

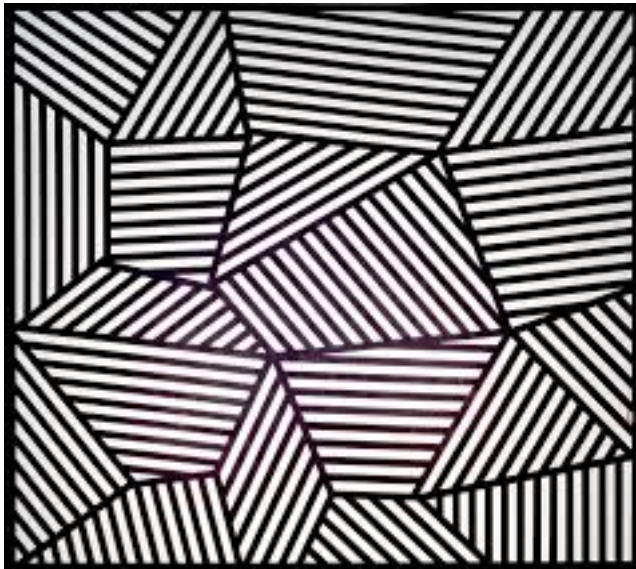
Math x Art

4 Ways to Think of It/Quick challenges

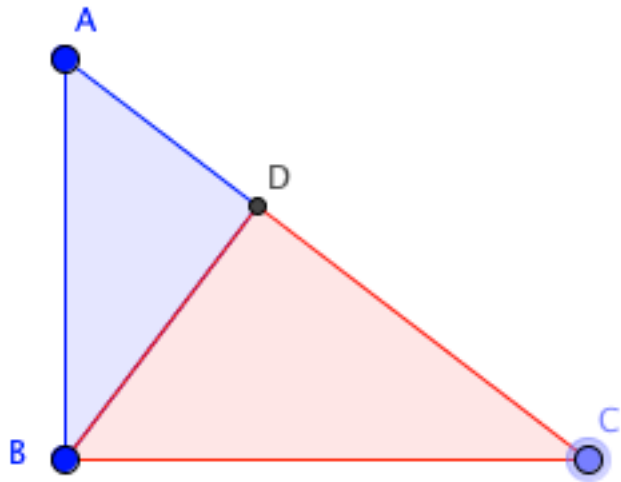
This handout and more at bit.ly/mathxart

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Art as inspiration: What was Sol LeWitt doing here? What were his rules? Can you make your own variation?



Math as inspiration: my favorite proof of the Pythagorean Theorem is that each right triangle decomposes into two similar right triangles. Can you use that structure to make an interesting image?



Art as the problem: we're going to make a mobile with pieces cut out of the same material. They will have the same mass if they have the same area. Design 3-7 mobile pieces that have the same area, but make an interesting collection. Sketch what your mobile might look like.

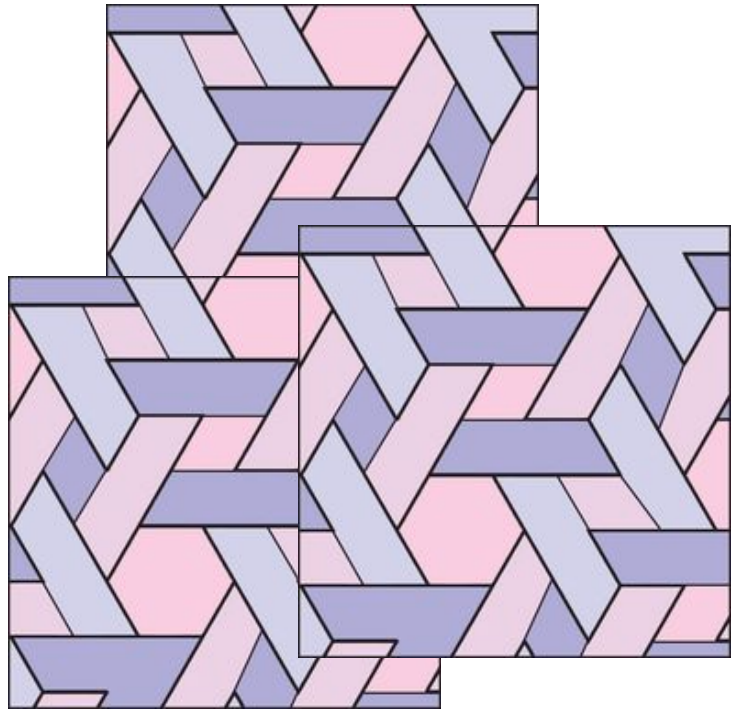


Math as a problem. You want to make a visual (or poem or song) to communicate a mathematical idea in a compelling way. That's an art problem! Sketch a design for a flier/painting that expresses a big idea in a course you teach.

(That's pretty open, so suggestions: what does it mean to solve an equation, what are different situations that bring up proportions, what is infinity, who was Gauss, how do we know multiplication is commutative...)

4 Examples with Pattern Blocks

- 1) *Art as inspiration*: see this! -->
- 2) *Math as inspiration*: a rep-tile in math is when you can use copies of a shape to be an enlarged (“similar” say mathematicians) version of the shape. Of course, then those enlarged copies should also fit together to make an even larger version. Try this with the red trapezoid.
- 3) *Math as the problem*: use pattern blocks to make a design that is rotationally symmetric (can turn onto itself and match) but *not* reflectionally symmetric (so it can’t match itself by flipping).
- 4) *Art as the problem*: Design a new pattern block tile. (Christopher Danielson is thinking about this a lot.)



Bonus: Math & Art as the problem: show all the ways to make a regular decagon with pattern blocks with an edge equal to one triangle edge.

More examples:

- 1) *Art as inspiration*: MC Escher, modified tessellations or impossible drawings.
- 2) *Math as inspiration*: Megan Schmidt’s number spirals:
<https://mathybeagle.com/2016/06/03/spiraling-out-of-control/>
- 3) *Math as the problem*: perspective drawing or isometric representations
- 4) *Art as the problem*: make a hundred face! <http://faceshundred.blogspot.com/>

Lessons, artists, examples and more: <http://mathombre.blogspot.com/p/mathart.html>