



## Time Travel Quest 8

# Palm Thatch Places: Apalachee Architecture

## August Theme: Architecture and Construction

### Historical Background

In 1539, Hernando de Soto—a Spanish explorer and conquistador—landed in what is now known as Tampa Bay. He marched north in search of gold, making his way to North Florida. When he encountered the Apalachee people of the Florida Panhandle, he wrote of how there were fierce warriors and skilled farmers. One thing he left out of his writings was that the Apalachee were also impressive woodworkers. The Apalachee were able to create all their structures using the plants that grew in their local environment. They used pine logs for structure and stability, palm leaves (or fronds) for roofs, and rope made of either yucca or Spanish moss to hold it all together.



The most impressive type of building that the Apalachee built was the Council House. They even built one at Mission San Luis! At 5 stories tall and 120 feet across at the base, the Council House was far larger than any other Apalachee structure and could be seen from far away. The size of this building let people know that it was very important for the village and this drew travelers to it.

To create this large building, there were eight large pine logs which formed the central structure. While archaeologists are not completely certain how the Apalachee were able to make these large logs stand straight up, the main theory is that they dug deep slanted

holes where they wanted the logs and then used rope to pull the logs up into the correct position. These logs were then connected to each other with more pine logs near the top and from there, smaller logs were placed in a circle around the frame sloping down to make a cone. Every time that a log had to be connected to another log it was probably tied in place with sturdy ropes. Even smaller logs were placed between the slanted logs, creating a strong frame.

Once this frame was constructed, the Apalachee needed walls and a roof. The Council House was unique in that its walls and roof are part of the same piece of the building: the wall is the roof and the roof is the wall, just like a tent. To keep rain and animals out of the building, layers of palm fronds were attached to the outside structure. These fronds were folded and then tied together to make a sheet of leaves. Once they were tied to the structure, more fronds were tied on with the layers slightly overlapping. The Council House needed tens of thousands of palm fronds to complete the roof, but once it was all tied down, it was nearly waterproof, with only the harshest storms being able to get through.

The pine trees used for constructing the Council House and other Apalachee structures at the founding of San Luis were harvested from the surrounding area. As the years went by, the logs and palm fronds needed to be replaced. This was because the materials were all natural and would eventually break down. By replacing the fronds and pine logs when they were not useful anymore, the main structure of the building was able to remain standing and the Apalachee did not need to remake the entire building every few years. The main issue with replacing parts of the Council House every so often was that it took a long time and a lot of effort to collect more materials. Woodworkers needed to travel about twenty miles to the north of San Luis to harvest more pine logs and about ten miles south to harvest more palm fronds as many of the trees around San Luis were cut down once the village was well established. Once these materials were brought to the village, the Apalachee would carefully replace the damaged parts of the building with the new items. By continuing to replace the bad parts, the Council House could theoretically last forever!

Keep in mind that before the Spanish introduced iron to the Apalachee, all these materials were harvested using only stone tools or fire. To harvest the large pine trees for logs, a layer of mud would be placed above the part of the trunk that the Apalachee wanted to cut and then a fire was made around the tree. Slowly, the tree would be burned through, with the part that was covered in mud not burning. That way only the parts of the trunk that they wanted to burn through would burn, and eventually they would be able to bring down the whole tree. Once the Spanish introduced iron axes to the Apalachee, they were able to use them to cut down large trees without having to use the fire method. Just think of how much faster the Apalachee could make new buildings with iron tools!

### Time Portal: Villagers through Video

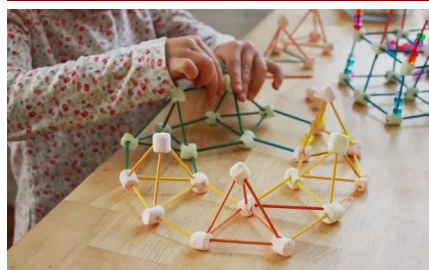
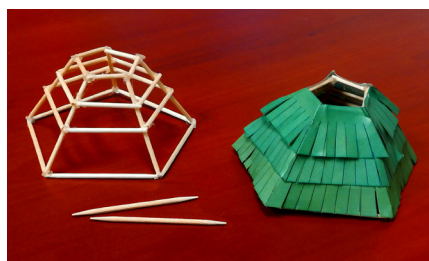
We are going to use virtual time travel to talk with one of the villagers of Mission San Luis! Today, a Mestizo villager explains the amazing process behind constructing the impressive Apalachee Council House.

**Quest 8 Video Link: PART ONE <https://bit.ly/316IFLq>  
PART TWO <https://bit.ly/39PZxd8>**

### Quest Questions

Questions can help you focus your journey into the past!  
Here are some questions to think about that will help guide you in your exploration:

- What are two materials that Apalachee Indian homes were built out of in 17th century Florida? Do other Southeastern Native American tribes build their buildings with these materials?
- What are three types of buildings that Apalachee Indians constructed in their towns and villages? What are the uses of these buildings?
- What are three important parts of the Council House building?
- What are three benefits of constructing the Apalachee Council House in the way it is built?



### Quest Crafts: Toothpick Engineering

OLDER KIDS - Let's make an Apalachee Council House model with toothpicks! For this craft see the separate pdf instructions at

- <https://missionsanluis.org/media/1756/msl-council-hse-toothpick-craft.pdf>

YOUNGER KIDS - See the link below for constructing some basic shapes with toothpicks and... edible connectors!

- <https://designinplay.com/2015/12/07/gumdrop-engineering/>

If you want to use some non-candy items try using grapes, cranberries, apple chunks, green peas or cheese! The next link shows those examples as well as some using marshmallows and beads!

- <https://artfulparent.com/toothpick-sculptures-kids-13-fun-toothpick-construction-ideas/>

PLEASE NOTE: Craft supplies will not be provided by Mission San Luis this week.

## Polygon or Circle?

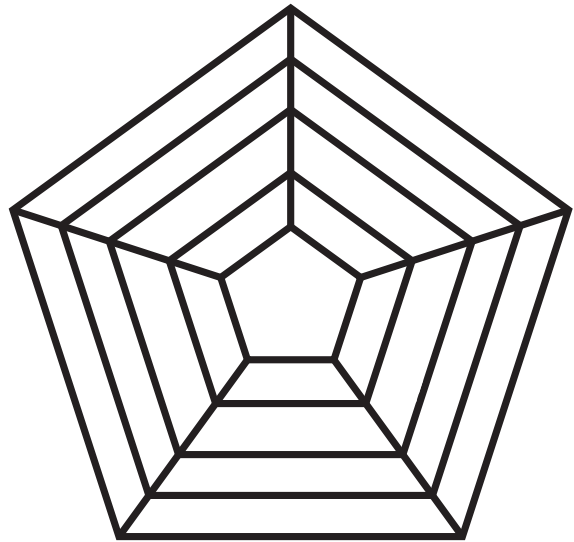
If you study the engineering of the Apalachee Council House you will see that although it looks like a circle, the perimeter is made up of many straight sides.

Notice in these diagrams that the greater the number of flat sides a shape has the more it looks like a circle!

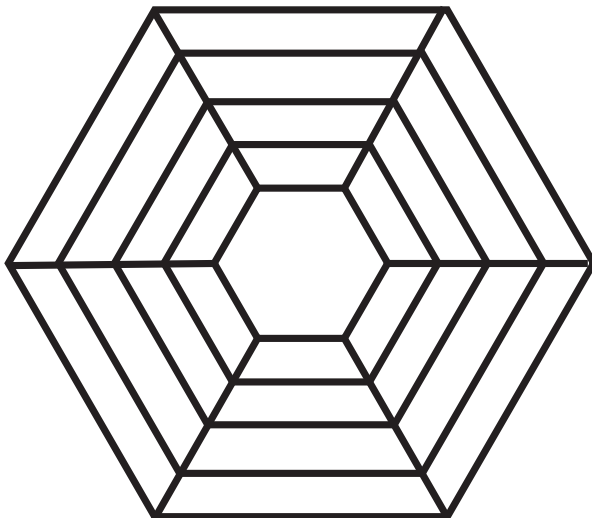
Each of these pictures has multiple polygons (two-dimensional shapes with straight sides) inside each other and lines connecting the corners - similar to the upright poles and cross braces in the Council House.

*Can you spot all the Greek prefixes in the words on this page and do you know what they mean?*

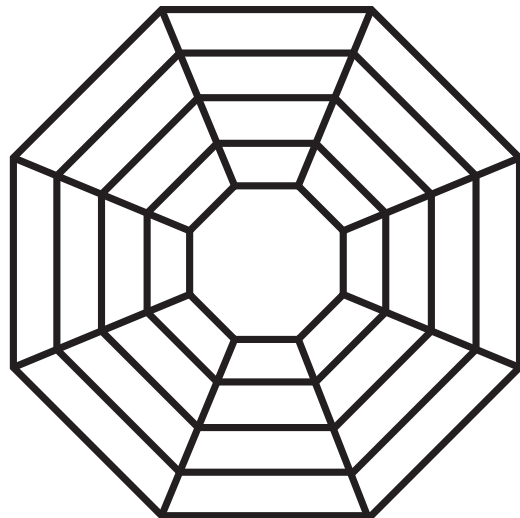
**Pentagon** (5 sides)



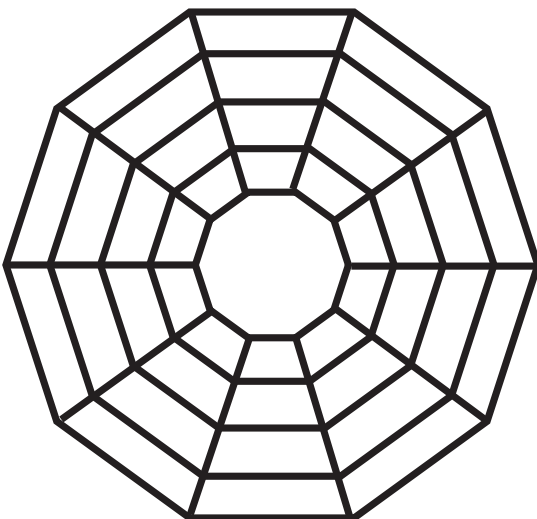
**Hexagon** (6 sides)



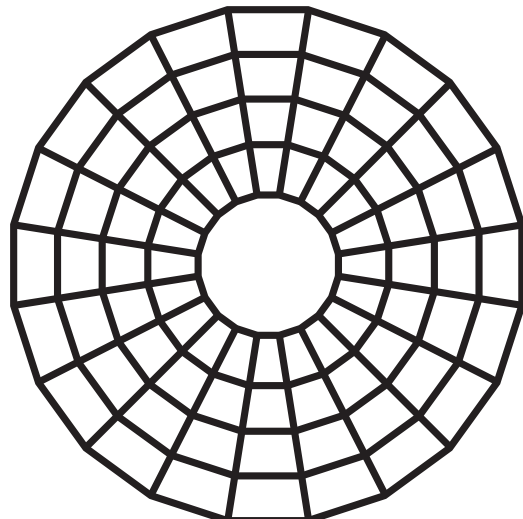
**Octagon** (8 sides)



**Decagon** (10 sides)



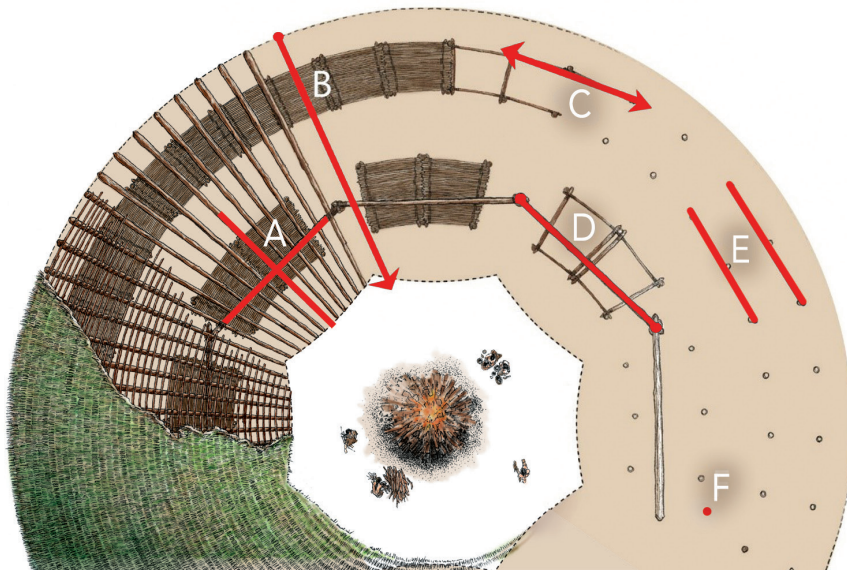
**Icosagon** (20 sides)



## Apalachee Architecture Math Activity

It takes a lot of work to build a Council House! It also takes a lot of different math skills! Can you help the Apalachee by solving the following questions?

*(Note for parents: After each question there is a corresponding Florida Sunshine State Standard for 4th-grade math for reference.)*



**1.** All buildings are made up of lines and geometric shapes. In this bird's-eye view of the Council House, each figure (in red) is labeled with a letter, A-F. Identify the specific geometric figures that A-F represent by writing each term in the word bank in the appropriate blanks below. You can only use each term once.

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_
- E. \_\_\_\_\_
- F. \_\_\_\_\_

**Word Bank:** line, line segment, parallel lines, perpendicular lines, point, and ray.

*MAFS.4.G.1.1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.*

**2.** The Council House stands 50 feet high. If one foot is 12 inches, how many inches tall is the Council House?

\_\_\_\_\_



*MAFS.4.MD.1.1: Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

**3.** You agree to help rethatch the lower part of the Council House roof. A 1-foot section of the Council House requires 24 palm leaves to cover. If you're rethatching a section that is 121 feet total, how many palm leaves will you need altogether?

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*MAFS.4.NBT.2.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.*

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**4.** You'll need your answer from question #3 to solve the following: There are 4 Apalachee builders rethatching the lower section of the Council House roof with you (5 builders total—you're one too!). How many palm leaves will each person need to complete the task? Indicate if there is a remainder in your answer.

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*MAFS.4.NBT.2.6: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.*

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**5.** An average barbacoa (rectangular bench) that the chief's council sits on measures 9 feet long and 4 feet wide. What is the perimeter (the measurement of the entire boundary of a geometric figure) of the barbacoa? What is the area (the measurement of the space within a geometric figure)?

Perimeter = \_\_\_\_\_ Area = \_\_\_\_\_

*MAFS.4.MD.1.3: Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

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### Answer Key

1. A. perpendicular lines, B. ray, C. line, D. line segment, E. parallel lines, F. point
2.  $50 \times 12 = 600$  inches
3.  $121 \text{ feet} \times 24 \text{ palm leaves} = 2,904 \text{ palm leaves}$
4.  $2,904 \text{ palm leaves} \div 5 \text{ builders} = 580$  with a remainder of 8 (or 580 R8 or 580.8) palm leaves per person
5. Perimeter = 9 feet long + 4 feet wide + 9 feet long + 4 feet wide = 26 feet. This could also be solved  $(9 \times 2) + (4 \times 2)$  or  $2(9+4)$   
Area = 9 feet long x 4 feet wide = 36 square feet

## Additional Exploration Resources

**Your time travel adventure doesn't stop here!** If you want to learn more about this subject, here are some suggested resources:

- *Mission San Luis de Apalachee: A Teacher's Guide (Illustrated)*  
[https://www.missionsanluis.org/media/1099/01-teachers\\_guide.pdf](https://www.missionsanluis.org/media/1099/01-teachers_guide.pdf)
- *Timucua Building Technology (Florida Public Archaeology Network)*  
[http://fpan.us/resources/timucuan/7\\_build.pdf](http://fpan.us/resources/timucuan/7_build.pdf)
- *Thatching - First Colony: Our Spanish Origins - Video (Florida Museum of Natural History)*  
<https://www.youtube.com/watch?v=wJJ-E-y4EYA>
- *Colonial History Bibliography for Young Readers (Museum of Florida History)*  
<https://museumoffloridahistory.com/learn/colonial-history-bibliography-for-young-readers/>

## Virtual Time Traveler Checklist

**Prizes** await your journey's end! For all virtual time travelers who complete four of the weekly summer camp *Time Travel Quests*, your family will receive free admission passes to Mission San Luis Living History Museum for a future visit! Steps to getting your prize are:

- **Complete at least four of the twelve Time Travel Quests** provided between June 15 and August 31, 2020.
- Fill out the *Virtual Time Traveler Checklist* (blank checklists can be found at:  
[http://www.missionsanluis.org/media/1742/virtual-time-traveler-checklist-2020\\_2ue.pdf](http://www.missionsanluis.org/media/1742/virtual-time-traveler-checklist-2020_2ue.pdf)
- Email the checklist to [Rebecca.Woofter@dos.myflorida.com](mailto:Rebecca.Woofter@dos.myflorida.com) or print and mail it to:

Mission San Luis (c/o Rebecca Woofter)  
2100 West Tennessee Street  
Tallahassee, FL 32304

FOR YOUR PRIZE: the **deadline is September 14, 2020** for completing and sending in your 2020 *Virtual Time Traveler Checklist*