

Mathematics and Architecture

For this activity, students are introduced to architecture and its' connection to mathematics. Discussions center on previous lessons including patterns, fractals, and symmetry that directly link mathematics and architecture.

I. About the lesson

1. Mathematics content and process learning objectives
 - a. Asking questions
 - b. Recognizing patterns
 - c. Conjecturing
 - d. Defending and communicating mathematical understanding
2. Related creativity traits
 - a. Making connections
 - b. Being inquisitive
 - c. Identifying similarities and differences
 - d. Having aesthetic taste
 - e. Dismissing conventional thinking – new approaches and perspectives
3. Other disciplinary connections including to everyday life
 - a. Understanding and identifying connections between architecture and students' experiences.

II. Preparing for the lesson

1. Materials
 - a. Architecture PowerPoint
 - b. Paper
 - c. Pencils

III. Conducting the lesson

1. Setting up for the exercise.
 - a. Ask students to recall previous lessons in order to identify connections between mathematics and architecture (possibilities: symmetry, proportions, scale, geometry, layering, nature, landscapes)
 - b. Using the PowerPoint, show examples of buildings that exemplify concepts discussed in the lesson introduction.
 - i. Mobius strip, Fibonacci numbers, geometry, patterns, fractals,
2. Give the following instructions to perform the experiment:

- a. Find examples of math in and around campus. Record your findings using paper and pencil (students can use their journals or other notebook to record)
- b. What types of things can you look for?
 - i. Symmetry, proportions, scale, geometry, layering, nature, landscapes

IV. Assessment

The lesson can be assessed by the following means:

- a. Students can be asked to defend their findings of the in-class activity (finding examples of mathematics on campus)

V. Modifications to this lesson

Potential modifications

- a. Including alternate buildings and examples of mathematics in architecture depending on the concepts previously covered.
- b. Students can be asked to find representations of mathematics in architecture prior to the examples given in the PowerPoint. By making their own slide for a presentation they can participate in finding connections between math and architecture and explain/defend their choices.