

Lesson Plan: The Architect's Secret Code - Proportion in Design

Subject: Art, Design, Architecture, Math

Grade Level: High School (Approx. Age 15)

Time Allotment: 2-3 hours

Core Resource: "A Theory of Proportion in Architecture & Design, with Steve Bass, Part I" (video)

Materials Needed

- Computer or tablet with internet access to watch the video
 - Notebook or sketchbook
 - Pencils and eraser
 - Ruler
 - Calculator
 - Several sheets of plain paper and graph paper
 - Optional: Colored pencils, markers, or a simple digital design tool (like Canva or Google Drawings)
 - Optional: Cardboard or cardstock, scissors, and glue for a 3D model
-

1. Learning Objectives

By the end of this lesson, the student will be able to:

- **Identify** at least three key proportional systems discussed by Steve Bass (e.g., the Golden Ratio, musical ratios).
 - **Apply** these proportional principles to create a balanced and harmonious architectural façade design.
 - **Analyze and articulate** how specific proportions create a sense of visual order and beauty, connecting mathematical concepts to aesthetic feeling.
-

2. Introduction: The "Everyday Proportions" Hunt (15 minutes)

The goal of this activity is to see that proportion isn't just an ancient, abstract idea—it's all around us.

1. **Discuss:** Start with a simple question: "Why do some things—a phone, a poster, a car—just look 'right'? What makes them pleasing to the eye?" Guide the conversation toward ideas of balance, harmony, and spacing.
 2. **The Hunt:** Grab a ruler and an everyday object like a credit card, a smartphone, or a book.
 - Measure the height and width of the object.
 - Divide the longer side by the shorter side. What number do you get? (For a credit card, it
-

will be very close to 1.6!)

- Jot down this ratio in the notebook. Explain that this number, the Golden Ratio (approx. 1.618), is a famous proportion found in nature and design.

3. **Set the Stage:** Explain that today's lesson will explore the "secret codes" architects and designers use to create beautiful things, based on the ideas of Steve Bass. These codes are all about the mathematical relationships between the parts of a design.

3. Guided Exploration: Video Analysis (45-60 minutes)

This is an active viewing session, not a passive one. The student will be a detective, hunting for clues in the video.

1. **Prepare the Notebook:** Before starting the video, have the student create a two-column chart in their notebook. Label the left column "Key Concept/Ratio" and the right column "Where I See It / What It Means."
2. **Watch with a Mission:** Play "A Theory of Proportion in Architecture & Design, with Steve Bass, Part I."
 - Instruct the student to pause the video whenever Steve Bass introduces a new concept, a specific ratio (like 1:2, 2:3, 3:4), or a key term (like "Golden Section," "harmony," "module").
 - In the chart, they should write down the term and a brief, simple explanation or an example he gives.
 - Encourage them to sketch the geometric examples he shows on screen.
3. **Post-Video Discussion (5 minutes):** Ask clarifying questions: "Which ratio did you find most interesting? Why does he compare architecture to music? What was the most surprising idea you heard?"

4. Main Activity: The Harmonious Façade Design Challenge (60 minutes)

This is where theory becomes practice. The student will use the ratios from the video to design the front of a small building.

Part A: Create Your Proportional Building Blocks (15 mins)

1. Using graph paper and a ruler, have the student draw and cut out several clean, simple rectangles based on the ratios from the video.
 - **Example Set:**
 - One large "Master" rectangle with a Golden Ratio (e.g., 16cm x 10cm). This will be the overall shape of the building façade.
 - A "Square" (1:1 ratio, e.g., 8cm x 8cm) for a large window or feature.
 - A "Double Square" (1:2 ratio, e.g., 4cm x 8cm) for a door.
 - A "Musical Harmony" rectangle (2:3 ratio, e.g., 4cm x 6cm) for a smaller window.
2. These cutouts are the physical "kit of parts" for the design.

Part B: Compose the Façade (30 mins)

1. On a fresh sheet of paper, the student will arrange their cutout shapes to design the front view (façade) of a building. It could be a modern tiny home, a classical library entrance, or a storefront.
2. **The Challenge Rules:**

- The design must use at least three different proportional rectangles.
- Encourage thinking about balance, rhythm, and alignment. How do the shapes relate to each other? Do they line up in a pleasing way?
- The student can trace the shapes once they find a composition they like, and then add details like window panes, door handles, or textures.

Part C: The Designer's Statement (15 mins)

1. Below the finished drawing, the student will write a short paragraph (3-5 sentences) explaining their design choices. This is the most important part for assessing their understanding.
 2. **Guiding Prompts:**
 - "What is the main proportion you used for the overall building shape and why did you choose it?"
 - "How did you use a different ratio for the door or windows to create harmony or contrast?"
 - "Describe in your own words how applying these rules made your design feel more 'ordered' or 'beautiful' than just random shapes."
-

5. Differentiation and Extension

- **For Extra Support:** Provide a pre-drawn building outline (a Golden Rectangle) and have the student focus only on placing pre-cut windows and doors within it.
- **For an Advanced Challenge:**
 - Have the student build a simple 3D model of their façade using cardboard.
 - Challenge them to design a second, "disharmonious" façade using intentionally awkward proportions. They can then write a comparison of why one "works" and the other doesn't.
 - Research a famous building (like the Parthenon or a villa by Palladio) and try to identify the proportional systems used in its design.

6. Assessment

Assessment is based on the application of concepts, not a test. Review the student's work based on the following:

- **Façade Design:** Is there clear evidence that the proportional rectangles were used as the basis for the design? Is the composition balanced and thoughtful?
- **Designer's Statement:** Does the student correctly use vocabulary from the video? Can they clearly articulate **why** they made their design choices and connect them to the core principles of proportion and harmony? (This is the key indicator of learning.)
- **Notebook Chart:** Is the chart complete? Does it show active engagement with the video content?