

**THE ANALYSIS OF MATHEMATICAL UNDERSTANDING
VIEWED FROM STUDENT'S EMOTIONAL INTELLIGENT
IN 8th GRADE OF SMP MA'ARIF NU 1 CILONGOK
BANYUMAS DISTRICT**



AN UNDERGRADUATE THESIS

**Submitted to the Faculty of Tarbiya and Teacher Training of State Islamic
University Prof. K.H. Saifuddin Zuhri Purwokerto as a Partial Fulfillment
for Requirement of *Sarjana Pendidikan* (S.Pd) Degree**

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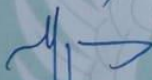
**THE ANALYSIS OF MATHEMATICAL UNDERSTANDING VIEWED FROM
STUDENT'S EMOTIONAL INTELLIGENT IN 8th GRADE OF SMP MA'ARRIF NU
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
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ABSTRACT

THE ANALYSIS OF MATHEMATICAL UNDERSTANDING VIEWED FROM STUDENT'S EMOTIONAL INTELLIGENT IN 8th GRADE OF SMP MA'ARIF NU 1 CILONGOK BANYUMAS DISTRICT

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Abstract: Mathematical understanding ability is the ability to absorb material, remember mathematical formulas, and concepts, and apply them in solving mathematical problems. Understanding and solving mathematical problems requires concentration and accuracy which is influenced by maximum motivation and emotional management. Therefore, emotional intelligence is something that students need in learning mathematics. Students who have high emotional intelligence can motivate themselves, regulate their moods, and keep stress from paralyzing their thinking abilities. This research aims to analyze students' mathematical understanding viewed from students' emotional intelligence in 8th grade of SMP Ma'arif NU 1 Cilongok Banyumas district. This type of research is qualitative research. The data collection techniques used were emotional intelligence questionnaires, mathematical understanding ability tests, and interviews. The research was conducted in class 8A of SMP Ma'arif NU 1 Cilongok Banyumas district. The results of this research show that students with high emotional intelligence have good mathematical understanding abilities, students with medium emotional intelligence have quite good mathematical understanding abilities, and students with low emotional intelligence have poor mathematical understanding abilities.

Keywords: Analysis, Emotional Intelligence, Mathematical Understanding Ability

ABSTRAK

ANALISIS KEMAMPUAN PEMAHAMAN MATEMATIS DITINJAU DARI KECERDASAN EMOSIONAL SISWA KELAS 8 SMP MA'ARIF NU 1 CILONGOK KABUPATEN BANYUMAS

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Abstrak: Kemampuan pemahaman matematis adalah kemampuan menyerap suatu materi, mengingat rumus dan konsep matematika serta menerapkannya dalam penyelesaian masalah matematika. Dalam memahami dan menyelesaikan masalah matematika dibutuhkan konsentrasi dan ketelitian yang dipengaruhi oleh motivasi dan pengelolaan emosi yang maksimal. Oleh karena itu kecerdasan emosional merupakan hal yang sangat dibutuhkan siswa dalam pembelajaran matematika. Siswa yang memiliki kecerdasan emosional yang tinggi mampu memotivasi diri sendiri, mengatur suasana hati, dan menjaga beban stres agar tidak melumpuhkan kemampuan berpikir. Tujuan dari penelitian ini adalah menganalisis kemampuan pemahaman matematis siswa ditinjau dari kecerdasan emosional siswa kelas 8 SMP Ma'arif NU 1 Cilongok Kabupaten Banyumas. Jenis penelitian ini adalah penelitian kualitatif. Teknik pengumpulan data yang digunakan yaitu angket kecerdasan emosional, tes kemampuan pemahaman matematis, dan wawancara. Penelitian dilakukan di kelas 8A SMP Ma'arif NU 1 Cilongok. Hasil dari penelitian ini menunjukkan bahwa siswa dengan kecerdasan emosional tinggi memiliki kemampuan pemahaman matematis yang baik, siswa dengan kecerdasan emosional sedang memiliki kemampuan pemahaman matematis yang cukup baik, dan siswa dengan kecerdasan emosional rendah memiliki kemampuan pemahaman matematis yang kurang.

Kata kunci: Analisis, Kecerdasan Emosional, Kemampuan Pemahaman Matematis

MOTTO

The thing is, sometimes you must do the things you think you can't. I know it's hard, *believe me, I do*, but that's how you continue to move forward and ahead. The things you think you can't do are the very things holding you back. The truth is, you need to overcome these challenges to continue to grow. You must escape your place of comfort for anything to change. Sometimes you need to get uncomfortable to achieve the things you think you can't.

Remember to acknowledge all achievements big or small, whenever you can.

Focus on the present moment, and keep moving forward.



DEDICATION

I dedicate this thesis to:

My beloved parents, Hartono and Sri Wahyuni


Thank you for the endless love, prayer, and support for believing in me to finish this thesis. Thank you for your sacrifice. I do not think I could ever tell you how much I love you and how lucky I am being your daughter, thank you so much for everything Ayah, Mama.

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PROF. K.H. SAIFUDDIN ZUHRI

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Sholawat may always be devoted to Prophet Muhammad SAW who always becomes a role model for all humans in the world. This thesis is presented as a partial fulfillment of the requirement for obtaining the undergraduate degree in Mathematics Education Study Program in the Faculty of Tarbiya and Teacher Training of State Islamic University Prof. K.H. Saifuddin Zuhri Purwokerto. In the process of completing this thesis, many parties have provided helps, motivations, supports, aids, and suggestions which are useful for the completion of this thesis. The deep gratitude and appreciation are expressed to:

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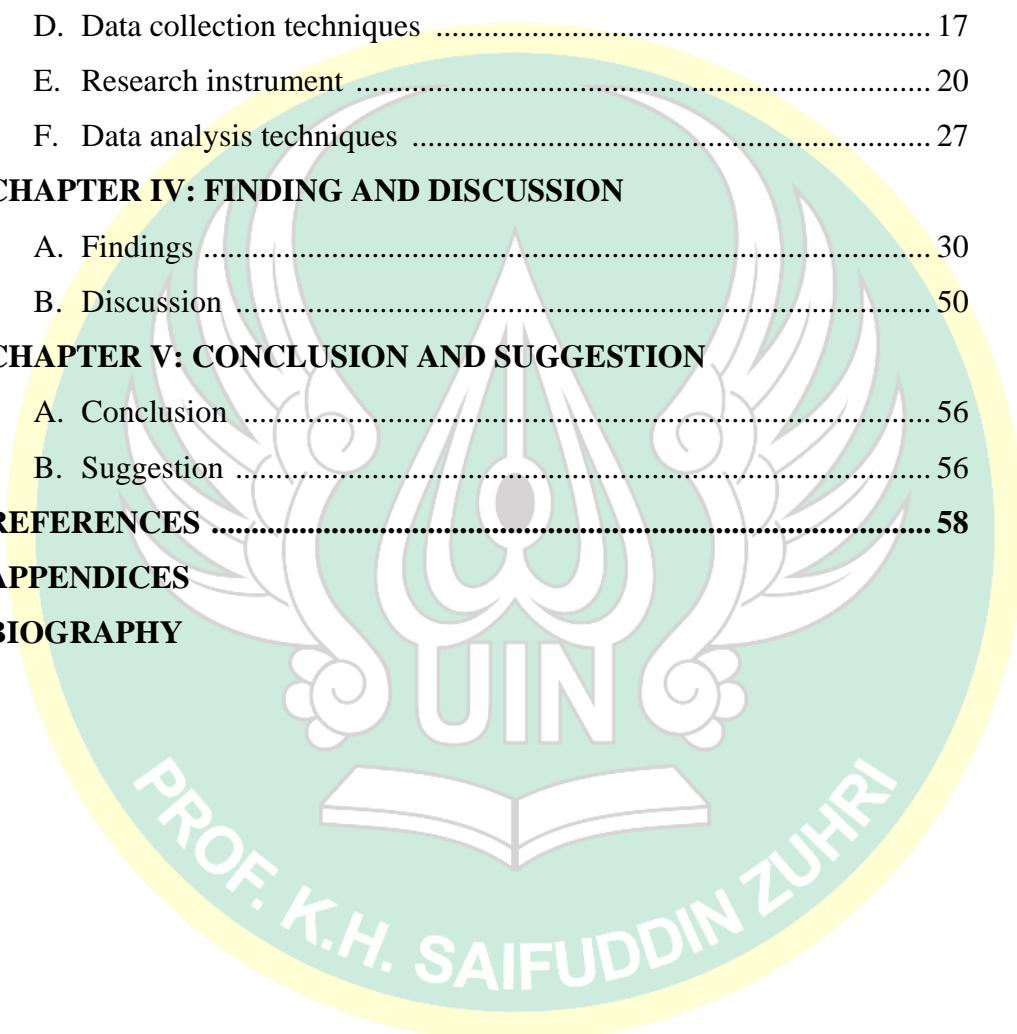
The researcher

Ratna Ainun Nadya

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CHAPTER I

INTRODUCTION

A. Background of the Study

Education is essentially a process of maturation of the quality of life. Through this process, it is expected that humans will be able to understand the meaning and nature of life, besides what and how to carry out life and living tasks correctly. Therefore, education focuses on forming a superior personality by focusing on the maturing process of quality, logic, heart, character, and faith. The top of education is the achievement of education is perfection in the quality of life.¹ Along with the opinion of H. Horne, education is a process carried out frequently from a higher adjustment for humans who have developed physically and mentally, who are free and aware of God, as implemented in the intellectual, emotional, and human environment of humans.² Briefly, education is meaningful as an effort or process of change and human development in a perfect and better direction.³

According to Paragraph 1 of the law on the national education system number 20 of 2003, national education functions to develop capabilities and form dignified national character and civilization in the framework of educating the nation, aiming at developing the potential of students to become human beings who believe and fear God almighty, have a noble character, be healthy, knowledgeable, capable, creative, independent, and be a democratic and responsible citizen. Consequently, the purpose of education is as a guide, mentor, and direction for students so that they can grow up according to their true potential and self-concept so that

¹ Dedi Mulyasa, *“Pendidikan Bermutu dan Daya Saing”*, Bandung: PT. Remaja Rosdakarya, 2012, p. 2

² Abd Rahman BP, dkk, *“Pengertian Pendidikan, Ilmu Pendidikan Dan Unsur-Unsur Pendidikan”*, Al Urwatul Wutsqa, Vol.2, Nomor 1, 2022, p. 4.

³ Moh. Roqib, *“Ilmu Pendidikan Islam”*, Yogyakarta: PT. LkiS Pelangi Aksara, 2016, p.

they can grow, compete, and maintain their lives in a future full of challenges and changes.⁴

Starting from the elementary education level to the tertiary level, mathematics is a subject that is taught at various levels of education. Mathematics studies the science of order, the science of structures organized from elements that are not defined.⁵ Mathematics is an exact science that has been the mother of all knowledge in this world. All the progress of the times and the development of human culture and civilization are always inseparable from the elements of mathematics.⁶ As Reported by R.Soejadi, Mathematics is a branch of science that is exact and systematically organized. Furthermore, James and James explain that mathematics is the science of logic, regarding shape, composition, quantity, and concepts related to one another.⁷

Quoted from the Ministry of National Education, the purpose of mathematics education is contained in the first point, namely, students understand mathematical concepts, explain the relationship between concepts, and systematically apply concepts or algorithms flexible, accurate, efficient, and precise in solving problems.⁸ On the other side, NCTM (National Council of Teacher of Mathematics) explains that students must learn mathematics with the ability to understand because the ability to understand is the ability to build new knowledge from experience and prior knowledge.⁹

The importance of students having a good understanding as Santrock said, is that understanding concepts is a key aspect of learning. Furthermore,

⁴ Dedi Mulyasa, “*Pendidikan Bermutu dan Daya Saing*”, Bandung: PT. Remaja Rosdakarya, 2012, p. 5.

⁵ Purwoto, *Strategi Pembelajaran Matematika*, Surakarta: UNS Press, 2003, p. 12.

⁶ Abdul Halim Fathani, “*Matematika: Hakikat & Logika*”, Jogjakarta: Ar-Ruzz Media, 2009, p. 5.

⁷ Sri Hastuti Noer, “*Strategi Pembelajaran Matematika*”, Yogyakarta: Matematika, 2017, p. 2-3.

⁸ Depdiknas, “*Pedoman Penyusunan Kurikulum Tingkat Satuan Pendidikan*”, Jakarta: tidak diterbitkan, 2006.

⁹ NCTM, *Principles and Standards for School Mathematics*. In *School Science and Mathematics* (Vol. 47), 2000. Retrieved from www.nctm.org

mathematical understanding is an important basis for thinking in solving mathematical problems and real-life problems. Also, mathematical understanding is very supportive in developing other mathematical abilities, including critical thinking, creative thinking, and mathematical thinking.¹⁰ Besides, Wihano has a similar opinion that the ability to understand the concept is an ability that must be considered during the process of learning mathematics, especially to gain meaningful mathematical knowledge.¹¹

According to Ngalim Purwanto, the success or failure of learning depends on various factors. The factors were divided into two specifically, the individual factors including maturity or growth, emotional intelligence, motivation, and personal factors, and the social factors including family or household, friends, teachers, how to teach, the tools used in learning, the environment and opportunities available, and social motivation. These factors are affecting mathematical understanding.¹² Understanding and solving mathematical problems requires concentration and accuracy. To manage concentration, patience, and accuracy, maximum motivation and emotional management are needed through students do not easily get discouraged and give up when they do not get a solution correctly. Therefore self-management is something that is needed by students in mathematics lessons by utilizing emotions productively.¹³ Robert K. Cooper and Ayman Sawaf created a concept that emotional intelligence is considered to be able to help students overcome the psychological obstacles they encounter in learning.¹⁴

¹⁰ J. W. Santrock, *Life-Span Development (Perkembangan Masa Hidup Edisi 13 Jilid 1 Penerjemah: Widya Sinta, B)*, Jakarta: Erlangga, 2012.

¹¹ Heris Herdiana, et al, *Hard Skills dan Soft Skills Matematik Siswa*, Bandung: Refika Aditama, 2021, p. 4.

¹² Ngalim Purwanto, *Psikologi Pendidikan*, Bandung: PT Rosdakarya, 2002, p. 102.

¹³ Teti, dkk, *Analisis level Kecerdasan Emosional Belajar Matematika Siswa Berdasarkan Gender pada Masa Covid*, Jurnal MathEdu (Mathematic Education Journal) Vol.5, No.2, 2022, p. 133.

¹⁴ Umriyati, *Hubungan Antara Kecerdasan Emosional Dan Hasil Belajar Matematika Di SMP PGRI Seedati*, Jurnal Pendidikan Matematika STKIP PGRI Sidoarjo, Vol. 3, No.1, 2015, p. 78.

Besides, student success in learning is not just determined by intellectual aspects in addition determined by one factor, including emotional intelligence. Equally, with thought by Goleman, the expert agrees that the intelligence quotient (IQ) just supports around 20% of determinants of success. Meanwhile, another 80% comes from other aspects, one of which is emotionally intelligent which is the ability to control a chaotic mood, motivate yourself, overcome frustration, empathize, and cooperate.¹⁵

Salovey and Mayer define emotional intelligence as a subset of social intelligence that involves the ability to monitor feelings and emotions in both oneself and others, sorting them all out and using this information to guide thoughts and actions.¹⁶ Goleman stated that in general, the characteristics of a person having emotional intelligence are being able to motivate oneself, endure frustration, control impulsive and not exaggerate the fun, set the mood, and keep the burden of stress from crippling the ability to think as well as empathize and pray. Emotional intelligence is the ability to respond to emotional knowledge in the form of receiving, understanding, and managing it.¹⁷

According to the interview conducted by the researcher on Friday, 14 April 2023 during observation, as claimed by the math teacher in SMP Ma'arif NU 1 Cilongok, class 8A is an excellent class that participates in the Islamic boarding school class program in SMP Ma'arif NU 1 Cilongok. Islamic boarding school class is a class that has recitation, memorization of Al-Qur'an activities, and activities aimed at developing student passions such as public speaking, hadroh, etc. Class 8A students are considered to have superior abilities compared to others. In learning mathematics this class has mostly good understanding ability. Class 8A students are excellent students who are used to being diligent and managing their time well in

¹⁵ Hamzah B. Uno, *Orientasi Baru dalam Psikologi Pembelajaran*, (Jakarta: PT. Bumi Akasara, 2008), p. 70.

¹⁶ Lawrence E. Shapiro, *Mengajarkan Emosional Intelligence Pada Anak*, Jakarta: PT Gramedia Pustaka Utama, 2001, p. 5.

¹⁷ Daniel Goleman, "*Kecerdasan Emosional Untuk Mencapai Puncak Prestasi*", Jakarta: Gramedia Pustaka Utama, 2002, p. 45.

learning at school and in Islamic boarding school classes. Meanwhile, many student's characters in emotional intelligence who manage their emotions differently, such as student's motivation in learning mathematics and group work in solving mathematical problems. Therefore, class 8A has good mathematical understanding abilities and various emotional intelligence abilities. According to the background of the research, the researcher intends to analyze the mathematical understanding viewed from emotional intelligence in the 8th grade of SMP Ma'arif NU 1 Cilongok.

B. Conceptual Definition

Based on the concept of this research, in general, the researcher will explain about research variable as follows:

1. Mathematical understanding

Mathematical understanding is basic competence in learning mathematics which includes: the ability to absorb the material, remember mathematical formulas and concepts and apply them in simple cases or similar cases, estimate the truth of a statement, and apply formulas and theorems in solving problems.

The indicators of mathematical understanding are:

- 1) Restate a concept.
- 2) Classify objects according to certain due to their nature.
- 3) Identify examples and non-examples of a concept.
- 4) Present concepts in various forms of mathematic representation.
- 5) Develop necessary or sufficient concept requirements.
- 6) Use and utilize along with selecting certain operating procedures, and
- 7) Apply concepts or algorithms in problem-solving.¹⁸

¹⁸ Heris Herdiana, et al, "*Hard Skills dan Soft Skills Matematik Siswa*", Bandung: Refika Aditama, 2021, p. 7.

2. Emotional intelligent

According to Goleman, emotional intelligence is a person's ability to manage his emotional life intelligently, maintaining emotional harmony and expressing it through self-awareness, self-regulation, self-motivation, social awareness, and social skills.

The indikator of emotional intellegence are :

- 1) Recognize self-emotion
- 2) Manage emotion
- 3) Self-motivation
- 4) Recognize people's emotion
- 5) Builds relationships¹⁹

C. Research Question

According to the background above, the research question in this study is how is students' mathematical understanding in 8th grade of SMP Ma'arif NU 1 Cilongok viewed from students' emotional intelligence?

D. Aims and Significances of the Study

1. Aims of the study

Based on the research question, this study aims to describe the mathematical understanding viewed from students' emotional intelligence in 8th grade of SMP Ma'arif NU 1 Cilongok.

2. The significance of the study

There are two kinds of significance of this study as follows:

a. Theoretical significances

To get the information about mathematical understanding viewed from students' emotional intelligence in 8th grade of SMP Ma'arif NU 1 Cilongok.

b. Practical significances

¹⁹ Daniel Goleman, "*Emotional Intelligence*", Jakarta: Gramedia Pustaka Utama, 2003, p. 58-59.

- a) For researcher: to add knowledge and insight about mathematical understanding as a teacher.
- b) For the student: to improve the student's emotional intelligence and ability to improve mathematical understanding skills.
- c) For the teacher: this research can help teachers improve mathematical understanding and students' emotional intelligence in mathematics learning.
- d) For school: the result of this study can be used as information in preparation and development of mathematical understanding and students' emotional intelligence in mathematics learning.
- e) For the reader: as a reference for similar research, in improving mathematical understanding and students' emotional intelligence in mathematics learning.

E. Organization of the Paper

The thesis content consists of five chapters, which will be explained as follows:

Chapter I: Introduction, including the background of the study, conceptual definition, research question, objective and significance of the research, literature review, and structure of the study.

Chapter II: Text, contains a theoretical basis for mathematical understanding, and emotional intelligence in mathematics learning.

Chapter III: Research Methodology, explain the type of research, research location, data source, data collection techniques, and data analysis techniques.

Chapter IV: Research Finding and Discussion, containing findings and discussion about mathematical understanding viewed from student's emotional intelligence in 8th grade of SMP Ma'arif NU 1 Cilongok.

Chapter V: Closing, including the conclusion and suggestions for further research.

CHAPTER II

LITERATURE REVIEW

A. Conceptual Framework

1. Mathematical Understanding

a. Definition of mathematical understanding

According to Sardiman, understanding (*comprehension*) can be interpreted as mastering something with the mind. Therefore learning means having to understand mentally the meaning and philosophy, the intent and implications and applications, which causes students to understand a situation.²⁰ Understanding is not only limited to knowing or remembering and restating what has been learned. However, understanding involves dynamic mental processes that create meaningful learning. In other words, students correctly understand the material provided by the teacher. At this level, students can know how to use their ideas in communicating, not only knowing the information but also knowing the neutrality and meaning contained in that information. Comprehension is a process or way of interpreting situations and facts that have been known based on the level of ability they have.²¹ Bruner argues that learning mathematics is learning about concepts and structures and looking for relationships between these concepts and structures. According to Bruner, an understanding of a concept along with its structure makes the material easier to remember and understand more comprehensively.²²

Learning concepts is a significant part of learning, especially in learning mathematics, because the main goal of learning is to

²⁰ Sardiman, “*Interaksi & Motivasi Belajar Mengajar*”, Depok: Rajawali Pers, 2018, p. 42-43.

²¹ Heris Herdiana, dkk, “*Hard Skills dan Soft Skills Matematik Siswa*”, Bandung: Refika Aditama, 2021, p. 5-6.

²² Zubaidah Amir, Risnawati, “*Psikologi Pembelajaran Matematika*”, Yogyakarta: Aswaja Pressindo, 2016, p.105.

make students understand the concepts given. Understanding mathematical concepts means explaining the interrelationships between concepts and applying concepts or algorithms, in a flexible, accurate, efficient, and precise manner, in solving problems.²³ Mathematical understanding is basic competence in learning mathematics which includes: the ability to absorb the material, remember mathematical formulas and concepts and apply them in simple cases or similar cases, estimate the truth of a statement, and apply formulas and theorems in solving problems.²⁴

b. The indicators of mathematical understanding are:

- 1) Restate a concept.
- 2) Classify objects according to certain due to their nature.
- 3) Identify examples and non-examples of a concept.
- 4) Present concepts in various forms of mathematical representation.
- 5) Develop necessary or sufficient concept requirements.
- 6) Use and utilize along with selecting a specific operating procedure.
- 7) Apply concepts or algorithms in problem-solving.²⁵

c. Factors affecting mathematical understanding

The success of the students in learning mathematics is influenced by several factors. Ngalim Purwanto revealed that the success or failure of learning depends on various factors. The factors were divided into two, specifically:

²³ Ibrahim, Suparni, “*Pembelajaran Matematika Teori dan Aplikasinya*”, Yogyakarta: SUKA-Press UIN Sunan Kalijaga, 2012, p. 36.

²⁴ Heris Herdiana, dkk, “*Hard Skills dan Soft Skills Matematik Siswa*”, Bandung: Refika Aditama, 2021, p. 6.

²⁵ Heris Herdiana, dkk, “*Hard Skills dan Soft Skills Matematik Siswa*”, Bandung: Refika Aditama, 2021, p. 7.

- 1) Individual factors, included in these individual factors include maturity or growth, emotional intelligence, motivation, and personal factors.
- 2) Social factors, included in these social factors include family or household circumstances, friends, teachers, how to teach, the tools used in learning, the environment and opportunities available, and social motivation.²⁶

d. Levels of mathematical understanding ability

According to Nana Sujana, that understanding can be divided into three categories, specifically:

- 1) Low level is understanding of translation, the ability to understand the meaning contained therein.
- 2) The second level is understanding interpretation, for example understanding graphs, connecting two different concepts, and distinguishing between the main and the non-subject.
- 3) The third level is the level of extrapolation understanding, namely the ability to see behind what is written, implied, and explicit, predict something, and broaden one's horizons.²⁷

2. Emotional Intelligence

a. Definition of emotional intelligent

The term emotional intelligence is rooted in the concept of social intelligence, namely an ability to understand and manage to act wisely in human relations. While Salovey and Mayer stated the term emotional intelligence is used to describe several skills related to accurate judgments about one's own and other people's emotions, as well as the ability to manage to feel to motivate, plan, and achieve

²⁶ Ngalim Purwanto, "*Psikologi Pendidikan*", Bandung: PT Rosdakarya, 2002, p. 102.

²⁷ Nana Sudjana, "*Dasar-Dasar Proses Belajar Mengajar*", Bandung: Sinar Baru Algesindo, 2010, p. 51.

life goals.²⁸ Another theory by Reuven Bar-On, explains that emotional intelligence is a series of abilities, competencies, and non-cognitive skills that influence a person's ability to recognize feelings, reach and generate feelings to help the mind, understand feelings and their meaning, and control feelings in depth to help emotional and intellectual development.²⁹

Emotional intelligence is known as the transformation of traditional "soft skills" (such as leadership, sensitivity, and social skills) in logical terms. Emotional intelligence is about understanding yourself and others and quickly adapting to better handle environmental demands.³⁰ According to Goleman, the characteristics of a person with emotional intelligence generally are being able to motivate oneself, endure frustration, control impulsive and not exaggerate it with fun, create an atmosphere, and prevent the stressful burden from crippling and damaging the ability to think, empathize and pray. In addition, Mubayidh has a similar opinion, that emotional intelligence is the ability to respond to emotional knowing in formation by receiving, understanding, and managing it.³¹

Cooper and Sawaf define emotional intelligence as the ability to sense, understand, and effectively apply the power and acumen of emotions as a source of human energy, information, connection, and influence. Emotional intelligence is a type of intelligence that focuses on understanding, recognizing, feeling, managing, and leading one's own and other people's feelings and

²⁸ Purwa Atmaja Prawira, "*Psikologi Pendidikan dalam Perspektif Baru*", Jogjakarta: Ar-Ruzz Media, 2013, p. 159-160.

²⁹ Hamzah B. Uno, "*Orientasi Baru Dalam Psikologi Pembelajaran*", Jakarta: PT Bumi Aksara, 2008, p. 69

³⁰ Iskandar, "*Psikologi Pendidikan (Sebuah Orientasi Baru)*", Jakarta: REFERENSI, 2012, p. 64.

³¹ Daniel Goleman, "*Kecerdasan Emosional Untuk Mencapai Puncak Prestasi*", Jakarta: Gramedia Pustaka Utama, 2002, p. 45.

applying them in personal and social life; intelligence in understanding, recognizing, enhancing, managing and leading the motivation of oneself and others to optimize the function of energy, information, relationships, and influence for the achievements of desired goals and set.³²

b. The indicators of emotional intelligence

As disclosed Goleman mentioned that there are five domains of emotional intelligence, that is :

1) Recognize self-emotion

Recognize self-emotion is a person's ability to recognize his feelings when those feelings or emotions arise.

2) Manage emotion

Managing emotion is an ability to control his feelings so they don't explode and can ultimately affect his behavior incorrectly.

3) Self-motivation

Self-motivation is the ability to encourage yourself to do something good and useful.

4) Recognize people's emotion

Recognizing people's emotions is the ability to understand other's feelings and is necessary so that other people will feel happy and understand their feelings.

5) Builds relationships

The ability to foster social relationships is the ability to manage other people's emotions, create high social skills, and make one's association wider.³³

³² Agus Efendi, "*Revolusi Kecerdasan Abad 21 Kritik MI, EI, SQ, AQ & Successful Intelligence Atas IQ*", Bandung: Alfabeta, 2005, p. 172-183.

³³ Iskandar, "*Psikologi Pendidikan (Sebuah Orientasi Baru)*", Jakarta: REFERENSI, 2012, p. 60-61.

B. Literature Review

The literature review is a brief description of relevant previous studies used as reference material. Based on several sources related to this research, there is previous research related to the topic of this research as follows.

- 1) The first, research entitled “Analisis Kemampuan Pemahaman Matematis Dalam Menyelesaikan Soal Ulangan Tengah Semester Genap pada Peserta didik kelas X Semester genap SMK Islam Terpadu Warungpring Tahun Ajaran 2019/2020”, was written by Ita Muflihatul Azizah in 2020. This research analyzed students’ mathematical understanding in solving the midterm exam questions during the school year 2019/2020. The conclusion of this research shows that students with mathematical understanding in 10th-grade Accountancy have a low level of mathematical understanding ability. According to the result of the midterm exam, there are many errors in indicators of mathematical understanding, especially indicators of defining concepts verbally and in writing, changing models, diagrams, and symbols to represent a concept. The similarity of these two research is both types of research analyze mathematical understanding ability, while the difference is this research analyzes based on the midterm exam questions during the school year 2019/2020, while the researcher tries to analyze mathematical understanding viewed from students’ emotional intelligence.³⁴
- 2) The second, research entitled “Analisis Kemampuan Pemahaman Matematis Siswa SMP Ditinjau Dari Minat Belajar”, was written by Rizky Aoliya Nurdiana et al in 2022. This research aims to describe and analyze the mathematical understanding ability of junior high school students in terms of learning interest in solving problems. The

³⁴ Ita Muflihatul Azizah, “Analisis Kemampuan Pemahaman Matematis Dalam Menyelesaikan Soal Ulangan Tengah Semester Genap pada Peserta Didik Kelas X Semester Genap SMK Islam Terpadu Warungpring Tahun Ajaran 2019/2020”, Skripsi, Universitas Pancasakti Tegal, (2020).

conclusion of this research shows that student with a high interest in learning gives systematic and precise answers, students with a medium interest in learning give completely incorrect answers because there are still errors in the calculation operation, while students with a low interest in learning give incorrect answers. After all, there are still errors in determining the formula and process arithmetic operations to solve the given problem. This shows that students who have a high interest in learning will have higher mathematical understanding abilities. The similarity of these researches is both analyze mathematical understanding ability, while the difference is the related variable that is the student's emotional intelligence.³⁵

- 3) The third, research entitled “Analisis kemampuan komunikasi matematis ditinjau dari kecerdasan emosional di SMAN 2 Pulau Punjung”, was written by Intan Herdiana in 2022. This research aims to describe students' mathematical communication abilities with high, medium, and low levels of emotional intelligence. The conclusion of this research shows that students with high emotional intelligence can master the three indicators of mathematical communication abilities as well. Students with high emotional intelligence have good communication abilities. And students with medium emotional intelligence can master one to two indicators of mathematical communication abilities as well. Students with medium emotional intelligence have good enough communication abilities. Meanwhile, students with low emotional intelligence can only master one indicator of mathematical communication ability as well, for the second and third indicators they still do not master it as well. Students with low emotional intelligence do have not good mathematical communication abilities. The similarity of these researches is the related variable of the study is

³⁵ Rizky Aoliya Nurdiyana, dkk, “Analisis Kemampuan Pemahaman Matematis Siswa SMP Ditinjau Dari Minat Belajar”, Jurnal Cendekia: Jurnal Pendidikan Matematika, Vol. 06, No. 03, 2022.

the student's emotional intelligence, while the difference is the researcher tries to analyze mathematical understanding ability.³⁶



³⁶ Intan Herdiana, “*Analisis Kemampuan Komunikasi Matematis Siswa ditinjau dari Kecerdasan Emosional di SMAN 2 Pulau Punjung*”, Skripsi, Institut Agama Islam Batusangkar, (2022).

CHAPTER III METHODOLOGY

A. Type of the research

Related to the objectives of this study, the researcher uses the qualitative descriptive method as the proper method. Qualitative research is a research procedure that produces descriptive data in the form of written or verbal from people and observable behavior.³⁷ The researcher becomes the main instrument, therefore the data collection technique is carried out in triangulation or combination, data analysis is inductive or qualitative and emphasizes meaning rather than generalizing the results of the research.³⁸ Descriptive research is a research report that contains data quotations to give an overview of the presentation of the report.³⁹ This research aims to describe the ability of mathematical understanding of eighth-grade students of SMP Ma'arif NU 1 Cilongok viewed from the student's emotional intelligence.

B. Location and time of the research

In this research, the researcher took the location of the research at SMP Ma'arif NU 1 Cilongok with the address at Masjid Kauman Cilongok Street, Cilongok sub-district, Banyumas district, Central Java, 53162. This research was conducted in the even semester of the school year 2023/2024, on Friday, March 1st, 2024. The implementation stages are as follows: submit a research permit application letter to the principal of SMP Ma'arif NU 1 Cilongok. Interviewed with the 8th-grade mathematics teacher of SMP Ma'arif NU 1 Cilongok. Dissemination of emotional intelligence questionnaires, and student's mathematical understanding test questions.

³⁷ Margono, "*Metodologi Penelitian Pendidikan*", Jakarta: PT. Rineka Cipta, 2003, p. 36.

³⁸ Sugiono, "*Metode Penelitian Kualitatif*", Bandung: Alfabeta, 2020, p. 9.

³⁹ Lexy J, Moloeng, "*Penelitian Kualitatif*", Bandung: Remaja Rosdakarya, 2008, p. 11.

From the results of the questionnaire and the test, students were selected to be interviewed. And then analyze the research data.

C. Object and the subject of the research

The object of this research is mathematical understanding viewed from students' emotional intelligence in SMP Ma'arif NU 1 Cilongok. The subject of this research is the eighth grade of SMP Ma'arif NU 1 Cilongok. The selection was based on the background of the problem and recommendations from mathematics subject teachers, and those selected were from class 8A with a total of 31 students. Furthermore, to select research subjects, class 8A students were asked to fill out a questionnaire and answer mathematical understanding ability test questions. Then students are categorized into 3 levels of emotional intelligence, namely high, medium, and low. The researcher selected several interesting student's answer from the mathematical understanding ability test and then interviewed them until the data was saturated. Six students were selected from these subjects, namely 2 students with a high level of emotional intelligence, 2 students with a medium level of emotional intelligence, and 2 students with a low level of emotional intelligence.

D. Data collection techniques

Data collection techniques of the research used by the researcher as follows:

1. Questionnaire

A questionnaire is a tool for collecting information by submitting some written questions to respondents by answering them in writing. The aim is to obtain information about affective aspects, such as student's responses, attitudes or interests toward the learning that has

been carried out, learning motivation, learning independence, mathematical disposition, and other affective aspects.⁴⁰

The researcher presents the questions about emotional intelligence to 8th-grade students of SMP Ma'arif NU 1 Cilongok, to acquire data on the students' emotional intelligence level. Based on the emotional intelligence indicators explained by Daniel Goleman, the researcher compiled questions from these six indicators. Before the questionnaire was used, the questionnaire had been tested for validity and reliability on non-sample respondents. The results of the questionnaire are valid and have a high level of reliability. The results of the questionnaire trial are in the attachment.

This research contains an emotional intelligence questionnaire, using a Likert scale. The questionnaire is a question that has four alternative answers in the form of always (SL), often (SR), sometimes (KK), and never (TP).

Table 1 Guideline for scoring questionnaire of emotional intelligence

Alternative answer	Statement score	
	Positive	Negative
Selalu	4	1
Sering	3	2
Kadang-kadang	2	3
Tidak pernah	1	4

Source: Sugiono (2018)

The criteria for classifying emotional intelligence in this research are as follows:

⁴⁰ Karunia Eka L., M. Ridwan Yudhanegara, "Penelitian Pendidikan Matematika", Bandung: PT Refika Aditama, 2018, p. 169.

Table 2 The Criteria for Classifying Emotional Intelligence

Criteria	Information
$x > (\bar{x} + SD)$	High
$(\bar{x} - SD) < x < (\bar{x} + SD)$	Medium
$x < (\bar{x} - SD)$	Low

Source: Karunia Eka Lestari and Mokhammad Ridwan Yudhanegara (2017)

2. Test

The test is a set of stimuli given to someone to get answers that can be used to determine a numerical score.⁴¹ Test instruments can be used to measure basic abilities and achievements or accomplishments.⁴² The researcher presents the test questions for measuring mathematical understanding ability in 8th-grade students of SMP Ma'arif NU 1 Cilongok. The test used in this research is in the form of essay questions consisting of seven questions arranged based on indicators of mathematical understanding ability according to Heris Herdiana. Before the test instrument was used, the test instrument had been tested for validity and reliability on non-sample respondents. The results of the test instrument are valid and have a high level of reliability. The results of the test instrument trial are in the attachments.

3. Interview

An interview is an information-gathering tool by asking several questions verbally to be answered verbally too.⁴³ The interviews used in this research were in-depth interviews, conducted by 6 students of 8A class who had been previously selected as research subjects. The purpose of this interview is to strengthen the results of the mathematical

⁴¹ Amirul Hadi, Haryono, "Metodologi Penelitian Pendidikan", Bandung: CV. Pustaka Setia, 2005, p. 139.

⁴² Suharsimi Arikunto, "Prosedur Penelitian, Suatu Pendekatan Praktik", Jakarta: PT Rineka Cipta, 2013, p. 266.

⁴³ Margono, "Metodologi Penelitian Pendidikan", Jakarta: PT. Rineka Cipta, 2003, p. 165.

understanding ability test in terms of emotional intelligence in 8 grade of SMP Ma'arif NU 1 Cilongok.

4. Triangulation

Triangulation is a data collection technique that combines various existing data collecting techniques and data sources. Researchers collect data using triangulation, meaning researchers collect data while simultaneously testing the credibility of the data, that is checking the credibility of the data using various data collecting techniques and various data sources. The aim is not to determine the truth about some social phenomenon, rather the purpose of triangulation is to increase one's understanding of whatever is being investigated.⁴⁴

In this research, triangulation was carried out by comparing the results of the questionnaires, tests, and interview results with the same source, so that it can be used as evidence that the research is credible and the data obtained is precise and accurate.

E. Research instrument

In this research, the instruments used by the researcher were emotional intelligence questionnaires, mathematical understanding ability tests with 7 questions, and interviews. Students are given 15 minutes to fill out the questionnaire, and 60 minutes left to answer the mathematical understanding ability test.

In this study, in compiling statement items in the questionnaire researchers used the six indicators of emotional intelligence proposed by Goleman. Below is the table of specifications of the emotional intelligence questionnaire:

⁴⁴ Sugiyono, "*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*", Bandung: Alfabeta, 2018, p. 241.

Table 3 Table of Specification of Emotional Intelligence Questionnaire

Component	Indicator	Statement		Total
		Positive	Negative	
Recognize self-emotion	Recognize and feel self-emotion	1	2, 3	3
Manage emotion	Ability to control emotions and express emotions appropriately	4	5, 6	3
Self-motivation	Ability to remain optimistic in facing problems	7, 9	8	3
	Encouragement to achieve	11	10,12	3
Recognize people's emotion	Ability to be considerate to others	13	14	2
	Ability to accept other people's points of view	15		1
Builds relationships	Ability to collaborate with others	16		1
	Ability to communicate with others	17		1
Total				17

Source: Daniel Goleman (2002)

In this research, the researcher initially made 25 statements of emotional intelligence questionnaire consisting of 13 positive statements and 12 negative statements. And each indikator of emotional intelligence contains positive and negative statements. After testing the instrument for validity and reliability of research instrument, there were 17 valid statements and 8 invalid statements. Therefore, the researcher used the 17 emotional intelligence questionnaire statements as the research instrument. The details of results of the validity and reliability of the questionnaire in the appendices.

While for the table of specifications of the mathematical understanding ability test is as follows:

Table 4 Table of Specification of Mathematical Understanding Ability Test Questions

Indicators of Mathematical Understanding	Indicator Question	Question Number	Question
Restate a concept	Redefining exponential numbers and mentioning the properties of exponential numbers	1	Apa yang dimaksud dengan bilangan berpangkat? Definisikan menurut bahasamu sendiri dengan baik dan benar.
Classify subjects according to certain due to their nature	Identify the properties of exponent numbers and determine the results of exponentiation	2	Perhatikan bilangan berpangkat dibawah ini! a) $p^2 \times p^3$ b) $p^6 \times q^2$ c) $5^a \times 7^a$ d) $3^m \times 3^n$ Tentukan manakah yang dapat disederhanakan dengan menggunakan sifat bilangan berpangkat!
Identify examples and non-examples of a concept	Determine and solve exponential numbers from examples and non-examples of	3	Manakah bilangan berpangkat di bawah yang hasil penyelesaiannya merupakan bilangan berpangkat nol (a^0)?

	the exponential number concept		a) $\frac{3^{12}}{3^4 \times 3^8}$ b) $\left(\frac{7^6}{7^{-6}}\right)^4$ c) $5^9 \times \frac{5^{-3}}{5^6}$ d) $\frac{11^8 \times 11^3}{11^4 \times 11^6}$
Present concepts in various forms of mathematical representation	Determine the standard form of exponent numbers from the exponent root form	4	Sederhanakanlah akar bilangan dari $\frac{15\sqrt{75}}{3\sqrt{3}}$ dalam bentuk bilangan berpangkat!
Develop the necessary or sufficient concept requirement	Determine and solve exponent numbers by substituting x and y values	5	Jika nilai $x = -3$ dan $y = 3$. Tentukan nilai $x^{-4} \times y^6$!
Use and utilize along with selecting certain operating procedure	Determine and solve exponential numbers by applying the concept of exponential numbers.	6	Tentukan nilai a dari persamaan berikut! $\frac{3^{2021} \times 3^{2022} \times 3^{2023}}{3^{2024} \times 81} = 3^a$
Apply concepts or algorithms in problem-solving	Solve daily problems related to the application of the concept of exponential numbers	7	Sinta membeli paket internet dengan kapasitas 9 GB, berlaku selama 30 hari. Berpakah KB kapasitas rata-rata tiap hari yang digunakan Sinta agar cukup selama sebulan? (1

			GB = 1×10^6 , 1 bulan = 30 hari)
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Source: Heris Herdiana (2021)

Furthermore the guideline for scoring test of mathematical understanding abilities is as follows:

Table 5 Guideline for Scoring Test of Mathematical Understanding Abilities

Indicators of Mathematical Understanding	Information	Score
1. Restate s concepts	Students do not answer	0
	Students restate a concept but the statement does not match the concept	1
	Students restate a concept according to the concept but it is not complete	2
	Students restate a concept according to the concept and complete	3
2. Classify subjects according to specific due to their nature	Students do not answer	0
	Students classify objects according to specific properties but not yet in accordance with the concept	1
	Students classify objects according to specific properties but it is not complete	2
	Students classify objects according to specific properties and complete	3
3. Identify examples and non-examples of a concept	Students do not answer	0
	Students identify examples and non-examples but not yet precise and incomplete	1

	Students identify examples and non-examples correctly but incomplete answer	2
	Students identify examples and non-examples correctly and answer completely	3
4. Present concepts in various forms of mathematical representation	Students do not answer	0
	Students answering but have not presented the concept in various forms of mathematical representations	1
	Students present concepts in various mathematical representations correctly but the answers are incorrect and without the calculation	2
	Students present concepts in various mathematical representations correctly but answers without the calculation	3
	Students present concepts in various mathematical representations correctly and complete answer	4
5. Develop necessary or sufficient concept requirements	Students do not answer	0
	Students answer but have not been able to develop the necessary or sufficient conditions for a concept	1
	Students answer some of the necessary or sufficient conditions correctly without the calculation	2
	Students answer the necessary or sufficient conditions for a concept correctly but the calculations are incorrect	3

	Students answer the necessary or sufficient conditions for a concept correctly and the calculations are correct	4
6. Use and utilize along with selecting a specific operating procedure	Students do not answer	0
	Students answer without use and utilize with selecting a specific operating procedure	1
	Students answer by use and utilize along with selecting a specific operating procedure incorrectly	2
	Students answer by use and utilize along with selecting a specific operating procedure correctly but the calculations are incorrect	3
	Students answer by use and utilize along with selecting a specific operating procedure correctly as well as the calculations are correct	4
7. Apply concepts or algorithms in problem-solving	Students do not answer	0
	Students answer the questions, but the answers do not yet lead to the application of the concept in question	1
	Students answer by apply concepts or algorithms in problem-solving incorrectly without writing the initial information of the question	2
	Students apply concepts or algorithms in problem-solving correctly but the calculations are incorrect without writing the initial information of the question	3

	Students apply concepts or algorithms in problem-solving correctly and the calculation are correct completely the initial information of the question	4
Maximum score for mathematical understanding ability		25

Source: Siti Mawaddah et al (2016)

Information :

$$\text{Score} = \frac{\text{score obtained}}{\text{total score}} \times 100$$

Furthermore, the interview in this research is an in-depth interview, where the researcher conducts questions and answers with respondents without using an interview guide. This interview aims to find problems more openly, where interview respondents are asked for their opinions and ideas. Therefore, the researchers need to listen carefully and record what the respondents say.⁴⁵

F. Data analysis techniques

Data analysis can be defined as the process of systematically searching and compiling data from the results of interviews, field notes, and documentation by organizing the data, dividing it into units, synthesizing it, arranging it into patterns, choosing what is important to study, and drawing conclusions. Therefore it is easy to understand and the results can be shared with others.⁴⁶

By looking at the type or method of research, the data analysis used in this research is:

1. Data reduction

Reducing data is an activity of summarizing, choosing the main things, focusing on the important things, and looking for themes and

⁴⁵ Sugiyono, “*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*”, Bandung: Alfabeta, 2018, p. 233.

⁴⁶ Lexy J, Moloeng, “*Penelitian Kualitatif*”, Bandung: Remaja Rosdakarya, 2008, p. 280.

patterns. Likewise, reduced data will provide a clearer picture, making it easier for researchers to collect further data.⁴⁷ In these steps, the researchers will distribute student's emotional intelligence questionnaires and mathematical understanding ability tests. Furthermore, the researchers corrected the student's emotional intelligence questionnaire and mathematical understanding ability test. Then the results of the questionnaire were grouped into three levels of student's emotional intelligence, namely high level, medium level, and low level. After that, determine several students who will be used as research subjects based on the student's level of emotional intelligence and the results of mathematical understanding ability tests.

2. Data display

Data display is a further step in data reduction, namely the activity of presenting data to provide the possibility of drawing conclusions and increasing understanding of data presentation can take the form of brief descriptions, charts, relationships between categories, flowcharts, etc. In this research, data is presented in the form of student's emotional intelligence questionnaire results, mathematical understanding ability test results based on different levels of students' emotional intelligence, and interviews with research subjects, as well as the results of data analysis.

3. Conclusion drawing

The last step of data analysis techniques is the conclusion drawn. The conclusion that qualitative research may or may not be appropriate to the qualitative research problem is still temporary and will be developed as research is carried out in the field. In qualitative research, conclusions can be in the form of an image or description of an object, in the form of a casual, hypothesis or theory.⁴⁸

⁴⁷ Sugiyono, "*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*", Bandung: Alfabeta, 2018, p. 247.

⁴⁸ Sugiyono, "*Metode Penelitian Kuantitatif, Kualitatif, dan R&D*", Bandung: Alfabeta, 2018, p. 252.

In this study, researchers concluded from the data findings obtained from the research, namely related to mathematical understanding abilities in terms of students' emotional intelligence.



CHAPTER IV FINDINGS AND DISCUSSION

A. Findings

This research was conducted at SMP Ma'arif NU 1 Cilongok on the exponential number of mathematics learning. The subjects of this research were 6 students from class 8A. The purpose of this research is to describe mathematical understanding abilities viewed from students' emotional intelligence in learning exponential numbers.

The research was conducted in two meetings on March 1, 2024, and March 26, 2024. Data collection was carried out using instruments in the form of student emotional intelligence questionnaires, mathematical understanding ability tests, and interviews. Researchers gave students an emotional intelligence questionnaire totaling 17 statements and a test totaling 7 questions which took 60 minutes. Furthermore, the researcher also conducted interviews with students selected as research subjects.

1. Results of questionnaire

Researchers gave a student emotional intelligence questionnaire to class 8A with a total of 31 students on Friday, March 1, 2024. The questionnaire was filled out by the provisions contained in the questionnaire for class 8A students, there are 5 students with high emotional intelligence, 18 students with medium emotional intelligence, and 8 students with low emotional intelligence.

Table 6 Result of Student's Emotional Intelligence

Initial Name	Score	Level
ADS	59	MEDIUM
AN	50	MEDIUM
AWA	58	MEDIUM
ANA	45	LOW
AAP	46	LOW
CN	48	MEDIUM
DNAD	48	MEDIUM
EPM	59	MEDIUM
FAL	46	LOW
FZI	64	HIGH

HNA	54	MEDIUM
HNI	52	MEDIUM
IPR	59	MEDIUM
KNA	61	HIGH
MZA	58	MEDIUM
MA	56	MEDIUM
MAW	47	LOW
MRRR	51	MEDIUM
NLS	57	MEDIUM
NS	54	MEDIUM
NA	45	LOW
RR	64	HIGH
RDA	47	LOW
RHM	46	LOW
RYD	64	HIGH
SF	47	LOW
SK	48	MEDIUM
UO	59	MEDIUM
VK	58	MEDIUM
ZDAR	55	MEDIUM
ZTS	65	HIGH
Mean	53,8709677	
SD	6,50508486	
Mean + SD	60,3760526	
Mean - SD	47,3658829	

2. Results of the test and interview

The researcher gave mathematical understanding test questions in the form of description questions consisting of 7 questions according to indicators of mathematical understanding ability.

Table 7 Results of the Mathematical Understanding Test

No.	Initial Name	Question Number							Score total
		1	2	3	4	5	6	7	
1	ADS	3	2	2	0	0	0	0	7
2	AN	3	2	2	0	0	0	0	7
3	AWA	3	0	0	0	0	0	0	3
4	ANA	2	2	0	0	0	0	0	4
5	AAP	3	2	0	0	0	0	0	5
6	CN	3	2	2	0	0	0	0	7

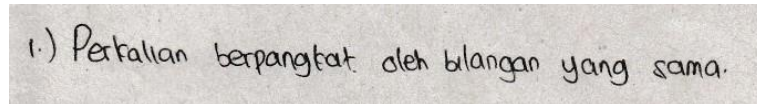
7	DNAD	3	2	2	0	0	0	0	7
8	EPM	3	2	2	0	0	0	0	7
9	FAL	3	2	2	0	0	0	0	7
10	FZI	3	2	2	0	0	0	0	7
11	HNA	3	3	0	0	0	0	0	6
12	HNI	3	1	1	1	1	0	0	7
13	IPR	3	3	2	0	0	0	2	10
14	KNA	2	2	0	0	0	0	0	4
15	MZA	3	2	0	1	0	0	0	6
16	MA	3	2	0	0	0	0	0	5
17	MAW	3	2	0	0	0	0	0	5
18	MRRR	3	2	0	0	0	0	0	5
19	NLS	3	2	0	0	0	0	0	5
20	NS	3	1	0	0	0	0	0	4
21	NA	2	2	1	3	3	0	0	11
22	RR	3	3	2	0	0	0	0	8
23	RDA	3	2	1	0	0	0	0	6
24	RHM	3	3	0	0	0	0	0	6
25	RYD	2	2	2	3	2	3	2	16
26	SF	3	2	2	0	0	0	0	7
27	SK	1	2	1	0	0	0	0	4
28	UO	3	2	0	0	0	0	0	5
29	VK	2	3	0	0	0	0	0	5
30	ZDAR	3	0	0	0	0	0	0	3
31	ZTS	2	3	2	3	3	3	2	18
	Mean	6,677419							
	SD	3,290259							
	Mean + SD	9,967679							
	Mean - SD	3,38716							

According to the results of the mathematical understanding test the researchers took 6 students from class 8A as research subjects for interviews. The questions given are related to how research subjects answered mathematical understanding ability test questions. The purpose of this interview is to strengthen data on the results of mathematical understanding ability in terms of student's emotional intelligence. The details of the interview results are in the appendices. The results of data analysis from test and interview results are as follows:

a. High Emotional Intelligence Category

1) Subject ZTS

a) Indicator restating a concept

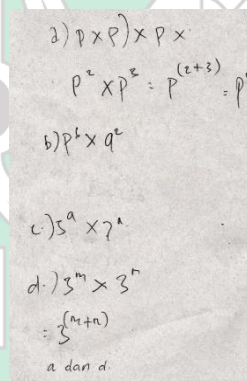


1.) Perkalian berpangkat oleh bilangan yang sama.

Picture 1 ZTS subject's answer to question number 1

Based on the picture above, it is shown that the ZTS subject can write definitions of exponent numbers. The ZTS's score of this question is 2. In the interview, the ZTS subject understood the question by explaining the definition of exponent numbers.

b) Indicator classifying objects according to certain due to their nature



a) $p \times p \times p \times p \times p$
 $p^e \times p^e = p^{(e+e)} = p^e$
 b) $p^k \times q^e$
 c) $5^a \times 7^a$
 d) $3^m \times 3^n$
 $= 3^{(m+n)}$
 a dan d

Picture 2 ZTS subject's answer to question number 2

Based on the picture above, it is shown that the ZTS subject can simplify exponent numbers using the properties of exponent numbers. The ZTS's score of this question is 3. In the interview, the ZTS subject understood the question and then explained that exponent numbers cannot be simplified because they are not multiples of the same number.

c) Indicator identifying examples and non-examples of a concepts

a.) $\frac{3^{12}}{3^8} = 3^{12-8} = 3^4 = 81$

b.) $\left(\frac{7^2}{7^{-6}}\right)^4 = \frac{7^{(6 \times 4)}}{7^{(-6 \times 4)}} = \frac{7^{24}}{7^{(-24)}} = 7^{24+24} = 7^{48}$

c.) $5^9 \times \frac{5^{-3}}{5^6} = 5^9 \times 5^{-9} = 5^0 = 1$

Picture 3 ZTS subject's answer to question number 3

Based on the picture above, the ZTS subject writes down calculation operations to determine numbers to the power of zero and non-numbers to the power of zero. The ZTS's score of this question is 3. In the interview, the ZTS subject understood the question and explained how to determine numbers to the power of zero and non-numbers to the power of zero from several examples of exponent numbers presented in the question.

- d) Indicator presenting concepts in various forms of mathematical representation

4.) $\frac{15\sqrt{75}}{3\sqrt{3}} = 5\sqrt{25} = 5 \times 5 = 5^2 = 25$

Picture 4 ZTS subject's answer to question number 4

Based on the picture above, the ZTS subject writes down calculation operations to simplify the root form into exponent numbers form. The ZTS's score of this question is 4. In the interview, the ZTS subject understood the question by explaining the steps in simplifying the root form and converting it into exponent numbers.

- e) Indicator developing necessary or sufficient concept requirement

Picture 5 ZTS subject's answer to question number 5

Based on the picture above, the ZTS subject writes down the initial information and completes the equation calculation operation in the question. The ZTS's score of this question is 4. In the interview, the ZTS subject understood the question and knew the initial information from the question that the value of x was -3 and the value of y was 3 , then she substituted the values of x and y into the equation and completed the calculation operation.

- f) Indicator use and utilization along with selecting a specific operating procedure

Picture 6 ZTS subject's answer to question number 6

Based on the picture above, the ZTS subject writes down the question calculation operation and finds the value of a from the equation. The ZTS's score of this question is 4. In the interview, the ZTS subject understood the questions and explained the procedure for solving the question to get a value of a .

- g) Indicator applying concepts or algorithms in problem-solving

7.) Diket: internet = 9GB
hari : 30
Jadi ~~ada~~ kapasitas KB
rata-rata hari yg digunakan
Dit?: Brp kapasitas KB? Sinto agar cukup selama
sebulan adalah 3×10^5

$$\frac{9 \times 10^8}{3 \times 10} = 3 \times 10^5$$

2023
2022
2021

Picture 7 ZTS subject's answer to question number 7

Based on the picture above, the ZTS subject writes down what is known and what the question asks and writes a conclusion from the answer. The ZTS's score of this question is 4. In the interview, the ZTS subject understood the question and explained how to solve the problem by applying a formula to calculate the average KB internet capacity per day from 9GB of internet for 1 month.

2) Subject RYD

a) Indicator restating a concept

1. Bilangan yang dikalikan dengan bilangan yang sama

Picture 8 RYD subject's answer to question number 1

Based on the picture above, the RYD subject writes descriptions of exponent numbers. The RYD score of this question is 2. In the interview, the RYD subject understood the questions and explained the definition of exponent number.

b) Indicator classifying objects according to certain due to their nature

2. a) ~~a~~ dapat disederhanakan karena bilangan yang dikalikan berjumlah sama
b, c tidak dapat disederhanakan karena bilangan yang dikalikan jumlahnya tidak sama

a) $p^2 \times p^3 = p^{2+3} = p^5$

Picture 9 RYD subject's answer to question number 2

Based on the picture above, the RYD subject can classify exponent numbers that can be simplified. However, the RYD subject wrote the conclusion without writing down how to simplify the exponent numbers examples presented in the question. The RYD's score of this question is 3. In the interview, the RYD subject understood the question and explained how to determine which exponent numbers can be simplified and which cannot be simplified.

- c) Indicator identifying examples and non-examples of a concepts

3. a.) $\frac{531.491}{81 \times 6561} = \frac{531.491}{531.491} = 1$ ✓

b.) $\left(\frac{2^6}{7^{-6}}\right)^4$

Picture 10 RYD subject's answer to question number 3

Based on the picture above, the RYD subject writes down one example of numbers to the power of zero from the examples of exponent numbers that were presented. The RYD's score of this question is 2. In the interview, the RYD subject understood the questions and explained the reasons for incomplete answers because she ran out of time to answer the question.

- d) Indicator presenting concepts in various forms of mathematical representation

a.) $\frac{5\sqrt{25}}{3\sqrt{3}} = 5 \times 25 = 5 \times 5^2 = 225 = 5^3$

$\frac{25}{3\sqrt{3}}$

Picture 11 RYD subject's answer to question number 4

Based on the picture above, the RYD subject can simplify the root form into exponent numbers form. The

RYD's score of this question is 4. In the interview, the RYD subject understood the question and explained the steps to simplify the root form into exponent numbers form.

- e) Indicator developing necessary or sufficient concept requirement

$$\begin{aligned}
 5-1 &= -3^{-4} \times 3^6 \\
 &= \frac{1}{81} \times 729 \\
 &= 9 = 3^2
 \end{aligned}$$

Picture 12 RYD subject's answer to question number 5

Based on the picture above, the RYD subject can determine the value of an equation. However, the RYD subject did not write down the initial information on the question. The RYD's score of this question is 4. In the interview, the RYD subject understood the question and shortened the time, the RYD subject immediately calculated the equation and got the value from that equation.

- f) Indicator use and utilization along with selecting a specific operating procedure

$$\begin{aligned}
 6-) & 3^{2021} \times 3^{2022} \times 3^{2023} \\
 & \frac{3^{2024} \times 81}{3^{2021}} \\
 & = 3^{2021} \\
 & = 3 \frac{6066}{2028} \\
 & \frac{6066}{2028} = 3 \\
 & = 3^{4058}
 \end{aligned}$$

Picture 13 RYD subject's answer to question number 6

Based on the picture above, the RYD subject can determine the value of a from an equation. The RYD's score

of this question is 3. In the interview, the RYD subject understood the question and explained the steps taken to solve the questions.

- g) Indicator applying concepts or algorithms in problem-solving

$$7.) \frac{8 \times 10^3}{3 \times 10} = \cancel{30000} \quad 3 \times 10^2$$

Picture 14 RYD subject's answer to question number 7

Based on the picture above, the RYD subject can solve realistic problems. However, the RYD subject did not write down the initial information and conclusions of the answer. The RYD's score in this question is 3. In the interview, the RYD subject understood the question and explained how to apply the formula to the problem by calculating and concluding the average daily internet KB capacity from 9 GB in a month.

b. Medium Emotional Intelligence Category

1) Subject IPR

1) Bilangan berpangkat adalah perkalian, berulang oleh bilangan yang sama

2) a. $P^2 \times P^3 = P^{2+3} = P^5$
 b. $P^6 \times Q^2 =$ tidak bisa disederhanakan karena bilangannya tidak sama
 c. tidak dapat disederhanakan karena bilangannya tidak sama
 d. tidak dapat disederhanakan karena tidak ada bilangannya

3) a. $\frac{531.441}{81 \times 6661} = \frac{531.441}{531.441} = 1$

b.

7) $\frac{9 \times 10^6}{30} = \frac{9 \times 10^6}{3 \times 10} = 3 \times 10^5$

Picture 15 IPR subject's answer to mathematical understanding ability test question

a) Indicator restating a concept

Based on picture 15, the IPR subject writes down the definition of exponent number in her language. The IPR's score of this question is 3. In the interview, the IPR subject understood question number 1 by re-explaining the definition of exponent numbers.

b) Indicator classifying objects according to certain due to their nature

Based on picture 15, the IPR subject can classify exponent numbers which can be simplified using the properties of exponent numbers. However, the IPR subject wrote an error in point d number 2 that point cannot be simplified. The IPR's score of this question is 2. In the interview, the IPR subject understood the question, but she was not careful to answer the question. After that, the IPR subject explained how to simplify exponent numbers by using the properties of exponent numbers.

c) Indicator identifying examples and non-examples of a concepts

Based on picture 15, the IPR subject wrote one example of numbers to the power of zero from the examples of exponent numbers presented in the question. However, the IPR subject did not write the conclusion. The IPR's score of this question is 2. In the interview, the IPR subject understood the questions and explained how to determine numbers to the power of zero from the examples of exponent numbers presented in the question. Then the IPR subject gave the reason that the answer was incomplete because she ran out of time to do it.

d) Indicator presenting concepts in various forms of mathematical representation

Based on picture 15, the IPR subject did not write down the answer number 4. The IPR's score of this question is 0. In the interview, the IPR subject gave the reason for not answering the question because she ran out of time to do it. However, the IPR subject understood the question and explained how to solve the question by simplifying the root form to exponent numbers form.

- e) Indicator developing necessary or sufficient concept requirement

Based on picture 15, the IPR subject did not write down the answer number 5. The IPR's score of this question is 0. In the interview, the IPR subject gave the reason for not answering the question because she ran out of time to do it and needed the time to recall the material that had been taught. However, the IPR subject understood the question and explained how to solve the equation by substituting the x value and y value into the equation and calculating the results.

- f) Indicator use and utilization along with selecting a specific operating procedure

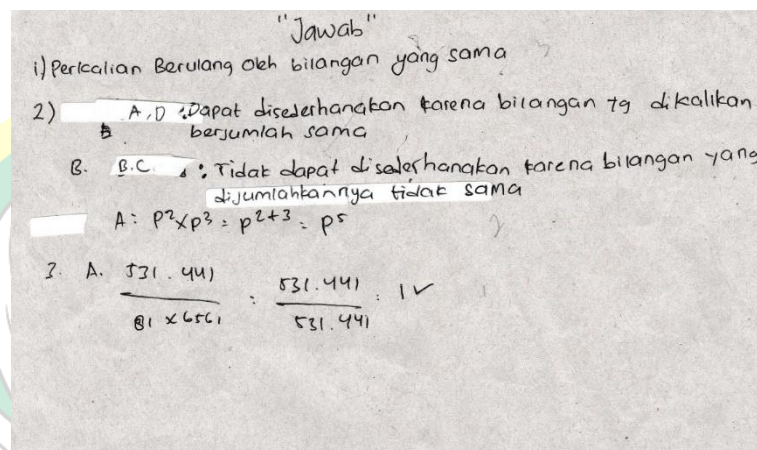
Based on picture 15, the IPR subject did not write down the answer number 6. The IPR's score of this question is 0. In the interview, the IPR subject gave the reason for not writing down the answer because she ran out of time to do the question. However, the IPR subject understood the question and explained the procedure for solving equations and finding the value of a .

- g) Indicator applying concepts or algorithms in problem-solving

Based on picture 15, the IPR subject wrote the calculation operations without writing down the conclusions.

The IPR's score of this question is 3. In the interview, the IPR subject understood the question and explained how to apply the formula to solve the problem by calculating and providing the conclusion that 3×10^5 is the average internet KB capacity of 9 GB used per day in 1 month.

2) Subject EPM



Picture 16 EPM subject's answer to mathematical understanding ability test question

a) Indicator restating a concept

Based on picture 16, the EPM subject wrote down the definition of exponent numbers. The EPM's score of this question is 3. In the interview, the EPM subject understood and explained the definition of exponent numbers.

b) Indicator classifying objects according to certain due to their nature

Based on picture 16, the EPM subject wrote a conclusion that determines exponent numbers that can be simplified. The EPM's score of this question is 3. In the interview, the EPM subject understood the question and explained how to determine exponent numbers which can be simplified using the properties of exponent numbers.

- c) Indicator identifying examples and non-examples of a concepts

Based on picture 16, the EPM subject wrote one number to the power of zero from the examples of exponent numbers presented in the question without a conclusion. The EPM's score of this question is 2. In the interview, the EPM subject understood the question and explained how to determine numbers to the power of zero from the examples of exponent numbers presented in the question. Then the EPM subject provides a conclusion from her answer.

- d) Indicator presenting concepts in various forms of mathematical representation

Based on picture 16, the EPM subject did not write down her answer number 4. The EPM's score of this question is 0. In the interview, the EPM subject gave the reason for not answering the question because she ran out of time to do it and needed time to understand the questions. However, the EPM subject understood the problem and explained how to solve the question by simplifying the root form to the exponent numbers form.

- e) Indicator developing necessary or sufficient concept requirement

Based on picture 16, the EPM subject did not write down the answer number 5. The EPM's score of this question is 0. In the interview, the EPM subject gave the reason for not answering because she needed time to understand the question. However, the EPM subject understood the question and explained how to solve the equation by substituting the x value and y value into the equation and then calculating and finding the results.

- f) Indicator use and utilization along with selecting a specific operating procedure

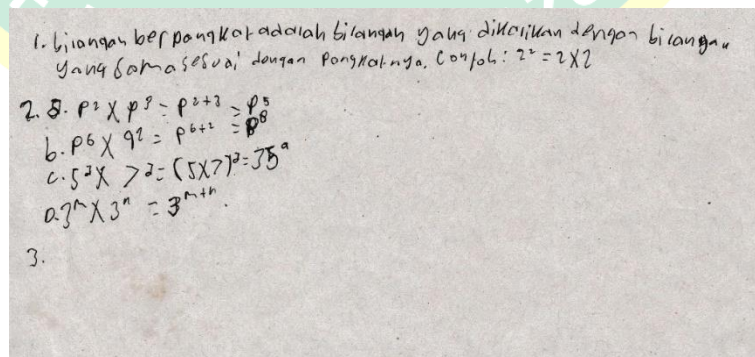
Based on picture 16, the EPM subject did not write down the answer number 6. The EPM's score of this question is 0. In the interview, the EPM subject gave the reason for not writing down the answer because she needed more time to understand the question. However, the EPM subject understood the question and explained the procedure for solving the questions and finding the value of a .

- g) Indicator applying concepts or algorithms in problem-solving

Based on picture 16, the EPM subject did not write down the answer number 7. The EPM's score of this question is 0. In the interview, the EPM subject gave the reason for not writing the answer because it took time to understand the questions. However, the EPM subject re-reads the question and understood the question well by explaining what is known and what the question asks and explaining how to apply the formula to solving the problem.

c. Low Emotional Intelligence Category

1) Subject AAP



Picture 17 AAP subject's answer to mathematical understanding ability test question

a) Indicator restating a concept

Based on picture 17, the AAP subject wrote down the description of exponent numbers by including examples of exponent numbers. The AAP's score of this question is 3. In the interview, the AAP subject understood the question and explained again the definition of exponent numbers.

b) Indicator classifying objects according to certain due to their nature

Based on picture 17, the AAP subject wrote down the calculation to simplify exponent numbers using the properties of exponent numbers without writing the conclusion from the answer. The AAP's score of this question is 3. In the interview, the AAP subject understood a little about question number 2. Therefore, it took the time to understand the question and explain the answer.

c) Indicator identifying examples and non-examples of a concepts

Based on the picture 17, AAP subject did not write down question number 3. The AAP's score of this question is 0. In the interview, the AAP did not write the answer. In the interview, the AAP subject understood a little about the question but needed time to understand it.

d) Indicator presenting concepts in various forms of mathematical representation

Based on the picture 17, the AAP subject did not write down the answer number 4. The AAP's score of this question is 0. In the interview, the AAP subject gave the reason for not answering the question because he did not understand the question. Therefore, the AAP subject did not answer question number 4.

- e) Indicator developing necessary or sufficient concept requirement

Based on picture 17, the AAP subject did not write down the answer to question number 5. The AAP's score of this question is 0. In the interview, the AAP subject gave the reason for not answering the question because he did not understand the question. Therefore, the AAP subject did not answer the question number 5.

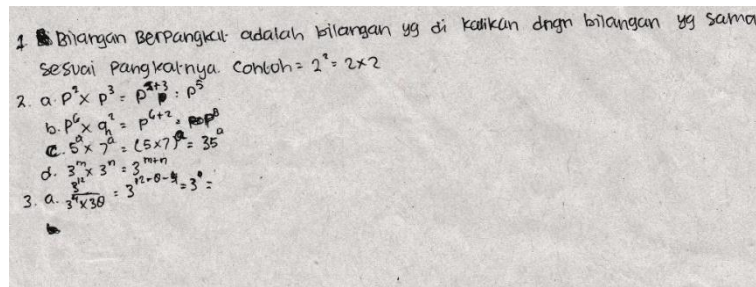
- f) Indicator use and utilization along with selecting a specific operating procedure

Based on picture 17, the AAP subject did not answer question number 6. The AAP's score of this question is 0. In the interview, the AAP subject understood a little about the question and explained the procedure for solving the equation to determine the value of a .

- g) Indicator applying concepts or algorithms in problem-solving

Based on picture 17, the AAP subject did not write down the answer to question number 7. The AAP's score of this question is 0. In the interview, the AAP subject gave the reason for not answering the question because he did not understand the question and how to solve the problem. Therefore, the AAP subject did not answer the question number 7.

2) Subject FAL



Picture 18 FAL subject's answer to mathematical understanding ability test question

a) Indicator restating a concept

Based on picture 18, the FAL subject wrote down the definition of exponent numbers. The FAL's score of this question is 3. In the interview, the FAL subject understood and explained the definition of exponent numbers.

b) Indicator classifying objects according to certain due to their nature

Based on picture 18, the FAL subject wrote down the calculation to solve exponent numbers using the properties of exponent numbers without writing the conclusion. The FAL's score of this question is 3. In the interview, the FAL subject understood a little about the questions but needed time to understand them. Then the FAL subject explained the conclusion of his answer.

c) Indicator identifying examples and non-examples of a concepts

Based on picture 18, the FAL subject wrote down one zero exponent number from the example of exponent numbers presented in the question. The FAL's score of this question is 2. In the interview, the FAL subject had little understanding of question number 3. Therefore, the FAL

subject could only answer one example of a zero exponent number from the examples of exponent numbers presented.

- d) Indicator presenting concepts in various forms of mathematical representation

Based on picture 18, the FAL subject did not write down the answer to question number 4. The FAL's score of this question is 0. In the interview, the FAL subject gave the reason for not writing the answer the question because he did not understand question number 4. Therefore, the FAL subject did not write the answer to question number 4.

- e) Indicator developing necessary or sufficient concept requirement

Based on picture 18, the FAL subject did not write down the answer to question number 5. The FAL's score of this question is 0. In the interview, the FAL subject gave the reason for not answering the question because he did not understand question number 5. Therefore, the FAL subject did not write the answer to question number 5.

- f) Indicator use and utilization along with selecting a specific operating procedure

Based on picture 18, the FAL subject did not write down the answer to question number 6. The FAL's score of this question is 0. In the interview, the FAL subject understood a little about the question and explained the procedure for solving the equation to determine the value of a .

- g) Indicator applying concepts or algorithms in problem-solving

Based on picture 18, the FAL subject did not write down the answer to question number 7. The FAL's score of this question is 0. In the interview, the FAL subject gave the reason for not answering the question because he did not

understand question number 7. Therefore, the FAL subject did not write down the answer number 7.

Table 8 Description of the mathematical understanding ability and emotional intelligence level of the subjects

Subject	Indicator of mathematical understanding	Emotional intelligence level
ZTS	ZTS has good mathematical understanding abilities. Based on test and interview results, ZTS subject was able to understand questions and solve problems with correct calculations. However, the ZTS subject has not answered correctly the definition of exponent numbers.	Students with high emotional intelligence category have high
RYD	RYD has good mathematical understanding abilities. Based on the test and interview results, RYD subject was able to understand questions and solve problems with correct calculations. However, the RYD subject has not answered correctly the definition of exponent numbers and she did not complete answer number 3.	mathematical understanding abilities.
IPR	IPR has good enough mathematical understanding abilities. Based on the test and interview, IPR subject was able to understand the question. However, IPR subject did not complete answer number 3 and she did not answer question number 4, 5, and 6 because IPR subject needed more time to understand the questions and solving them.	Students with medium emotional intelligence category have medium
EPM	EPM has good enough mathematical understanding abilities. Based on the test and interview, EPM subject was able to understand the question.	mathematical understanding abilities.

	However, EPM subject sis not complete the answer number 3 and she did not answer question number 4, 5, 6, and 7 because the EPM subject needed more time to understand the questions and solving them.	
AAP	AAP has low mathematical understanding abilities. Based on the tests and interview, AAP subject mostly did not understand the questions. Subject AAP can solve question number 1 and 2. However, subject AAP did not answer question number 3, 4, 5, 6, and 7 because he did not understand the questions.	Students with low emotional intelligence category have low mathematical understanding abilities.
FAL	FAL has low mathematical understanding abilities. Based on the tests and interview, FAL subject mostly did not understand the questions. Subject FAL can solve question number 1, 2, and 3. However, subject FAL has not complete answer number 3 and he did not answer question number 4, 5, 6, and 7 because he did not understand the questions.	

B. Discussion

The following is the discussion of research results related to the mathematical understanding abilities of 8th-grade students at SMP Ma'arif NU 1 Ciongok Banyumas district:

1. High emotional intelligence category

From the results of the questionnaire, ZTS and RYD subjects were among the selected subjects in the high emotional intelligence category. Subject ZTS got a score of 65 and subject RYD got a score of 64 on the emotional intelligence questionnaire. According to the mathematics teacher, ZTS and RYD subjects are students who are active in participating in mathematics learning and often get good grades in mathematics lessons.

From the results of mathematical understanding ability tests and interviews conducted by researchers, question number 1 is an indicator of restating a concept. ZTS and RYD subjects were able to understand question number 1 and re-explain the definition of exponent numbers in their language.

Meanwhile, the indicator classifies objects according to certain of their nature, in question number 2 the ZTS subject was able to classify exponent numbers by simplifying exponent numbers using the properties of exponent numbers. RYD subjects can classify exponent numbers by looking at the same variables in the exponent number examples presented and determining exponent numbers that can be simplified.

For the indicator identifying examples and non-examples of a concept, in question number 3, ZTS and RYD subjects were able to determine numbers to the power of zero from 4 examples of exponent numbers presented in the question. And the indicator presenting the concept in various forms of mathematical representation, in question number 4, ZTS and RYD subjects were able to simplify the root form into the exponent numbers form.

For the indicator developing necessary or sufficient conditions for a concept, in question number 5, ZTS and RYD subjects were able to determine the value of the equation by substituting the x value and y value into the equation. And the indicator of using and utilizing along with selecting a specific operating procedure, in question number 6, ZTS and RYD subjects were able to explain the procedure for solving the equation to determine the value of a .

Then, in the indicator of applying concepts or algorithms in problem-solving, in question number 7, ZTS and RYD were able to understand what was known and what was asked in the question and apply formulas to solve the problem presented. From the overall

average, it can be concluded that students with high emotional intelligence have good mathematical understanding abilities.

2. Medium emotional intelligence category

From the results of the emotional intelligence questionnaire, the IPR and EPM subjects were among the selected subjects in the medium emotional intelligence category. Subject IPR got a score of 59 and subject EPM got a score of 59 on the emotional intelligence questionnaire. According to the mathematics teacher, IPR and EPM are students who are active in learning mathematics.

From the results of mathematical understanding ability tests and interviews conducted by researchers, the indicator restating a concept in number 1, IPR and EPM subjects understood question number 1 and re-explain the definition of exponent numbers. For the indicator of classifying objects according to certain of their nature, in question number 2, IPR subjects were able to classify exponent numbers by simplifying exponent numbers using the properties of exponent numbers. EPM subjects can classify exponent numbers by looking at the same variables in the examples of exponent numbers presented and determine exponent numbers that can be simplified.

For the indicator identifying examples and non-examples of a concept, in question number 3, IPR and EPM subjects were able to determine numbers to the power of zero from the examples of exponent numbers presented. However, due to running out of time, IPR and EPM subject have not completed their answer.

For the indicator of presenting concepts in various forms of mathematical representation, in question number 4, IPR and EPM subjects were able to simplify the root form into exponent numbers form. However, IPR and EPM subjects could not answer question number 4 because they needed time to understand the question.

For the indicator of developing necessary or sufficient conditions for a concept, in question number 5, IPR and EPM subjects can determine

the equation by substituting the x value and y value into the equation and then explaining the calculation operation. However, IPR and EPM subjects were able to simplify the root form into exponent numbers form. However, IPR and EPM subjects could not answer question number 5 because they needed time to understand the question.

For the indicator of using and utilizing along with selecting a specific operating procedure, in question number 6, IPR and EPM subjects were able to explain the procedure used to determine the value of a . However, due to running out of time, the IPR and EPM subjects have not answered question number 6.

Then, in the indicator of applying concepts or algorithms in problem-solving, in question number 7, the IPR and EPM subjects understood what is known and what is asked in the question and explained how to solve the problem by applying the formula to solving the problem. From the overall average, it can be concluded that students in the medium emotional intelligence category have quite good mathematical understanding abilities.

3. Low emotional intelligence category

From the results of the emotional intelligence questionnaire, the AAP and FAL subjects were among the selected subjects in the medium emotional intelligence category as subjects in the low emotional intelligence category. The AAP subject got a score of 46 and the FAL subject got a score of 46 on the emotional intelligence questionnaire. According to mathematics teachers, the AAP subject and the FAL subject are students who are considered lacking in mathematics learning in class.

From the results of mathematical understanding ability tests and interviews conducted by researchers, the indicator restating a concept in question number 1, the AAP subject, and the FAL subject can define exponent numbers and provide an example of exponent numbers. In the indicator of classifying objects according to certain of their nature, in

question number 2, the AAP subject and the FAL subject can simplify exponent numbers by using the properties of exponent numbers.

For the indicator of identifying examples and non-examples of a concept, in question number 3 the AAP subject needs time to understand the question, therefore he did not answer question number 3. Meanwhile, the FAL subject determines one example of numbers to the power of zero from 4 examples of exponent numbers presented because he takes time to understand the question.

For the indicator of presenting concepts in various forms of mathematical representation, in question number 4, the AAP subject and FAL subject did not understand the question. Therefore, the AAP subject and FAL subject did not answer question number 4.

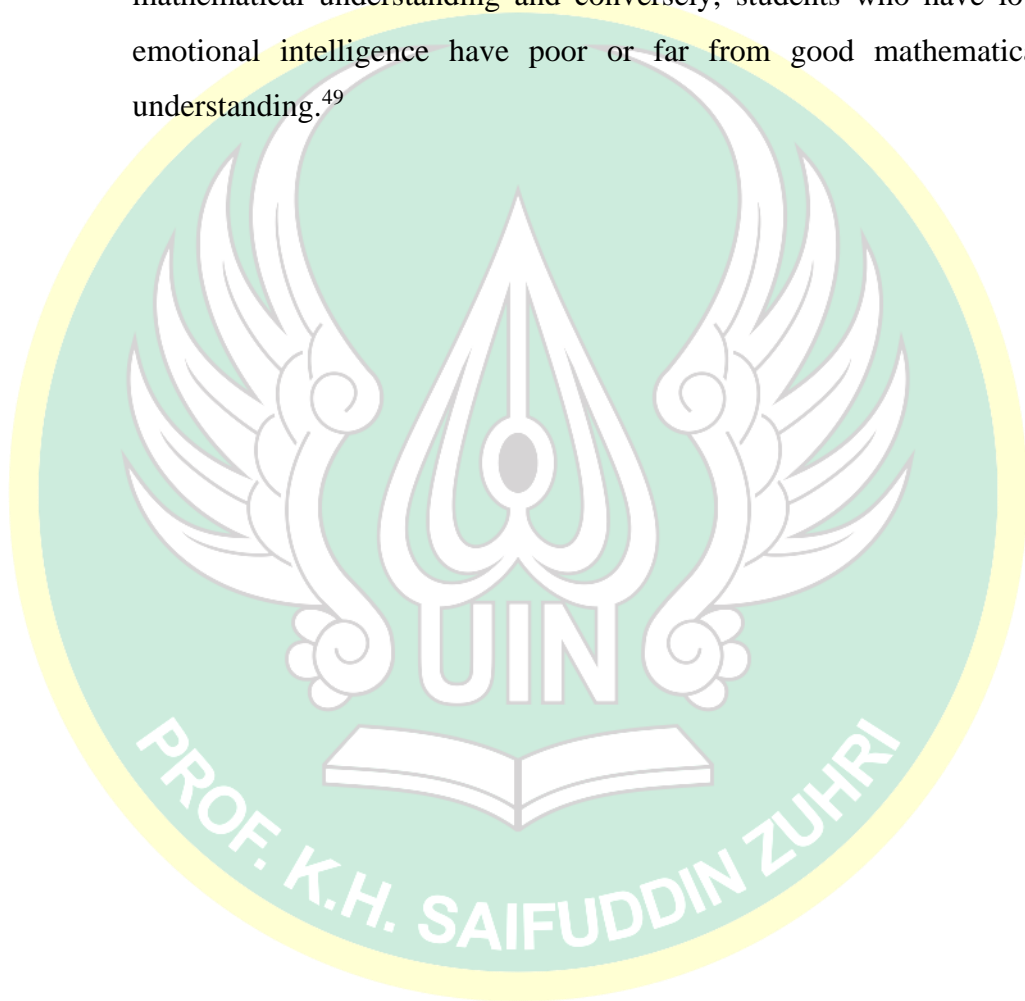
For the indicator of developing necessary or sufficient conditions of a concept, in question number 5, the AAP subject and FAL subject did not understand the question. Therefore, the AAP subject and FAL subject did not answer question number 5.

For the indicator of using and utilizing along with selecting a specific operating procedure, in question number 6 the AAP subject and FAL subject understood the question and explained the procedure for determining the value of a . However, the AAP subject and FAL subject did not answer question number 6 because they needed time to understand the question.

Then, the indicator of applying concepts or algorithms in problem-solving, in question number 7 the AAP subject and FAL subject did not understand the question. Therefore, they could not answer question number 7. From the overall average, it can be concluded that students with low emotional intelligence category have poor mathematical understanding abilities.

Considering the presentation of the results of the research data analysis above, it can be concluded that students with high emotional intelligence have high mathematical understanding abilities, students

with medium emotional intelligence have medium mathematical understanding abilities, and students with low emotional intelligence have low mathematical understanding abilities. This research is in accordance with the results of Wa Ode Israria and La Misu's research analysis that students who have high emotional intelligence have good mathematical understanding and conversely, students who have low emotional intelligence have poor or far from good mathematical understanding.⁴⁹



⁴⁹ Wa Ode Israria, La misu, "Pengaruh Kecerdasan Emosional terhadap Pemahaman Matematis pada Siswa Kelas VIII di SMP Negeri 5 Kendari", Jurnal Penelitian Pendidikan Matematika, Vol. 2, No. 3, 2014.

CHAPTER V

CONCLUSION AND SUGGESTION

A. Conclusion

Based on the results of the research and data analysis presented in CHAPTER IV, it can be concluded that the mathematical understanding ability in 8th grade of SMP Ma'arif NU 1 Cilongok Banyumas district viewed from the student's emotional intelligence, that students with high emotional intelligence have high mathematical understanding ability. Students solved all the questions on the exponent numbers material well, but not optimally because some students needed time to understand and remember the exponent number material that had been taught. Meanwhile, the students with medium emotional intelligence have quite good mathematical understanding abilities. There are still many students who do not answer all the questions and make mistakes in solving questions on exponent numbers. Students with low emotional intelligence have low mathematical understanding abilities. Students do not understand the questions and find it difficult to solve test questions on exponent numbers, the indicator of presenting concepts in various forms of mathematical understanding, the indicator of developing necessary or sufficient conditions of a concept, and the indicator of applying a concept or algorithms to problem-solving are still lacking.

B. Suggestion

Based on the research results, the researcher provides several suggestions as follows:

1. For the students: Students need to develop their emotional intelligence in mathematics learning.
2. For the teachers: Teachers need to increase students' mathematical understanding ability in various terms of indicators of mathematical understanding ability and guide students to develop their emotional intelligence in mathematics learning.

3. For the researchers: Researchers can develop more specific indicators of mathematical understanding to make it easier to assess student's mathematical understanding abilities.



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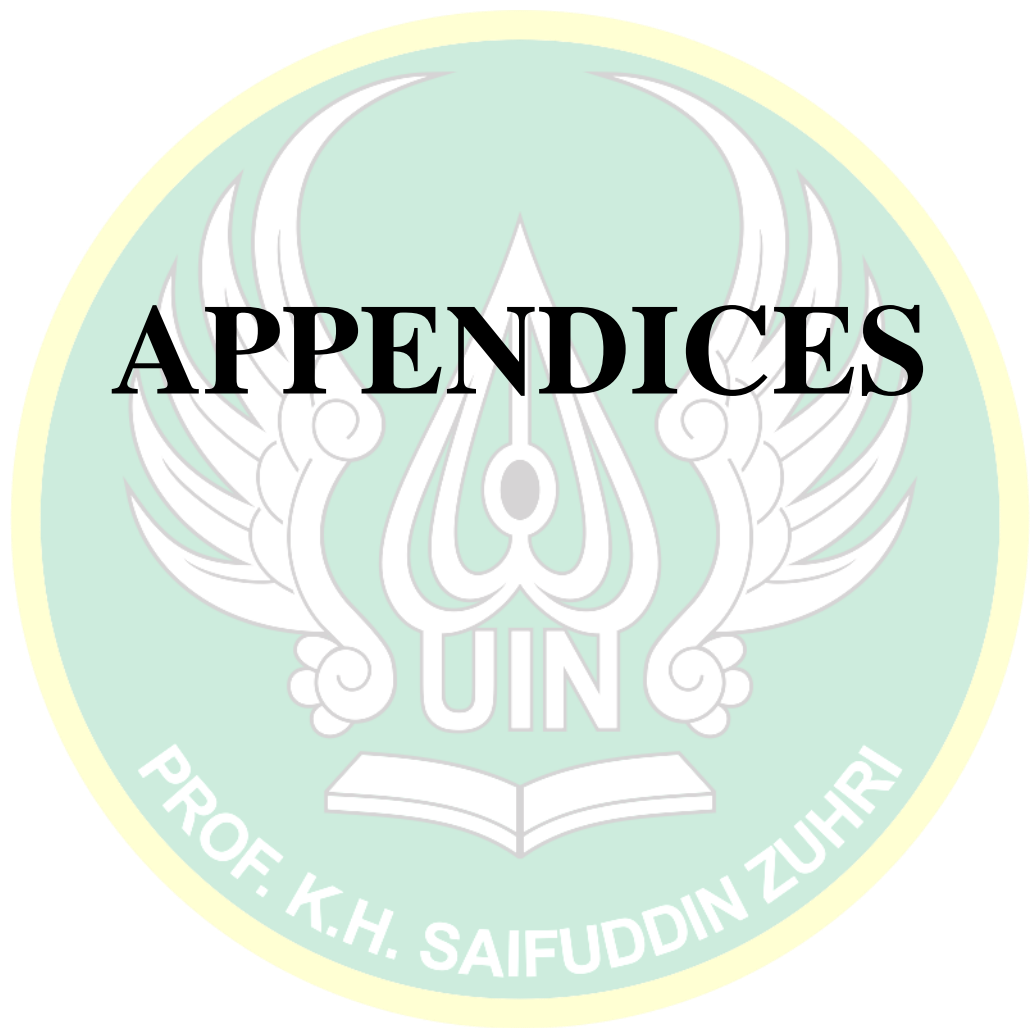
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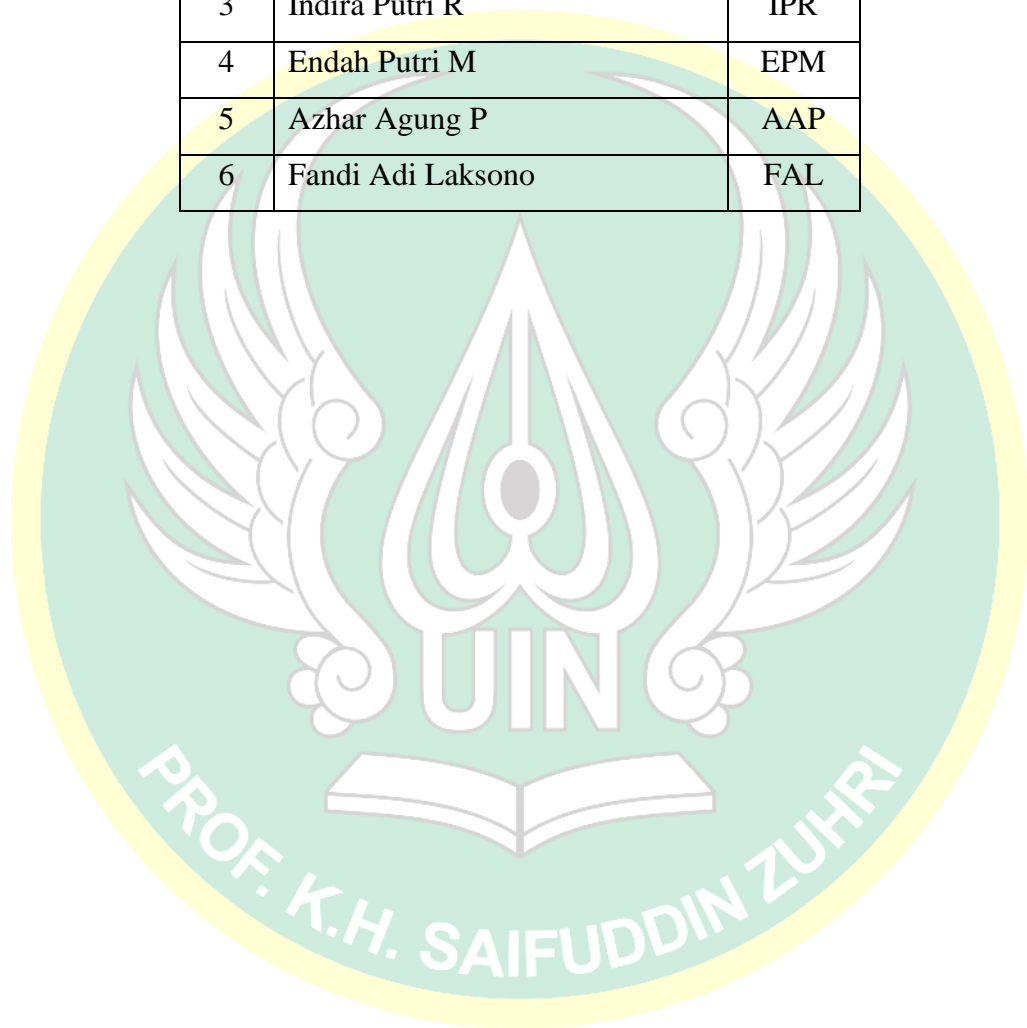
APPENDICES



Appendix 1 List of Names of Research Subject

LIST OF NAMES OF SUBJECTS RESEARCH

No.	Initial subjects	Code
1	Zidna Tuqo Syahadah	ZTS
2	Roihanah Yumna Dzakiyyah	RYD
3	Indira Putri R	IPR
4	Endah Putri M	EPM
5	Azhar Agung P	AAP
6	Fandi Adi Laksono	FAL



Appendix 2 Results of Validity and Reliability of Research Instruments

RESULT OF VALIDITY OF THE QUESTIONNAIRE

No.	Initial Responden	Number Butir Angket																	Total							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20	21	22	23	24
1	AGP	2	1	2	4	1	2	4	4	4	1	2	3	4	4	4	1	4	4	4	4	4	4	4	4	35
2	ABR	3	3	4	3	2	4	3	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	70
3	DGP	3	3	4	3	2	4	3	4	2	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	83
4	EGR	2	4	3	4	2	3	4	4	2	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	79
5	EGR	1	3	3	2	2	3	4	3	2	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	68
6	FGA	2	3	4	2	3	4	3	2	4	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	74
7	HGS	2	3	4	2	3	4	3	2	4	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	69
8	IKSA	1	1	2	2	2	3	4	1	4	2	4	2	4	4	4	4	4	4	4	4	4	4	4	4	64
9	IMMA	2	3	3	2	2	3	4	1	4	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	77
10	IMWA	2	3	3	2	2	4	4	3	4	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	78
11	MIG	4	3	3	2	2	4	4	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	84
12	MIBN	2	3	3	2	2	4	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	84
13	NBD	2	4	4	2	2	3	3	3	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	91
14	OP1	2	4	4	2	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	87
15	PRV	2	4	3	4	2	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	82
16	RF1	2	3	3	2	1	2	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	79
17	REP	2	3	3	2	1	2	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	78
18	RDS	2	3	3	2	1	3	4	3	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	76
19	RST	2	2	3	2	2	4	4	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	85
20	SH	2	3	3	2	2	4	4	4	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	4	72
21	SHP	2	3	3	2	2	3	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	79
22	SHF	2	3	3	1	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	82
23	TTS	1	3	3	2	1	2	4	3	3	2	3	2	4	4	4	4	4	4	4	4	4	4	4	4	65
24	FAR	1	3	3	4	1	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	81
25	AZZ	2	3	3	2	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	82
26	AMF	2	3	3	2	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	81
27	ARR	3	3	3	2	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	97
28	AWP	2	3	3	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	71
29	DGP	2	3	3	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	76
30	DGP	2	3	3	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	76
31	DHI	4	4	4	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	97
32	DKA	2	2	4	4	2	2	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	72
33	FCM	2	3	3	2	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	64
34	FHD	2	3	3	2	2	4	4	4	4	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	64
35	F5	2	3	3	2	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	76
36	FLF	3	3	3	2	2	3	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	81
37	FZL	3	3	3	2	2	3	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	77
38	GGP	2	3	3	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	65
39	IKS	2	3	3	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	88
40	MMA	2	3	3	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	76
41	MKA	2	3	3	2	2	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	72
42	MZR	2	3	3	2	2	4	4	4	4	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	71
43	RAD	2	3	3	2	2	4	4	4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	71
44	RDK	2	3	3	4	2	3	4	4	4	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	73
45	RPR	1	2	2	4	2	2	4	4	4	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	61
46	RSF	2	3	3	1	2	4	4	4	4	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	75
47	SHY	2	4	3	2	2	3	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	81
48	SNY	2	3	3	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	84
49	TPA	2	3	3	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	78
50	ZNM	1	4	3	2	2	2	4	4	4	2	3	2	4	4	4	4	4	4	4	4	4	4	4	4	65
	r_{xy}	0.3898	0.328	0.3051	-0.089	0.1134	0.4298	0.4574	0.4526	0.2103	0.5075	0.4566	0.3698	0.5769	0.4027	0.4377	0.0952	0.5689	0.412	0.1401	0.3523	0.5786	0.185	0.2541	0.5263	0.0407
	r_{xy}	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787	0.2787
	status	VALID	VALID	TIDAK VA	TIDAK VA	VALID	VALID	VALID	VALID	VALID	TIDAK VA	VALID	VALID	VALID	VALID	VALID	TIDAK VA	VALID	VALID	TIDAK VA	VALID	VALID	TIDAK VA	TIDAK VA	VALID	TIDAK VA
	jumlah	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
	jumlah	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Ringkasan Hasil Uji Validitas			
No Soal	r_{xy}	r_{tabel}	Status
1	0,38982	0,2787	VALID
2	0,32803	0,2787	VALID
3	0,30506	0,2787	VALID
4	-0,08904	0,2787	TIDAK VALID
5	0,11345	0,2787	TIDAK VALID
6	0,42982	0,2787	VALID
7	0,45736	0,2787	VALID
8	0,45264	0,2787	VALID
9	0,21034	0,2787	TIDAK VALID
10	0,50748	0,2787	VALID
11	0,45663	0,2787	VALID
12	0,36595	0,2787	VALID
13	0,5769	0,2787	VALID
14	0,40219	0,2787	VALID
15	0,43765	0,2787	VALID
16	0,09521	0,2787	TIDAK VALID
17	0,56893	0,2787	VALID
18	0,412	0,2787	VALID
19	0,14011	0,2787	TIDAK VALID
20	0,35231	0,2787	VALID
21	0,57855	0,2787	VALID
22	0,18498	0,2787	TIDAK VALID
23	0,25413	0,2787	TIDAK VALID
24	0,52633	0,2787	VALID
25	0,04067	0,2787	TIDAK VALID

Rumus Korelasi Pearson (Product Moment)

$$r_{x,y} = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Dengan:

n = Banyaknya Pasangan Data x dan y

$\sum x$ = Total jumlah dari variabel x

$\sum y$ = Total jumlah dari variabel y

$\sum x^2$ = Kuadrat dari total jumlah variabel x

$\sum y^2$ = Kuadrat dari total jumlah variabel y

Keterangan:

Jika $r_{hitung} > r_{tabel}$ = Valid

Jika $r_{hitung} < r_{tabel}$ = Tidak Valid



RESULTS OF RELIABILITY OF THE QUESTIONNAIRE

No.	Inisial Responden	Nomor Butir Angket																								Total
		1	2	3	6	7	8	10	11	12	13	14	15	17	18	20	21	24								
1	AGP	2	1	2	2	2	4	4	1	2	3	4	1	1	4	4	4	4	45							
2	APR	3	3	4	4	3	4	4	3	2	4	4	4	3	4	4	4	3	60							
3	DDP	3	3	3	3	3	4	4	3	4	3	3	3	4	4	3	3	4	57							
4	EAR	2	4	3	3	3	4	4	3	3	3	4	1	1	4	2	2	4	50							
5	FFA	1	3	3	2	2	4	2	3	3	3	2	4	4	4	4	4	3	51							
6	IRN	2	3	4	4	3	2	1	3	3	1	4	3	4	3	4	2	4	50							
7	KRS	1	1	1	2	1	1	2	4	4	2	2	4	1	3	4	4	4	41							
8	LRM	2	3	3	2	3	4	4	1	4	3	2	3	4	4	4	4	4	54							
9	MMA	2	3	3	2	4	3	4	3	4	3	3	3	4	4	4	4	4	57							
10	MNK	2	3	3	4	4	4	4	3	4	3	4	3	3	4	2	4	4	58							
11	MLQ	4	3	3	4	4	4	4	4	3	4	2	4	4	4	3	4	4	62							
12	MBN	2	3	3	2	3	3	2	3	4	3	4	4	1	4	2	2	4	49							
13	NMD	2	4	4	4	4	4	4	3	4	3	2	4	4	4	4	4	4	62							
14	OPT	2	3	3	2	4	4	4	3	4	4	4	4	4	4	4	4	4	61							
15	PFW	2	4	3	4	4	4	4	3	3	4	4	4	3	4	3	2	4	58							
16	RPT	2	3	3	2	4	3	4	3	4	3	3	3	4	4	4	4	4	57							
17	RRF	1	1	1	3	3	4	3	1	4	3	4	2	4	4	4	4	4	50							
18	RDS	2	3	3	4	4	4	4	3	4	3	2	4	4	4	4	4	4	60							
19	RST	2	2	3	2	4	4	4	3	4	3	2	3	2	4	2	4	2	50							
20	RIH	2	3	3	2	3	4	4	3	4	3	2	3	4	4	4	4	4	56							
21	SAF	2	3	3	2	2	4	4	1	4	3	4	4	1	4	4	4	3	52							
22	SNF	2	3	3	2	4	4	4	3	4	4	4	4	4	4	4	4	4	61							
23	TTS	1	3	3	2	2	4	3	2	3	2	2	3	2	4	3	2	2	45							
24	FKR	1	1	3	3	2	3	4	1	4	4	2	3	1	1	4	4	2	43							
25	AFZ	2	3	4	3	4	4	3	4	3	4	4	4	2	4	3	3	2	56							
26	AMF	2	3	3	2	4	4	2	3	2	2	2	3	3	2	2	2	2	44							
27	ANR	3	3	3	2	3	3	4	3	3	3	3	4	2	3	3	3	3	51							
28	AWP	2	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	64							
29	DAP	2	3	3	3	4	4	4	4	2	4	2	4	4	4	4	2	3	56							
30	DFT	2	3	3	4	4	4	4	4	3	4	4	4	4	4	4	4	4	63							
31	DJH	4	4	4	2	4	2	3	2	3	3	4	3	1	4	1	2	2	48							
32	DKA	2	2	2	2	3	3	2	3	2	3	2	3	2	3	2	2	2	40							
33	FCM	2	3	3	3	3	2	2	2	2	3	3	3	2	4	2	2	3	44							
34	FHD	2	3	3	4	4	3	2	3	4	3	4	3	4	4	4	3	2	55							
35	FIS	2	3	3	2	4	4	3	4	2	4	4	3	4	4	4	4	4	58							
36	FLF	3	3	3	3	4	4	3	3	2	3	4	4	2	4	3	3	2	53							
37	FZL	3	3	3	1	4	4	4	4	3	3	4	3	2	4	3	4	3	55							
38	IGP	2	3	3	2	4	4	2	4	2	3	2	4	1	4	2	1	2	45							
39	IKS	2	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	64							
40	MAA	2	3	3	3	4	4	4	4	4	4	4	2	4	1	4	4	2	54							
41	MKA	2	3	4	4	4	3	2	3	2	4	4	3	1	3	2	4	4	52							
42	MZR	2	3	3	4	4	4	2	3	4	3	2	3	2	4	4	4	2	53							
43	RAD	2	2	3	4	4	4	4	2	2	4	2	3	2	4	3	2	3	49							
44	RDK	2	3	3	3	4	4	4	1	2	4	4	3	1	4	4	4	4	54							
45	RPR	1	2	2	2	4	2	4	1	2	1	1	2	4	4	4	1	2	39							
46	RSF	2	3	3	4	4	4	2	3	4	3	2	3	4	4	1	4	4	54							
47	SHY	2	4	3	3	4	4	3	4	3	4	4	4	2	4	3	2	3	56							
48	SNY	2	3	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	63							
49	TPA	2	3	3	4	4	2	4	3	2	4	4	4	2	4	4	4	4	57							
50	ZNM	1	4	3	2	4	4	2	3	2	3	2	3	2	3	2	1	1	42							
Varians butir		0,40653	0,51592	0,34653	0,84245	0,58122	0,58	0,83425	0,90816	0,74939	0,55347	0,97306	0,54857	1,57388	0,29755	0,85878	1,06122	0,83918	45,6996							
Jml Varians Butir		12,4702																								
Varians total		45,6996																								
r ₁₁		0,77257																								
Reliabilitas		TINGGI																								



RESULTS OF VALIDITY OF THE TESTS

No.	Inisial Responden	Nomor Butir Soal							Jumlah	Ringkasan Hasil Uji Validitas			
		1	2	3	4	5	6	7		No Soal	r_{xy}	r_{tabel}	Status
1	AGP	2	1	1	1	1	1	1	8	1	0,48118	0,2787	VALID
2	APR	2	3	2	0	0	0	0	7	2	0,45536	0,2787	VALID
3	DDP	2	3	1	3	1	1	1	12	3	0,67078	0,2787	VALID
4	EAR	2	3	0	3	1	1	0	10	4	0,79411	0,2787	VALID
5	FFA	3	3	2	0	0	1	1	10	5	0,66355	0,2787	VALID
6	IRN	2	3	1	3	1	1	0	11	6	0,8599	0,2787	VALID
7	KFS	2	3	1	3	1	1	1	12	7	0,79495	0,2787	VALID
8	LRM	2	1	2	3	1	1	2	12				
9	MVA	2	2	1	1	1	1	1	9				
10	MNK	2	2	1	3	1	1	2	12				
11	MLO	2	3	2	3	3	1	0	14				
12	MBN	2	3	2	3	3	1	0	14				
13	NMD	2	3	2	3	2	1	2	15				
14	OPT	2	2	1	1	2	1	0	9				
15	PFW	2	3	1	3	1	1	1	12				
16	RPT	2	2	1	1	1	1	1	9				
17	RRF	2	2	1	0	1	1	1	8				
18	RDS	2	1	2	3	2	1	2	13				
19	RST	3	2	1	3	1	1	2	13				
20	RIH	2	3	2	3	1	1	1	13				
21	SAF	2	3	3	3	3	1	0	15				
22	SNF	2	2	1	0	0	0	0	5				
23	TTS	3	3	2	0	0	0	0	8				
24	FKR	2	2	2	0	1	1	1	9				
25	APZ	3	2	2	3	2	2	3	17				
26	AMF	3	1	0	0	0	0	0	4				
27	ANR	2	3	2	0	0	0	0	7				
28	AWP	2	3	2	2	1	3	3	16				
29	DAP	3	3	2	2	1	3	2	16				
30	DFT	3	2	2	3	2	2	2	16				
31	DJH	2	1	0	0	0	0	0	3				
32	DKA	3	3	3	2	1	3	2	17				
33	FCM	0	0	0	0	0	0	0	0				
34	FHD	3	3	3	0	0	0	0	9				
35	FIS	3	3	2	3	1	3	3	18				
36	FLP	3	2	2	3	2	2	3	17				
37	FZL	3	3	3	0	0	0	0	9				
38	IGP	2	3	0	0	0	0	0	5				
39	IKS	2	3	2	2	1	3	3	16				
40	MAA	2	3	2	0	0	0	0	7				
41	MKA	3	3	2	3	1	3	2	17				
42	MZR	3	3	2	0	0	0	0	8				
43	RAD	2	2	0	0	0	0	0	4				
44	RDK	3	3	3	2	1	3	3	18				
45	RPR	1	1	0	0	0	0	0	2				
46	RSF	2	3	2	2	1	3	3	16				
47	SHY	3	2	2	3	2	2	2	16				
48	SNY	2	3	2	2	1	3	3	16				
49	TPA	2	3	2	2	1	3	3	16				
50	ZNM	2	3	0	0	0	0	0	5				
	r_{xy}	0,48118	0,45536	0,67078	0,79411	0,66355	0,8599	0,79495					
	r_{tabel}	0,2787	0,2787	0,2787	0,2787	0,2787	0,2787	0,2787					
	Status	VALID	VALID	VALID	VALID	VALID	VALID	VALID					
	Jml Valid	7											
	Jml Tidak valid	0											

Rumus Korelasi Pearson (Product Moment)

$$r_{x,y} = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2][n\sum y^2 - (\sum y)^2]}}$$

Dengan:

n = Banyaknya Pasangan Data x dan y

$\sum x$ = Total jumlah dari variabel x

$\sum y$ = Total jumlah dari variabel y

$\sum x^2$ = Kuadrat dari total jumlah variabel x

$\sum y^2$ = Kuadrat dari total jumlah variabel y

Keterangan:

Jika $r_{hitung} > r_{tabel}$ = Valid

Jika $r_{hitung} < r_{tabel}$ = Tidak Valid

RESULTS OF RELIABILITY OF THE TESTS

No.	Inisial Responden	Nomor Butir Soal							Jumlah
		1	2	3	4	5	6	7	
1	AGP	2	1	1	1	1	1	1	8
2	APR	2	3	2	0	0	0	0	7
3	DDP	2	3	1	3	1	1	1	12
4	EAR	2	3	0	3	1	1	0	10
5	FFA	3	3	2	0	0	1	1	10
6	IRN	2	3	1	3	1	1	0	11
7	KRS	2	3	1	3	1	1	1	12
8	LRM	2	1	2	3	1	1	2	12
9	MMA	2	2	1	1	1	1	1	9
10	MNK	2	2	1	3	1	1	2	12
11	MLQ	2	3	2	3	3	1	0	14
12	MBN	2	3	2	3	3	1	0	14
13	NMD	2	3	2	3	2	1	2	15
14	OPT	2	2	1	1	2	1	0	9
15	PFW	2	3	1	3	1	1	1	12
16	RPT	2	2	1	1	1	1	1	9
17	RRF	2	2	1	0	1	1	1	8
18	RDS	2	1	2	3	2	1	2	13
19	RST	3	2	1	3	2	1	2	13
20	RIH	2	3	2	3	1	1	1	13
21	SAF	2	3	3	3	3	1	0	15
22	SNF	2	2	1	0	0	0	0	5
23	TTS	3	3	2	0	0	0	0	8
24	FKR	2	2	2	0	1	1	1	9
25	AFZ	3	2	2	3	2	2	3	17
26	AMF	3	1	0	0	0	0	0	4
27	ANR	2	3	2	0	0	0	0	7
28	AWP	2	3	2	2	1	3	3	16
29	DAP	3	3	2	2	1	3	2	16
30	DFT	3	2	2	3	2	2	2	16
31	DJH	2	1	0	0	0	0	0	3
32	DKA	3	3	3	2	1	3	2	17
33	FCM	0	0	0	0	0	0	0	0
34	FHD	3	3	3	0	0	0	0	9
35	FIS	3	3	2	3	1	3	3	18
36	FLF	3	2	2	3	2	2	3	17
37	FZL	3	3	3	0	0	0	0	9
38	IGP	2	3	0	0	0	0	0	5
39	IKS	2	3	2	2	1	3	3	16
40	MAA	2	3	2	0	0	0	0	7
41	MKA	3	3	2	3	1	3	2	17
42	MZR	3	3	2	0	0	0	0	8
43	RAD	2	2	0	0	0	0	0	4
44	RDK	3	3	3	2	1	3	3	18
45	RPR	1	1	0	0	0	0	0	2
46	RSF	2	3	2	2	1	3	3	16
47	SHY	3	2	2	3	2	2	2	16
48	SNY	2	3	2	2	1	3	3	16
49	TPA	2	3	2	2	1	3	3	16
50	ZNM	2	3	0	0	0	0	0	5
Varians butir		0,35959	0,61878	0,78408	1,79592	0,71061	1,17102	1,34735	22,2551
Jml Varians butir		6,78735							
Varians total		22,2551							
r ₁₁		0,81086							
Reliabilitas		TINGGI							



PROF. K.H. SAIFUDDIN ZUHRI

Appendix 3 Emotional Intelligence Questionnaire

ANGKET KECERDASAN EMOSIONAL SISWA

Nama :

Kelas :

No. Absen :

Petunjuk pengisian:

1. Mulai dengan membaca *basmallah*
2. Bacalah setiap pertanyaan dengan teliti dan seksama
3. Jawablah setiap pertanyaan dengan jujur apa adanya. Semua jawaban dapat diterima dan tidak ada jawaban yang dianggap salah.
4. Pilihlah jawaban dengan cara memberikan tanda centang (✓) pada kolom yang kamu pilih.

Keterangan :

SL = Selalu

KK = Kadang-kadang

SR = Sering

TP = Tidak pernah

No.	Pertanyaan	Alternatif Jawaban			
		SL	SR	KK	TP
1	Saya merasa senang ketika mendapat pelajaran matematika				
2	Saya merasa bosan ketika mendapat pelajaran matematika				
3	Saya merasa malas dengan pelajaran matematika				
4	Saya mau belajar lebih giat setelah mendapat nilai yang buruk dalam pelajaran matematika				
5	Ketika terdapat soal matematika yang sulit, saya langsung mengeluarkan kata-kata kasar				
6	Saat merasa bosan pada pelajaran matematika, saya berhenti belajar matematika				
7	Saya berusaha untuk mengerjakan dan menyelesaikan soal matematika				
8	Meskipun sudah belajar, saya tetap merasa tidak punya percaya diri dalam mengerjakan soal ulangan matematika				
9	Saat kesulitan dalam pelajaran matematika, saya akan bertanya kepada teman atau guru				
10	Jika ada soal matematika yang sulit, saya malas untuk menyelesaikannya				

11	Saya akan berusaha untuk mendapatkan nilai terbaik dalam pelajaran matematika diantara teman-teman sekelas				
12	Nilai ulangan matematika yang buruk membuat saya malas belajar matematika				
13	Saya akan meminta maaf jika teman diskusi saya merasa tersinggung dengan ucapan saya mengenai pelajaran matematika				
14	Saya meledek teman yang mendapatkan nilai tidak bagus dalam pelajaran matematika				
15	Saya menghargai pendapat teman dalam pelajaran matematika				
16	Saat ada kerja kelompok pada pelajaran matematika, saya akan berbagi tugas dengan teman kelompok				
17	Saya berbicara dengan sopan dan jelas saat bertanya tentang kesulitan dalam pelajaran matematika				



Appendix 4 Mathematical Understanding Test

SOAL TES KEMAMPUAN PEMAHAMAN MATEMATIS SISWA

SATUAN PENDIDIKAN : Sekolah Menengah Pertama (SMP)

MATA PELAJARAN : Matematika

MATERI : Bilangan berpangkat

KELAS : 8

Petunjuk umum:

1. Tuliskan terlebih dahulu identitas siswa pada lembar jawaban
2. Dahulukan menjawab soal-soal yang dianggap mudah
3. Baca dan pahami serta kerjakan soal-soal yang tertera dengan teliti dan tepat
4. Awali dan akhiri pengerjaan dengan membaca do'a

Soal:

1. Apa yang dimaksud dengan bilangan berpangkat? Definisikan menurut bahasamu sendiri dengan baik dan benar.
2. Perhatikan bilangan berpangkat dibawah ini!

a) $p^2 \times p^3$

b) $p^6 \times q^2$

c) $5^a \times 7^a$

d) $3^m \times 3^n$

Tentukan manakah yang dapat disederhanakan dengan menggunakan sifat bilangan berpangkat!

3. Manakah bilangan berpangkat di bawah yang hasil penyelesaiannya merupakan bilangan berpangkat nol (a^0)?

a) $\frac{3^{12}}{3^4 \times 3^8}$

b) $\left(\frac{7^6}{7^{-6}}\right)^4$

c) $5^9 \times \frac{5^{-3}}{5^6}$

d) $\frac{11^8 \times 11^3}{11^4 \times 11^6}$

4. Sederhanakanlah akar bilangan dari $\frac{15\sqrt{75}}{3\sqrt{3}}$ dalam bentuk bilangan berpangkat!
5. Jika nilai $x = -3$ dan $y = 3$. Tentukan nilai $x^{-4} \times y^6$!
6. Tentukan nilai a dari persamaan berikut!
- $$\frac{3^{2021} \times 3^{2022} \times 3^{2023}}{3^{2024} \times 81} = 3^a$$
7. Sinta membeli paket internet dengan kapasitas 9 GB, berlaku selama 30 hari. Berpakah KB kapasitas rata-rata tiap hari yang digunakan Sinta agar cukup selama sebulan? (1 GB = 1×10^6 , 1 bulan = 30 hari)



Appendix 5 Answer Sheets of Mathematical Understanding Ability Test

SOLUTION SHEET OF MATHEMATICAL UNDERSTANDING TEST QUESTION

No.	Jawaban
1	Bilangan berpangkat merupakan perkalian berulang dari suatu bilangan yang sama.
2	<p>Diketahui:</p> <p>a) $p^2 \times p^3 = p^{2+3} = p^5$</p> <p>b) $p^6 \times q^2 =$ (tidak bisa disederhanakan karena kedua variabelnya berbeda)</p> <p>c) $5^a \times 7^a =$ (tidak bisa disederhanakan karena kedua variabelnya berbeda)</p> <p>d) $3^m \times 3^n = 3^{m+n}$</p> <p>Jadi, a dan d merupakan sifat perkalian bilangan berpangkat</p>
3	<p>Diketahui:</p> <p>a) $\frac{3^{12}}{3^4 \times 3^8} = \frac{3^{12}}{3^{4+8}} = \frac{3^{12}}{3^{12}} = 3^{12-12} = 3^0 = 1$</p> <p>b) $\left(\frac{7^6}{7^{-6}}\right)^4 = \frac{7^{6 \times 4}}{7^{(-6) \times 4}} = \frac{7^{24}}{7^{-24}} = 7^{24-(-24)} = 7^{48}$</p> <p>c) $5^9 \times \frac{5^{-3}}{5^6} = 5^{9+(-3)-6} = 5^0 = 1$</p> <p>d) $\frac{11^8 \times 11^3}{11^4 \times 11^6} = \frac{11^{8+3}}{11^{4+6}} = \frac{11^{11}}{11^{10}} = 11^{11-10} = 11^1 = 11$</p> <p>Jadi, a dan c merupakan bilangan berpangkat nol (a^0)</p>
4	$\frac{15\sqrt{75}}{3\sqrt{3}}$ $= \frac{15}{3} \sqrt{\frac{75}{3}}$ $= 5\sqrt{25}$ $= 5 \times 5^2$ $= 5^3$
5	Diketahui: $x = -3$ dan $y = 3$

	<p>Ditanya : $x^{-4} \times y^6$</p> <p>Jawab: $x^{-4} \times y^6$</p> $= (-3)^{-4} \times 3^6$ $= \frac{1}{(-3)^4} \times 729$ $= \frac{1}{81} \times 729$ $= 9$ $= 3^2$
6	$\frac{3^{2021} \times 3^{2022} \times 3^{2023}}{3^{2024} \times 81} = 3^a$ $\frac{3^{2021+2022+2023}}{3^{2024} \times 3^4} = 3^a$ $\frac{3^{6066}}{3^{2024+4}} = 3^a$ $\frac{3^{6066}}{3^{2028}} = 3^a$ $3^{6066-2028} = 3^a$ $3^{4038} = 3^a$ <p>Jadi, nilai $a = 4038$.</p>
7	<p>Diketahui</p> <p>Paket internet = 9 GB = 9×10^6 KB</p> <p>1 bulan = 30 hari = 3×10^1</p> <p>Ditanya : internet yang kira-kira digunakan dalam sehari?</p> <p>Jawab :</p> $\frac{\text{paket internet}}{30 \text{ hari}}$ $\frac{9 \times 10^6}{3 \times 10^1}$ $= 3 \times 10^{6-1}$ $= 3 \times 10^5 \text{ KB}$ <p>Jadi, Sinta menggunakan internet dengan kapasitas rata-rata 3×10^5 KB per hari</p>

Appendix 6 Results of the Emotional Intelligence Questionnaire

No.	Nama Siswa	Nomor Butir Soal																Jumlah	Keterangan	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			17
1	Ajilina Dian Saputri	4	3	3	4	4	4	4	2	3	3	4	4	4	4	4	2	3	59	MEDIUM
2	Arrafi Naafidin	2	3	3	2	3	4	3	3	4	3	2	3	2	3	2	4	4	50	MEDIUM
3	Awaluni Ardilyanti	4	4	4	4	3	3	3	1	2	3	4	3	4	4	4	4	58	MEDIUM	
4	Ayu Nur Aeni	4	3	3	4	2	3	2	2	3	1	3	1	2	4	4	2	2	45	LOW
5	Azhar Agung Pamuji	2	3	3	2	4	2	3	2	2	2	3	3	2	4	4	3	2	46	LOW
6	Caca Nurfalni	2	2	3	4	4	3	2	1	3	3	2	2	2	4	4	4	3	48	MEDIUM
7	Daffa Naufal Adz Dzaki	2	3	3	3	3	2	3	1	3	3	3	3	3	4	3	2	4	48	MEDIUM
8	Endah Putri Maelani	3	3	3	4	4	4	4	3	3	3	2	3	4	4	4	4	4	59	MEDIUM
9	Fandi Adi Laksono	2	3	3	3	3	4	2	3	4	3	2	3	1	3	2	2	3	46	LOW
10	Firhya Zalfa Ihtinan	3	4	3	4	4	4	4	3	4	3	4	4	4	4	4	4	4	64	HIGH
11	Heggy Nur Apriani	2	3	3	3	3	3	4	2	4	3	3	3	4	4	4	3	3	54	MEDIUM
12	Hidayatum Nur Isnaeni	2	3	3	3	4	4	3	3	2	3	4	4	2	4	3	3	2	52	MEDIUM
13	Indhira Putri Rahmawati	3	3	3	3	4	3	4	3	4	3	3	3	4	4	4	4	4	59	MEDIUM
14	Khumalah Nur Aisyah	3	4	3	4	3	4	4	3	4	3	4	3	3	4	4	4	4	61	HIGH
15	Maica Zeva Aurelia	3	3	3	3	4	4	4	3	4	3	4	4	3	4	3	3	3	58	MEDIUM
16	Melati Agustin	3	3	3	4	4	2	4	1	4	3	4	4	2	4	4	4	3	56	MEDIUM
17	Mutal Awal	2	3	3	2	4	2	3	2	2	3	2	4	3	4	4	2	2	47	LOW
18	M. Raffa Rojak R.	2	3	4	2	4	4	3	4	2	3	2	4	2	4	4	2	2	51	MEDIUM
19	Nabila Lulu Sefiana	2	3	3	4	3	4	4	1	2	4	4	4	4	4	4	3	4	57	MEDIUM
20	Nur Safitri	3	3	3	4	3	4	4	1	3	3	4	3	2	4	3	4	3	54	MEDIUM
21	Nuzul Amanah	3	3	3	3	4	2	2	1	2	3	2	2	3	3	3	3	3	45	LOW
22	Refalia Rakhmah	4	3	3	4	4	4	4	3	4	3	4	4	4	4	4	4	4	64	HIGH
23	Rifqi Dwi Ardiansah	2	3	2	3	3	3	3	2	4	2	2	4	2	3	1	4	4	47	LOW
24	Riska Hana Maula	2	2	3	3	3	3	2	1	3	3	2	2	4	4	4	4	3	46	LOW
25	Roihanah Yumna Dzakiyyah	4	4	4	4	3	4	4	3	4	3	4	3	4	4	4	4	4	64	HIGH
26	Sa'dan Farezil	2	3	3	2	3	4	2	1	4	3	4	3	2	4	2	2	3	47	LOW
27	Siti Khasanah	4	2	3	4	4	4	2	1	1	3	3	1	3	4	4	1	4	48	MEDIUM
28	Uli Oktavizena	2	3	4	4	3	4	4	2	4	3	4	4	3	4	4	3	4	59	MEDIUM
29	Vivi Kholifah	2	3	3	4	3	4	4	3	4	3	4	2	3	4	4	4	4	58	MEDIUM
30	Zahra Dwi Ayu Ranun	3	3	3	4	3	4	4	2	4	2	4	3	3	3	4	4	2	55	MEDIUM
31	Zidna Tugo Syahadah	4	4	4	4	4	4	4	3	4	3	4	3	4	4	4	4	4	65	HIGH
	Mean	53,87997																		
	SD	6,505085																		
	Mean + SD	60,37605																		
	Mean - SD	47,36588																		

Appendix 7 Results of Mathematical Understanding Ability Test

No.	Initial Name	Question Number							Score total	Level
		1	2	3	4	5	6	7		
1	ADS	3	2	2	0	0	0	0	7	MEDIUM
2	AN	3	2	2	0	0	0	0	7	MEDIUM
3	AWA	3	0	0	0	0	0	0	3	LOW
4	ANA	2	2	0	0	0	0	0	4	MEDIUM
5	AAP	3	2	0	0	0	0	0	5	MEDIUM
6	CN	3	2	2	0	0	0	0	7	MEDIUM
7	DNAD	3	2	2	0	0	0	0	7	MEDIUM
8	EPM	3	2	2	0	0	0	0	7	MEDIUM
9	FAL	3	2	2	0	0	0	0	7	MEDIUM
10	FZI	3	2	2	0	0	0	0	7	MEDIUM
11	HNA	3	3	0	0	0	0	0	6	MEDIUM
12	HNI	3	1	1	1	1	0	0	7	MEDIUM
13	IPR	3	2	2	0	0	0	2	9	MEDIUM
14	KNA	2	2	0	0	0	0	0	4	MEDIUM
15	MZA	3	2	0	1	0	0	0	6	MEDIUM
16	MA	3	2	0	0	0	0	0	5	MEDIUM
17	MAW	3	2	0	0	0	0	0	5	MEDIUM
18	MRRR	3	2	0	0	0	0	0	5	MEDIUM
19	NLS	3	2	0	0	0	0	0	5	MEDIUM
20	NS	3	1	0	0	0	0	0	4	MEDIUM
21	NA	2	2	1	3	3	0	0	11	HIGH
22	RR	3	3	2	0	0	0	0	8	MEDIUM
23	RDA	3	2	1	0	0	0	0	6	MEDIUM
24	RHM	3	3	0	0	0	0	0	6	MEDIUM
25	RYD	3	2	2	3	2	3	2	17	HIGH
26	SF	3	2	2	0	0	0	0	7	MEDIUM
27	SK	1	2	1	0	0	0	0	4	MEDIUM
28	UO	3	2	0	0	0	0	0	5	MEDIUM
29	VK	2	3	0	0	0	0	0	5	MEDIUM
30	ZDAR	3	0	0	0	0	0	0	3	LOW
31	ZTS	3	3	2	3	3	3	2	19	HIGH
	Mean	6,709677								
	SD	3,475568								
	Mean + SD	10,18524								
	Mean - SD	3,23411								

Appendix 8 Results of the Interview

A. The ZTS subject

R: what do you understand about question number 1?

ZTS: it is about the definition of exponent number

R: what is the definition of exponent numbers?

ZTS: numbers that are multiplied by the same number

R: what do you understand about question number 2?

ZTS: simplifies exponent numbers

R: how do you simplify the exponent numbers?

ZTS: the number that are multiply have the same number

R: what do you understand about question number 3?

ZTS: determining numbers to the power of zero

R: how do you determine it?

ZTS: I simplify every example in the question presented and find the right answer

R: what do you understand about question number 4?

ZTS: it is about simplifying the root form into the exponent number form

R: how do you simplify it?

ZTS: I divided the root form and continued the operation calculation and the results is a cube of 5

R: what do you know about question number 5?

ZTS: the value of x is minus 3 and the value of y is 3

R: and how do you solve question number 5?

ZTS: substituting the x and y values to the equation and doing operation calculation

R: what do you understand about question number 6?

ZTS: determine the value of a

R: what is the value of a ? And how to determine it?

ZTS: the value of a is a power of 3. To find out the value of a is simplified the equation by the procedure calculation

R: what do you understand about question number 7?

ZTS: It is about what Sinta use the internet every a month with 9 GB of internet

R: how do you solve this problem?

ZTS: I divided the internet data by 30 days in months

B. The RYD subject

R: what do you understand about question number 1?

RYD: it is about exponent numbers that multiplied numbers by the same number

R: what do you understand about question number 2?

RYD: it is about simplifying the exponent number

R: can you explain to me how to simplify the exponent number from the examples above?

RYD: well, I think because the numbers that were multiplied by the same number is the example that was presented which can be simplified

R: why don't you complete your answer to question number 3?

RYD: because I've run out the time to finish my answer

R: do you understand about question number 3?

RYD: yes, I do understand. It is about determining the numbers the power of zero

R: what do you understand about question number 4?

RYD: simplifying the root form by dividing the equation

R: what do you know about question number 5?

RYD: the value of x and the value of y

R: how do you solve the question?

RYD: substituting the x and y values to the equation and finish the operation calculation

R: what do you understand about question number 6?

RYD: determining the a value

R: how do you determine it?

RYD: calculate the equation by exponent numbers properties

R: what do you understand about question number 7?

R YD: it is about the average KB of the internet can be used per day for one month from 9 GB of internet

R: how do you solve the problem?

R YD: count the calculation of the internet divided by 30 days

C. The IPR subject

R: what do you understand about question number 1?

IPR: exponential numbers are repeated multiplication of the same number

R: what do you understand about question number 2?

IPR: simplifying the exponent number?

R: why the b and c examples cannot be simplified?

IPR: because they do not have the same number multiplication

R: what do you understand about question number 3?

IPR: determining the numbers to the power of zero

R: how do you determine it?

IPR: calculating exponent numbers and finding the power of zero.

R: why did you uncomplete your answer?

IPR: because I run out the time to answer the question

R: what do you understand about number 4?

IPR: simplify the equation

R: how do you simplify it?

IPR: the numerator is divided by the denominator of the fraction

R: why do not you answer question number 4?

IPR: because I need time to remember the matery of the exponent number

R: what do you understand about question number 5?

IPR: I'm not sure I understand a little

R: why do not you answer the question?

IPR: because I need more time to understand the question

R: what do you understand about question number 6?

IPR: determine the value of a

R: how to determine it?

IPR: count the calculation of the equation to find the value of a

R: why do not you answer number 6?

IPR: because I run out the time to answer the question

R: what do you understand about the question number 7?

IPR: looking for the internet capacity per day for one month

R: how do you solve it?

IPR: the internet divided by 30 days

D. The EPM subject

R: what do you understand about question number 1?

EPM: exponential numbers are repeated multiplication of the same number

R: what do you understand about question number 2?

EPM: simplify the exponent number

R: what are the different exponent numbers that can be simplified and can not be simplified

EPM: the difference is they should have the same number multiplication

R: what do you understand about question number 3?

EPM: determining the numbers to the power of zero

R: why do not you complete your answer

EPM: because I run out the time to finish my answer

R: what do you understand about question number 4?

EPM: it is about simplifying the root form by divided formula

R: why do not you answer the question number 4?

EPM: because I do not have time to answer it

R: what do you understand about question number 5?

EPM: I understand a little

R: why do not you answer question number 5?

EPM: because I need time to understand the question

R: what do you understand about question number 6?

EPM: determining the value of a

R: why do not you answer question number 6?

EPM: because I was confusing to answer the question

R: what do you understand about the question number 7?

EPM: finding how much is the capacity of KB internet on average per day from 9 GB

R: how do you solve it?

EPM: change the number to the exponent number and calculate the answer

E. The AAP subject

R: what do you understand about question number 1?

AAP: An exponent number is a number that is multiplied by the same number according to its power

R: what do you understand about question number 2?

AAP: simplify the exponent number

R: what do you understand about question number 3?

AAP: I understand a little

R: what do you understand about question number 4?

AAP: I do not understand

R: what do you understand about question number 5?

AAP: I do not understand

R: what do you understand about question number 6?

AAP: I do not understand

R: what do you understand about question number 7 ?

AAP: I understand a little

R: what do you know about question number 7?

AAP: the capacity internet in one month

F. The FAL subject

R: what do you understand about question number 1?

FAL: An exponent numbers is a number that is multiplied by the same number according to its power

R: what do you understand about question number 2?

FAL: simplifying exponent number

R: what do you understand about question number 3?

FAL: I understand a little

R: why do not you complete the answer?

FAL: because I need time to understand the question

R: what do you understand about question number 4?

FAL: I do not understand about root form

R: what do you understand about question number 5?

FAL: I do not understand

R: what do you understand about question number 6?

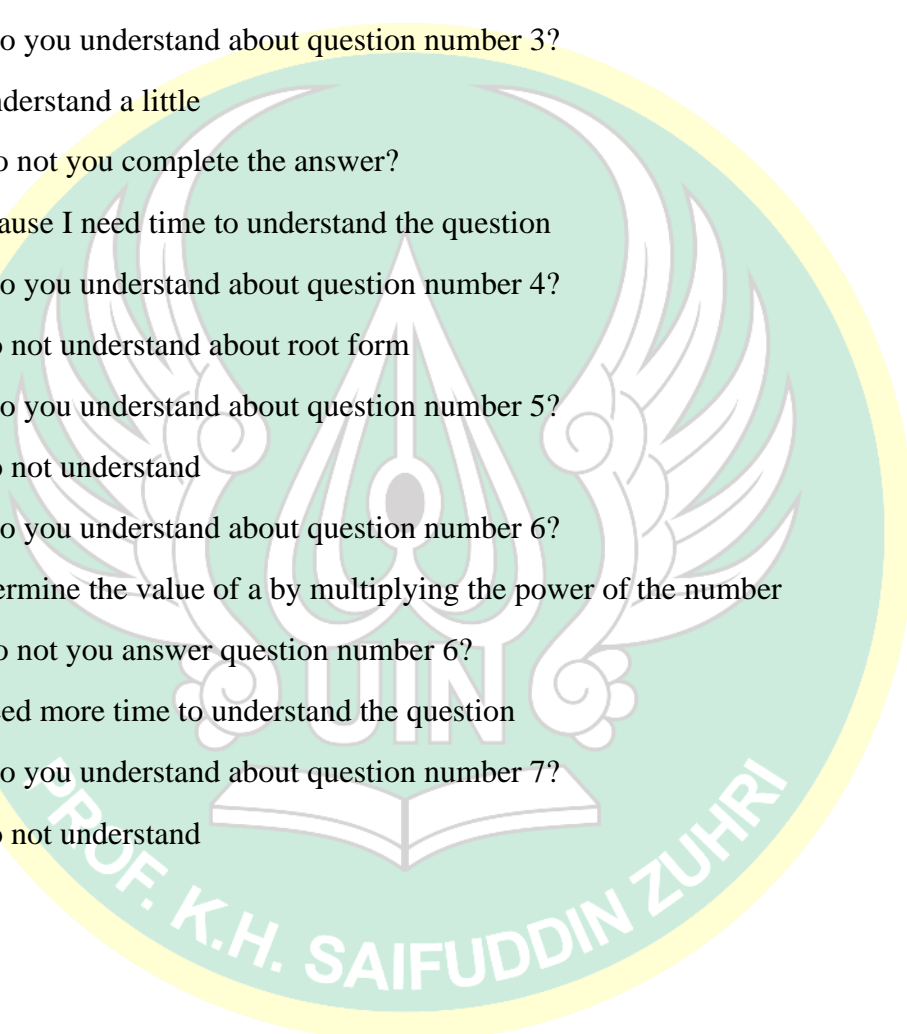
FAL: determine the value of a by multiplying the power of the number

R: why do not you answer question number 6?

FAL: I need more time to understand the question

R: what do you understand about question number 7?

FAL: I do not understand



Appendix 9 Documentation



Appendix 10 Letters



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Jalan Jenderal A. Yani No. 40A Purwokerto 53126
Telepon (0281) 635624 Faksimili (0281) 635653
www.iainpurwoko.ac.id

Nomor : B.m.831/Un.19/D.FTIK/PP.05.3/03/2023
Lamp. : -
Hal : 20 Maret 2023
: Permohonan Ijin Observasi Pendahuluan

Kepada
Yth. Kepala SMP Ma'arif NU 1 Cilongok
di Tempat

Assalamu'alaikum Wr. Wb.

Diberitahukan dengan hormat bahwa dalam rangka proses pengumpulan data penyusunan skripsi mahasiswa kami:

1. Nama : Ratna Ainun Nadya
2. NIM : 1717407026
3. Semester : 12 (Dua Belas)
4. Jurusan / Prodi : Tadris Matematika
5. Tahun Akademik : 2022/2023

Memohon dengan hormat kepada Bapak/Ibu untuk kiranya berkenan memberikan ijin observasi pendahuluan kepada mahasiswa kami tersebut. Adapun observasi tersebut akan dilaksanakan dengan ketentuan sebagai berikut:

1. Objek : Observasi Pendahuluan
2. Tempat / Lokasi : Jl. Masjid Kauman RT 07/RW 01 Cilongok, Kec. Cilongok, Kab. Banyuwangi, Jawa Tengah
3. Tanggal Observasi : 21-03-2023 s.d 04-04-2023

Kemudian atas ijin dan perkenan Bapak/Ibu, kami sampaikan terima kasih.

Wassalamu'alaikum Wr. Wb.

An. Dekan
Ketua Jurusan Tadris



Maria Ulipah



LEMBAGA PENDIDIKAN MA'ARIF NU KABUPATEN BANYUMAS
Akte Notaris : Muryati Sulam, SH, MA, Nomor 04 Tahun 2013
SMP MA'ARIF NU 1 CILONGOK
TERAKREDITASI "A"
Alamat : Jl. Masjid Kauman Cilongok (timur lapangan sepak bola Cilongok 53162)
Telp. ☎ (0281) 655332 E-mail : namaarifbanyuw@gmail.com

SURAT KETERANGAN MELAKSANAKAN OBSERVASI

Nomor : 023/LPM/33.08/SMP-04/G/VIII/2023

Yang bertanda tangan di bawah ini :

Nama : HIDAYATULLOH, S.Ag.,M.Pd.
NIP : -
Jabatan : Kepala Sekolah

Dengan ini menerangkan bahwa :

Nama : Ratna Ainun Nadya
NIM : 1717407026
Semester : 13 (Tiga Belas)
Jurusan/Prodi : Tadris Matematika
Tahun akademik : 2023/2024
Tempat Kuliah : UIN Saizu Purwokerto

Telah melaksanakan penelitian di SMP Ma'arif NU 1 Cilongok yang dilaksanakan pada tanggal 14-19 April 2023.

Demikian surat keterangan ini dibuat untuk dipergunakan sebagaimana mestinya.



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SURAT KETERANGAN

No. B-876/In.17/WD.I.FTIK/PP.009/V/2021

Yang bertanda tangan di bawah ini Wakil Dekan Bidang Akademik, menerangkan bahwa :

Nama : Ratna Ainun Nadya
NIM : 1717407026
Prodi : TMA

Mahasiswa tersebut benar-benar telah melaksanakan ujian komprehensif dan dinyatakan *LULUS* pada :

Hari/Tanggal : Jum'at, 21 Mei 2021
Nilai : B-

Demikian surat keterangan ini kami buat untuk dapat digunakan sebagaimana estinya.

Purwokerto, Mei 2021
Wakil Dekan Bidang Akademik,

Suparjo, M.A.
NIP. 19730717 199903 1 001



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SURAT KETERANGAN

SEMINAR PROPOSAL SKRIPSI

No. No. B2501.Un.17/FTIK.JTMA/PP.00.9/8/2023

Yang bertanda tangan di bawah ini, Koordinator Program Studi Tadris Matematika pada Fakultas Tarbiyah dan Ilmu Keguruan (FTIK) IAIN Purwokerto menerangkan bahwa proposal skripsi berjudul :

"The Analysis of Mathematical Understanding viewed from Student's Emotional Intelligent in 8th grade of SMP Ma'arif NU 1 Cilongok Banyuwangi District"

Sebagaimana disusun oleh :

Nama : Ratna Ainun Nadya
NIM : 1717407026
Semester : 13
Jurusan/Prodi : Tadris Matematika

Benar-benar telah diseminarkan pada tanggal : 15 Agustus 2023

Demikian surat keterangan ini dibuat dan dapat digunakan sebagaimana mestinya.

Purwokerto, 28 Agustus 2023
Mengetahui
Koordinator Prodi Matematika

Hidayatulloh, S. Ag., M. Pd.
NIP. 196811172008042003

Blanko Bimbingan Skripsi



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Telepon (0281) 635624 Faksimili (0281) 636553
www.uinszu.ac.id

BLANGKO BIMBINGAN SKRIPSI

Nama : Ratna Ainun Nadya
No. Induk : 1717407026
Fakultas/Jurusan : Tarbiyah dan Ilmu Keguruan/Tadris Matematika
Pembimbing : Dr. Maria Ulpah S.Si., M.Si.
Nama Judul : The Analysis of Mathematical Understanding Viewed From Student's Emotional Intelligent in 8th grade of SMP Ma'arif NU 1 Cilongok Banyumas District

No	Hari / Tanggal	Materi Bimbingan	Tanda Tangan	
			Pembimbing	Mahasiswa
1.	Kamis, 16 Februari 2023	- ACC Judul Skripsi		
2.	Selasa, 11 April 2023	- Revisi Judul Skripsi (ditambahkan Kabupaten) - Revisi Background of Problem (kurang sesuai dengan penelitian kualitatif) - Revisi Conceptual Definition (cari referensi yang ada di buku) - Literature Review (tambahkan penelitian tentang kecerdasan emosional) - Theoretical (tambahkan sub bab teori apa saja yang digunakan dan faktor-faktor apa yang mempengaruhi)		
3.	Senin, 17 Juli 2023	- ACC Proposal Skripsi		
4.	Selasa, 15 Agustus 2023	- Revisi paragraf latar belakang (paragraf terlalu sedikit) - Cari referensi asal sumber data		



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5.	Jum'at, 15 September 2023	- Bimbingan instrumen penelitian - Revisi indikator 2, 3, 4, dan 5 kisi-kisi soal tes pemahaman matematis - Tambahkan referensi pada kisi-kisi soal tes pemahaman matematis dan kisi-kisi angket kecerdasan emosional		
6.	Rabu, 1 November 2023	- Revisi kisi-kisi soal tes pemahaman matematis - Revisi indikator No. 2 kisi-kisi soal tes - Buat pertanyaan wawancara		
7.	Senin, 20 November 2023	- Validasi instrumen penelitian - Lakukan uji coba instrumen untuk mendapatkan validitas dan reliabilitas instrumen penelitian		
8.	Jum'at, 2 Februari 2024	- Bimbingan hasil uji validitas dan reliabilitas instrumen penelitian - Gunakan rumus slovin untuk menentukan sampel subjek penelitian - Kirimkan BAB III		
9.	Kamis, 21 Februari 2024	- Bimbingan BAB III - Revisi subjek tidak perlu menggunakan rumus slovin - Instrumen perlu di uji coba lagi di kelas lain		
10.	Jum'at, 1 Maret 2024	- Bimbingan hasil uji validitas dan reliabilitas instrumen penelitian		
11.	Senin, 1 April 2024	- Bimbingan BAB 1- V - Revisi BAB IV - Tambahkan kroscek dengan peneliti sebelumnya pada kesimpulan hasil penelitian - Tambahkan abstrak dan lengkapi halaman		



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12.	Rabu, 3 April 2024	- Bimbingan revisi BAB IV - Revisi abstrak dan cover tanpa watermark - ACC Skripsi		
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Dibuat di : Purwokerto
Pada tanggal : 4 April 2024
Dosen Pembimbing

Dr. Maria Ulpah, S.Si., M.Si.
NIP. 19801152005012004

BIOGRAPHY

A. Personal identity

1. Name : Ratna Ainun Nadya
2. Student Number : 1717407026
3. Place/date was born : Banyumas, October 18, 1999
4. Address : Pageraji RT 03/ RW 10, Cilongok Subdistrict, Banyumas District.
5. Father's name : Hartono
6. Mother's name : Sri Wahyuni

B. Educational background

1. Formal education
 - a. SD Negeri 2 Pageraji
 - b. SMP AL HIKMAH Benda
 - c. MA AL HIKMAH 2 Benda
 - d. UIN Prof. K.H. Saifuddin Zuhri Purwokerto
2. Non-formal education
 - a. AL-HIKMAH 2 Benda Islamic Dormitory
3. Organizational experience
 - a. English Department Student (EDS) (2016/2017) of Malhikdua
 - b. English Arabic Student Association (EASA) (2019/2020) of UIN Prof. K.H. Saifuddin Zuhri Purwokerto
 - c. HMPS Tadris Matematika (2019/2020) of UIN Prof. K.H. Saifuddin Zuhri Purwokerto.