p–ISSN: 2723 - 6609 e-ISSN: 2745-5254
Vol. 5, No. 5 Mei 2024 http://jist.publikasiindonesia.id/

Student Numeracy Ability in Solving Problems on Geometry and Measurement Material

Saffrina[1*], Baidullah[2]
Sekolah Tinggi Keguruan dan Ilmu Pendidikan Muhammadiyah Aceh Barat Daya, Indonesia
Email: frinaa2002@gmail.com[1]*, baidullah1990@gmail.com[2]

*Correspondence

Keywords: Numeracy, Geometry and Measurement; SMP Negeri 1 Blangpidie.

ABSTRACT

Numeracy is the ability to apply number concepts and arithmetic operation skills in daily life, professional development, and the development of science and technology. Numeracy skills play an essential role in the application of number concepts and arithmetic operations in the context of everyday life. This research aims to determine the numeracy skills of class VIII-B students at SMP Negeri 1 Blangpidie in solving problems on geometry and measurement material. The data collection methods used were tests and interviews. From the research results, of the total 27 students involved, 22 students showed very high numeracy skills, reaching a percentage of 81%. Meanwhile, five other students have a high level of numeracy ability, with a percentage of 19%. The level of numeracy ability of class VIII-B students is assessed based on student indicators in solving problems on geometry and measurement material. It can concluded that the numeracy skills of class VIII-B students in solving geometry and measurement material problems have perfect numeracy scores.

Introduction

Mathematics is a subject taught at the elementary/equivalent, junior high/ equivalent, and high school/equivalent education levels and plays a vital role in developing science and technology (Mustari, 2022). Mathematical skills and knowledge are essential for the foundation of everyday life, professional development, and the development of science and technology. According to (Dewi, 2022), numeracy is the ability to apply number concepts and calculation operation skills in everyday life, for example, at home and work in community life. It can explain information around us (Ayuningtyas & Sukriyah, 2020).

Numeracy ability is the ability to understand and apply mathematical concepts in diverse situations to solve problems and also be able to communicate how to use mathematics to others. Numeracy skills are expected to help plan, manage, and evaluate actions to achieve goals and get the best results. According to (Maulidina, 2019),

numeracy is a crucial ability students master. Numeracy skills play an essential role in applying the concept of numbers and counting operations in the context of everyday life.

Numeration is one of the literacies in mathematics (Rahmawati, 2021). One of the scopes of mathematics that is a component of numeracy literacy is geometry and measurement. Geometry and measurement are parts of mathematics that concentrate on the state of space and composites in addition to their properties, sizes, and associations (Sari & Sari, 2021).

Geometry and measurement materials are used in this study (Poernomo et al., 2021). Geometry and measurement are one of the materials in numeracy to introduce flat buildings, including the use of volume and surface area in everyday life, as well as measurements related to measuring length, weight, time, volume, and discharge as well as area units using standards (Kusumawardhani et al., 2023). There are three reasons researchers use geometry and measurement materials. First, because this material can be applied in everyday life. Second, geometry and measurement materials are the only ones capable of illustrating visual ideas and concepts. Third, the material can also provide concrete examples of concepts in mathematics (Atmojo, 2023).

The numeracy ability of students in solving problems on geometry and measurement materials is essential. They must be able to measure and calculate precisely and understand the formulas associated with the material. Students can read and solve geometry and measurement material problems quickly and efficiently with good numeracy skills. This will help them in other learning, as well as in everyday life.

Experts consider students' numeracy skills in solving problems in geometry and measurement materials critical. Dr. Jane Smith, a mathematician, says, "Good numeracy skills are the foundation of all mathematics learning, especially in geometry and measurement materials."

Research Methods

This study uses a descriptive qualitative method to describe students' numeracy skills in geometry and measurement material problems. It was conducted at SMP Negeri 1 Blangpidie. The subjects were students in grades VIII-B. Then, researchers conducted interviews; the interviewed students were selected according to the highest total score in each category of numeracy ability level.

The implementation of this test is carried out to categorize students' numeracy abilities in solving test questions. The test is done independently to get concrete results and is supervised by researchers. The test is carried out for 60 minutes. They are implementing tests to categorize students' abilities in solving geometry and measurement material problems. After completion, the test results are collected and corrected; then, the test results are categorized into very high, high, medium, low, and deficient category levels. Moreover, each question has different indicators of numeracy ability. Here is Table 1, Numeracy Capability Indicator.

Table 1
Numeration Ability Indicator

NO	Numeration Indicator	Question Number
1.	Able to use various numbers or symbols related to basic mathematics in solving everyday problems.	2, 3, 4, 5
2.	Able to analyze information displayed in various forms (graphs, tables, charts, diagrams, and so on).	1, 2, 3, 4, 5
3.	Interpret the results of such analysis to predict and make decisions.	1, 3, 4, 5

After completion, the test results are collected, corrected and categorized into very high, high, medium, low, and deficient category levels. Researchers examine the results of student numeracy ability tests using the assessment rubric listed in Table 2 of the Assessment Rubric.

Table 2
Assessment Rubric

Numeration Ability Indicator	Score	Description
Able to use various kinds of numbers or symbols related to basic mathematics in solving everyday life problems	1	They cannot yet use various numbers or symbols related to geometry and measurement materials to solve mathematical problems in everyday life, and their final answer is wrong.
	2	Quite able to use various kinds of numbers or symbols related to geometric material and measurements to solve mathematical problems in everyday life with the final answer correct.
	3	Ability to use various numbers or symbols related to

		geometry and measurement materials to solve mathematical problems in everyday life with the correct final answer.
Able to analyze information displayed in various forms (graphs, tables, charts, diagrams, and so on).	1	I have not yet been able to analyze information displayed in various forms (graphs, tables, charts, diagrams, and so on).
	2	I am quite able to analyze information displayed in various forms (graphs, tables, charts, diagrams, and so on).
	3	Ability to analyze information displayed in various forms (graphs, tables, charts, diagrams, etc.).
Interpret the results of the analysis to predict and make decisions.	1	I have not yet been able to interpret the results of the analysis to predict and make decisions correctly.
	2	Quite able to interpret some of the analysis results to predict and make decisions correctly.
	3	Able to interpret all the analysis results to predict and make decisions.

Then, data analysis was carried out by calculating the percentage of all indicators of student numeracy ability. Table 3, Categorization of Numeracy Ability Levels, describes the numeracy literacy level categories in detail.

Then, the stage of presenting data is compiling information by conducting interviews. To find out the presentation of this research data by discussing the numeracy

ability of junior high school students in each category in solving problems (Kusumawardhani et al., 2023).

Results and Discussion

This research was conducted at SMP Negeri 1 Blangpidie class VIII-B with 27 students. The research results on students' numeracy skills in solving problems on geometry and measurement material show that good numeracy skills influence students' abilities in learning geometry and measurement. Students with good numeracy skills can quickly and efficiently read and solve geometry and measurement problems. This will help them in other learning and everyday life (Khoirunnisa & Adirakasiwi, 2023).

Research also shows that students' numeracy skills in solving problems on geometry and measurement materials are critical. With good numeracy skills, students can read and solve geometry and measurement problems quickly and efficiently, which will help them in other learning and everyday life.

The following are student test results in geometry and measurement material questions 7.

Table 3
Student Numeracy Ability Level

Category	Number of Students	Presented
Very High	22	81%
Tall	5	19%
Keep	-	-
Low	-	-
Very Low	-	-
Total	27	100%

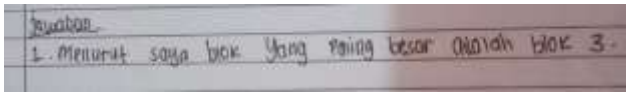
After categorizing according to category level. Furthermore, to get in-depth results, the authors conducted an interview test. The interview guidelines contain questions related to students doing test questions, such as comprehension, application, and reasoning. Here are the results of the student's answers and interview results:

Problem 1:

1. **Wacana 1:** Peta Kota
Tujuh orang remaja sedang melakukan perjalanan di kota. Gambar berikut merupakan denah bagian kota yang mereka kunjungi.

Dari wacana di atas, blok yang memiliki luas terbesar adalah ...? Jelaskan dan berikan alasan menurut pemahaman masing-masing!

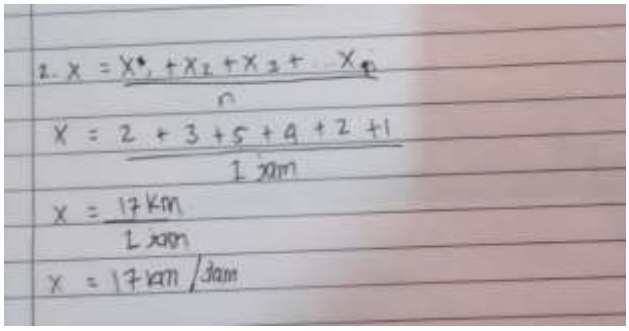
Here are the students' answers in answering question No.1



Here are the results of an interview with GU
K: How do you compare each block's area to determine which has the most significant area?
GU: Look first at the discourse picture 1; keep looking at the vast block.
K: Yes, then how do we see the largest block?
GU: The area from block 1 to block 5 is block 3. So, the answer is block 3.

Problem 2:

Here are the students' answers in answering question No.2



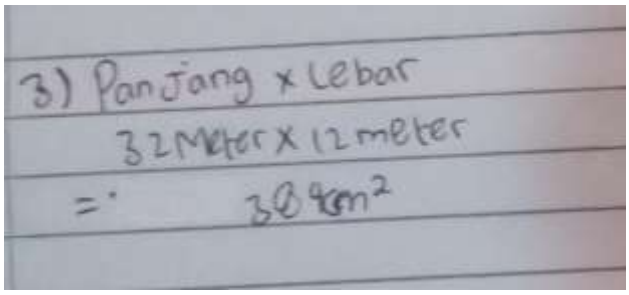
Here are the results of an interview with SW
K: How do you find out the average speed of Mr. Oni's motorcycle?
SW: By using the formula?
K: What kind of formula is used to find the speed value of Mr. One?t $X =$
to solve the formula.
SW: hen, from enter the umber because n **icome2**the already o ss 2 k e equals $n = \frac{2\ km+3\ km+5\ km+4\ km+2\ km+1\ km}{1\ jam}$

K: Why is it 1 hour?
SW: Because n is the amount of data, and in the problem, it is known that the value is 1 hour.

K: Well, what is next?
SW: Then, all of that is added up and produces a result of 17 km. 17 km divided by 1 hour, which is 17 km/hour.

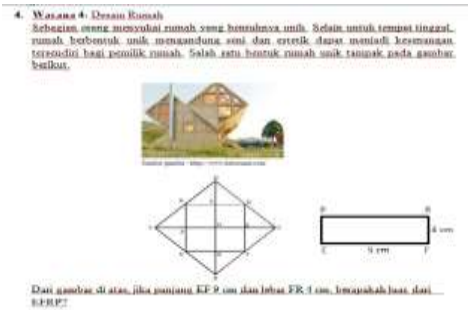
Question 3:

Here are the students' answers in answering question No.3

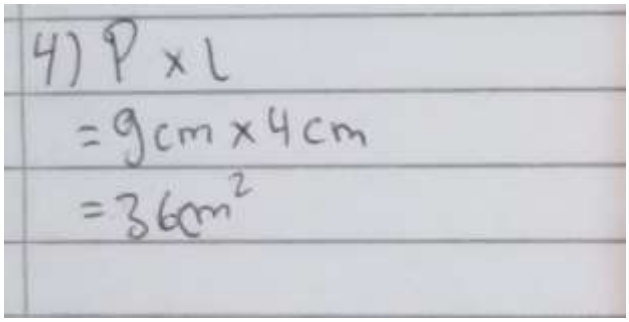


Here are the results of an interview with I:
K: How do I solve the problem?
I: The way to solve the problem is to understand the question
K: After understanding the problem, what steps are taken?
I: After understanding the problem and drawing, immediately enter the formula.
K: What formula is used?
I: Therefore, the landform is rectangular, and the question is area, so the formula is p x l.
K: Well, what is next?
I: Next, put it into the formula because, in the picture, it is already known that the length is 32 meters and the width is 12 meters. So, the result of 32 meters by 12 meters is 32 m^2.

Question 4:

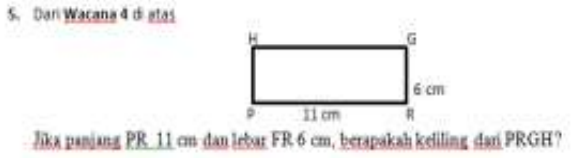


Here are the students' answers in answering question No.4

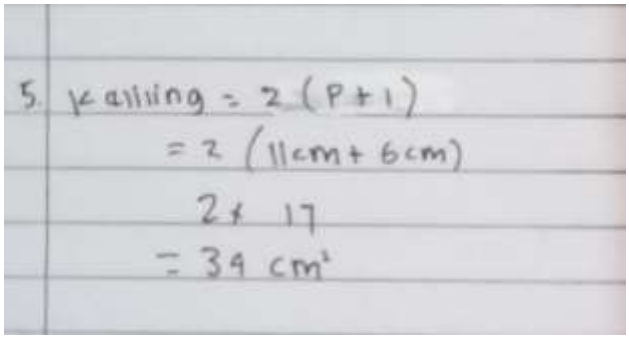


Here are the results of an interview with R
K: How do I solve the problem?
R: By looking at the discourse and understanding the problem?
K: Once understood, what is done?
R: After seeing and understanding the problem, it turns out that what is asked is the area of the design.
K: Yes, what is next?
R: The areas asked from the design are EF and FR. Because EF and FR are rectangular, the formula used is px. The length and width in the problem are already known to be EF 9 cm and FR 4 cm, so multiply it, and the result of p x l is 36 m^2
K: Okay.

Question 5:



Here are the students' answers in answering question No.5



Here are the results of the interview with F
K: How do I solve the problem?

F: The way to solve the problem is to understand the problem.
K: After understanding and knowing what is being asked, what next?
F: In that question, what is asked is the circumference of PRGH, which is PR value 11 cm and RG 6 cm, and the image is rectangular. Then, the formula for the circumference of a rectangle is used. So, 2 (p+l). Which is 11 cm long, and the sheet is 6 cm. 2 (11 cm + 6 cm), i.e. 2(17cm), two times 17, i.e. 34 cm. So, the circumference of the PRGH is 32 cm.

Conclusion

Based on the results of research on grade VIII-B students at SMP Negeri 1 Blangpidie, with geometry and measurement material obtained, as many as 22 students showed a very high level of numeracy ability, reaching a percentage value of 81%. Meanwhile, five other students showed a high level of numeracy ability, with a percentage of 19% of the total 27 students involved in this study. The level of numeracy ability of grade VIII-B students is scored based on indicators of students' ability to solve problems on geometry and measurement materials and reviewed based on numeracy ability indicators.

Bibliography

Atmojo, A. Tri. (2023). Penerapan Model Problem Based Learning (Pbl) Berbantu Media Konkret Untuk Meningkatkan Kemampuan Berhitung Pada Peserta Didik Kelas Ii Sdn Peterongan. *Prosiding Seminar Nasional Pendidikan Profesi Guru*, *1*(2), 1902–1910.

Ayuningtyas, Nurina, & Sukriyah, Dewi. (2020). Analisis pengetahuan numerasi mahasiswa matematika calon guru. *Delta-Pi: Jurnal Matematika Dan Pendidikan Matematika*, *9*(2). https://doi.org/10.33387/dpi.v9i2.2299

Khoirunnisa, Salsabilah, & Adirakasiwi, Alpha Galih. (2023). Analisis Kemampuan Literasi Numerasi Siswa Smp Pada Era Merdeka Belajar. *Jurnal Pembelajaran Matematika Inovatif*, *6*(3), 925–936. https://doi.org/10.22460/jpmi.v6i3.17393

Kusumawardhani, Rizky Ayu, Agustina, Lady, & Galatea, Chusnul Khotimah. (2023). Analisis Kemampuan Numerasi Siswa dalam Materi Geometri dan Pengukuran Ditinjau Dari Gaya Kognitif Reflektif dan Impulsif. *JEMS (Jurnal Edukasi Matematika Dan Sains)*, *11*(1), 107–115. https://doi.org/10.25273/jems.v11i1.14213

Maulidina, P. (2019). Analisis Numerasi Siswa Melalui Soal Asesmen Kompetensi Minimum Ditinjau Dari Kecerdasan Emosional. *Info Artikel: Dikirim*, *7*(1), 12–25.

Mustari, M. (2022). *Manajemen pendidikan di era merdeka belajar*. Prodi S2 Studi Agama-Agama UIN Sunan Gunung Djati Bandung.

Nurhayati, Nurhayati, Asrin, Asrin, & Dewi, Nurul Kemala. (2022). Analisis Kemampuan Numerasi Siswa Kelas Tinggi dalam Penyelesaian Soal Pada Materi Geometri di SDN 1 Teniga. *Jurnal Ilmiah Profesi Pendidikan*, *7*(2b), 723–731. https://doi.org/10.29303/jipp.v7i2b.678

Poernomo, Erdy, Kurniawati, Lia, & Atiqoh, Khamida Siti Nur. (2021). Studi literasi matematis. *ALGORITMA: Journal of Mathematics Education*, *3*(1), 83–100.

Rahmawati, Alfi Nurlaili. (2021). Analisis Kemampuan literasi numerasi pada siswa kelas 5 sekolah dasar. *Prosiding SI MaNIs (Seminar Nasional Integrasi Matematika Dan Nilai-Nilai Islami)*, *4*(1), 59–65.

Sari, Desty Puspita, & Sari, Piana Puspita. (2021). Peran Media Gambar dalam Meningkatkan Kemampuan Berhitung Siswa pada Mata Pelajaran Matematika Kelas III MIN 2 Bengkulu Selatan. *Jurnal Pendidikan Islam Al-Affan*, *2*(1), 114–121.