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DESCRIPTION OF STUDENTS' ABILITY TO SOLVE CIRCLE PROBLEMS IN TERMS OF UNDERSTANDING MATHEMATICAL CONCEPTS

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Abstrak

Pemahaman konsep matematika sangat penting untuk siswa, karena konsep matematika yang satu dengan yang lain saling berkaitan sehingga untuk mempelajarinya harus runtut dan berkesinambungan. Jika siswa telah memahami konsep-konsep matematika maka akan memudahkan siswa dalam mempelajari konsep-konsep matematika berikutnya yang lebih kompleks. Pemahaman sendiri diartikan sebagai penyerapan arti materi yang dipelajari. Sehingga untuk mengetahui pemehaman kosep matematika siswa maka penelitian ini bertujuan untuk mengetahui pemahaman konsep siswa dalam menyelesaikan soal lingkaran. Jenis penelitian ini adalah penelitian kuantitatif dengan menggunakan pendekatan deskriptif dimaksudkan untuk mendeskripsikan pemahaman konsep siswa dalam menyelesaikan soal lingkaran. Populasi penelitian ini adalah seluruh siswa MTs Negeri Ambon kelas VIII berjumlah 22 orang. Hasil penelitian menggambarkan bahwa siswa yang dapat menyelesaikan soal bilangan bulat dengan presentase 91% dan soal pecahan 68%, sedangkan siswa tidak dapat menyelesaikan soal aljabar dengan presentase 64% dan soal bangun datar 73%. Dengan demikian dapat dikatakan bahwa soal bilangan bulat dan pecahan dapat diselesaikan oleh siswa dengan mudah, sedangkan soal aljabar dan bangun datar tidak dapat diselesaikan oleh siswa.

Abstract

Understanding mathematical concepts is very important for students, because one mathematical concept with another is interrelated so that to learn it must be coherent and continuous. If students have understood mathematical concepts, it will make it easier for students to learn the next more complex mathematical concepts. Understanding itself is interpreted as the absorption of the meaning of the material studied. So to find out the understanding of students' mathematical concepts, this study aims to find out the understanding of students' concepts in solving circle

problems. This type of research is quantitative research using a descriptive approach intended to describe students' understanding of concepts in solving circle problems. The population of this study was all students of MTs Negeri Ambon 8th grade totaling 22 people. The results illustrate that students who can solve integer problems with a percentage of 91% and fraction problems of 68%, while students cannot solve algebra problems with a percentage of 64% and flat wake problems of 73%. Thus it can be said that integer and fraction problems can be solved by students easily, while algebra and flat built problems cannot be solved by students.

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INTRODUCTION

Mathematics deals with ideas, logical thinking processes, deductive thinking patterns and various abstract concepts that are arranged systematically. In reality, there are still many students who consider mathematics difficult enough to have an impact on student learning outcomes that are not satisfactory (Yufentya et al., 2019). This is in line with what was stated by Zukardi (2003: 7) i.e. "mathematics is learning that emphasizes concepts". This statement means that mathematics learning is based on a good understanding of concepts. Furthermore, students are able to apply these concepts in solving problems related to mathematics or with real life (Nastiti & Syaifudin, 2020).

The competency standards for Junior High School mathematics subjects consist of 4 aspects, namely: numbers, algebra, geometry and measurement, probability and statistics. While the expected mathematical skills in mathematics learning are: understanding concepts, procedures, reasoning and communication, problem solving, and (e) appreciating the usefulness of mathematics (Nastiti & Syaifudin, 2020).

This is in line with Permendiknas No. 22 of 2006, one of the objectives of mathematics in secondary education is for students to have the ability to understand mathematical concepts, explain the relationship between

concepts and apply concepts or algorithms, flexibly, accurately, efficiently, and precisely in problem solving. Low student ability in solving math problems related to understanding concepts is certainly a problem in mathematics learning (Permendikbud, 2016).

In learning mathematics, understanding mathematical concepts is very important for students. Because one mathematical concept with another is related so that to learn it must be coherent and continuous. If students have understood mathematical concepts, it will make it easier for students to learn the next more complex mathematical concepts. Understanding itself is interpreted as the absorption of the meaning of the material studied. According to him, understanding is the ability of students to understand the meaning of a concept, situation, and existing facts. In understanding something, one should be able to recognize the object itself, the relationship between similar and unsimilar objects, and the relationship of objects with other theories. Understanding according to Bloom (Winkel, 2004: 274) includes the ability to capture meaning in its learned meaning. The ability to understand can also be referred to as "understanding". A student is said to have the ability to understand or understand if the student can explain a certain concept in his own words, can compare, can distinguish, and can compare the concept with other concepts (Nastiti & Syaifudin, 2020).

According to Purwanto "comprehension is the level of ability that expects students to be able to understand the meaning or concepts, situations and faka they know". While Boediono explained that mathematical concepts are all things that are in the form of new understandings that can arise as a result of thinking, including definitions, understandings, special characteristics, the nature and content of mathematical material (Romansyah et al., 2018). One of the objectives of mathematics learning in the annex to the Regulation of the Minister of National Education (Permendiknas) Number 20 of 2006 concerning content standards is that students are able to understand mathematical concepts, explain the relationship between concepts and apply

concepts or logarithms flexibly, accurately, efficiently, and precisely in problem solving (Depdiknas, 2006).

According to Jihad & Haris, comprehension ability consists of indicators of restating a concept; classify objects according to certain properties according to concepts; give examples and not examples of concepts; presenting concepts in various forms of mathematical representation; develop necessary conditions and sufficient conditions of a concept; using, utilizing, selecting certain procedures or operations; and apply concepts to solve problems. While Sanjaya indicators of concept understanding include: (1) able to apply concepts that are already owned; (2) students are familiar with different steps; (3) able to classify objects based on whether or not the requirements that make up the concept are met; (4) can provide reinforcement to examples obtained from understanding; (5) able to apply concepts algorithmically; and (6) the student is able to develop concepts that he already has (Warmi, 2019).

In line with this, Afgani argues that ability is related to understanding mathematical ideas that are thorough and functional. The ability to understand concepts can be achieved by paying attention to the following indicators. a) The ability to restate concepts that have been learned; b) The ability to classify objects based on mathematical concepts; c) Ability to apply algorithm concepts; d) The ability to give examples and not examples; e) Ability to present concepts in various mathematical representations; f) Ability to relate various mathematical concepts internally or externally (Romansyah et al., 2018).

Research on understanding concepts has been categorized into several studies, namely; First on mathematics learning researched by (Juniantari et al., 2019), (Siregar, 2021), (Apriliani, 2020), (Sari, 2018), (Brinus et al., 2019); Second, in terms of learning styles researched by (Solihah et al., 2022), (Aini et al., 2020), (Liberna, 2018); Third, cognitive psychology is researched by: (Riyatuljannah & Suyadi, 2020), (Handayani, 2019), (Melisari

et al., 2020), (Handayani, 2019), (Mutmainna et al., 2018), (Sopamena et al., 2020). Based on these studies, the research further simplifies the study of the ability of individuals to solve mathematical problems in terms of understanding mathematical concepts.

METHOD

This type of research is quantitative research, while the design of this research using a descriptive approach is intended to describe the ability to understand students' concepts in solving circle problems. The population of this study was all students of MTs Negeri Ambon 8th grade totaling 22 people. Based on a relatively small population (less than 100), the sample of this study was determined with the total population, namely the researcher took the entire population of 22 students as a research sample (Sugiyono, 2013). Sampling in this study used saturated sampling techniques. Data collection techniques are observation and questionnaire. Quantitative description analysis techniques.

RESULT AND DISCUSSION

In general, the ability to understand the concept of MTs Negeri Ambon 8th grade students in solving circle problems can be seen in the following table.

No	Indicators	Concept Understanding Problems				Total	
		f	%	f	%	f	%
1	Integers	20	91	2	9	22	100
2	Fractional	15	68	7	32	22	100
3	Algebra	8	36	14	64	22	100
4	Wake up flat	6	27	16	73	22	100

Based on the data of the table above, the results of students' ability to solve circle problems are followed by an understanding of mathematical concepts, of the 22 students who can solve a number problem for 91%

presentation and 2 students cannot solve integer problems with a percentage of 9%, 15 students can solve fraction problems with a percentage of 68% and 7 students cannot solve the problem fractions with a percentage of 32%, 8 students can solve algebra problems with a percentage of 36% and 14 students cannot solve algebra problems with a percentage of 64%, 6 students can solve flat wake problems with a percentage of 27% and 16 students cannot solve building flat problems r with a percentage of 73%.

Thus, it can be said that integer and fraction problems can be solved by students easily, while algebra and flat building problems cannot be solved by students. These results basically present that the ability to understand mathematical concepts affects students' mathematics learning outcomes. In mathematics learning, students are required to be able to understand mathematical concepts to be able to solve mathematical problems. However, not a few students also have low concept understanding abilities. Most of them find it difficult to solve the questions given because they forget or do not know the concept of circles in the sub-sections of the central angle and the circumference angle.

This is in accordance with the findings of Attin Warmi who stated that there are many students who still have a lack of understanding of concepts. Learning circle material should focus more on conceptual understanding, because understanding concepts is important and fundamental for subsequent learning. Student habits in practicing in answering questions can have a positive impact, namely students are able to understand in depth the concepts being taught by their teachers (Warmi, 2019).

CONCLUSION

Based on the findings, it can be concluded that the ability of MTs Negeri Ambon 8th grade students in solving circle problems in terms of understanding the concepts described, among others; Students can solve integer problems with a percentage of 91% and fraction problems of

68%, while students cannot solve algebra problems with a percentage of 64% and flat wake problems of 73%. Thus, it can be said that integer and fraction problems can be solved by students easily, while algebra and flat building problems cannot be solved by students.

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