



Design Your Summer Home

Lesson Overview

Students will study the dimensions of Belmont Mansion and design a summer home of their own. They will then figure out the area and perimeter of their newly designed home. This lesson can be used as a stand-alone lesson or as a pre/post visit activity if your students have visited Belmont Mansion. *Recommended for grade 4.*

Standards

Grade 4 - Mathematics

Measurement and Data

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.

Objectives

Students will be able to interpret a floor plan. Students will be able to draw their own basic floor plans and evaluate them for area and perimeter.

Time Required

2-3 class periods

Materials & Resources

- Floor plan of Belmont Mansion (provided)
- Ruler, Pencil/Pen
- Graph paper

Lesson Procedure

1. Show the students the floor plan of Belmont Mansion. Tell them that it was the summer home of Adelicia Acklen. Discuss what kind and how many of each kind of room Adelicia had. (Images of certain rooms can be accessed online at belmontmansion.com) Also tell them she had a bath house, bowling alley, billiards room, green house, gazebos, art gallery, alligator pond, aviary, gardens, a gas refinery and fountains.
2. Ask the students if they have ever seen a floor plan before. Explain to them it is a drawing of a house if you took the roof off and looked straight down in to the house. Explain how these drawings are done to scale so an architect can figure out how big to build something. Using the Mansion floorplan, have students solve some math problems on the attached worksheet. (For Teacher's reference: The circles and squares at one end of the Grand Salon represent columns and the hallway between the columns and the wall of the Central Parlor/Pantries should be exactly $\frac{1}{2}$ " or 10').

3. Ask the students to take 5 minutes and brainstorm what they would like in their dream summer home. Explain that they will be drawing a floor plan of their dream summer homes.
4. Give the students graph paper to design their home. Tell them that each square equals 5 feet. Have them draw their rooms and label each one. Also, their house must fill up more than half of the paper.
5. After they have drawn their houses have them calculate the area and perimeter of each room, as well as the area of the whole house.

Extension

Have the students design the outside grounds for their dream home. Include measurements so they can determine area and perimeter of the outside features of their home.

Evaluation

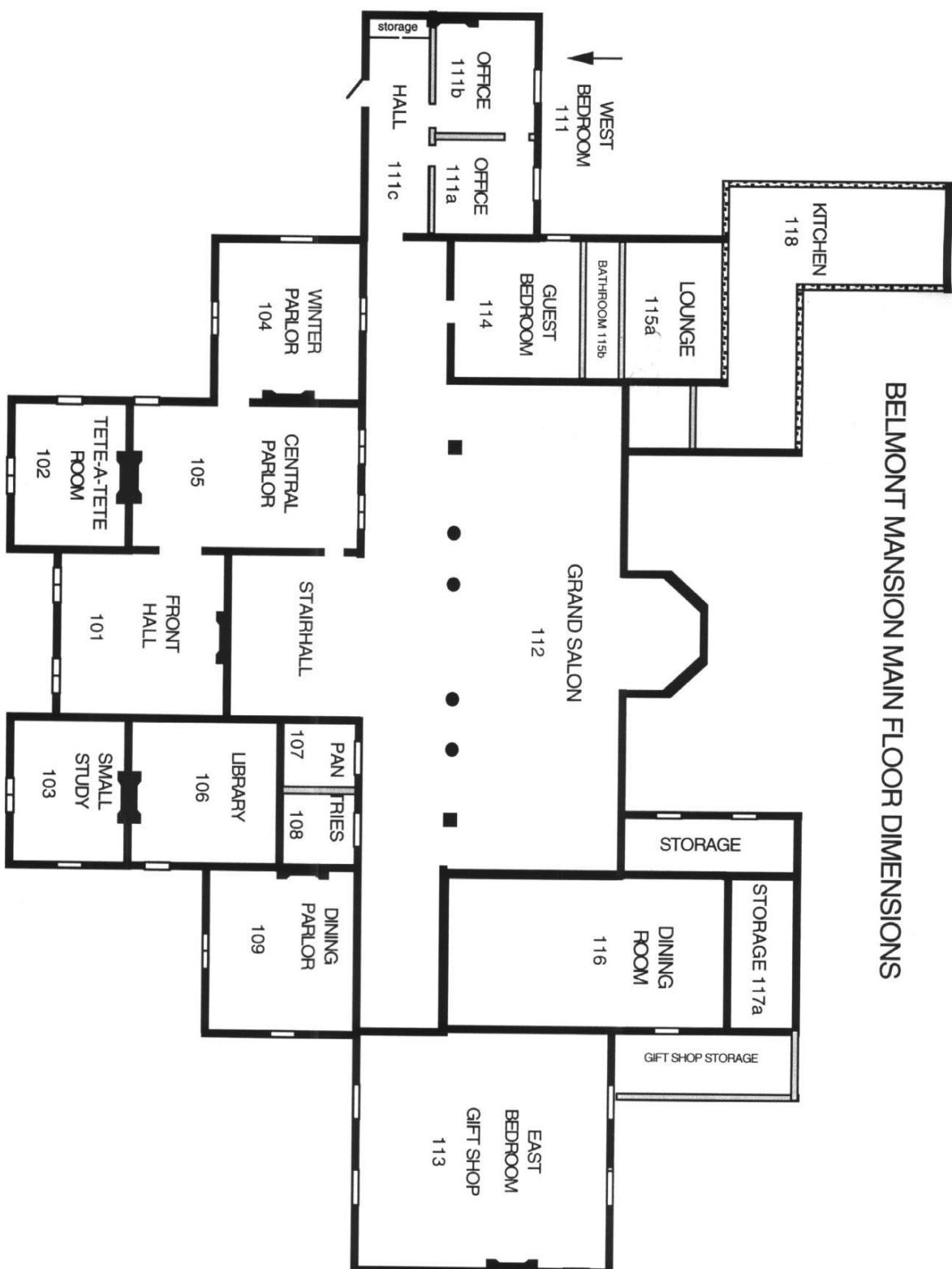
Students will be evaluated on the completion of the mansion worksheet, the completion of personal floor plans, and accuracy of calculated area and perimeter based on designs.

Belmont Mansion: Square Footage ANSWERS

Since the measurements are estimates to the nearest 1/8" there is room for error on the student's part in questions 2 and 4. Consequently grade these questions based on student's understanding of perimeter and area, not on if they got the exact answer.

1. **Scale:** $1/8"$ inch = 2.5' feet
 $1/4"$ inch = 5' feet
 $1/2"$ inch = 10' feet
 $1"$ inch = 20' feet
2. **Length of house**
Length: 8" or 160'
3. **Central Parlor (105)**
Length: 7/8" or 17.5' Width: 1 3/8" or 27.5'
Perimeter: 90' Area: 481.25'
4. **Dining Room (116)**
Length: Length: 7/8" or 17.5' Width: 1.75" or 35'
Perimeter: 105' Area: 612.5'
5. **Hall (111c)**
Length: 27.5' Perimeter: 70'
6. **Pantries (107 and 108)**
Width: 7.5' Perimeter: 50'
7. **Difference between Pantries and Hall area and perimeter**
Area: 75' Perimeter: 20'

BELMONT MANSION MAIN FLOOR DIMENSIONS



Name _____ Date _____

Belmont Floorplan: Square Footage

Directions: Solve the following problems and show your work. When measuring the floorplan, estimate measures to nearest $\frac{1}{8}$ " inch.
Length = long side of page. Width = short side of page

- 1. Determine the measuring scale. If $\frac{1}{2}$ " inch equals 10 'feet. How much do the other measurements equal?**

$$\frac{1}{8}" \text{ inch} = \underline{\hspace{2cm}}' \text{ feet}$$

$$\frac{1}{4}" \text{ inch} = \underline{\hspace{2cm}}' \text{ feet}$$

$$\frac{1}{2}" \text{ inch} = 10' \text{ feet}$$

$$1" \text{ inch} = \underline{\hspace{2cm}}' \text{ feet}$$

- 2. Determine the length of the mansion at its longest point (from Hall 111c to the edge of the gift shop).**

Length: ____" inches or ____' feet

- 3. Using the floorplan, find the length, width, perimeter, and area of the Central Parlor (105).**

Length: ____" inches or ____' feet Width: ____" inches or ____'

Perimeter: _____

Area: _____

- 4. Using the floorplan, find the length, width, perimeter and area of the Dining Room (116).**

Length: _____" inches or _____' feet Width: _____" inches or _____'

Perimeter: _____

Area: _____

- 5. Hall (111c) has an area of 206.25' and a width of 7.5'. Without measuring the floorplan, determine the length and perimeter.**

Length: _____' Perimeter: _____

- 6. Combined, the two pantries (107 and 108) have an area of 131.25' and a length of 17.5'. Without measuring the floorplan, determine the width and the perimeter.**

Width: _____' Perimeter: _____

- 7. What is the difference in area and perimeter between the Hall and the Pantries?**

Area Difference: _____' Perimeter Difference: _____'