AMUM
Lesson Plan Template

Teacher	
Grade/Subject	**Middle & High School Math**
Lesson Title	**Math Meets Art: Geometry in African Patterns**

Lesson Overview

Students will describe and analyze geometric patterns in traditional African Art and create symmetrical patterns or tessellations based on what they see.

Suggested Standards

- 7.G.A.1, 8.G.A.1, G.CO.A.1, G.CO.C.9, G.MG.A.1 U, M1.G.CO.C.5, M2.G.CO.A.1-4

Objectives

- Identify and analyze geometric transformations in African Art.
- Explore symmetry and tessellations found in traditional African objects.
- Create original designs based on geometric principals and inspired by African objects.
- Make cultural connections between math and visual storytelling.

Assessment

- Pre-Instruction guided recall questions
- Strategic questioning as a group during instruction
- Application of vocabulary terms during group discussion
- Present and reflect on choices made during the activity (group talk or exit ticket)

Materials

Images or examples of traditional African patterns, plain paper, ruler, pencil, coloring tools (crayons, markers, colored pencils, etc.)

Introduction

- Show a series of African art and objects and ask (students can answer verbally or on paper):

- “What patterns do you notice?”
- “Do you see any uses of symmetry or shapes you recognize?”

Instruction	Activity
• Introduce or review key geometry vocabulary: Line of Symmetry, Translations, Rotations, Dilations, Tessellations. • Go back to the images shown previously and have students reevaluate their answers. • Then ask students: ○ o “How does geometry help artists create balance, rhythm, and patterns?”	• Create a symmetrical or tessellated design inspired by African art or objects. • Have students start by sketching their designs either in a sketchbook or looseleaf paper. Encourage trouble shooting at this stage. • For an extra challenge, create specific parameters for students to work with. • Either use plain paper and a ruler for accuracy or grid paper.

Reflection

- Hold a discussion (either small groups or full class) for students to explain their final designs. Some example questions include:
  - “What inspired your pattern?”
  - “What math concepts did you include?”
  - “How does your design reflect traditional African art?”

Additional Resources

- Optional Lesson Extensions:
  - Explore the use of the Golden Ratio and fractals in African sculpture, textiles, and architecture (e.g. The Palace of the Chief in Logone-Birni, Cameroon, Ba-lia Settlements of Southern Zambia)
  - Use coordinate geometry to graph and transform African textile-inspired patterns.