



Mathematical Art Grades K-12

Introduction

Art is everywhere in our world and is intimately linked to maths although we may not always think of it in that way. Poetry is all about following certain patterns within the syllables you use, music finds the ratios between tones so they harmonize at the right times, and in the visual arts we can find all sorts of geometry and patterns. This activity is about noticing and sharing the maths that is in the art from different cultures.

Agenda

Activity	Time	Description/Prompt	Materials
Mindset Message	5 min	<ul style="list-style-type: none"> Play the mindset video 	<ul style="list-style-type: none"> Mindset video
Introduce	10 min	<ul style="list-style-type: none"> Introduce the goal of the activity to students Encourage them to select a piece of art in pairs or small groups 	
Investigate	20+ min	<ul style="list-style-type: none"> Brainstorm the kinds of mathematics students might find. Students find the maths embedded in the art. 	<ul style="list-style-type: none"> Printouts of the art pieces Patty paper Markers
Create	20+ min	<ul style="list-style-type: none"> Students create their own art inspired by the art they analyzed. 	<ul style="list-style-type: none"> Art supplies
Discuss	10 min	<ul style="list-style-type: none"> Discuss with the class what it was like to see art that is familiar to them through this new lens. 	
Debrief Mindset Messages	5 min	<ul style="list-style-type: none"> Debrief the mindset messages for this activity. 	



Activity

Find examples of the art in your community. This can be art from artists that are a part of your community, art that is traditional to your culture, or art from the spaces around you such as murals or other forms of public art. You might want to mention this a day or two before the lesson so students can bring their own or have time to go out and take pictures they can use, or you can bring several pictures of pieces they can choose from.

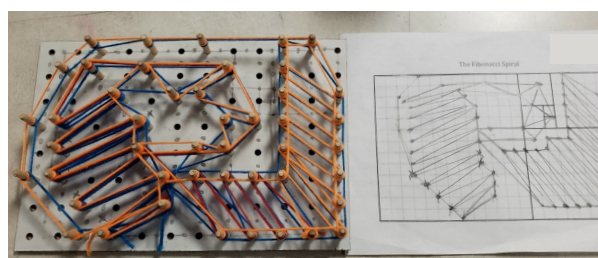
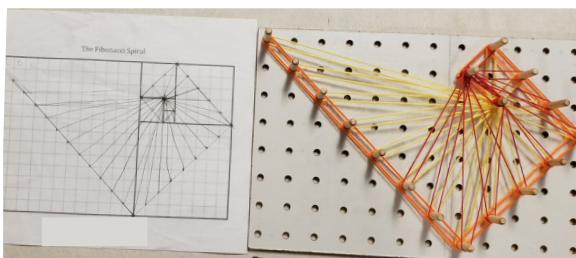
Once you're ready to start, tell the students about the goal of the lesson. You might want to read from the introduction above. Have students select what piece of art they want to explore in pairs or small groups. They might choose more than one. Spend a little bit of time brainstorming about the kinds of maths they might find (it can be patterns you notice, angles you can show and measure, geometrical shapes within the art, transformations and symmetry, etc.). Think broadly and make it clear that the list is not exhaustive. Then let the students explore their pieces of art. A good way of showing what they're finding is to use patty paper to put over the printout and draw on (see the examples).

Once students have had some time to analyze their chosen pieces of art, encourage them to create their own. They can be inspired both by the piece of art they were working on and the maths they found. Once students have had time to create, you may choose to do a gallery walk where students can see each others' work, or ask students if they want to share with the class.

Finally, have a discussion with the students about what it was like to see art that is familiar to them through the lens of mathematics, and whether they discovered something new in the art they were looking at by analyzing it in this way. Reflect also on the importance of art to their communities and cultures and how maths is present even in places we often don't think about.

Another Mathematical Art Idea:

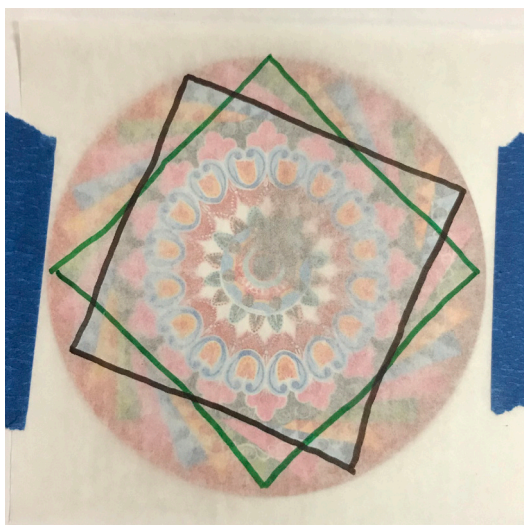
Our colleague, math teacher Marc Petri, invited a local artist to come into class to share their artwork. Marc then had his students create their own string art. Here are a few pictures of the students' art:



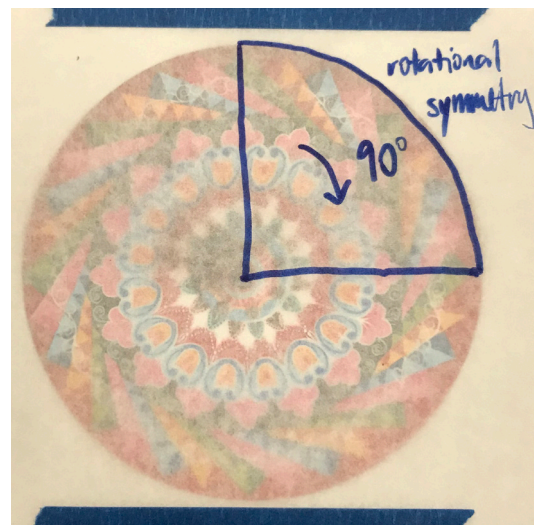


Mathematical Art Examples

Traditional Costa Rican Oxcart Wheel Painting



Example 1

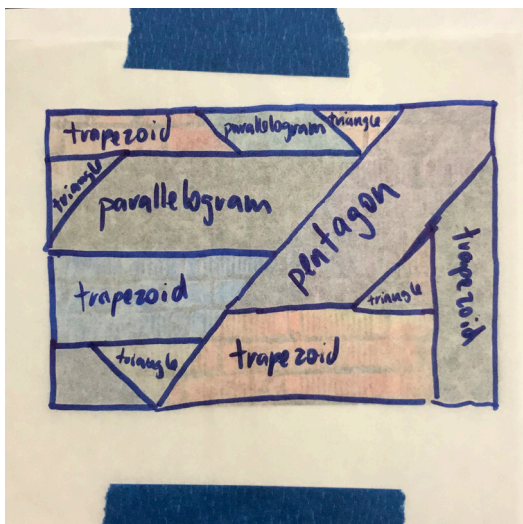


Example 2

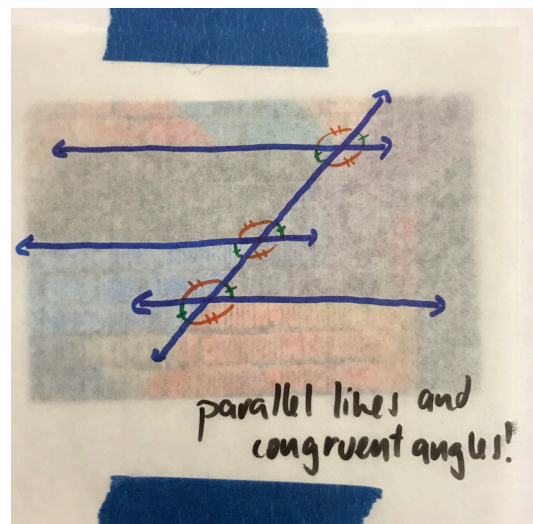


Mathematical Art Examples

Close-Up Picture of Street Art



Example 1



Example 2



Mathematical Art

Art from Mindset Mathematics, Book 4
Inspired by Red, Yellow, Blue by Ellsworth Kelly, 1963



Art from Mindset Mathematics, Book 4
Inspired by Composition II, by Piet Mondrian, 1921

