

## ETHNOMATHEMATICS: EXPLORATION IN KAJANG LAKO HOUSE

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### Abstract

This study aims to identify and describe the mathematical concepts contained in the Kajang Lako Jambi House. This research is a qualitative research using an ethnographic approach. The instruments used in this study were humans as the main instrument, observation guidelines, interview guidelines, documentation, and field notes. Collecting data in this study using observation, interviews, documentation, and field notes. Data analysis techniques were carried out by data reduction, data presentation, and Conclusion Drawing/Verification of Data. The results of this study describe the architectural design of Kajang Lako Jambi House. In the architecture of the Kajang Lako Jambi House, many geometric shapes are applied, including the heads of the stairs on the Kajang Lako Jambi House stairs in the form of cubes, handrails on the stairs, krawo, and Jambi traditional aisle chairs in the house in the form of blocks, the roof of the house as a whole is in the form of triangular prisms, the roof Jambi traditional aisles are in the form of a rectangular pyramid, square windows, doors, carved frames, and the sloping sides of a rectangular roof, then a roof covering called tedeng/tebarlayar which is triangular in shape. Apart from that, the counting of the steps on the steps of the Kajang Lako House applies the concept of a number pattern, as well as the carvings on the house, doors and window screens using the concept of reflection. These are all mathematical concepts that can introduce mathematics learning through local culture.

**Keywords:** Ethnomathematics, Mathematics, Kajang Lako House

### Abstrak

Penelitian ini bertujuan untuk mengetahui dan mendeskripsikan konsep matematika yang terdapat pada Rumah Kajang Lako Jambi. Penelitian ini merupakan penelitian kualitatif dengan menggunakan pendekatan etnografi. Instrumen yang digunakan dalam penelitian ini adalah manusia sebagai instrumen utama, pedoman observasi, pedoman wawancara, dokumentasi, dan catatan lapangan. Pengumpulan data dalam penelitian ini menggunakan observasi, wawancara, dokumentasi, dan catatan lapangan. Teknik analisis data dilakukan dengan reduksi data, penyajian data, dan Penarikan Kesimpulan/Verifikasi Data. Hasil penelitian ini mendeskripsikan desain arsitektur pada Rumah Kajang Lako Jambi. Pada arsitektur Rumah Kajang Lako Jambi banyak menerapkan bentuk geometri, diantaranya kepala tangga pada tangga Rumah Kajang Lako Jambi berbentuk kubus, pegangan pada

*tangga, krawo, dan kursi pelaminan adat Jambi pada rumah tersebut berbentuk balok, atap pada rumah secara keseluruhan berbentuk prisma segitiga, atap pelaminan adat Jambi berbentuk limas segiempat, jendela berbentuk persegi, pintu, bingkai ukiran, dan sisi miring atap berbentuk persegi panjang, kemudian penutup bubungan atap yang disebut dengan tedeng/tebar layar yang berbentuk segitiga. Selain itu penghitungan anak tangga pada tangga Rumah Kajang Lako menerapkan konsep pola bilangan, serta ukiran pada rumah, daun pintu, dan sekat jendela menggunakan konsep refleksi/pencerminan. Hal itu semua merupakan konsep matematika yang dapat memperkenalkan pembelajaran matematika melalui budaya lokal.*

**Kata Kunci:** *Etnomatematika, Matematika, Rumah Kajang Lako.*

## **1. Introduction**

In terms of application and reasoning, mathematics is a broad science that serves as a foundation for all other disciplines, and is essential for understanding science, technology, and culture (Noto et al., 2018; Rakhmawati & Alifia, 2018; Siagian, 2016). The ways, styles, and methods that people use to react to their environment - such as seeking explanations, information, and answers to the phenomena around them - are the origin of mathematics (D'Ambrosio, 2007; Rosa & Shirley, 2016; D'Ambrosio, 2016). Mathematics is influenced by historical, environmental, social, and geographical factors, or what is commonly referred to as culture, where humans change over time (D'Ambrosio, 2016; Utami et al., 2020).

In everyday life, mathematics and culture are closely related (Hardiarti, 2017; Medyasari et al., 2019). Society is influenced by culture as a whole and comprehensive unit. In fact, mathematics as a form of culture has entered into aspects of people's lives (Fauzan et al., 2020; Medyasari et al., 2019). Sometimes, mathematics and culture are seen as separate (Hardiarti, 2017; Naja et al., 2021), even though they are like two sides of a coin: on the one hand, mathematics is influenced by culture, and on the other hand, mathematics is a tool for cultural advancement.

Culture plays an important role in the process of acquiring mathematics (Ahadi, 2020; Hasibuan & Hasibuan, 2020; Sunandar, 2016; I. Wahyuni et al., 2021). Students' perception of objects, including their understanding of mathematical materials, is influenced by their culture (Abdullah, 2016; Hasibuan & Hasibuan, 2020; Sunandar, 2016). It is difficult to interpret a material if it is disconnected from the cultural schema used (Abdullah, 2016; Hasibuan & Hasibuan, 2020; Sunandar, 2016). Rahman (2014) added that learning mathematics should be done for two reasons: first, to develop students' minds to be able to answer problems critically, rationally, thoroughly, and accurately; second, to develop students' personalities to be adept at using arithmetic in practical situations. To make it easier to accept and understand the material, learning will be made more enjoyable by the presence of culturally related mathematics learning (Ahadi, 2020; Kehi et al., 2019). This is because the material taught is related to the students' culture which consists of daily activities (Serepinah et al., 2021; Sunandar, 2016).

But in reality, according to research conducted by Rosa & Orey (2011), mathematics taught in schools is usually facts, concepts and materials not related to culture. This leaves students without concrete meaning and experience of their experiences, leading to negative perceptions of mathematics education. Connecting math to students' experiences, social life, and even local arts and culture can help achieve this (Febriyanti & Ain, 2021; Pratiwi et al., 2022; Richardo, 2016). Therefore, there is a need for learning methods that can relate mathematics to the culture around students.

Ethnomathematics is an approach that educators can use to integrate math with culture in the classroom. This is because ethnomathematics serves as a bridge between culture and mathematics and mathematics and culture (Ilmiyah et al., 2021; Sunandar, 2016; Surat, 2018). Linguistically, the prefix "ethno" refers to socioculture, language, jargon, behavioral conventions, mythology, and symbols (Kehi et al., 2019; Nuh & Dardiri, 2016; Sunandar, 2016; A. Wahyuni et al., 2013). The main word "mathema" usually refers to explaining, knowing, and understanding as well as performing activities such as measuring, coding, classifying, inferring, and modeling. The suffix "tics" comes from the Greek word *techne*, which has the same meaning as technique (Kehi et al., 2019; Nuh & Dardiri, 2016; Sunandar, 2016; A. Wahyuni et al., 2013). Through an ethnomathematics perspective, one can see and understand mathematics as a component of a culture connected to ideas, language, customs, and geography and offering physical and social knowledge. According to D'Ambrosio (Fajriyah, 2018), the purpose of ethnomathematics is to identify the existence of various mathematical practices with consideration of the disciplines created sectors of society and variations in how various cultures show their mathematical practices (how to count, measure, classify, design objects or games, and others). Ethnomathematics can be formally integrated into the mathematics curriculum according to its concepts and objectives (Fitriatien, 2016). This is done to eliminate the notion that math is difficult and to assist students in overcoming their various learning barriers (Fitriatien, 2016; Sirate, 2012).

Indonesia is a multicultural country consisting of 2,500 regional languages and 1,340 ethnic groups (Sitokdana et al., 2019). As a multiethnic country, each region of Indonesia with a variety of unique, different cultures (Prabowo et al., 2015). Traditional houses owned by local communities can be found in almost every region of Indonesia, which illustrates Indonesia's cultural diversity. Traditional houses are buildings with different appearance, construction, and purpose. Traditional houses in Indonesia are mostly houses on stilts (Wijaya et al., 2021). The use of stilt houses is a result of natural conditions that have not been 'friendly' to the community, such as wild animals and the possibility of waterlogging during the rainy season (Poerwaningtias & Suwanto, 2017).

Several researchers have used the context of traditional dwellings or buildings in their ethnomathematics research. Fauzan et al. (2020) investigated the mathematical concepts contained in the construction and design process of Minangkabau traditional houses and then created Realistic Mathematics Education (RME)-based

mathematics learning tools derived from the ethnomathematics of Minangkabau traditional houses. Nare et al. (2022) found the mathematical concepts of the Kranggan Stage House in the form of flat shapes, spatial shapes, and angular shapes that are in accordance with elementary school mathematics learning materials. Sulistyani et al. (2019) investigated the application of ethnomathematics in the Tulungagung Joglo Traditional House. Sulistyani et al. (2019) found the concept of geometry on the pillars, entrance, and roof of the traditional house in this study. His research on geometry concepts focused on the topics of flat shapes, spatial shapes, congruence, pythagoras, and geometric transformations (translation, reflection, dilation). Susanto et al. (2022) examined the Joglo Sinom Limas Traditional House and its mathematical concepts. Susanto et al. (2022) found that the building of the Joglo Sinom Limas Traditional House contains elements of geometry in the roof structure, poles, and furniture. From these studies, no research has been found that examines the mathematical concepts contained in the Jambi Kajang Lako House.

Kajang Lako House is a traditional building in Jambi province that resembles a house on stilts. Kajang lako is a typical traditional residence that reflects the reflection and ideals of the Jambi people (Wijaya et al., 2021). This traditional house is generally rectangular in shape. Usually, the dimensions of this traditional house are 9 meters by 16 meters, and it uses ironwood as the main building material (Lainang, 2014; Poerwaningtias & Suwanto, 2017; Wiyana, 2016). The Batin usually use traditional techniques for making wood, including connecting hooks, bases, and latches with pegs (Lainang, 2014; Wijaya et al., 2021). In addition, the construction and decoration of Kajang Lako houses have their own characteristics. The roof or superstructure is in the shape of a boat with a curved top end called the jerambah or lipat kejang (Lainang, 2014; Poerwaningtias & Suwanto, 2017; Wiyana, 2016). This boat-shaped symbol represents the Malay kingdom. In addition, there is a rafter shape, which is the upper roof that prevents rainwater from entering the house (Lainang, 2014).

The researcher intends to conduct a research entitled "Exploration of Ethnomathematics in Kajang Lako Jambi House" based on the information provided. This is because the researcher believes that this research should be conducted so that people can know that mathematical concepts are incorporated into the design of Rumah Kajang Lako. In addition, the architecture of this traditional house can serve as a contextual learning tool or resource for students, facilitating their understanding of mathematical concepts and introducing them to local culture.

## 2. Methods

The research methods include qualitative research and development. According to Saharsaputra (2012), qualitative research is a procedure that produces descriptive data in the form of written or spoken words from people and observed behavior. Qualitative research processes data analysis inductively, or emphasizes more on meaning (Sugiyono, 2021). This qualitative investigation uses ethnographic methodology. On the basis of extensive field research, ethnographic research seeks to describe and analyze culture.

The location of this research is on Jalan Sultan Thaha, Muara Bulian District, Batanghari Regency, Jambi Province. This research focused on the place of the traditional kajang lako house and related sources. The relevant resource persons in question are customary institutions and members of the Batanghari Regency cultural community.

Methods of observation, interviews, documentation, and field notes for research data collection. Interviews were conducted with the respondents, namely Datuk Fathuddin Abdi who is the head of the Batanghari district customary institution, Datuk Zuhdi Tamhudi who is the vice chairman of the Batanghari district customary institution, and brother Sidqi Hamdi who is the head of the Batanghari cultural community. Respondents were selected purposively to get more information based on their experiences. The interview used was unstructured interview. Humans are the main instruments, along with observation guidelines, interviews, documentation, and field notes. The results of data collection were analyzed through the stages of data reduction, display, and drawing conclusions/data verification.

### **3. Results and Discussion**

#### *Architectural Design of the Kajang Lako House*

Tracing the history of the kajang lako house is complicated because it must be based on valid historical evidence. Nevertheless, researchers tried to trace data related to the history of this kajang lako house through interviews with traditional leaders in the Batanghari Regency area. According to Datuk Zuhdi Tamhudi's statement, this traditional house was built based on the house of the former Jambi great. The house is located in the Rambutan Masam area. However, the house was destroyed by the Dutch army in ancient times because the Jambi people fought against the Dutch. Although it was destroyed, the photo of the house still exists. In the 1980s, the Jambi people, especially the Batanghari district, together built a house that took an example from the house of the former Jambi leader and then the house was used as a traditional house called the kajang lako house.

Described part of the kajang lako house in general, as a basis for examining mathematical concepts in the design of the kajang lako house.

#### **a. Roof**

The roof of the kajang lako house was originally made of palm fiber and some of bulian wood. The bulian wood is flattened lengthwise with a length of 50-75 cm and a width of 10-15 cm. The flaked bulian wood is then neatly arranged to look like nipa leaves. However, due to the times, roofs made of palm fiber and bulian wood are rarely found. Most have used zinc.

The distinctive feature of the kajang lako house lies in its roof. The top of the roof on this traditional house is curved which is commonly referred to as *lipat kajang* or *potong jerambah*. Then above the roof lattice on this traditional house is shaped like

a goat horn. These goat horns are used to symbolize that Jambi people uphold the law, whoever is wrong is punished. The toughest law for people who make mistakes in Jambi custom is washing the village using goats. Examples of mistakes are such as committing immorality or unpleasant things. Therefore, Jambi people make goat horns a symbol of the rule of law.

In making this kajang lako house, there is a count on the kasonya. The rafters are the ribs on the roof of the house. The count of rafters on the roof of this traditional house is kaso-maso-wait-live. The myth is, if the count falls on the count of the rafters, it means good. If the count falls on the wait count, then the residents will often be afflicted with misfortune in the form of sickness. And if the count falls on the stay count, then one day the house will be abandoned by the owner.

b. Tebar layar/tedeng layar.

Tebar layar / tedeng layar is the wall covering the ridge of the kajang lako house. Tebar layar / tedeng layar is found at the left and right ends of the top of the house. Tebar/tedeng layar is decorated with floral carvings. Teber / tedeng layar serves to hold rain tempias.

c. Pole

The pole in this kajang lako house does not have a regular shape. This is because the poles used only follow the shape of the existing wooden beams. The material for making this pole uses bulian wood because the nature of this bulian wood is strong, hard, and durable. The length of the pole is also not the same, this is adjusted to the layout. If the pole is in the middle, it will be longer than in the front and back.

The number of poles in the kajang lako house is 36 poles. This pole consists of 24 main poles and 12 additional poles. The main poles are divided into tuo poles totaling 1, center poles totaling 3, right bank poles / right hand poles totaling 4, left bank poles / left hand poles totaling 4, deepening turning poles totaling 4, transverse turning poles / bucu totaling 4, and gaho poles totaling 4. While additional poles are divided into 4 poles in the warinan, and 8 poles in the kitchen. The layout of the pole can be seen in Figure 1.

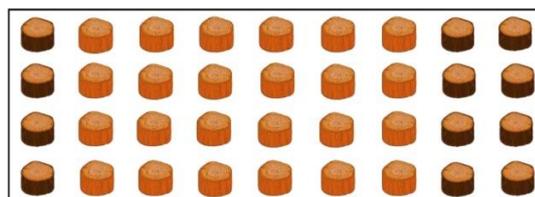


Figure 1. Layout Of The Poles In The Kajang Lako House

d. Stair

The kajang lako house is a house on stilts, so it needs stairs to go up and down made of wood arranged without cement. There are two stairs in this traditional house. The

first staircase is located in front as the main staircase, and the other staircase is located near the kitchen which is used as a ladder for girls to go up and down the house.

This staircase has its own philosophy for the Jambi people. Jambi people usually call it the term "Bejenjang naek betanggo turun" which means that in life it should not pursue something by jumping, it must follow the flow and process. Besides having a philosophy, this staircase also has its own count for the steps. The count of the stairs is called Gerodak-Porak-Gerontang-Tanggo. The myth is that a good count on the stairs if it falls on the final stair count on the designation Tanggo is more than one.

On the stairs there is also a part called the head of the stairs. In the Jambi language, the head of the stairs is called kepalo tanggo. Kepalo tanggo kajang lako house is cube-shaped. Kepalo tanggo is found at the top and bottom of the stairs. Kepalo tanggo at the top of the main stairs serves as an entry barrier for guests who come when there is no man at home. So, if there are no male family members at home, then guests who come, especially male guests, cannot go up to the top of the house beyond the kepalo tanggo limit. If this happens, they will be subject to customary sanctions. The lower part of the kepalo tanggo on the main staircase serves as a boundary for guests to ask questions.

e. Peranginan

Peranginan is one of the rooms in the kajang lako house which is located at the front of the house. Peranginan means a place that is windy. Based on its definition, this peranginan is one of the open places in the house. The function of peranginan in this kajang lako house is as a place to confer.

f. Front porch

The front porch is a room in a kajang lako house that functions as a living room. Guests who have been allowed into the house can only enter the front porch. But this is an exception for guests who are still related to the owner of the house.

There are three doors that connect the peranginan with the front porch. Each of these doors has its own role. If there is a regular event, the doors that are opened are the two doors on the side. One door on the side serves as the male entrance and the other serves as the female entrance. Meanwhile, if there is a traditional event, then all three doors are opened. The middle door is referred to as the rajo door, in the sense that those who enter the door are people who are highly valued and respected, such as traditional elders.

g. Living room

The living room is the largest room in the kajang lako house. The room is in the center of the house. This room functions as a family room, courtroom, or family deliberation. In this room there are 2 poles that function to hold the top of the house. This pole is divided into 2, namely upper and lower. This pole is called krawo.

h. Laren

Laren is the room behind the living room. Laren in a kajang lako house functions as a dining room.

i. Garang

Garang is an open room located between the kitchen and the main house. Garang is used as a place to plant live pharmacies and kitchen spices in the form of small plants. Garang is also used as a place to wash dishes. In addition, the garang also functions as a fire breaker in the event of a fire in the kitchen. This is because this garang is a place that will certainly always be wet because it is always exposed to water.

j. Kitchen

Kitchen, a room located at the very back of the kajang lako house. The kitchen in this kajang lako house is located separately from the main house. This kitchen functions like a kitchen in general, namely a place to cook.

k. Aisle

The aisle in Jambi custom is called Putro Retno. This aisle is in the middle room. This is because in ancient times the wedding reception was held in the house.

This traditional Jambi aisle has several levels including 3 and 7. A 3-level aisle is used if the one holding the reception is a child of ordinary people. While the 7-level aisle is used for children of officials such as children of kings, regents, governors, RT, village heads, and village heads.

l. Decoration

The kajang lako house is decorated with several decorative motifs in the form of carvings. The decorative motifs used in general are flora (plants). The floral motifs found in the kajang lako house are bungo simpur, bungo kangkung, rattan flower, and bungo lotus motifs.

The layout of the kajang lako house be seen in Figure 2.

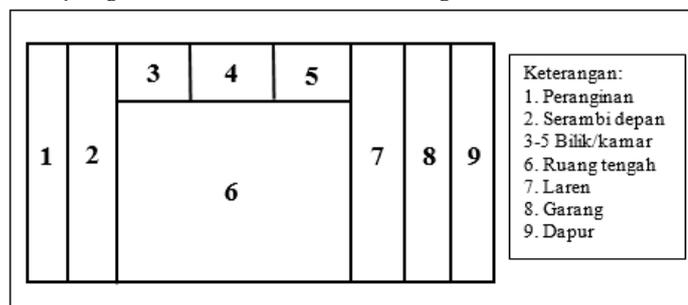


Figure 2. Layout of the Kajang Lako House

**Mathematical Concepts in Kajang Lako House**

From the observation of kajang lako houses in Batanghari Regency, the forms of ethnomathematics found in kajang lako houses can be explored in this study. The

exploration of ethnomathematics forms in kajang lako houses shows that there is a connection between ethnomathematics forms and mathematical concepts, especially geometry and the pythagorean theorem. Among the geometry related to ethnomathematical forms are square, rectangle, triangle, cube, block, quadrilateral pyramid, triangular prism, and tube.

a. Pythagorean Theorem Concept.

The kajang lako house is a house on stilts, so it requires stairs to go up and down. In determining the length of the stairs in a kajang lako house, the concept of the pythagorean theorem can be used, namely the square of the length of the stairs equal to the sum of the squares of the distance from the end of the stairs to the house and the height of the stairs. The relationship of stairs with pythagorean theorem concept can be seen in Figure 3.

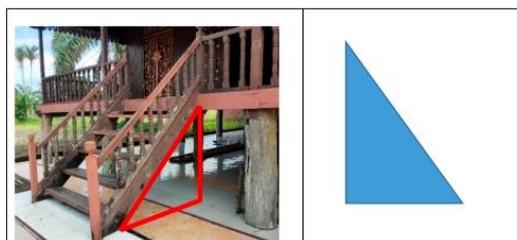


Figure 3. The Relationship of Stairs in Kajang Lako House with Pythagorean Theorem Concept

b. Square.

The kajang lako house has 10 windows. The distance of the windows from the floor in the kajang lako house is as high as an adult sitting looks the tip of the skullcap. The windows in the kajang lako house is square. In one window, 4 screens are made with each screen also forming a square shape. The relationship of windows with Square Shape



Figure 4. The Relationship of Windows in Kajang Lako House with Square Shape

c. Rectangle.

This shape is widely used in building kajang lako houses. Parts of the rectangular kajang lako house include the frame on the carving of the kajang lako house, the door, and the roof of the kajang lako house. The part of the kajang lako house can be seen in Figure 5.



Figure 5. Relationship of Carved Frames, Doors, and Roofs in Kajang Lako Houses with Rectangular Shapes

d. Triangle.

The roof ridge cover on a kajang lako house is called a tebar/tedeng layar. The tebar/tedeng layar on the kajang lako house is triangular in shape. The relationship of tedeng/tebar layar with triangle shapes can be seen in Figure 6.



Figure 6. Relationship of Tedeng/Tebar Layar in Kajang Lako Houses with Triangle Shapes

e. Cube.

One part of the stairs is the head of the stairs. The head of the stairs in the kajang lako batanghari house is shaped like one of the spatial shapes, namely a cube. The head of the stairs at the bottom serves as a place to ask for guests who come to the house. The relationship of the head of the stairs with cube can be seen in Figure 7.



Figure 7. The Relationship of the Head of the Stairs in the Kajang Lako House with the Cube

f. Cuboid

This form is widely used in Batanghari kajang lako houses. Parts of the kajang lako house that are in the form of a cuboid include the stairs, krawo, and putro retno aisle. The cuboid part of the stairs is the handrail and the end of the stairs. On the krawo,

the top and bottom of the krawo are in the form of a cuboid accompanied by carvings on each side. While in the putro retno aisle, the part that is in the form of a cuboid is the aisle seat. The relationship the parts of kajang lako house with cuboid can be seen in Figure 8.

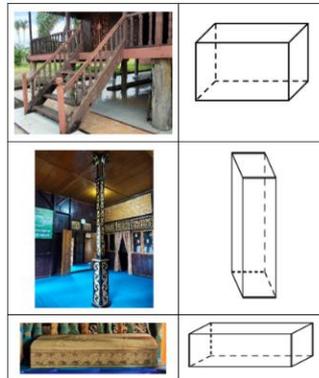


Figure 8. Relationship of the Handrails. Krawo, dan Aisle Chairs in the Kajang Lako House With Cuboid

g. Pyramid.

In Jambi culture, in ancient times the aisle was located inside the house. The aisle in Jambi custom is called Putro Retno. Jambi traditional aisles have several levels which indicate social status in society. The roof on the aisle is shaped like a space, namely a pyramid. The relationship of the aisle roof with pyramid can be seen in Figure 9.

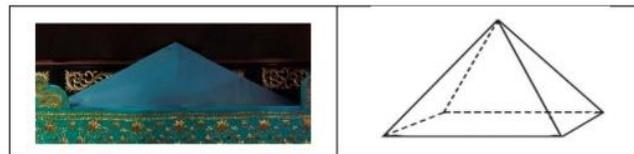


Figure 9. Relationship of the Aisle Roof with Pyramid

h. Prism

As a whole, the roof of the kajang lako house is in the shape of a triangular prism. On the left and right side of the roof, the kajang lako is covered by a triangular tedeng/tebar layar. Therefore, this roof is in the shape of a triangular prism. In addition to the main roof, the kitchen roof of the kajang lako house as a whole is also in the form of a prism. The relationship of the roof with prism can be seen in Figure 10.

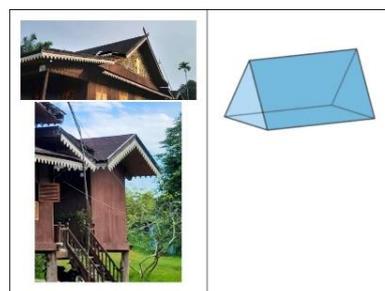


Figure 10. Relationship of the Roof in Kajang Lako House with Prism

i. Concept of Congruence.

The concept of congruence is found in many kajang lako houses. Parts of the kajang lako house that apply the concept of congruence include windows, doors, and sail spreads. The relationship window with the concept of congruence can be seen in Figure 11.



Figure 11. The Window in Kajang Lako House

Figure 11 shows that the windows in the kajang lako house are divided into four screens. Each partition has the same shape and size. Therefore, it can be said that in making this window, the concept of congruence is used. In addition to windows, the doors in kajang lako house also apply the concept of congruence, can be seen in Figure 12.



Figure 12. The Door in Kajang Lako House

From Figure 12, it can be seen that the door on the kajang lako house has 2 door leaves having the same shape, size. Because it can be said that the door leaf is two congruent objects. Then, tedeng/tebar layar in kajang lako house also applies the concept of congruence, can be seen in Figure 13.



Figure 13. Tedeng/ Tebar Layar in Kajang Lako House

The tedeng/tebar layar in the kajang lako house is triangular in shape. Tedeng/tebar layar is located on both sides of the roof of the house. The sails on both sides have the same shape and size.

j. Reflection

The kajang lako house is inseparable from the ornaments attached to it. The interior ornaments of the house can be seen in various decorations on the walls and poles. In Figure 14, you can see the decoration on the wall in the form of flower carvings. The carving is referred to as bungo tanjung carving. This carving design incorporates the concept of reflection. Reflection maps point  $P$  to point  $P'$  if and only if: 1) If  $P$  is not a mirror, then the mirror bisects the line segment  $PP'$  perpendicularly (written  $M_j: P \rightarrow P'$  where  $j$  is the mirror line), 2) if  $P$  is a mirror, then  $P' = P$ . Similarly, the carving in Figure 15 is called a bungo jeruk carving. The relationship of the carvings with the concept of reflection can be seen in Figure 14 and Figure 15.



Figure 14. Bungo Tanjung Carving in Kajang Lako House



Figure 15. Bungo Jeruk Carving in Kajang Lako House

In addition to the ornaments on the kajang lako house, the layout of the kajang lako house pole also applies the concept of reflection. There are 36 poles in this kajang lako house consisting of 24 main poles, 12 additional poles. The poles are arranged into 4 rows. The layout of the poles in the kajang lako house can be seen in Figure 16.

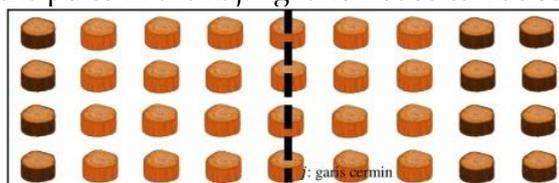


Figure 16. Layout Of The Poles In The Kajang Lako House

k. The Concept of an Arithmetic Sequence

On the stairs of the kajang lako house there is a separate count for the stairs. The count of the steps is called Gerodak-Porak-Gerontang-Tanggo. The myth is that a good count on the stairs falls on the count of the final rung on the designation Tanggo more

one. Therefore, the number of good steps on the stairs of the kajang lako house are 5, 9, 13, 17, etc. The number of good steps on the stairs of this kajang lako house forms an arithmetic sequence pattern with the first term of 5 and has a difference of 4. This can be seen in Figure 17.



Figure 17. Stairs in Kajang Lako House

The results of the exploration of mathematical concepts in the Lako Kajang House show that the people of Jambi have used mathematical concepts that they learned on their own and these creative ideas emerged from their experience in making the architecture of the Lako Kajang House. In Indonesia, ethnomathematics has actually been extracted from various places and cultures in Indonesia, such as mathematical concepts in the form of flat shapes, spatial concepts, line concepts, angular concepts, and geometric transformations in the design of Lengkong traditional houses (Yuningsih et al., 2021). Then there are also mathematical concepts contained in geometric material such as points, lines, plane shapes, geometric shapes, congruence, and geometric transformations in the building elements of traditional human houses (Mar et al., 2021). Likewise in the traditional Uma Lengge building which contains mathematical concepts in the form of flat shapes and geometric shapes (Safitri et al., 2021). The results of this study and previous research on ethnomathematics exploration in Indonesian culture can be one of the transformative efforts to bridge mathematics with the reality and perceptions of students in learning. Thus, students can see that mathematics is close to the culture around them, and students can finally take the meaning of the mathematical concepts they learn to apply in everyday life (Abdullah, 2017; Risdiyanti & Prahmana, 2018).

#### 4. Conclusion

Based on these findings, it is concluded that in the architecture of the kajang lako house there is a mathematical concept. The concept can be seen from the first on the roof of the kajang lako house. The roof of the kajang lako house as a whole is shaped like a prism. The ridge on the roof of the kajang lako house is in the form of a rectangular flat shape and the cover of the ridge of the kajang lako house called the tedeng / screen spread is in the form of a triangle. The tedeng/tebar layar is located on both sides of the roof of the house and has the same shape, size, so it can be said that the tedeng/tebar layar on the kajang lako house applies the concept of congruence. Furthermore, it can be seen in the calculation of stairs that also apply mathematical concepts, namely number patterns, the head of the stairs is cuboid, and in calculating the length of the stairs can use the concept of the pythagorean theorem.

The window in the kajang lako house is square. The windows in this traditional house are divided into four which have the same shape, size so that it can be said that the making of partitions in the windows of this traditional house applies the concept of congruence. Likewise for the door in this traditional house. The door of this kajang lako house is rectangular and has two door leaves that have the same shape and size. The layout of the poles that make up this kajang lako house also applies mathematics, namely the concept of reflection. In the kajang lako house there are several ornaments in the form of carvings including carvings of bungo tanjung and bungo jeruk. The frame on this carving is rectangular. The carvings of bungo tanjung and bungo jeruk apply the mathematical concept of reflection. In the middle room of the kajang lako house there are 2 poles called krawo. This krawo is divided into the upper krawo and the lower krawo. This krawo is in the form of a beam. In the middle room there is also a traditional Jambi aisle called Putro Retno. The roof of this aisle is shaped like a quadrilateral pyramid and the chairs in this aisle are shaped like a block.

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