



Analysis of Students' Ability in Solving Pisa Standard Financial Literacy Problems at State Yuniior High School 189

Tifany Larasati Dewi^{1*}, and Titik Ulfatun²

^{1,2} Accounting Education, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia
*a210190146@student.ums.ac.id

Abstract. Financial literacy is a process of developing knowledge, skills and confidence in managing money in everyday life. This study aims to analyze the ability of students to solve PISA standardized financial literacy questions at State Yuniior High School 189 Jakarta using qualitative research methods. This study was conducted at State Yuniior High School 189 Jakarta involving 33 students from class VIII. Data collected by providing samples of financial literacy questions issued by the OECD after the 2018 PISA field trials on unit "bank statement". The results of this study indicate that in question 1, as many as 23 out of 33 students (69.7%) who were the research sample were able to answer questions with the following details: 15 students answered correctly (45.5%), 8 students answered incorrectly (24.2%), and 10 students did not give an answer (30.3%). Meanwhile, in question 2, only 17 out of 33 students (51.5%) were able to answer questions with the following details: 5 students answered correctly (15.2%), 12 students answered incorrectly (36.4%), and 16 students did not give an answer (48.5%).

Keywords: Analysis, PISA, Financial Literacy, Bank Statement

1. INTRODUCTION

Education has a very important role in equipping the younger generation with the knowledge and skills needed to succeed in this increasingly complex world. In addition, education in Indonesia, which is still lacking in quality, is sufficient to add to the task of educational institutions to improve the quality of education in Indonesia. One of the efforts made by the government to improve the quality of education is to participate in various international standard assessment programs [1].

PISA (Program for International Student Assessment) is one of the international standard assessment programs participated by the Indonesian government to improve the quality of its education. OECD (Organization for Economic Cooperation and Development) as the organizer of PISA has an ambitious goal, namely to measure the quality of learning in a country in terms of student achievement aged 15 years 3 months to 16 years 2 months [2]. The PISA test is exploratory in nature and is used to provide various useful information for the government to make improvements to the education system [3]. In a global context, the Program for International Student Assessment (PISA) has become a benchmark measure that is widely recognized to evaluate students' financial literacy abilities in various countries.

PISA has been held since 2000 and at that time Indonesia became a participating country for the first time. During the 7 periods of the PISA assessment, the results achieved by Indonesian students were very poor. The ranking of the ability of Indonesian students is shown in Table 1. as follows:

Table 1. PISA ranking of Indonesian students in 7 periods.

No	Year	Rank
1	2000	39 out of 41 countries

No	Year	Rank
1	2000	39 out of 41 countries
2	2003	38 out of 40 countries
3	2006	50 out of 57 countries
4	2009	61 out of 65 countries
5	2012	64 out of 65 countries
6	2015	63 out of 70 countries
7	2018	74 out of 79 countries

Source: [3]

Table 1 shows that Indonesia's ranking is very low. Especially in the 2018 PISA assessment which showed Indonesia ranked 74th out of 79 participating countries. Indonesia's low ranking in PISA 2018 is also supported by research from Murtiyasa et al. [4], which states that the results of the PISA assessment are still below average because students are not trained to solve problems according to PISA standards. One of them is the theme of financial literacy. Apart from that, Sutama et al. [5] in their research also stated that not many students were able to solve PISA standard questions even though the questions had been translated and made easier. This theme relates to the subject of solving financial problems in everyday life and has been studied at the junior high to high school levels.

Financial literacy is the activity or process of developing knowledge, skills, and confidence in managing money in everyday life. But more than that, the meaning of literacy was also stated by Salahudin et al. [6], which includes visual literacy, which means the ability to recognize and understand ideas conveyed visually (scenes, videos, and images). Kemendikbud [7] defines financial literacy as knowledge and skills to apply concepts and understanding of risk, make effective and efficient decisions in financial situations, maximize personal and social financial well-being, and self-competence to participate in society. In addition, Harnovinsah et al. [8] also defines financial literacy as the ability to make judgments and make effective decisions related to managing the use of money. In short, financial literacy is knowledge about money that can be boldly acted upon by every individual. Financial literacy is very important for us, because society's financial literacy has proven capable of surviving difficult financial times [9].

Given the importance of financial literacy for all levels of society, the government is activating an understanding of finance and introducing it into education starting from elementary school (SD). Through effective and efficient learning, students will develop skills to understand, assess, and act on their financial situation. However, the level of financial literacy in Indonesia is still relatively low compared to other countries. For example, research conducted by Titik Ulfatun [10] showed that the financial literacy level of students at the UNY Faculty of Economics in the 2012-2014 class was 57%. If this percentage is interpreted into the financial literacy level criteria according to Chen and Volpe [11], then 57% is in the low category (<60%). The 2018 PISA assessment results published by the OECD in 2019 showed that Indonesia's ranking was very worrying in the field of financial literacy, where Indonesia was ranked last out of 20 countries that participated in the PISA program, especially in financial literacy material [12].

Table 2. Results of the Indonesian PISA Assessment on Financial Literacy Material.

Score Average	Participating Countries	Positional Score from the OECD Average
547	Estonia	
537	Finland	
532	Canadian Province	Above the OECD average
520	Poland	

511	Australia	Almost the same or not much different from the OECD average
506	United States of America	
505	Portugal	
501	Latvia	
498	Lithuania	
495	Russia	
492	Spanish	
481	Republic Slovakia	
476	Italy	
451	Chili	
444	Serbia	
432	Bulgaria	
420	Brazil	
411	Peru	
403	Georgia	
388	Indonesia	

Source: [13]

The difference in financial literacy scores between the countries with the highest and lowest performance according to Table 2 is more than 60% or 159 points. This gap shows a striking difference in the ability of 15-year-old children in Estonia and Indonesia to solve PISA financial literacy questions. If you look at the report on the results of the 2018 PISA assessment, it can be concluded that the financial literacy abilities of students in Indonesia are very concerning. This can be caused by several factors, including students in Indonesia who have minimal training in solving national standard financial literacy questions or PISA standard [14]. Even in every PISA assessment, Indonesia's ranking has not shown satisfactory results and tends to decrease [15].

The selection of PISA target schools is not necessarily done randomly, there are criteria for schools and students who will take the test. Selection of target schools by looking at the condition of schools that must be easily accessible and have facilities in the form of LAB's computer as well as adequate internet to conduct the test. While the selection of student samples conducted by the OECD is by conducting field trials on students in the form of PISA test questions in the year period, previously namely PISA 2015 and PISA 2018 [16]. Students who have scores above the average according to OECD provisions will take the PISA 2021 test. Therefore, in the PISA 2021 assessment, State Yuniur High School 189 Jakarta was selected by the OECD as one of the PISA target schools that will represent Indonesia in the implementation of the test, because the condition of the school and its students have met the specified criteria.

This article aims to analyze the ability of students to solve PISA standardized financial literacy questions in units "Bank Statement" at State Yuniur High School 189 Jakarta. The PISA standard provides a comprehensive framework for measuring students' financial literacy at the international level. In this study, we will look at the extent to which students are able to understand and apply important financial concepts in their daily lives.

2. RESEARCH METHODS

This research is a qualitative research with a case study design involving 33 students from class VIII at State Yuniur High School 189 Jakarta who have an age range of 13-15 years. State Yuniur High School 189 Jakarta was chosen as the research location because it was once a PISA 2021 target school. Data collection was carried out using a sample of financial literacy questions issued by the OECD after the PISA 2018 field trial on certain units, namely

“Bank Statement”. A unit bank statement consists of two kinds of questions with different levels on each question. This level distribution has been used since PISA 2012 and has not changed for three consecutive periods. Table 3 will provide an overview of the characteristics of each ability level, especially level 4 and level 5 contained in the unit bank statement.

Table 3. Level of Financial Literacy Ability in PISA 2018.

Question	Level	Explanation
1	4	Students translate their understanding of less common financial concepts and terms into contexts that will be relevant to them as they grow older
2	5	Students are able to analyze complex financial terms and can consider significant financial concepts but cannot be directly proven

Source: [13]

The data analysis model used by researchers is the Miles & Huberman [17] analytical model. The components in Miles & Huberman data analysis in this study are described as follows: (1) Data collection, in this case the researcher collects research data in the form of answers students after working on a sample of financial literacy questions issued by the OECD after the 2018 PISA field trial in units “Bank Statement”. (2) Data reduction, data reduction refers to the process of selecting, simplifying, and transforming “rough” data obtained during research. Data reduction takes place continuously until the research report is compiled. (3) Data presentation, the next most important flow of data analysis is data presentation. Presentation of data is a structured set of information that provides the possibility to draw conclusions and take action. (4) Conclusion drawing or verification, drawing conclusions here is carried out by the researcher from the beginning the researcher collects data such as seeking understanding that has no pattern, noting the regularity of explanations, and causal flow, the final stage is summarizing all the data obtained by the researcher.

The questions used in this study are as follows:

Every week, Mrs. Maya transfers IDR 130.000 to her son’s bank account. In Zedland, banks charge a fee for each transfer. Mrs. Maya received this statement from her bank in November 2022.

ZEDBANK				
Statement for : Mrs. Maya			Account Type : Current	
Month : November 2022			Account Number : Z0005689	
Date	Transaction	Credit	Debit	Total
1 Nov	Initial Balance			IDR 1.780.250
5 Nov	Wages	IDR 575.000		IDR 2.355.250
5 Nov	Transfer		IDR 130.000	IDR 2.225.250
5 Nov	Cost Tranfer		IDR 1.500	IDR 2.223.750
12 Nov	Wages	IDR 575.000		IDR 2.798.750
12 Nov	Transfer		IDR 130.000	IDR 2.668.750
12 Nov	Cost Tranfer		IDR 1.500	IDR 2.667.250
13 Nov	Withdraw		IDR 165.000	IDR 2.502.250
19 Nov	Wages	IDR 575.000		IDR 3.077.250
19 Nov	Transfer		IDR 130.000	IDR 2.947.250
19 Nov	Cost Tranfer		IDR 1.500	IDR 2.945.750
26 Nov	Wages	IDR 575.000		IDR 3.520.750
26 Nov	Transfer		IDR 130.000	IDR 3.390.750
26 Nov	Cost Tranfer		IDR 1.500	IDR 3.389.250

27 Nov	Withdraw		IDR 180.000	IDR 3.209.250
27 Nov	Rental Fee		IDR 1.200.000	IDR 2.009.250
30 Nov	Interest	IDR 6.100		IDR 2.015.350

Source: [18]

Question 1:

What is the total fee charged by the bank when Mrs. Maya transfers money to her son in November?

This question is categorized at level 4, because students are required to put a bank statement and financial terms that are rarely used into contexts that will be useful to them as they get older. This question requires students to perform basic calculations in the form of addition or multiplication.

Question 2:

The next transaction occurred on December 3:

- A salary of IDR 575.000 was deposited into Mrs. Maya’s account
- Mrs. Maya transferred IDR 130.000 to her child’s account

Mrs. Maya did not make any other transactions on December 3. What was his new bank balance at the closing of accounts on December 3? (balance in IDR).

In question 2 it is categorized in level 5, because students are expected to be able to analyze complex economic terms and think about important economic concepts. In addition, students are also required to calculate bank balances at a certain time after adding new transactions without eliminating previously provided data. One of the considerations for unit selection “Bank Statement” is that students have learned the concepts that are appropriate to the item being tested. The questions used have been translated into Indonesian.

3. RESULTS AND DISCUSSION

The researcher conducted a qualitative analysis of students’ answers to analyze students’ ability to solve PISA-standard financial literacy questions on the unit “Bank Statement” at State Junior High School 189 Jakarta. Based on framework The newest PISA, these two questions are used to test the same unit but at different levels. As mentioned, the specific competency being tested is “interpreting data and evidence scientifically” from each level. The distribution of student answers is shown in Table 4.

Table 4. Distribution of Student Answers.

Question	Percentage Learners							
	Correct/Full Credit		Partial Credit		Wrong		Not Answering	
	n	%	n	%	n	%	n	%
1	15	45.5%	-	-	8	24.2%	10	30.3%
2	2	6.1%	3	9.1%	12	36.3%	16	48.5%

The data in Table 4 shows that the majority of students who did not answer the questions and were wrong in answering the questions. The most disappointing result refers to the second question, almost 85% of the total students who were in the research sample failed to answer the questions correctly. How students solve each question given will be discussed as follows:

Question 1:

What is the total fee charged by the bank when Mrs. Maya transfers money to her son in November?

This question asks students to interpret bank statements. Students are asked to identify bank fees from statements and perform basic calculations (addition or multiplication). The purpose of these questions is to test whether students can find information on statements and pay attention that these statements are not presented in total, but as individual transactions. Such skills are essential to correctly understand the information received from financial service providers. Therefore, this question is categorized at level 4.

The correct answer is IDR 6.000 with explanations that match the answers written by students. Such an answer leads to full credit. Of the 15 students who completed the questions correctly, 2 of them provided answers and explanations that were in accordance with what the researcher expected, namely writing down in detail how to complete the questions and the appropriate reasons. An example of student answers is shown in Figure 1.

UNIT 13 (PERNYATAAN BANK) – PERTANYAAN 1



Figure 1. An example of the correct answer to question 1 using a full explanation.

From Figure 1 it can be seen that the answer from the students was "the total cost is only Rp. 6,000 because each transfer has a fee of 1,500 and Mrs. Maya only made the transfer 4 times. $1,500 \times 4 = 6,000$." This answer is the answer desired by the researcher, where students provide a brief explanation of what they answered. Thirteen other students have also shown relevant abilities but have difficulty writing down their thoughts so they only write down how to solve them without providing explanations. The example of student answers shown in Figure 2 shows the completion of the question briefly, without explaining where the written numbers can be obtained.

UNIT 13 (PERNYATAAN BANK) – PERTANYAAN 1

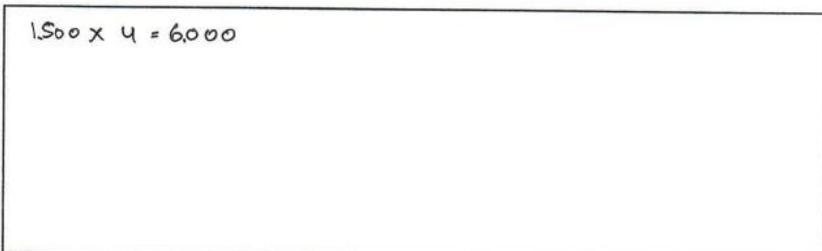


Figure 2. Example of correct answer to question 1 without full explanation.

Meanwhile, 18 students failed to complete the questions properly. Where, 11 of them did not write down the answers at all and 7 students failed to understand the questions given. Students were asked to answer how much interest the bank charged when Mrs. Maya

transferred money to her son. However, what the students wrote was the amount of money that Mrs. Maya transferred to her son. Examples of students' wrong answers can be seen in Figure 3.

UNIT 13 (PERNYATAAN BANK) – PERTANYAAN 1

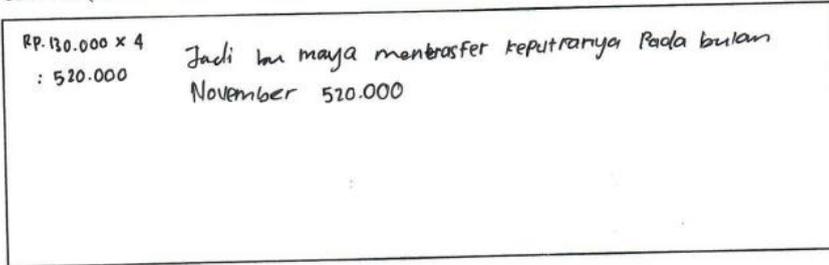


Figure 3. Example of wrong answer to question 1.

The way students answered this question showed that they were not familiar with financial literacy questions, especially those that used data and evidence to answer them. Most of them don't even use the data in their answers, although a few of them do. Therefore, it is important to familiarize students with financial literacy-oriented tests because an individual must be able to think along with evidence. If they are able to solve the problems presented, maybe they can far transfer them into real life contexts in solving everyday problems.

Question 2:

The next transaction occurred on December 3:

- A salary of IDR 575.000 was deposited into Mrs. Maya's account
- Mrs. Maya transferred IDR 130.000 to her child's account

Mrs. Maya did not make any other transactions on December 3. What was his new bank balance at the closing of accounts on December 3? (balance in rupiah)

This question requires students to calculate the bank balance at a certain point in time considering the initial balance and transactions that occurred. Full credit goes to learners who can not only add and subtract relevant amounts deposited and paid from accounts, but also account for transaction costs. Correct answers are given a full and partial credit score according to how the learner solves the problem. Therefore, this question is categorized as level 5.

The answers to question 2 are as follows:

a. Full credit

Referring to the student's answer in full and taking into account the transfer fee
 $= \text{IDR } 2.012.350 + \text{IDR } 575.000 - \text{IDR } 130.000 - \text{IDR } 1.500$
 $= \text{IDR } 2.458.850$

b. Partial credit

Referring to students who do not pay attention to transfer fees
 $= \text{IDR } 2.012.350 + \text{IDR } 575.000 - \text{IDR } 130.000$
 $= \text{IDR } 2.460.350$
 $= \text{IDR } 2.460.000$ (rounded up)

Refers to students who pay attention to transfer fees but are not written in detail or rounding (IDR 2.458.000 or IDR 2.459.000)

Of the 33 students who became the research sample, only 5 students were able to answer the questions correctly. Two students give answers with full credit, while the rest can answer with partial credit. Figure 4 will show the answers of students who answered this question with full credit.

UNIT 13 (PERNYATAAN BANK) – PERTANYAAN 2

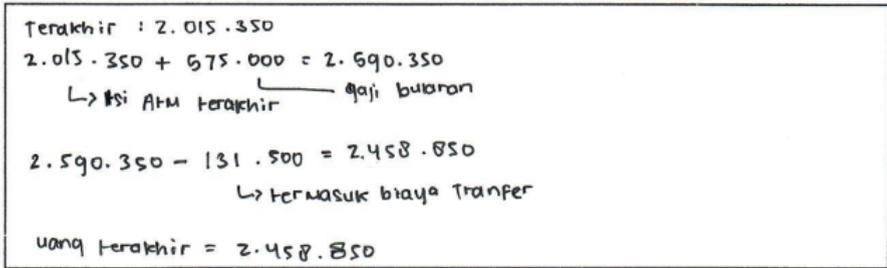


Figure 4. Example of correct answer to question 2 (full credit).

An example of students' answers shown in Figure 4 shows that they have provided a complete explanation and calculated the transfer fee. Students can use the method by adding to the final balance in November and the salary received by Mrs. Maya on December 3. The sum of the final balance and salary of Mrs. Maya is reduced by the amount of money that Mrs. Maya transferred to her son and the transfer fees charged by the bank. Another case is applied to students who present incomplete answers clearly but have demonstrated the ability to interpret data. Such an answer will be subject to partial credit. Student answers that were correct but only received partial credit can be seen in Figure 5.

Pertanyaan 2 :

Transaksi berikutnya terjadi pada tanggal 3 Desember:

- Gaji sebesar Rp 575.000 disetorkan ke rekening Bu Maya
- Bu Maya mentransfer Rp 130.000 ke rekening anaknya

Bu Maya tidak melakukan transaksi lain pada tanggal 3 Desember. Berapa saldo bank barunya pada penutupan akun tanggal 3 Desember? (saldo dalam rupiah)

2.460.350

Figure 5. Example of correct answer to question 2 (partial credit).

Figure 5 is an example of student answers that do not provide ways and explanations for answering questions. Students use the same method as calculating full credit but do not pay attention to costs transfer charged by the bank. Thus, such answers are given a partial credit score. In this case the students did not include how to do the questions so they could produce written answers. This can be caused by students who can understand the questions, but are too confused to express their thoughts.

There were 28 students who did not get a score, 12 of them answered incorrectly because they did not understand the meaning of the question and 18 students did not provide an answer. An example of an incorrect answer is shown in Figure 6. It is clear in Figure 6 that the students gave an explanation without using the data given in the table. Questions are presented in verbal form (text) but they cannot capture what is being asked. As a result, they

fail to associate what they need to do to solve this problem.

UNIT 13 (PERNYATAAN BANK) – PERTANYAAN 2

A handwritten calculation on a white background with a black border. It shows the number 575.000 with a plus sign to its right. Below it is 130.000 with a minus sign to its right. A horizontal line is drawn under 130.000. Below the line is the result 495.000.

Figure 6. Example of wrong answer to question 2.

In Figure 6 is one of the answers of students who failed to answer correctly. The students only used numbers in the questions given, namely a salary of IDR 575,000 which was deposited into Mrs. Maya's account and the amount of money that Mrs. Maya transferred to her child's account was IDR 130,000. Students do not use the tables listed in the questions, even though the tables and additional questions are interrelated.

Most of the students who gave wrong answers and did not answer question 2, around 85%. How they answered the questions showed low performance in reading both information presented verbally (text) and visually (tables). Students' reading ability plays a major role in literacy finance because those who have higher reading skills will also have higher skills in understanding financial issues [19].

Reviewing the ability of students to answer questions, some of the students gave a slightly longer explanation. That is, they are quite familiar with questions that require them to elaborate on their ideas. But the evidence proves that they have difficulty in expressing their thoughts and transferring information from one representation to another, namely from tables to text (from visual to verbal). This capability is one of the indicators framed by PISA which is the focus of this discussion.

The two issues discussed assess similar competencies, namely "interpret data and evidence scientifically" at each level. The number of students who answered correctly in the second question was less than in question 1. This is acceptable because the second question examines a higher level of difficulty than question 1. However, this is unacceptable by looking at the number of students who gave the correct answer for each section. These results confirm that students need to hone their financial literacy skills through various sources and media, especially in teaching and learning activities.

As previously explained in the 2018 PISA assessment results [13], Indonesia's ranking in financial literacy material is the last rank out of the 20 participating countries. The OECD [13] stated in the book that title PISA 2018 Result (Volume IV), that almost 95% of Indonesian students who took the PISA 2018 test were only able to reach level 1 to level 3, while no more than 5% of them were able to reach level 4 and level 5. The OECD statement has been proven in this study, where most students have not been able to reach level 4 and level 5. Percentage showed that only 45.5% of students reached level 4, while only 15.2% of students reached level 5. Researchers assume that students still lack an understanding of less common financial concepts and terms and are unable to analyze complex financial terms.

The findings of this study direct us to prepare the right way to guide students to achieve financial literacy skills. According to Sari [20], several methods that can be used to improve financial literacy skills include; (1) Mobile financial literacy education, (2) Product

simulation bank products, (3) Socialization in writing and orally, (4) Developing a curriculum design containing financial literacy material, (5) Technical assistance to educational institutions, (6) Thematic community service programs regarding financial literacy, and (7) Providing outlets OJK in higher education. Apart from that, various methods of teaching and learning activities and teaching materials can be used as an effort to support students' financial literacy competencies. There is strong evidence that the selection of good and appropriate teaching materials has a high effect on increasing literacy among students with the balance of the teacher's ability to guide the process of learning [21]. The teaching materials in question include a variety of resources such as reading books, practice books, homework, quizzes, and tests that are of national and international standards. Based on the last three sources mentioned, we suggest teachers use unit test the selected PISA is in accordance with the current financial literacy teaching topics to familiarize students with financial literacy competencies, test items, and how to answer questions. Strictly speaking, PISA unit tests are not linked to any particular school curriculum, but we strongly encourage the integration of specific PISA unit tests into the classroom. Since the issuance of PISA, several financial literacy test items have been prepared by PISA. With the topic of financial literacy to be taught, appropriate items or units can be selected that can be used and adapted to facilitate the identification of financial literacy.

4. CONCLUSION

For the unit bank statement test, the way students answered showed that not all students were able to answer the PISA test questions at levels 4 and 5. At ability level 4 in the first question, it showed that of the 33 students who were the research sample, only 15 students answered correctly (45.5 %), 8 students answered incorrectly (24.2%) and 10 students did not provide an answer (30.3%). Of the 15 students who answered correctly, two of them answered what the researcher expected, namely explain in detail how to solve the problem and give the appropriate answer. However, there were 13 students who only answered questions without giving a detailed explanation. Researchers assume that 13 students actually demonstrated relevant abilities but experienced difficulties in writing down their thoughts so they only wrote short answers without providing explanations.

Meanwhile, at ability level 5 in the second question, the results were more disappointing than level 4. Out of 33 students who were respondents, only 5 students were able to answer correctly (15.2%), 12 students answered incorrectly (36.3%), and 16 students did not give an answer (48.5%). The results of the research show that most of the students are not capable of reaching level 5 according to the PISA standard issued by the OECD. Researchers assume that the many students who fail to answer questions are caused by students not understanding the intent of the question asked. So that students fail to associate what they need to do to solve this problem. However, this research is only limited to the subject matter bank statement, further research is needed to get a comprehensive calculation.

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