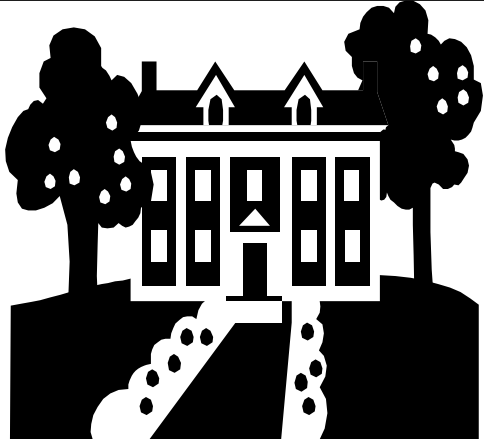
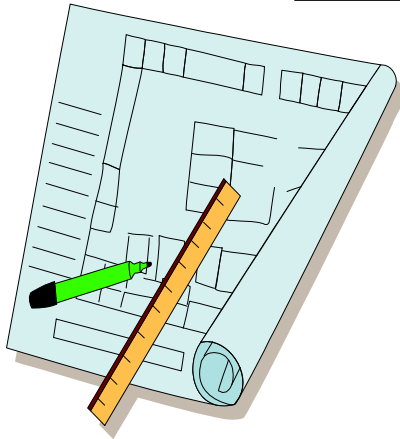




MEASURE UP!
BELAIR MANSION
ARCHITECTURE
AND
MATH LESSON PLAN



BELAIR MANSION
CITY OF BOWIE MUSEUMS

Belair Mansion

Architecture/Math Lesson Plan

Introduction

Belair is a “Georgian” or “Palladian” style house. “Palladian” architecture, or style, was named after a famous Italian architect named Andrea Palladio, who lived between 1508 until 1580. He designed buildings to resemble those of ancient Rome. These buildings were always balanced and **symmetrical**, inside or outside the building. Palladian-style buildings built between 1714 and 1830 are called “Georgian” since, during that time, the Kings of England were all named George. It was during this time, also, that the American colonies were beginning to grow, with many gentry people wishing to make their homes appear as they would in England or other European countries where Andrea Palladio’s designs were admired.

Georgian buildings can have one, three, or five parts. Many here in Maryland have five parts. The main part of the house is called the **central block**. The two **wings** on either side of the building are joined to the center block by small connecting areas called **hyphens**. When Belair Mansion was first begun for Governor Samuel Ogle, in 1745, it consisted only of a **central block**, which, because it was symmetrical, followed Palladio’s designs. Later, between 1910 and 1914, the Woodward family added **wings** on either side, still following Palladio’s designs.

In this lesson, students will measure, analyze and interpret data collected on Belair Mansion to determine whether or not the house meets the criteria of Palladian/Georgian style structure.

Objectives

Students will be able to:

1. Explore the artful architecture of a Palladian/Georgian style building.
2. Practice measuring skills.
3. Analyze and interpret data.
4. Explore the concept of symmetry.
5. Become familiar with a variety of architectural terms.
6. Make a connection between history, architecture and mathematics.

Materials

1. Biographical data - Andrea Palladio
2. Brief synopsis of Palladian/Georgian architecture
3. Written descriptions/drawings of other Palladian/Georgian Houses such as Chase-Lloyd House and the Md. State House in Annapolis, MD and His Lordship’s Kindness, Clinton, MD (documents, drawings, sketches)
4. Written description of Belair (documents, drawings, sketches)
5. Assessment sheets, response log
6. Rulers (provided by students)

Learning Strategies

Day 1

Students will be introduced to the concepts of symmetry and asymmetry
Activity: Enlarged drawing of Palladian/Georgian house (Belair)
cut up, laminated

Start with main building segment on chalk board

- * If I draw a line down the center of the main segment, is it the same on both sides of the line? *Yes*
- * Are there the same amount of windows, chimneys, etc.? *Yes - it is SYMMETRICAL.*
- * If I add this small attachment called a *hyphen*, is the house still symmetrical? *No*

ASYMMETRY occurs when things are not the same on both sides.
How could I make it symmetrical? Add another hyphen? *Yes*

Continue as you add the wings.

Ask students to read descriptions of the Maryland State House, Chase-Lloyd House and His Lordship's Kindness. Have students highlight or underline information within gives clues as to whether or not the buildings described are Palladian/Georgian.

Discuss findings as a class.

If time allows, have children complete rough sketches of their "own" Palladian/Georgian style building, with a written narrative explaining why it is Palladian/Georgian and how they have incorporated symmetry into the design.

Day 2

Review concept of symmetry. You may do this using the laminated house from Day 1.

While reviewing the concept of symmetry, review architectural terms, i.e., central block, hyphens, wings, hyphens, etc.

Pass out rulers and copies of floor plan of Belair Mansion. Have class label the sections of the floor plan (central block, wings, hyphens). Instruct children that they will be measuring the different parts of Belair. (They may work with partners.) Using their mathematical findings, they must analyze the collected data and determine if Belair is truly symmetrical in design. Allow students to work independently, recording measurements and completing comprehension questions on Response Log sheet. Discuss findings as a class.

Response Log

1. Summarize - in your own words - the biography of Andrea Palladio. (You may refer back to the biography provided.)

2. List and describe the characteristics that are unique to the Palladian/Georgian style of architecture.

3. Describe Belair Mansion. (Don't forget to use architectural vocabulary.)

4. Define symmetry and assymetry.

5. Is Belair an example of a symmetrical building? Explain why or why not.

6. List several other examples of Palladian/Georgian style buildings that can be found in Maryland.

7. When measuring the parts of Belair, what were your findings?

8. Can you think of a building which is NOT Palladian/Georgian in style?

Measuring activities:

1. What is “**symmetry**”?
2. Measure the **central block** front **facade** of Belair Mansion. What is its length?
3. How long is the office **facade**? How long is the stairhall facade? How long is the parlor **facade**?
4. Is the Stairhall **facade** equal to the sum of the office **facade** plus the parlor **facade**?
5. Is the front **symmetrical** in its measurements? (Are rooms evenly divided?)
6. What is the distance of the two entry doors (front and garden facades) from the wall? Are the doors **symmetrical**?
7. Measure the **hyphens**. Are they the same?
8. Measure the **wings**. Are they the same?
9. What is the total measurement of Belair’s entire front **facade**?
10. Can that number be divided evenly by two? Is Belair **symmetrical**?

Andrea Palladio, Architect

Andrea Palladio was born in Italy, in Padua, in 1508, and trained as a stonemason. He was originally named Andrea de Pietro dalla Gondola, but received the name Palladio when he began his architectural studies. He went to Rome where he studied and measured Roman ruins and studied the writings of other important ancient Roman architects such as Vitruvius. One thing that came out of his studies was a book, *Antiquities of Rome*, a guidebook to Roman ruins, which was published in 1554.

He designed many famous buildings throughout Italy, and built several churches in Venice.

Palladio's work was highly influenced by the works of Roman architecture he studied and by the works of High Renaissance architects. He combined the elements of Roman buildings as suggested by his own building sites and by contemporary needs.

Palladio's buildings were highly functional. He was the first architect to develop a systematic organization of the rooms in a house. He was also the first to apply to houses the features often used in ancient Roman temples. Palladio wrote *The Four Books of Architecture* in 1571. Its rules and formulas were widely used and copied, especially in England, where many famous British architects like Inigo Jones and Christopher Wren used them in their work. These, and other architects, designed and constructed buildings during the time of the British Kings named George (1714-1830), so Palladian style became known as "Georgian" architecture as well. Palladio's designs influenced many architects of his day, and continue to do so even today.

Georgian Architecture - A Definition

Georgian architecture refers to an architectural style that was popular throughout Europe, especially in England, and the American colonies during the reigns of the King Georges of England (1714-1830). Georgian architecture is based on the work and designs of a 16th century Italian architect named Andrea Palladio.

While European-trained architects found ready employment in the colonies, designing and constructing homes for wealthy colonials, those same colonials were able to purchase books based on Palladio's ideas which gave detailed instruction on how to design and build your own house in the Georgian style. The massive Brice House in Annapolis, at Prince George and East Sts., is an example of a gentleman designing his own home. The Hammond-Harwood House, also in Annapolis, is an example of a London-trained architect (William Buckland) using European books of architecture to guide his work for a wealthy planter/gentleman.

Characteristics of Georgian architecture include:

1. Balance and symmetry in design & construction
2. Elaborate cornice moldings
3. Central projection (pavilion)
4. Belt Course
5. Water Table
6. Bull's Eye Window (Oculus)
7. Pediment

Belair Mansion

When Belair Mansion was completed in 1745, it was the grandest house in the neighborhood! It was to be the home of Governor Samuel Ogle and his wife, Anne Tasker Ogle. Its location was perfect. The beautiful house stood on a slight hill, making it visible to travelers from much of the surrounding area and giving its owners a wonderful view of their property from the windows.

Many of the craftsmen who built Belair - carpenters and bricklayers - were trained on the job. Many were probably slaves from the plantation. Bricks for building were made on the plantation, since Maryland soil contains a high amount of clay. Fingerprints from some of the slaves who made bricks can still be seen in the bricks today. Wood came from timber taken off the plantation's land.

Belair is built in the **Georgian/Palladian** style, with simple lines and ornamentation based on classical designs from Greek and Roman buildings of ancient times. Since the main characteristic of Georgian architecture is **balance and symmetry**, both **facades** have a center door with an equal number of windows on each side. The south, or garden, **facade** features a center **pavilion** - a section of the brick wall which projects out from the rest of the **facade** wall. To also lend symmetry, at about five feet from the ground, Belair has a **water table** of molded bricks and between the stories is a **belt course**. There are four chimneys, two on each end, to allow smoke and heat to rise from nine fireplaces in the house. Inside the Mansion, the rooms were all originally laid out in symmetrical fashion, as well.

Between 1910 and 1914, members of the Woodward family (who owned Belair at the time) made changes to the mansion, adding the hyphens and wings on each end. The house then became a **five-part house**, a style very popular in Maryland.

Today, Belair Mansion is a museum, reflecting the lives of all the people who lived here during its 255 year life.



Belair Mansion

Chase Lloyd House
22 Maryland Avenue
Annapolis

Chase-Lloyd House in Annapolis is one of the finest examples of **Georgian/Palladian** architecture in Maryland.

Maryland attorney Samuel Chase began construction of this fine house in 1769, but had to sell it, before it was completed, to Edward Lloyd, one of Maryland's richest men. Mr. Lloyd hired a "joiner" - or architect - named William Buckland to complete the house for him.

Chase-Lloyd House demonstrates the idea of **symmetry** very strongly. It is a **central block** house. Three floors are visible from the street, and are separated by belt courses. A **water table** of molded brick encircles the house. A projecting **pavilion**, like that at Belair Mansion, is included on the street, or front, **facade** of the house. While the outside of the house appears very plain, the inside is richly decorated with beautiful carved moldings. Some of the doors in Chase-Lloyd house are made from mahogany, a very expensive wood.

Chase-Lloyd House is still a residence today. It is used as a retirement home for ladies.



The Maryland State House

State Circle - Annapolis

Maryland's capitol building, called the State House, was begun in 1769, during the time when Georgian/Palladian architecture was most popular. The facade of the building had windows in equal numbers on each side of the doors, plus a symmetrical arrangement of windows on the second floor. The building has both a **water table** and a **belt course**. The east **facade** of the building also has a projecting pavilion. Inside, the meeting rooms which would be used by Maryland's lawmakers were also arranged in a balanced and symmetrical plan. Like the Chase-Lloyd House, the State House was very plainly decorated outside, but more richly decorated inside. In 1905, the government of Maryland added a "new annex" to the State House to provide larger meeting rooms for Senators and Delegates. This addition to the State House contains some elements, or features, of Georgian design.

Maryland's Senators and Delegates continue to use our State House every day. It is the oldest State Capitol in continual legislative use in the United States.



His Lordship's Kindness

His Lordship's Kindness, located in Clinton, MD, is a handsome **five-part** brick mansion noted for its beautiful proportions. The right **wing** was once a Roman Catholic chapel. The left **wing** was used as a kitchen. The house has a central projecting **pavilion**, with a half-moon window in the **pediment**. There are also, on both the front and back of the house, special large, lovely windows which are known as "Palladian Windows," so called because Andrea Palladio favored them in his designs. This property belonged originally to the Darnall family, who owned it for many years. Some of the 18th century service buildings still survive. His Lordship's Kindness is a museum today.



Measuring Activity Sheet

Floor Plan Layout

Belair Mansion

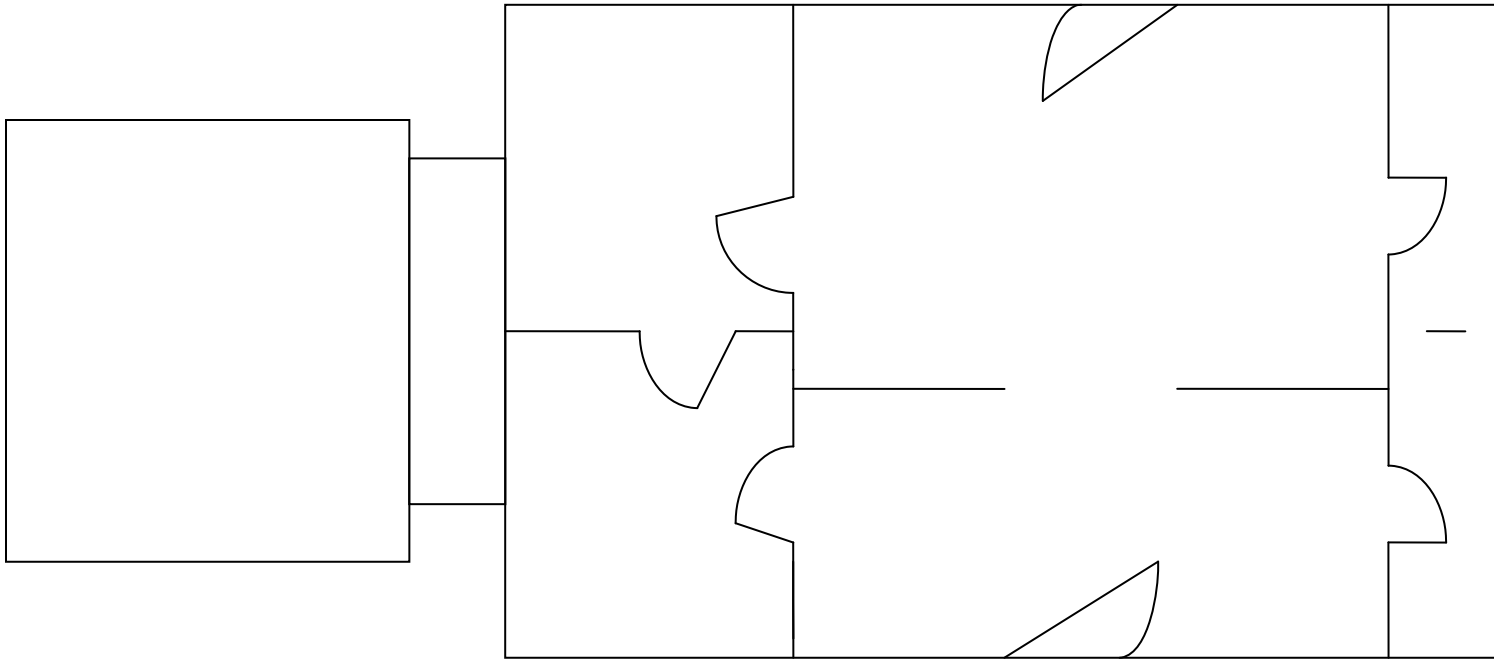
To be used with activities on

Day 2 of Lesson Plan

Belair Mansion

1745

1910/14



Belair Mansion is part of the City of Bowie's Division of Historic Properties. For information or tours, please call 301-809-3089 or email: museums@cityofbowie.org