

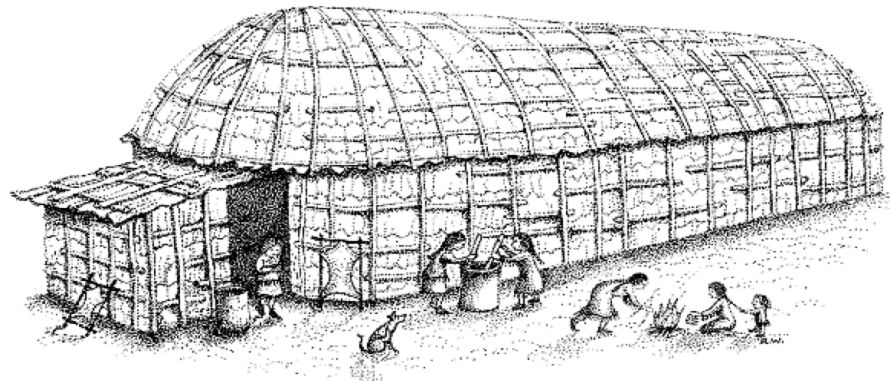
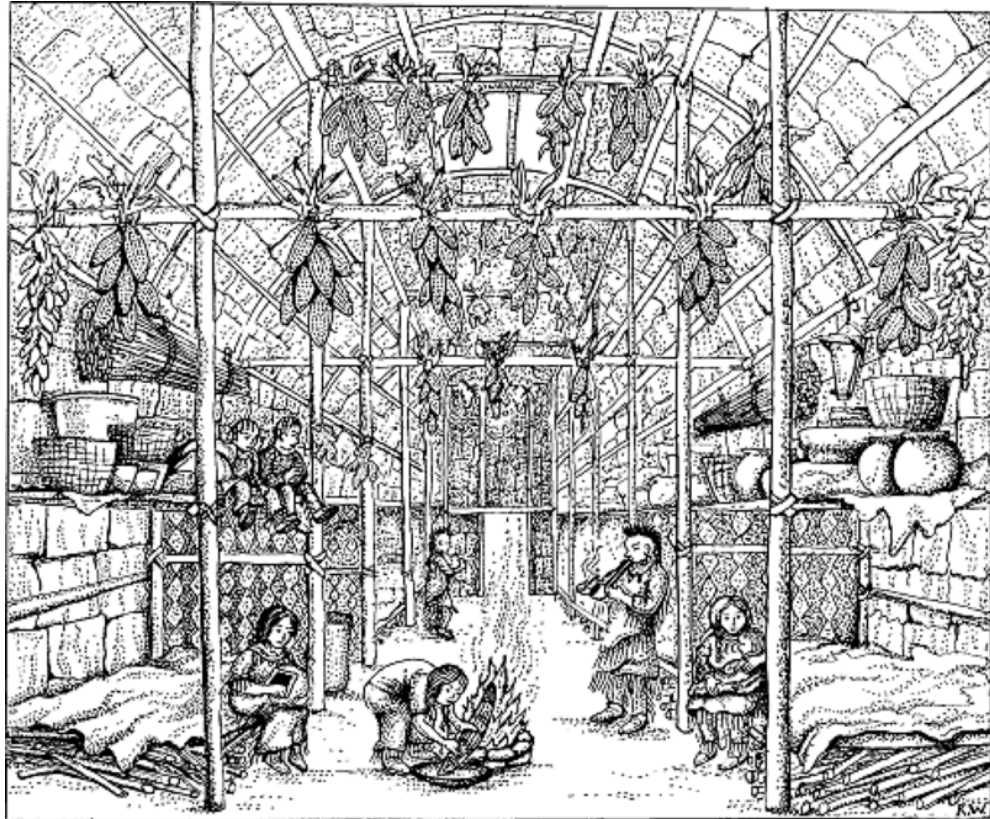
Iroquois Longhouse

Iroquois longhouses were found in the area that is now the state of New York. A longhouse had a framework built of posts and poles and was covered with sheets of bark. Different types of trees were used in various parts of the building. A strong stiff tree would be used for the outer posts. The rafters were made from young sapling trees that were flexible. The parts of the building were held together with long strips of bark or with ropes made by braiding strips of bark. Basswood and hickory trees were used for making the strips. The framework of the longhouse was covered with sheets of bark also. Trees whose bark could be peeled into large sheets were preferred. Elm bark was used if it was available. Another framework of small poles on the outside of the bark was used to hold the bark down, keep it flat, and to keep the wind from lifting it.

A longhouse ranged in length from 30 feet to several hundred feet. A typical longhouse was 180 to 220 feet long. The length of a longhouse was determined by the size of the extended family that would live in it. As the size of the extended family grew, the building was enlarged to make room for the expanding population. The longhouses were almost always 20 feet wide and 20 feet high. The roof was rounded rather than peaked. The rounded roof was heat efficient because it allowed the heat to rise and then fall. There were two doors for the entire building, one at each end. Longhouses were symmetrical around a centerline along their length. Inside, the right and left sides were identical.

The length and interior space of the longhouse was divided into compartments, which were 20 feet long. Two families lived in each compartment, one on each side of the aisle that ran down the center. The aisle was 10 feet wide, running the full length of the longhouse. It was a common space used by both families in the compartment. A fire area was in the middle of the aisle in the center of each compartment for heating, cooking, and light. Each family had its own space on one side of the aisle for sleeping and storage of personal items. In the family space, a bench was built about a foot above the floor for sitting, sleeping, and working. Another bench was built about 5 feet above the lower bench. Storage closets filled the spaces along the wall that were not occupied by the benches. The inside of the wall was lined and insulated with woven mats or furs. The benches were also covered with mats and furs for comfort.

The **diagrams** and plan of a traditional Iroquois Longhouse were provided by New York State Museum (<www.nysm.nysed.gov/IroquoisVillage/>)



Name: _____

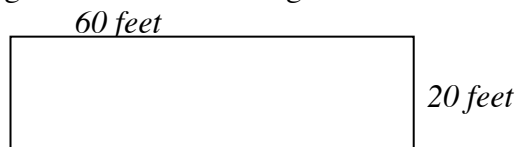
Longhouse Assessment

1. The framework of a longhouse was covered with _____.
2. How many families lived in each compartment of a longhouse? Circle the answer.
 - a. 8
 - b. 4
 - c. 2
 - d. 1
3. What type of tree was not used to construct a longhouse? Circle the answer.
 - a. Basswood
 - b. Hickory
 - c. Elm
 - d. Oak
4. _____ were used to insulate the inside wall of the longhouse.
5. What is the length of a typical longhouse? (Keep in mind that this is different than the typical length of a 2-family compartment) Circle the answer.
 - a. About 20 feet
 - b. About 200 feet
 - c. About 2000 feet
6. Sketch a 6 family longhouse. Label the length and the width of the longhouse.
7. Calculate the perimeter of a 6 family longhouse by adding the lengths of all the sides of your longhouse. Show your work.
8. Calculate the area of a 6 family longhouse by multiplying the length and the width of your longhouse. Show your work.

Answer Key for Longhouse Assessment

1. The framework of a longhouse was covered with sheets of bark.
2. How many families lived in each compartment of a longhouse?
 - a. 8
 - b. 4
 - c. 2**
 - d. 1
3. What type of tree was not used to construct a longhouse?
 - a. Basswood
 - b. Hickory
 - c. Elm
 - d. Oak**
4. Woven mats or furs were used to insulate the inside wall of the longhouse.
5. What is the length of a typical longhouse? (Keep in mind that this is different than the typical length of a 2-family compartment)
 - a. about 20 feet
 - b. about 200 feet**
 - c. about 2000 feet

6. Sketch a 6 family longhouse. Label the length and the width of the longhouse.



7. Calculate the perimeter of a 6 family longhouse. ($P = 2L + 2W$)

$$\begin{aligned} P &= 2 \times 60 + 2 \times 20 \\ &= 120 + 40 \\ &= 160 \text{ feet} \end{aligned}$$

8. Calculate the area of a 6 family longhouse. ($A = LW$)

$$\begin{aligned} A &= 60 \times 20 \\ &= 1200 \text{ sq. feet} \end{aligned}$$

Spanish Adobe Homes

Spanish adobe homes were found in the southwestern United States including New Mexico, Arizona, and southern California. The word adobe comes from the ancient Arabic building tradition called al-tob. The Spanish knew the process from their contact with the Moors of North Africa and called it adobe. Adobe is made from a mixture of clay, sand, straw and water. Wooden molds were used to produce bricks with the same size and shape. These bricks dried quickly and were used to make walls about 2 feet to 2 1/2 feet thick. The bricks were laid with mud mortar. The houses were built on foundations made of bricks, fieldstones, or double walls filled with rubble stone, tile fragments, or seashells. A long wooden timber was often placed within the top rows of adobe brick. Strong timber beams were used for roof supports. The roof consisted of wooden poles on which layers of twigs were covered with 6 or more inches of packed adobe earth. When available, hand-split planks of cedar, cypress, aspen or mesquite were used instead of poles and twigs. In some areas of the Southwest, saguaro ribs were used to span the beams rather than poles or planks. The flat roofs were sloped toward hollowed logs used as drains. This method of roof construction was not waterproof and the roofs often leaked. The outside of the house was covered with mud plaster made of the same materials as adobe. The plaster was smoothed by hand using deerskins, sheepskins, or a small slightly rounded stone.

The adobe house began as a single, square, flat-topped room. Additional rooms were added in a single file. These rooms enclosed an open patio, so the shape of the house resembled an O. The rooms opened onto the patio. No windows were on the exterior of the house, only the patio area. The entrance was through a large wooden gate, wide enough for wagons and livestock to pass through. A smaller pedestrian gate was often set within the larger gate. As defense became less of a concern, many houses took on an I, L, or U shape.

The interior of the adobe house was covered with whitewash, which consisted of ground gypsum rock, water, and clay. It was either brushed on the wall or applied with large pieces of coarse fabric such as burlap. The homes included a corner fireplace with a flue to direct smoke out of a room, a pantry where food was stored, and dome-shaped beehive ovens where harvests were baked before drying. Carved spaces for placing revered objects and built in clay benches were also common. Floors were made of packed earth with flooring materials placed directly on the earth. Some flooring materials used included earth brick, adobe brick, fired brick, tile, flagstone, and wood. Floor coverings included woven rugs.

The **image** and plan of a traditional Hispano House are courtesy of the National Park Service (<www.cr.nps.gov/nr/twhp/wwwlps/lessons/96ranchos/96visual1.htm>)

A TRADITIONAL HISPANO ADOBE HOUSE



Name: _____

Spanish Adobe Home Assessment

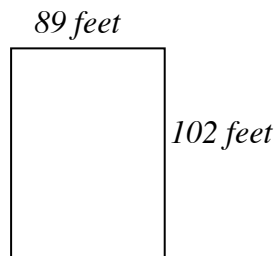
1. What was the shape of the earliest Spanish adobe homes? Circle the answer.
 - a. I-shaped
 - b. L-shaped
 - c. O-shaped
 - d. U-shaped
2. The exterior of the adobe house was covered with _____.
3. The thickness of the walls in an adobe house were _____. Circle the answer.
 - a. 6"
 - b. 1' - 1 1/2'
 - c. 2' - 2 1/2'
 - d. 3' - 3 1/2'
4. What type of material was not used on the roof? Circle the answer.
 - a. Mesquite
 - b. Hickory
 - c. Saguaro ribs
 - d. Aspen
5. _____ were used to drain water from the flat roof of the adobe house.
6. Sketch the outside edges of the adobe house. Label the length and the width of the adobe house.

7. Calculate the perimeter of the adobe house by adding the lengths of all the sides of your adobe house. Show your work.

8. Calculate the area of the adobe house by multiplying the length and the width of your adobe house. Show your work.

Spanish Adobe Home **Answer Key**

1. What was the shape of the earliest Spanish adobe homes?
 - a. I-shaped
 - b. L-shaped
 - c. O-shaped**
 - d. U-shaped
2. The exterior of the adobe house was covered with mud plaster.
3. The thickness of the walls in an adobe house were
 - a. 6"
 - b. 1' - 1 1/2'
 - c. 2' - 2 1/2'**
 - d. 3' - 3 1/2'
4. What type of material was not used on the roof?
 - a. Mesquite
 - b. Hickory**
 - c. Saguaro ribs
 - d. Aspen
5. Hollowed logs were used to drain water from the flat roof of the adobe house.
6. Sketch the adobe house. Label the length and the width of the adobe house.



7. Calculate the perimeter of the adobe house. ($P = 2L + 2W$) Show your work.
$$\begin{aligned} P &= 2 \times 102 + 2 \times 89 \\ &= 204 + 178 \\ &= 382 \text{ feet} \end{aligned}$$
8. Calculate the area of the adobe house. ($A = LW$) Show your work.
$$\begin{aligned} A &= 102 \times 89 \\ &= 9078 \text{ sq. feet} \end{aligned}$$

Name _____

Comparison Assessment

1. Both types of houses are generally _____ in shape.
2. One major difference is the roof of each house. A longhouse has a _____ roof and an adobe house has a _____ roof.
3. Since defense was a concern, both houses had limited entrances and no _____ windows.
4. Both homes used _____ in the roof, although the ones in the longhouse were smaller / larger (*circle the correct answer*) in diameter than the adobe house.
5. How does the area of a 6 family longhouse compare with the area of a 6 family adobe house? The adobe house is about _____ times the longhouse.

Comparison Assessment **Answer Key**

1. Both types of houses are generally rectangular in shape.
2. One major difference is the roof of each house. A longhouse has a rounded roof and an adobe house has a flat roof.
3. Since defense was a concern, both houses had limited entrances and no exterior windows.
4. Both homes used trees in the roof, although the ones in the longhouse were smaller in diameter than the adobe house.
5. How does the area of a 6 family longhouse compare with the area of a 6 family adobe house?
The adobe house is about 7 or 8 times the longhouse.

Grading Rubric for Mathematics

Question 6

- 4** - The student sketched a rectangular shape and correctly labeled the length and the width.
- 3** - The student sketched a rectangular shape and incorrectly labeled the length and/or the width.
- 2** - The student sketched a shape that was not rectangular and put a length and width on two of the sides.
- 1** - The student did not sketch a shape but listed the length and the width.
- 0** - The student made no effort.

Questions 7 & 8

- 4** - The student used the correct formula and the correct values to determine the correct answer.
- 3** - The student used the correct formula and correct values but came up with an incorrect answer.
- 2** - The student used the incorrect formula or incorrect values.
- 1** - The student used both the formula and values incorrectly.
- 0** - The student made no effort.

Celtic Round Houses

Celts lived in Britain before the time of the Roman conquest. The Celts lived in round houses. Each house held one family. The round house had a diameter of 33 feet. There were no windows and an entrance on the east and an entrance on the west side. This design made the round houses easier to defend and to hold in warmth. To make the outside walls of the round house, wooden poles were driven into the ground until they were the height of the entrance. Then thinner sticks were woven between the larger poles. Then the sticks (wattle) were covered with a mixture of clay, dirt, and straw (daub). The roof, which had a cone-shape, was a thick layer of straw or reeds (thatch). The daub and the thatch helped to keep out the rain. A wall of stone or wood that was 98 feet in diameter surrounded the house for additional defense.

Inside the round house, the walls were whitewashed and decorated with red and black geometric designs. A ring of poles was 5 feet from the inside wall and helped support the roof. Between ring of poles and the wall, the family kept all of their belongings. Beds were made of wood and stuffed with hay as mattresses. The blankets were animal skins. Other belongings included looms for weaving cloth, baskets and pottery for food and water storage, stones on which to grind grain and make flour, wooden stools, tables, chests, wooden bowls and cups, and cooking utensils.

Herbs, meat, and fish were hung from the roof so they would dry and be preserved. The dirt floor was covered with straw and animal skins. The fire pit was in the center of the house. This was the only source of heat, and it was where the cooking was done. Over the fire pit, suspended on a tripod, was a large iron pot. Food would be cooked all day long in the pot. When guests came, it was customary to give them warmth and food in the round house.

Source:

<http://www.gallica.co.uk/celts/house-pan.htm>

Native American Tipi

The Plains tribes of North America were nomadic people who followed the buffalo. As a result, they used a portable dwelling called the tipi. It was designed to keep the inhabitants warm in the winter and cool in the summer. Putting up and taking down the tipi was the work of women. In the days before horses in North America, dogs would transport the tipi. After the horse is introduced by the Europeans, the Plains tribes would use horses to carry the tipi materials.

The tipi is a cone-shaped structure with a diameter of 15 feet. The first step in constructing a tipi is to stand three poles against one another. After that, twelve to fifteen poles (again 15 feet in height) are leaned against the original three poles and tied together at the top. A rope would hang down from this cluster of poles at the center of the cone. The rope was anchored with a peg to the ground and would hold the framework in place. Next the covering of 15 to 50 tanned buffalo hides stitched together was stretched over the poles. Where the edges of the covering met in the front, lodge pins made of wood would hold the cover together. Then the edges of the covering would be anchored to the ground with wooden pins. A door flap would be attached to the door opening. Last of all, two poles would be inserted into the outer flaps of the smoke hole. These poles would be on the outside of the tipi. These poles could be moved to change the direction of the smoke hole and to close the hole in case of rain or snow. The direction the tipi faced depended on the wind. The door always faced away from the wind. The smoke hole flaps could be positioned to draw in breezes (summer) or to draw out the smoke (mealtimes, winter).

There were rules of etiquette governing the people using the tipi. An open door meant you could enter. If the door was closed, you must wait for an invitation to enter. It was forbidden to walk between the fire and the people sitting around it. When entering the tipi, the guests would walk to the right. The guest of honor sat to the left of the host. Young men were not permitted to speak unless asked to by an elder. Women never sat cross-legged but rather on their heels or with their legs to the side. When the host cleaned his pipe, it was the sign for the guest to leave.

The interior of the tipi reflected the nomadic nature of the tribes. There was no furniture. Weapons and cooking utensils hung from the poles. The fire pit was slightly off-center. Bedding consisted of animal skins spread around the edges near the walls. The tipi was primarily used for sleeping and entertaining. Most work took place outside.

Source: <http://md.essortment.com/indiantipi>

Name _____

Celtic Round House Assessment

1. How many families lived in a Celtic round house? _____
2. _____ and _____ were used to build the walls.
3. The roof was made of _____.
4. The diameter of the circle house was _____ feet.
5. The radius of the circle house was _____ feet.
6. Name three things that were hung from the roof.
7. What was the source of heat for the home?
8. Sketch the shape of the floor of the house. Label the diameter.

9. Calculate the circumference of the Celtic round house. Show your work.
($3.14 \times \text{diameter}$)

10. Calculate the area of the Celtic round house. Show your work. ($3.14 \times \text{radius squared}$)

Name _____

Native American Tipi Assessment

1. What shape is the tipi? _____
2. The tipi was made of _____ and _____.
3. The direction the tipi faced depended on the _____.
4. The diameter of the tipi was _____ feet.
5. The radius of the tipi was _____ feet.
6. Name two things that were hung from the roof.
7. What was the source of heat for the home?
8. Sketch the shape of the floor of the house. Label the diameter.

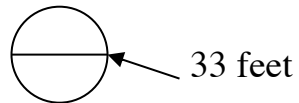
9. Calculate the circumference of the tipi. Show your work. ($3.14 \times \text{diameter}$)

10. Calculate the area of the tipi. Show your work. ($3.14 \times \text{radius squared}$)

Answer Keys to Celtic Round House and Tipi Assessments

Celtic Round House Assessment

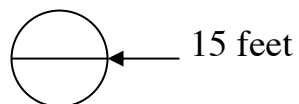
1. one
2. wattle (wood, sticks) and daub (clay, dirt)
3. thatch (reeds, straw)
4. 33
5. 16.5
6. herbs, meat, fish
7. fire pit
- 8.



9. 103.62 feet
10. 854.865 square feet

Tipi Assessment

1. cone-shaped, conical
2. wood (poles) and buffalo hides
3. wind
4. 15
5. 7.5
6. weapons, cooking utensils
7. fire pit
- 8.



9. 47.1 feet
10. 176.625 square feet