**Marvelous Moroccan Mosaics: Patterns in Zillij**

Students learn about a centuries-old craft and use its geometric shapes to make tessellations.

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**Grade Level** 6-7  
**Duration** 2 class periods

### National Geography Standards

**ELEMENT TWO: Places and Regions**

1. The physical and human characteristics of places.

3. How culture and experience influence people’s perception of places and regions.

### Arizona Geography Standards

**CONCEPT 4**  
**Human Systems**  
**GRADE 6**  
PO 2 Describe the environmental, economic, cultural and political effects of human migrations and cultural diffusion on places and regions.

**CONCEPT 2**  
**Places and Regions**  
**GRADE 7**  
PO 1 Describe the human and physical characteristics of places and regions

### Arizona Math Standard

**STRAND 4 Geometry and Measurement**

**CONCEPT 1 Geometric Properties**  
**GRADE 6**  
PO 9 Draw a two-dimensional shape with a given number of lines of symmetry.

**CONCEPT 2 Transformation of Shapes**  
**GRADE 6**  
PO1 Identify reflections, and translations using pictures  
PO2 Perform elementary transformations to create a tessellation.

**GRADE 7**  
PO1 Identify rotations about a point, using pictorial models.  
PO2 Recognize simple single rotations, translations or reflections on a coordinate grid.

### Overview

Since ancient times, Morocco’s mystiques of landscape and culture have been enticing visitors. Among Morocco’s unique cultural customs and art forms is the tile work called zillij (pronounced zah-LEEGE). Zillij mosaics decorate buildings, walls, floors, and much more throughout Morocco. Its repeating patterns and richness of colors create an intriguing image of this northwest African country.

### Purpose

In this lesson students will learn about the beauty and craft of Moroccan tile and use zillij patterns and shapes to perform elementary tessellations.

### Materials

- Handout 1: “What is Zillij?”
- Animations of zillij (to be used as an extension if computer technology is available)
- Handout 2: Images of zillij (can be downloaded and made into overhead transparencies or computer slide show)
- Handout 3: “Practice Making Your Own Zillij” and Answer Key
- Atlases
- Outline map of North Africa and Southwest Asia
- Isometric Grid/graph paper and colored pencils
- Handout 4: Assessment sheet “Make Your Own Moroccan Mosaics” and Answer Key
Marvelous Moroccan Mosaics

Objectives

The student will be able to:

1. Locate Morocco on a map of North Africa.
2. Explain what zillij is, how it creates a regional image of Morocco, and how its effect brings tourism and trade to Morocco.
3. Perform elementary tessellations by illustrating reflections, rotations, and translations (tessellations) using basic zillij shapes and patterns.
4. Distinguish between symmetric and asymmetric figures and their uses in tiling.
5. Draw traditional zillij shapes that have two or more lines of symmetry.

Procedures

Students should have experience in translation, rotation, reflection, line of symmetry, and tessellations.

SESSION ONE
1. Students will find and label Morocco on the outline map. Use atlases if necessary.
2. Teacher will lead discussion, using a KWL chart about any perceptions or images students may already have about Morocco.
3. Students will read Handout 1, “What is Zillij?” and then view the images from Handout 2.
4. Homework Handout 3, “Practice Making Your Own Zillij.”

SESSION TWO
5. Students share their zillij pattern from the homework assignment.
6. Assessment, Handout 4 “Make Your Own Moroccan Mosaics”.

Assessment

The assessment, Handout 4, is multiple-choice questions based on student understanding of the reading, and the student will draw and color his/her zillij-style mosaic. Questions 1 - 3 assess the geography content; Questions 4 - 5 assess the math content. Mastery will be considered 80% or higher.

Extensions

For further practice students can use the software, “Tessellmania.” (See sources).

Students can use traditional American quilt patterns and shapes to perform transformations.

Instead of cutting paper shapes (Handout 3), students can use plastic manipulatives to test the use of asymmetric figures in tiling patterns.

Students can examine some of M.C. Escher’s tessellations.

The class can discuss how other cultures and countries decorate their homes and public buildings.

Sources

Smithsonian, August 2002 “Morocco’s Mystique” pages 78-88.
Marvelous Moroccan Mosaics


Digital images of zillij were from the author’s Fulbright-Hays trip to Morocco in July 2002. Other people on the trip took some images, and the author acknowledges these fellow travelers who granted permission for use of their pictures: Aomar Boum, Mike Laird, and Jeannine Kuropatkin.

