affects science and technology. Because of its very important role is to improve

the quality of mathematics education at all levels must be pursued. Various efforts have been made by the government to improve the quality of mathematics education in Indonesia. But until now the results have not increased the implementation of learning in general. According to Tambunan (2018) that : Many countries make mathematics a compulsory subject in schools from primary to higher education. Debriefing mathematics at every level of Education adapted to the development of Science and technology. According Panjaitan & Efron (2015) is : Currently the world of mathematics education is faced with the problem of low mastery of students at every level of education to mathematics. This can be seen from the mathematics achievement achieved by students is still low. The low learning outcomes of mathematics are caused by several factors, namely in general terms of curriculum demands that emphasize more on achieving targets. That is, all materials must be completed taught and not the student's understanding of mathematical concepts. In mathematics, understanding concepts is very important to understand the ability of students to interpret their understanding of the concepts and learning processes of Mathematics being studied. Through understanding concepts, students can convey their ideas to teachers and other students. This means that students ' ability to understand mathematical concepts must be improved so that student learning outcomes can be better than before. According Sumarno (2013) is : The importance of understanding mathematical concepts in learning activities because it is necessary to solve mathematical problems, problems in other disciplines and problems in daily life, which is the vision of the development of mathematical learning to meet current problems. There are many learning materials in mathematics, one of which is a function. Function can be interpreted as a relationship. The relationship between the home district (domain) and the friend district. Function is a relationship that pairs each member of the set of regions of origin to exactly one set of regions of his friend (Slameto 2003 : 35) material relations and functions have several benefits in learning, the relationship is useful to know the relationship between the two groups. Research shows that it is still difficult for students to learn relations and functions. According to Aprilianti, Akbar & Zanthi (2018) that : The ability of Junior High School students ' mathematical understanding of the material relations and functions is still low. High school students have a mathematical understanding that can be categorized as low. The low ability of students ' mathematical understanding of the function material is due to teachers often giving examples of routine problems without explaining the concept first, so that when students get different types of problems from the examples given students cannot solve them. In solving the problem of relation material there are mistakes made in stating the relation set and pairing the members of the set e.g. A with members of the Set B (Ulfa & Effendy, 2014). Difficulties also occur in function materials where students cannot distinguish between functions and non-functions presented in the form of Arrow diagrams (Kamariah 2016 : 32). This study was conducted in SMP Negeri Satu Atap Tanjung Balai because the understanding of mathematical concepts in stating the function of eighth grade students SMP Negeri Satu Atap Tanjung Balai is still low.

## RESEARCH METHODS

data collection techniques in a study is to obtain the data and information needed. The data collection technique used in this study is a written test. The written test used in this study is a test description (essay test) which is used to determine the learning outcomes of learners function material in the experimental class. The test is done at the end of the lesson (post-test). The steps for collecting research data are as follows.

- a. Creating problem grids

Grid-kidi problem prepared based on indicators of mathematical ability.

b. Determine the shape and model of the test

The test that will be used is a subjective test or a test in the form of a limited description. Each question will be prepared based on the achievement indicator mathematical connection.

c. Set the number of items / items about

d. Arrange the test questions according to the number that has been designed in the grid of questions

e. Testing try out the test questions.

## RESULTS AND DISCUSSION

### Validity Problem

From the test results given to the students of Class IX SMP Negeri Satu Atap Tanjung Balai with the number of students 32 people, then for problem No. 1 which measures the ability of understanding the concept of students contained in Appendix 5 obtained price  $> 0.5709 > 0.3388$ . So it is said that question number 1 is valid with a significant level of  $\alpha = 5\%$ . In the same way, the tests tested as many as 7 questions were declared all valid.

Table 1.

Summary Of Test Instrument Trial Validity Calculation

Problem Number	$r_{hitung}$	$r_{tabel}$	Description
1	0,5709	0,3388	Valid
2	0,4087	0,3388	Valid
3	0,6665	0,3388	Valid
4	0,6545	0,3388	Valid
5	0,4738	0,3388	Valid
6	0,7756	0,3388	Valid
7	0,5629	0,3388	Valid

### Reliability problem

The technique used to determine the reliability of the test is to use the Alpha formula. Calculation of the reliability coefficient of the problem in (appendix 7).Mathematical communication skills give the result  $r_{hitung} = 0,626974$  to  $\alpha = 5\%$  with  $n = 32$   $r_{tabel}$  value = 0,3494. When compared with the value of  $r_{hitung}$   $r_{tabel}$  obtained  $r_{hitung} > r_{tabel}$  or  $0.5547 > 0.3494$ , it can be concluded that the Post-Test Test is reliable.

Table. 2  
 Summary Of Test Instrument Trial Reliability Calculation

Problem Number	The Variance Problem
1.	6,2099
2.	8,5273
3.	9,2773
4.	3,6943
5	12,1210
6	3,2148
7	5,5273
$\Sigma\sigma_i^2$	48,5722

### Problem Difficulty Level

Based on the calculation in (Appendix 9) for the level or difficulty index of the Post-Test instrument test for students ' mathematical communication skills, the difficulty level of each item of the question can be shown in Table 3 below:

Table 3.

The difficulty level of the test item of the Post-Test instrument to the ability of students in understanding the concept.

Problem Number	$\Sigma KA$	$\Sigma KB$	$\Sigma KA + \Sigma KB$	$N_1 * S$	Difficulty Level	Description
1.	59	28	87	172,8	50,34%	Medium
2.	56	36	92	172,8	53,24%	Medium
3.	77	38	115	172,8	66,55%	Medium
4.	79	64	143	172,8	82,75%	Easy
5	80	48	128	172,8	74,07%	Easy
6	79	65	114	172,8	83,33%	Easy
7	60	35	95	172,8	54,97%	Medium

### Differentiating Power Of Matter

Based on calculations in (Appendix 9) for power difference Post-Test problem number 1 understanding of the concept, is significant because  $t_{hitung} > t_{tabel}$  or  $4.0698 > 1.745$ . So let's say Number 1 is important. In the same way, the tests tested as many as 7 questions were declared all significant.

Table 4.

Power Difference Test Questions Post-Test Understanding Of Concepts

Problem Number	$M_A$	$M_B$	$\Sigma X_1^2$	$\Sigma X_2^2$	$N_1 (N_1 - 1)$	Different Power	Description
1	6,5	3,1	20,2	31,21	72	4,0698	Signifikan
2	6,2	4	41,5	34	72	2,1671	Signifikan
3	8,5	4,2	18,2	53,74	72	4,3309	Signifikan
4.	8,7	7,1	7,5	18,33	72	2,7681	Signifikan
5	8,8	5,3	6,8	89,59	72	3,0667	Signifikan

**Data Analysis Frequency Distribution Of Test Values**

Table 5  
Frequency Distribution Of Test Value Results

Interval	Frequency	Persentase(%)	Kategori Kemampuan
$X > 93$	1	3%	Sangat Tinggi
$82 < X \leq 93$	6	19%	Tinggi
$70 < X \leq 82$	18	56%	Sedang
$59 < X \leq 70$	5	16%	Rendah
$X \leq 59$	2	6%	Sangat Rendah
Jumlah	32	100%	

Based on Table 5 it can be described that the mean value of 76 is in the third interval shows as many as 18 people or 56% of medium category students and is the largest frequency and percentage. Frequency and percentage at intervals above the mean class, namely as many as 6 students or 19% of students stated a high category and as many as 1 student or 3% stated a very high category. While the frequency and percentage below the mean class, as many as 5 students or 16% of low category students, and as many as 2 students or 6% of very low category students. Thus it can be stated that the ability of students in understanding the concept of material set students in Class VIII SMP Negeri Satu Atap Tanjung Balai T.P. 2021/2022 is a medium category.

**CONCLUSION**

From the analysis of research data it was concluded that the ability of students in understanding the concept of material function Class VIII SMP Negeri Satu Atap Tanjung Balai T.P 2021/2022 having the ability to understand concepts is a medium category.

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