



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
2010 Volume IV: The Mathematics of Wallpaper

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## The Art of Symmetry

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The Art of Symmetry is an exploration into the basics of Geometry, how shapes and images move on a grid, and how this connects to symmetry of patterns. It is designed for any teacher looking to introduce symmetry to their math classes. This is a unit that can easily be adapted for any level of math or art classes. Lesson plans will include a variety of differentiated instructional strategies including games, symmetry in everyday life, art and lecture. All lesson plans are based on a direct instruction model which scaffolds each skill into small increments. Students will be introduced to symmetry through pictures of famous structures in the Bay Area. Afterwards we will make a day and explore symmetry in games such as building a house of cards to better understand the concept with a hands on activity. Lectures on the basic idea of symmetry and the 7 Frieze Patterns will further their understanding of symmetry and how simple shapes and figures move within a grid and later onto wallpaper. Their final project will be both identifying each of the 7 Frieze Patterns by looking at simple wallpapers and creating wallpaper designs of their own by choosing any 3 of the 7 Frieze Patterns.

(Developed for The Essentials of Algebra, grades 9-12; recommended for Basic Geometry and Special Education Math Class, grades 3-12 with the higher grades more for special education classes)

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