

**Alifmatika: Jurnal Pendidikan dan Pembelajaran Matematika**

Volume 6, Issue 1, 104-119, June 2024

e-ISSN: 2715-6109 | p-ISSN: 2715-6095

<https://journal.ibrahimy.ac.id/index.php/Alifmatika>

Exploration of mathematical concepts in prayer and Mushofahah movements

Fifi Alfi Laili¹, Maswar Maswar^{2*}¹Students of Mathematics Education Study Program, Universitas Ibrahimy, East Java 68374, Indonesia^{2*}Mathematics Education, Universitas Ibrahimy, Situbondo, East Java 68374, Indonesia¹fifialfilaili2002@gmail.com, ^{2*}maswar@ibrahimy.ac.id

Received: March 15, 2024 | Revised: June 11, 2024 | Accepted: June 21, 2024 | Published: June 30, 2024

*Corresponding author

Abstract:

Knowledge of integration between mathematics and religion is necessary to increase a Muslim's mastery of scientific treasures. This article describes several mathematical concepts contained in prayer movements and *Mushofahah*. This research is a qualitative descriptive research type of literature review. Data/information collection methods are carried out by observation and documentation. These two methods are used to collect information about mathematical concepts contained in prayer movements and *Mushofahah*, obtained from several primary and secondary sources in the form of the al-Qur'an, al-Hadith, books, and scientific journals as well as documentation of prayer movements and *Mushofahah* (shaking hands). The data analysis technique used is content analysis. The research results showed many daily life activities, including prayer and *Mushofahah*, concrete examples of the integration of mathematics and Islamic religion. These concepts include: In the prayer movement, there were number concepts, which included the addition and multiplication of integers, algebraic concepts in the form of sets, arithmetic sequences, and geometric concepts in the form of lines and angles. Meanwhile, in *Mushofahah*, there were factorial concepts, permutation concepts, and opportunities.

Keywords: Exploration; Mathematical Concepts; Mushofahah; Prayer Movement.**How to Cite:** Laili, F. A., & Maswar, M. (2024). Exploration of mathematical concepts in prayer and Mushofahah movements. *Alifmatika: Jurnal Pendidikan dan Pembelajaran Matematika*, 6(1), 104-119. <https://doi.org/10.35316/alifmatika.2024.v6i1.104-119>

Introduction

Indonesia is rich in culture, race, language, customs, and religion. Six religions exist and are recognized in Indonesia, but of the six religions, Indonesia is among the majority of countries that adhere to the Islamic religion (Sabila & Neni, 2021). Regarding religion, Islam is the religion of Rahmatan Lil Alamin, which Rasulullah SAW taught. From an Islamic perspective, every existing law and rule will never be separated from four principles: the Koran, hadith, ijma', and qiyas. Thus, these four guidelines teach that a person's faith is based on belief and knowledge. A person who knows will be elevated in rank by Allah SWT. as Allah SWT says in surah QS. Al-Isra': 36, which reads. "And do not pursue that of which you do not know. Indeed, the hearing, the sight and the heart – about all those [one] will be questioned" (Ali, 2005; Saheeh International., 1997).



Content from this work may be used under the terms of the [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) that allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal.

In the verse above, Allah gives special attention to every Muslim to always seek knowledge because humans are creatures that Allah created accompanied by reason so that that reason can be put to good use with knowledge. Seeking knowledge is a person's obligation that must be fulfilled; this aims to enable humans to think and do things prescribed by religion. A person's knowledge can be seen from their education; until now, education in Indonesia continues to develop rapidly (Musbaiti et al., 2023). Education is a medium that creates quality and potential human beings and develops young Indonesian minds to become more active and create innovative imaginations.

The state has carried out various aspects to realize the nation's ideals, which are in harmony with Pancasila. Hence, education in Indonesia focuses not only on general knowledge but also on religious knowledge. Science without religion will be destroyed, but apart from that, the knowledge you have must be honed and integrated with real life. So, everything must be able to be collaborated, such as religious knowledge with medicine, physics, chemistry, mathematics, etc. In mathematics, many concepts can be integrated with Islamic religious values. It aims to ensure that someone is not only able to master mathematics but is also able to learn the greatness of Allah SWT. and make it happen in real life.

According to James et al. (1976), mathematics is a science that teaches logic, shape, structure, quantity, and many interconnected concepts and is divided into three fields: algebra, analysis, and geometry. Mathematics is a primary education curriculum that strategically improves the quality of human resources in Indonesia. Mathematics is part of the exact sciences, which teaches concrete and abstract things and deals with various symbols and numbers (Dinni, 2018). Mathematics has been used by every society in everyday life. Mathematics is part of culture and everyday life (Murtiyasa, 2010). Therefore, mathematics learning in schools today must be linked to the context of students' daily lives (Dewita et al., 2019). Related to mathematics ability, students at all levels may explore mathematics if they know that mathematics can be learned (Alpar & Van Hove, 2019). However, the belief that ability is a fixed trait (instead of a growth trait) is widespread and may be a key reason for students' underperformance and disinterest in mathematics (Kismiantini et al., 2021)

Mathematics learning is associated with 21st-century skills such as communication, collaboration, critical thinking in problem-solving, creativity, and innovation (Rahayu & Indra Putri, 2020). According to Abraham S Luchins and Edith N Luchins, mathematics can be answered differently depending on when the question is asked, where it is asked, who answers it, and what is deemed part of mathematics. Mustafa defined mathematics as the science of amount, shape, order, and size. Primary mathematics is the approach and process of determining with precise conceptions and consistent symbols the nature and relationship between quantity and size, either abstractly, in pure mathematics, or concerning advantages in applied mathematics (Yunus et al., 2015). Conceptual knowledge and procedural knowledge of students with high abilities can identify facts related to questions, know formulas, and manipulate formulas that will be used to solve problems and know examples and not examples. The student can also see the procedure that will be used to solve the problem and check the final results he gets (Felia & Defitriani, 2021; Manandhar et al., 2022).

However, the facts show that quite a few school students still think that mathematics is a subject that makes them "stressed," confuses their minds, wastes time, and tends to just mess around with useless formulas. Many students don't like mathematics lessons and even become math-phobic because they consider it a challenge

and a source of frustration. Many reasons cause this. Mathematics is a challenging topic because of its abstract, logical, systematic nature and use of complex symbols and formulas. In addition, students' negative attitudes toward mathematics lessons are shaped by their experiences studying with bad teachers (Marhamah, 2018; Wayan & Dewi, 2018).

Studying science by Abdussakir, including mathematics in Islam, is carried out holistically by utilizing the potential of dhikr and thinking using the Burhani, Bayani, and 'Irfani methods. Rationalist, empirical, and logical approaches (Bayani and Burhani) are needed to understand the natural aspects of mathematics. Meanwhile, intuitive, imaginative, and metaphysical approaches (Irfani) are required to understand the abstract aspects of mathematics. The main strength of mathematics lies in imagination or intuition, which is then accepted after being proven logically or deductively (Fathani, 2019). In the real world, mathematical concepts are closely related to human life, such as work and everyday life. It cannot be denied that with the science of mathematics, a person's ability to solve everyday problems can be resolved well, and reasoning will increase, so whether it is recognized or not, mathematics is a science that every human being must know as an alternative in dealing with all daily problems. Talking about the context of mathematics in Indonesia, the context of mathematics can be explored from various things in everyday life, such as buying and selling, household life, and education, to religious issues, such as prayer, zakat, distribution of inheritance, and so on, which can be integrated. In mathematical concepts, we take the example of worship.

Prayer is a pillar of religion that cannot be abandoned and is the second pillar of Islam (Agus Transyah et al., 2019). The command to carry out prayers has been prescribed since the beginning of the prophet Muhammad, and prophethood was strengthened again by the Isro'-Mi'roj incident. Prayer is obligatory for people who have reached the age of puberty, and it is a sin if they are neglected. Epistemologically, prayer is a prayer, while epistemologically, prayer is an activity in the form of several utterances or movements preceded by takbir and ending with greetings accompanied by several predetermined conditions and pillars. Five times are determined for prayer: dawn, Dhuhr, Asr, Maghrib, and Isya' prayer. In prayer, several movements can be connected to mathematical concepts, such as the prayer rak'ah, which includes the addition of whole numbers; the Makmum row, which contains horizontal lines and parallel lines, as well as the bowing and prostration movements, which form angles of 90° and 45° respectively. So, prayer is an important aspect that can be developed as a mathematics lesson. It will make it easier for students to learn and correlate mathematical concepts with real life.

The word prayer is accompanied by the word Qiyam in the Koran, which is mentioned 51 times. This number is proportional to the number of rak'ahs of prayer, namely 17 rak'ahs of the five obligatory prayers, plus 34 rak'ahs of the circumcision prayer; if the circumcision prayer at dawn (Shubuh) is considered two rak'ahs, eight rak'ahs of the midday prayer, eight rak'ahs of the Asr prayer, four rak'ahs of the Maghrib prayer, and Isha circumcision is regarded as one rak'ah of two. one sitting rak'ah, plus 11-night circumcision rak'ahs, so the total is 34 rak'ahs. Thus, the total number of prayers with 17 rak'ahs of obligatory prayers becomes 51 rak'ahs (Soimah & Tilawah, 2021).

Based on the above exposure, the author took the initiative to do this research after looking at a previous study that discussed mathematical concepts with prayer movements (Syafiulia & Mariana, 2021) with the title "Exploration of Mathematical

Concepts on Sholat Tarawih Through Auto-Ethnographic Studies,” which found the existence of mathematics concepts that include numbers, build spaces, flat builds, and angular relations. Then, another study was conducted (Yasin & Indah Nursupriah, 2019) with the title “Mathematical Modeling of the Number of Sholat Cancers in Human Health,” which found mathematical modeling of the number of prayer movements cancers that relate to the burning of calories as well as related things about human health. Further research was conducted by Khalishah et al. under the title “Exploration of Geometry: Relationship of 180-Degree Angles with the Sholat Eclipse,” which contains mathematical concepts concerning geometry and the relation of angles (Khalishah et al., 2021).

Based on the findings of the research, the author is increasingly interested in writing articles about the relationship between religious science and mathematical concepts so that we can study mathematics not only textually but also conceptually about the activities of everyday life, such as religion, worship, and devotion, and learn the unknown secrets of the integration of mathematics and religion. Therefore, Based on the background, the author is increasingly interested in developing an article on mathematical notions against religion. Hence, this research aims to describe the mathematical concepts of the prayer and Mushofahah movements.

Research Methods

This research is a qualitative descriptive literature review intended to describe the integration of mathematics and the Koran in the specifications for the study of prayer movements and Mushofahah. Meanwhile, data and information collection methods are carried out through observation and documentation. These two methods are used to collect information about mathematical concepts contained in prayer movements and Mushofahah, obtained from several primary and secondary sources in the form of the al-Qur’an, al-Hadith, books, and scientific journals, as well as documentation of prayer movements and Mushofahah (shaking hands). The data analysis technique used in this research is content analysis (Mutijah, 2018).

Results and Discussions

Analyzing the words of Allah SWT, in Surah Al-Muj, the 58th verse 11, which explains the importance of knowledge for a person, the knowledge that is possessed must not only be limited to understanding material and theory but must be able to be implemented in day-to-day life. Thus, knowledge is not limited to understanding; it is also application-based. In line with this, learning at school must also be able to be implemented in real life. The examples we take are prayer and Mushofahah. Mathematical concepts contained in prayer and Mushofahah are:

Prayer Movement

Prayer is an obligation that Muslims carry out every day at least five times a day as a form of gratitude and our faith in Allah SWT. When performing prayer, all aspects of health (birth, mental, and thought) work together in harmony. The motivation to perform prayer comes from self-awareness (mental, spiritual, and thought aspects) to serve Allah SWT as the Creator. Then, proceed with the pillars or prayer movement

structure (Adi, 2006). According to Syah (2000), prayer will make a person behave positively. Positive means good, practical, and in line with expectations. It also means that the change is always an addition, namely the acquisition of something new (such as new understanding and skills) that is better than what existed before (Lusriyanti & Yusuf, 2020). The prayer movement has mathematical elements, including numbers, algebra, and geometry.

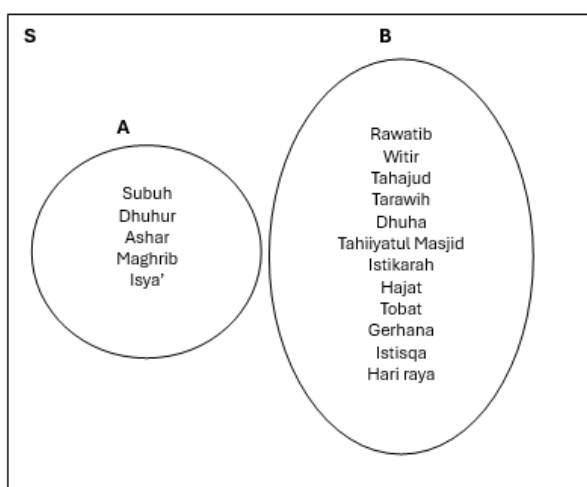
Number Concepts.

In the concept of numbers, there are sub-discussions on addition and multiplication. Examples of this are the addition and multiplication of numbers. In addition, in the number of rak'ahs of prayer, there are 17 rak'ahs with details of dawn (2), Dhuhr (4), Asr (4), Maghrib (3), and Isha' (4), so when added up, it is $2 + 4 + 4 + 3 + 4 = 17$ (Agus Transyah et al., 2019). This concept teaches us how to know the count in prayer. Then, for the multiplication of numbers, prayers have repeated readings such as al-fatihah, bowing, prostrations, and so on, so we will know how much we read these readings in worship. For example, we will recite the Fatihah 4 times during the midday prayer. The mathematical concept formed is $4 \times 1 = 1 + 1 + 1 + 1 = 4$. Whereas in each rak'ahs, we will prostrate two times, and the reading is repeated three times, the mathematical concept is $2 \times 3 \times 4 = 24$. Thus, we will repeat the prostration reading 24 times in our midday prayer.

Multiplication is a mathematical operation that indicates how many times a number is added to itself. It is signified by the multiplication signs (\times) or ($*$). Thus, the concept of multiplication contained in the midday prayer activity also explains its correlation with the idea of addition. By definition, $4 \times 1 = 1 + 1 + 1 + 1$ equals the sum of the number 1 repeated four times (added to itself).

Algebra Concepts: Set and Arithmetic Sequences.

The concept of algebra consists of the idea of sets and arithmetic sequences. In prayer, there is also the concept of set. A set is a collection of things or objects that can be clearly defined (Goldie, 2012; Svirin, 2004). Examples of sets are S = universe of prayer sets, A = set of obligatory prayers, and B = set of Sunnah prayers (Rhomadani, 2022). So, the set of obligatory prayers is (Subuh, Dhuhr, Ashar, Maghrib, Isya') the form of the ven diagram is:



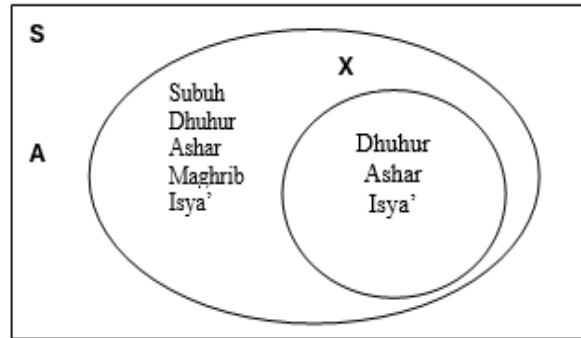
Picture 1. Venn Diagram of Obligatory and Sunnah Prayers

For the set concept

A = set of obligatory prayers

X = set of prayers totaling four rak'ahs

The set of prayers that have four rak'ahs (Dhuhur, Asharr, Isya') in the form of a ven diagram are:

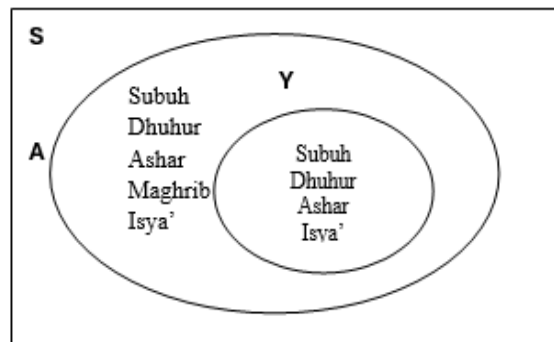


Picture 2. Venn Diagram of The Set of Prayer Parts Totaling four Rak'ahs

The set of prayers consisting of 4 rak'ahs, namely Dhuhur, Asr, and Isha', is also called a subset of the set of obligatory prayers, called X subset A.

A = set of obligatory prayers

Y = an even number of obligatory prayers (Those with even numbers (Subuh, Dhuhur, Ashar, Isha').



Picture 3. Venn Diagram of The Set of Even-Numbered Obligatory Prayers

While in Algebraic Concepts arithmetic sequences, Abu Daud narrated that Rasulullah SAW. said: "Do five, seven, nine or eleven rak'ah Witr prayers" (Eri Agus et al., 2020). Based on the hadith above, it is known that the number of rak'ahs for the Witr prayer starts from 1, 3, 5, 7, 9, 11. Thus, the mathematical concept is a series of odd numbers less than or equal to 11. If written in set form, it becomes $W = \{x \mid 1 \leq x \leq 11, x \in \text{Odd Number}\}$. Apart from that, the Tahajjud prayer can also be an example of a sequence of numbers, namely: The number of rak'ahs of the Tahajjud prayer starts from 2, 4, 6, 8, n so, the mathematical concept is a sequence of even numbers. If written in set form, it becomes $Z = \{x \mid x \geq 2, x \in \text{Even Number}\}$ (Agus Transyah et al., 2019).

An arithmetic sequence is a sequence to express the nth term; the formula usually used is $U_n = a + (n - 1)d$. We know that U_n is the n^{th} the term a is the 1^{st} The term n is the term number, and d is the common difference. An example that can be applied to

arithmetic sequences is the Tahajjud prayer. In the Tahajjud prayer, the rak'ahs form an even number pattern, and the ratio of U_1 to U_2 has the same ratio. So the mathematical concept is:

1st Greeting term: $U_1 = 2$

2nd Greeting term: $U_2 = 2 + 2$

3rd Greeting term: $U_3 = 2 + 2 + 2$

.
. .
.

The n^{th} greeting term: $U_n = 2n$. Thus, the n^{th} number of greetings term is equal to $2n$

Example :

Ahmad was performing the Tahajjud prayer; he was always Wastiqomah doing it. In the 1st greeting, he performed two rak'ahs; by the 3rd greeting, he had performed six rak'ahs. One day, he wants to think about how many rak'ahs he has done in Salam 7.

Solution:

Known: $a = 2, d = 2$

Asked: U_7

Answered: $U_n = a + (n - 1)d$

$$U_7 = 2 + (7 - 1)2$$

$$U_7 = 2 + 6 \times 2$$

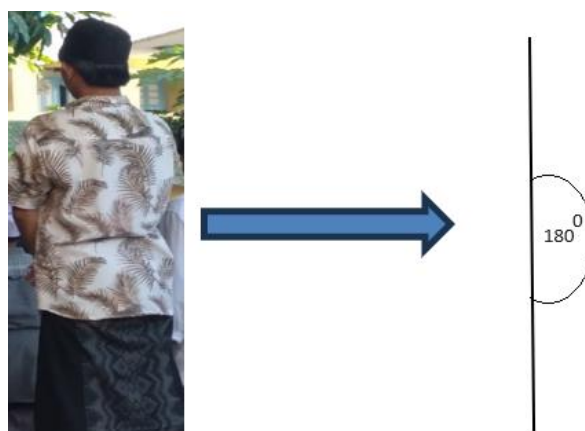
$$U_7 = 2 + 12$$

$$U_7 = 14$$

Thus, the number of rak'ahs in the 7th greeting term is 14 rak'ahs

Geometry Concepts

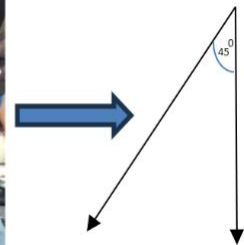
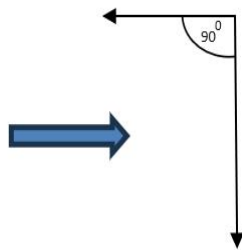
Prayer movements also illustrate mathematical knowledge about geometry. The geometry in question is lines and angles. When praying, a person's position will stand upright, forming a vertical line that points up and down. It is under the concept of line segments. The vertical line illustration is:



Picture 4. Illustration of Standing Prayer Movements Forming A Straight Line and A 180 Degree Angle

When carrying out congregational prayers, the shof of the congregation forms a straight line under the concept of a line. A line is a collection or set of several points so that one person in the congregation is illustrated as a point. Thus, a collection of several people in a congregation will form a line. Each line will have an end and a base, while the Makmum Shof also forms a horizontal line pattern. Then, the angle on a straight line is 180 degrees.

One of the particular angles, namely 180° , 90° , and 45° They are found in prayer when standing, bowing, and prostrating. An angle of 180° It will be formed when standing. Meanwhile, an angle of 90° occurs during the bowing movement. Ruku' is a prayer movement that uses both knees as the fulcrum and straightens the back to form a 90° Angle while the starting point is the waist. When performing the prone action, the first line generated from the beginning point will form an angle of 45 degrees. The starting point here is the waist towards the head, while the second line is the waist towards the knees. The illustration is as follows:



Picture 5. Illustration of The Bowing Prayer Movement Forming A 90 Degree Angle

Picture 6. Illustration of The Prostration Prayer Movement Forming A 45 Degree Angle

Overall, the number of angles formed during the prayer movement is 360 degrees. It is obtained from the movement when standing 180 degrees + the movement when bowing 90 degrees + the movement when prostrating 45 degrees + the movement when prostrating 45 degrees. Thus, from here, we can conclude that in 1 rak'ah of prayer, we form a 360° angle per rak'ah, Ahmad Jamaludin (Khalishah et al., 2021).

It is known that the types of angles and angle measures are acute angles (between 0° and 90°), right angles (90°), obtuse (between 90° and 180°), straight (180°), reflex (between 180° and 360°), and revolution angles (360°)(Greenwood et al., 2015). Not only that, this indicates that the planet is prostrating itself to Allah SWT. by rotating on its axis 360° . This rotation requires at least 12 gears representing the earth, which is depicted in the gears of the prayer movement. The number 12 is obtained from the KPK (Least Common Multiple) numbers 3, 4, 2, 4, 4. The teeth of the Fajr prayer wheel are 6, namely $12 : 2 = 6$, because Fajr is two rak'ahs. The teeth of the noon prayer wheel are 3, namely $12:4 = 3$ because noon is four rak'ahs. The teeth of the Asr and Insha prayer wheels are 3, namely $12:4 = 3$ because the Asr and Isha's prayers are four rak'ahs. So, the teeth of the prayer wheel are equivalent to the arrangement of the letters "Bismillahirrahmanirrahim, 34336"(Soimah & Tilawah, 2021):

بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ

There are many benefits that a person can experience from praying. Of course, this is practiced directly and indirectly in mathematics and religion classes in school. Prayers educate to purify oneself from bad qualities; Prayers educate the Unity and Unity of the Ummah, Prayers educate Time Discipline; prayers educate Obedience to Leaders; prayers Educate Courage to Remind Leaders, and Prayers Educate Healthy Living (Ahmad, 2019). The research results show that implementing prayer services has a considerable and significant influence on work ethic (Qodar et al., 2017). Then, Implementing the early fardu prayer is one factor in forming a person's disciplinary character (Sarifudin & Madromi, 2021).

Mushofahah (Shaking Hands)

Mushofahah is a custom carried out in Indonesia, which involves kissing the hand of someone considered older, more honorable, or more authoritative. This activity is a form of respect and is etiquette or polite behavior. Sometimes, someone doesn't just kiss the hand once but turns the back and palm three times.

According to Imam Nawawi, Mushofahah is stretching the surface of the hand to the surface of another (person's) hand to strengthen affection. Then, Musafahah, or shaking hands, is an action carried out by touching the palm of their hand with another person and facing each other to strengthen brotherhood by establishing friendship between fellow Muslims and strengthening affection (Munadi, 2021).



Picture 7. Illustration of The Mushofahah Movement

The image above is a picture of someone doing Mushofahah. So, this way of shaking hands can be used as a form of mathematics learning at school. Examples of mathematical concepts are: Three students were visiting the teacher's house of the Salafiyah Syafi'iyah Islamic boarding school in Sukorejo; the students said hello and shook hands with the Kyai by turning their backs and palms:

1. What is the order of Mushofahah (shaking hands) between the students and the teacher?
2. How many Mushofahah activities take place?
3. What character values are reflected in the context of the question? (Richardo, 2020)

Answered :

1. this problem can be solved using the factorial concept. The factorial concept (symbol: !) means multiplying a series of descending natural numbers.

$$\begin{aligned} n! &= n \times (n - 1)! \\ 3! &= 3 \times (3 - 1)! \\ &= 3 \times (2)! \\ &= 3 \times 2 \times 1 \\ &= 6 \end{aligned}$$

Note: it is generally agreed that $0! = 1$. It may seem funny that multiplying no numbers together gets us 1, but it helps simplify many equations.

Where n is the number of things to choose from, and we choose r of them, no repetitions, order matters. Instead of writing the whole formula, people use different notations, such as these:

$$P(n, r) = P_r^n = \frac{n!}{(n - r)!}$$

Here, " $P(n, r)$ " represents the " n " objects to be selected from " r " objects without repetition, in which the order matters. In this case, there are as many r objects to be chosen as n permutation objects. So, the permutations obtained are precisely the same as the factorial function for interval $0 < r \leq n$, (Corteel et al., 2006).

$$\begin{aligned} P(3,3) &= P_3^3 = \frac{3!}{(3 - 3)!} \\ P(3,3) &= P_3^3 = \frac{3!}{0!} \\ P(3,3) &= P_3^3 = \frac{3!}{1} = 3! \end{aligned}$$

Thus, for $r = n$ objects in a permutation is equal to with factorial function ($n!$), $P_n^n = n!$.

Permutations and factorials are closely related to mathematical concepts. Permutations relate to the order of objects, while factorials involve all possible outcomes of an event. If items are ordered in a particular way, factorials determine the number of times they can be ordered.

Solution with cyclical permutation in mathematics;

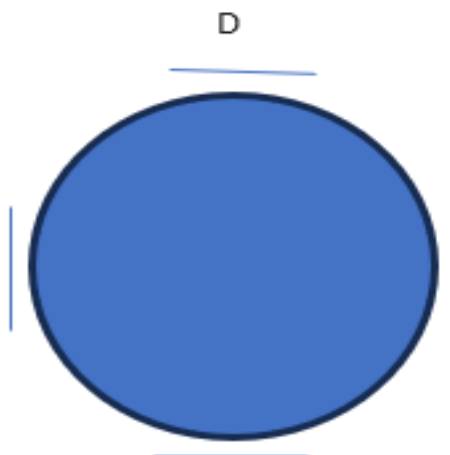
$$P_n = (n - 1)!$$

Information:

P: Permutation

n: Many Elements

!: Faktorial Symbol



Picture 8. Illustration of a Cyclical Permutation of 4 Objects

For illustration, D (teacher) is already sitting in his chair, meaning that A, B, and C (students) have not occupied the three remaining chairs. Thus, this case has four elements, including a teacher (1) and three students (3). In cyclic permutation is obtained:

$$\begin{aligned}
 P_n &= (n - 1)! \\
 P_4 &= (4 - 1)! \\
 P_4 &= (3)! \\
 P_4 &= 3 \times 2 \times 1 \\
 P_4 &= 6
 \end{aligned}$$

Next, by using the Permutation and Combination Calculator, similar results are obtained as follows:

Total Amount in a Set (n)

Amount in each Sub-Set (r)

Calculate
Clear

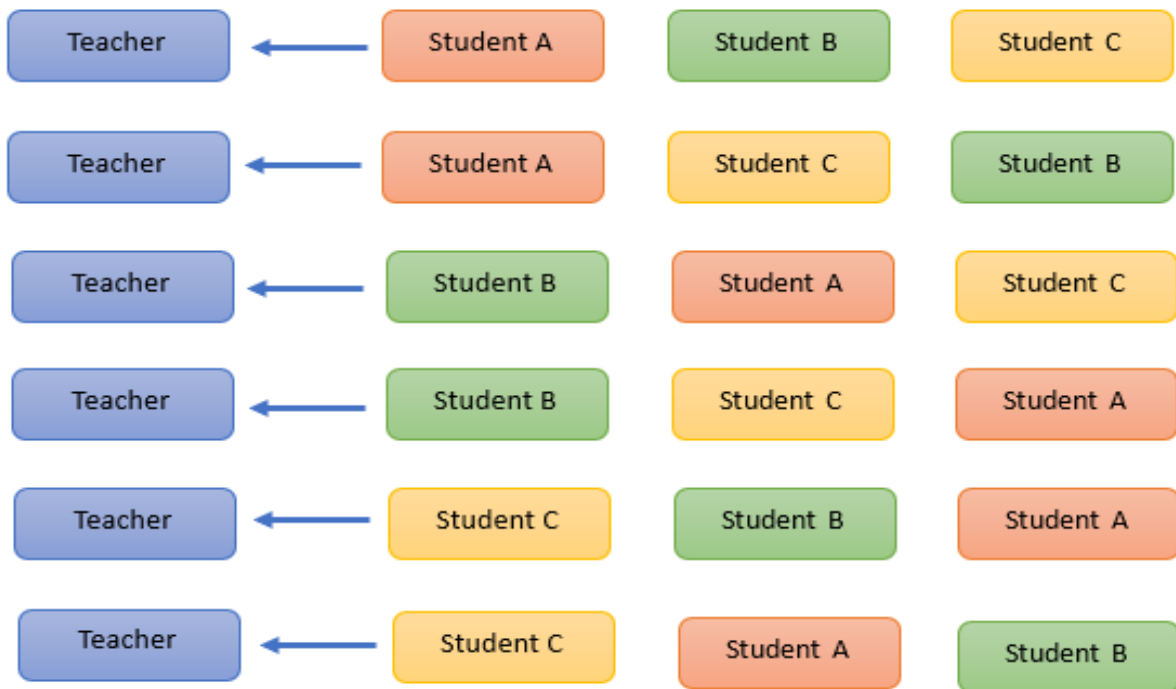
Result

Permutations, ${}_n P_r = \frac{3!}{(3-3)!} = 6$

Combinations, ${}_n C_r = \frac{3!}{3! \times (3-3)!} = 1$

Picture 9. The result of Permutation and Combination Calculator

The number of Mushofahah Strategies that occur based on question 1 equals 18. Please pay attention to the following diagram illustration!



Picture 10. Diagram of The Mushofahah Strategies Number

Specifically, it can be seen through the following solution illustration:

Table 1. The Mushofahah Completion Strategies Below

Number	Completion Strategy	Ways	Number of Mushofahah
1	ABC	First Way	3
2	ACB	Second Way	3
3	BAC	Third Way	3
4	BCA	Fourth Way	3
5	CBA	Fifth Way	3
6	CAB	Sixth Way	3
Sum		6	18

Based on the solution above, it shows that the possibility of Mushofahah occurring is 18 times. Various things in our lives will never be separated from mathematics, so we have to know mathematics to simplify all the problems that arise in our environment. The character values reflected in the context of the questions are religious. Character values are determined based on Minister of Education and Culture Regulation Number 20 of 2018. Spiritual values are reflected in the fact that kissing a cleric's hand to respect and appreciate goodness and knowledge is a virtue in the Islamic religion (Richardo, 2020).

In Indonesia, shaking hands or Mushofahah between students and teachers is a highly respected custom and is considered a form of respect and a sign of mutual respect. In this tradition, students not only shake hands but often kiss the teacher's hand

as a symbol of respect and acknowledgment of the knowledge provided by the teacher. This Mushofahah contains deep moral values and teaches students always to respect older and more knowledgeable people.

Apart from the moral and ethical aspects, Mushofahah can also be thought of as teaching about the concept of factorials and cyclical permutations in mathematics. In this case, each shaking hands between student and teacher can be seen as one of many combinations or permutations of school encounters. Factorial, which in mathematics is the product of all positive numbers up to a certain number, describes the unique ways a student can shake hands with a teacher on different days. Meanwhile, cyclical permutations reflect how students can shake hands in various ways but in a repeating order, similar to the cycle of daily meetings. Thus, Mushofahah not only enriches students with ethical and moral values but also implicitly teaches fundamental mathematical concepts, showing the deep meaning of this simple habit.

Conclusions and Suggestion

In conclusion, the integration between mathematics and religion can be seen through various religious practices, such as prayer movements and Mushofahah. In prayer, we can find concrete applications of mathematics, such as numbers, the repetition of certain rak'ahs, and movements that involve regular counting. Set: The group of movements in each rak'ah forms a set of movements that must be performed sequentially. Algebra: The sun's position may be used to calculate prayer times using algebraic techniques. Arithmetic Sequence: The sequence of movements and rak'ahs in prayer forms a regular sequence. Geometry: Qibla direction and congregational prayer formations teach the concept of geometry in space. Thus, in Mushofahah, between students and teachers, there are mathematical concepts such as factorial: Every meeting and shaking hands can be considered a unique combination that can be calculated using factorial concepts. Cyclical Permutation: A shaking hands pattern that repeats in a particular order describes a cyclical permutation. Thus, daily religious practice teaches moral and ethical values and contains deep mathematical concepts. It shows that mathematics and religion can complement each other and integrate with everyday life, enriching our understanding of both fields.

The research results are recommended for anyone who wants to know about mathematical concepts in prayer and Mushofahah. The study from this paper is suitable for use as literacy or even contextual mathematics learning media, which can be directly practiced by students studying mathematics in school classes. It is a study that can be understood as an alternative solution to the problems of everyday life. Tika: The sequence of movements and rak'ahs in prayer forms an orderly line.

Acknowledgments

We want to thank the Head of the Mathematics Education Study Program at Ibrahimy Situbondo University, who helped us complete this scientific work, supported and guided us during the writing, and helped us find the correct references and prepare the required documents. The integration of mathematics and religion is significant to be studied by all Islamic boarding school students as prospective teachers, especially in

mathematics education study programs and students in all school institutions. One of them is the integration of mathematics with prayer and Mushofahah movements.

References

- 'Alī, M. Sher. (2005). *The Holy Qur'ān: Arabic text and English translation*. Islam International Publications Ltd.
- Agus Transyah, E., Astuti, D., & Hamdani. (2019). Analisis contoh kontekstual konsep matematika sekolah yang terdapat dalam ibadah Shalat [Analysis of contextual examples of school mathematics concepts contained in prayer services]. *Jurnal Untan*. <https://jurnal.untan.ac.id/index.php/jpdpb/article/view/35836>
- Ahmad, N. (2019). Penanaman nilai-nilai ibadah sholat dalam merekonstruksi akhlak narapidana di Lapas kelas IIB kota Pariaman [Instilling the values of prayer in reconstructing the morals of prisoners in class IIB prisons in the city of Pariaman]. *Mauizhah: Jurnal Kajian Keislaman*, 9(2), 1-20. <https://doi.org/10.55936/mauizhah.v9i2.24>
- Anonim. (2024). *Calculator*. Diakses 27 Mei 2024. <https://www.calculator.net/permutation-and-combination-calculator.html?cnv=3&crv=3&x=Calculate>. Diakses, 27 Mei 2024
- Corteel, S., Louchard, G., & Pemantle, R. (2006). Common intervals in permutations. *Discrete Mathematics and Theoretical Computer Science DMTCS*, 8(1), 189-214. <https://doi.org/10.46298/dmtcs.362i>
- Dewita, A., Mujib, A., & Siregar, H. (2019). Studi etnomatematika tentang bagas godang sebagai unsur budaya mandailing di Sumatera utara [Ethnomathematical study of bagas godang as an element of Mandailing culture in North Sumatra]. *Mosharafa: Jurnal Pendidikan Matematika*, 8(1), 1-12. <https://doi.org/10.31980/mosharafa.v8i1.530>
- Dinni, H. N. (2018). HOTS (high order thinking skills) dan kaitannya dengan kemampuan literasi matematika [HOTS (high order thinking skills) and its relationship to mathematical literacy abilities]. *Prisma, Prosiding Seminar Nasional Matematika*, 1(1), 170-176. <https://journal.unnes.ac.id/sju/prisma/article/view/19597>
- Fathani, A. H. (2019). *Fathani, A. H. (2019)*. Pembelajaran Matematika bagi Santri Pondok Pesantren Berbasis Kecerdasan Majemuk [Mathematics learning for Islamic boarding school students based on multiple intelligence]. *Anargya: Jurnal Ilmiah Pendidikan Matematika*, 2(1), 46-53. <https://doi.org/10.24176/anargya.v2i1.3043>
- Felia, D., & Defitriani, E. (2021). Analysis of student's conceptual and procedural knowledge in solving mathematics. *Journal of Research on Mathematical Instruction*, 3(1), 14-24. <https://doi.org/10.33578/jrmi.v3i1.60>
- Goldie, Sophie. (2012). *Pure mathematics. 1*. Hodder Education.
- Greenwood, D. M., Humberstone, Bryn., Robinson, Justin., Goodman, Jennifer., & Vaughan, Jennifer. (2015). *Essential mathematics for the Australian curriculum year 7*. Cambridge University Press.

- Khalishah, N., Salafudin, H., Jurusan Tadris Matematika, M., & Fakultas Tarbiyah dan Ilmu Keguruan, D. (2021). Eksplorasi geometri: Relasi sudut 180° dengan Sholat gerhana [Geometric exploration: The relationship between the 180° angle and the eclipse prayer]. *Santika: Seminar Nasional Tadris Matematika* 1(1), 201-218. <https://proceeding.uingusdur.ac.id/index.php/santika/article/view/351>
- Kismiantini, Setiawan, E. P., Pierewan, A. C., & Montesinos-López, O. A. (2021). Growth mindset, school context, and mathematics achievement in Indonesia: A multilevel model. *Journal on Mathematics Education*, 12(2), 279-294. <https://doi.org/10.22342/jme.12.2.13690.279-294>
- Lusriyanti, V., & Yusuf, H. (2020). Kemampuan melakukan gerakan shalat melalui praktek langsung [Ability to perform prayer movements through direct practice]. *Jurnal Riset Golden Age PAUD Uho*, 3(3), 246-254. <http://ojs.uho.ac.id/index.php/RGAP/article/view/15400>
- Manandhar, N. K., Pant, B. P., & Dawadi, S. D. (2022). Conceptual and Procedural Knowledge of Students of Nepal in Algebra: A Mixed Method Study. *Contemporary Mathematics and Science Education*, 3(1), 1-10. <https://doi.org/10.30935/conmaths/11723>
- Marhamah. (2018). Belajar matematika melalui permainan matematika [Learn mathematics through math games]. *Seminar Nasional 21 Universitas Pgris Palembang*. <https://jurnal.univpgripalembang.ac.id/index.php/Prosidingpps/article/view/1906>
- Munadi, R. (2021). Berjabat tangan dalam perspektif hadis Nabi; Suatu kajian ma'ani al hadis [Shaking hands in the perspective of the Prophet's hadith; A study of ma'ani al hadith]. *Jurnal Ushuluddin: Media Dialog Pemikiran Islam*, 23(2), 99-115. <https://doi.org/10.24252/jumdpi.v23i2.23212>
- Musbaiti, Miftahurrahmah, R., Nabila, Z., & Fahmy, R. (2023). Eksplorasi etnomatematika masjid agung al-muhtaram kajan kabupaten pekalongan dalam pembelajaran matematika [Exploration of ethnomathematics at the Grand Mosque of Al-Muhtaram Kajan, Pekalongan Regency in mathematics learning]. *Circle: Jurnal Pendidikan Matematika*, 3(1), 53-65. <https://doi.org/10.28918/circle.v3i1.355>
- Mutijah. (2018). Model integrasi matematika dengan nilai-nilai islam dan kearifan lokal budaya dalam pembelajaran matematika [Model of integration of mathematics with Islamic values and local cultural wisdom in mathematics learning]. *Jurnal Pendidikan Matematika*, 1(2), 51-75. <http://doi.org/10.21043/jpm.v1i2.4878>
- Qodar, L., Wijaya, W., & Amilda, A. (2017). Pelaksanaan ibadah shalat dan pengaruhnya terhadap etos kerja [Implementation of prayer services and its influence on work ethic]. *Jurnal Studi Agama*, 1(1), 1-14. <https://jurnal.radenfatah.ac.id/index.php/jsa/article/view/1544>
- Rahayu, P. T., & Putri, R. I. I. (2021). Project-Based Mathematics Learning: Fruit Salad Recipes in Junior High School. *Journal on Mathematics Education*, 12(1), 181-198. <https://doi.org/10.22342/jme.12.1.13270.181-198>
- Renalia, R. (2022). Konsep matematika materi himpunan dalam Al-Qur'an [The mathematical concept of set material in the Al-Qur'an]. Doctoral dissertation, UIN Prof. KH Saifuddin Zuhri. <https://repository.uinsaizu.ac.id/16121/>

- Richardo, R. (2020). Pembelajaran matematika melalui konteks islam nusantara: sebuah kajian etnomatematika di Indonesia [Learning mathematics through the Islamic context of the archipelago: an ethnomathematics study in Indonesia]. *Jurnal Pendidikan Matematika (Kudus)*, 3(1), 73-82. <https://doi.org/10.21043/jpm.v3i1.6998>
- Saheeh International. (1997). *The Qur'ān: Arabic text with corresponding English meanings = al-Qur'ān al-karīm ma'a tarjamat al-ma'ānī bi-al-lughah al-Injilīzīyah*. Abul-Qasim Pub. House.
- Sarifudin, & Madromi. (2021). Implementasi pelaksanaan salat fardu awal waktu pada pembentukan karakter disiplin santri di pesantren Islam Al Ghiffari kecamatan Leuwiliang kabupaten Bogor tahun ajaran 2019/2020 [Implementation of early fardu prayers to form the disciplined character of students at Al Ghiffari Islamic boarding school, Leuwiliang sub-district, Bogor district, 2019/2020 academic year]. *Cendikia Muda Islam: Jurnal Ilmiah*, 1(1), 1-20. <https://jurnal.staialhidayahbogor.ac.id/index.php/cendikia/article/view/1408>
- Soimah, W., & Tilawah, H. (2021). Integrasi Shalat dalam perspektif matematika Islam [Integration of Prayer in an Islamic mathematical perspective]. *Prosiding Konferensi Integrasi Interkoneksi Islam dan Sains*, 3(1), 45-48. <http://sunankalijaga.org/prosiding/index.php/kiiis/article/view/706>
- Svirin, A. (2004). *1300 Math Formulas*. The Pragmatic Bookshelf. <http://fribok.blogspot.com/http://fribok.blogspot.com/>
- Syafiulia, S. H., & Mariana, N. (2021). Eksplorasi konsep matematika pada shalat tarawih melalui studi auto | etnografi [Exploration of mathematical concepts in tarawih prayers through auto study | ethnography]. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, 9(4), 2083-2077. <https://ejournal.unesa.ac.id/index.php/jurnal-penelitian-pgsd/article/view/39918>
- Wayan, N., & Dewi, D. P. (2018). Permainan matematika sederhana sebagai alternatif pembelajaran yang menyenangkan (sebuah kajian pustaka) [Simple math games as a fun learning alternative (a literature review)]. *Suluh Pendidikan: Jurnal Ilmu-Ilmu Pendidikan*, 16(1), 1-8. <https://ojs.ikip-saraswati.ac.id/index.php/suluh-pendidikan/article/view/7>
- Yasin, M., & Nursupriana, I. (2019). Pemodelan matematika jumlah raka'at sholat pada kesehatan manusia [Mathematical modeling of the number of prayer rak'ahs on human health]. *Pediamatika: Journal of Mathematical Science and Mathematics Education*, 1(3), 19-30. <https://jurnal.syekhnurjati.ac.id/index.php/pmat/article/view/5861>
- Yunus, M., Astuti, I. F., & Khairina, D. M. (2015). Game edukasi matematika untuk sekolah dasar [Mathematics educational game for elementary school]. *Informatika Mulawarman: Jurnal Ilmiah Ilmu Komputer*, 10(2), 59-64. <http://doi.org/10.30872/jim.v10i2.192>