

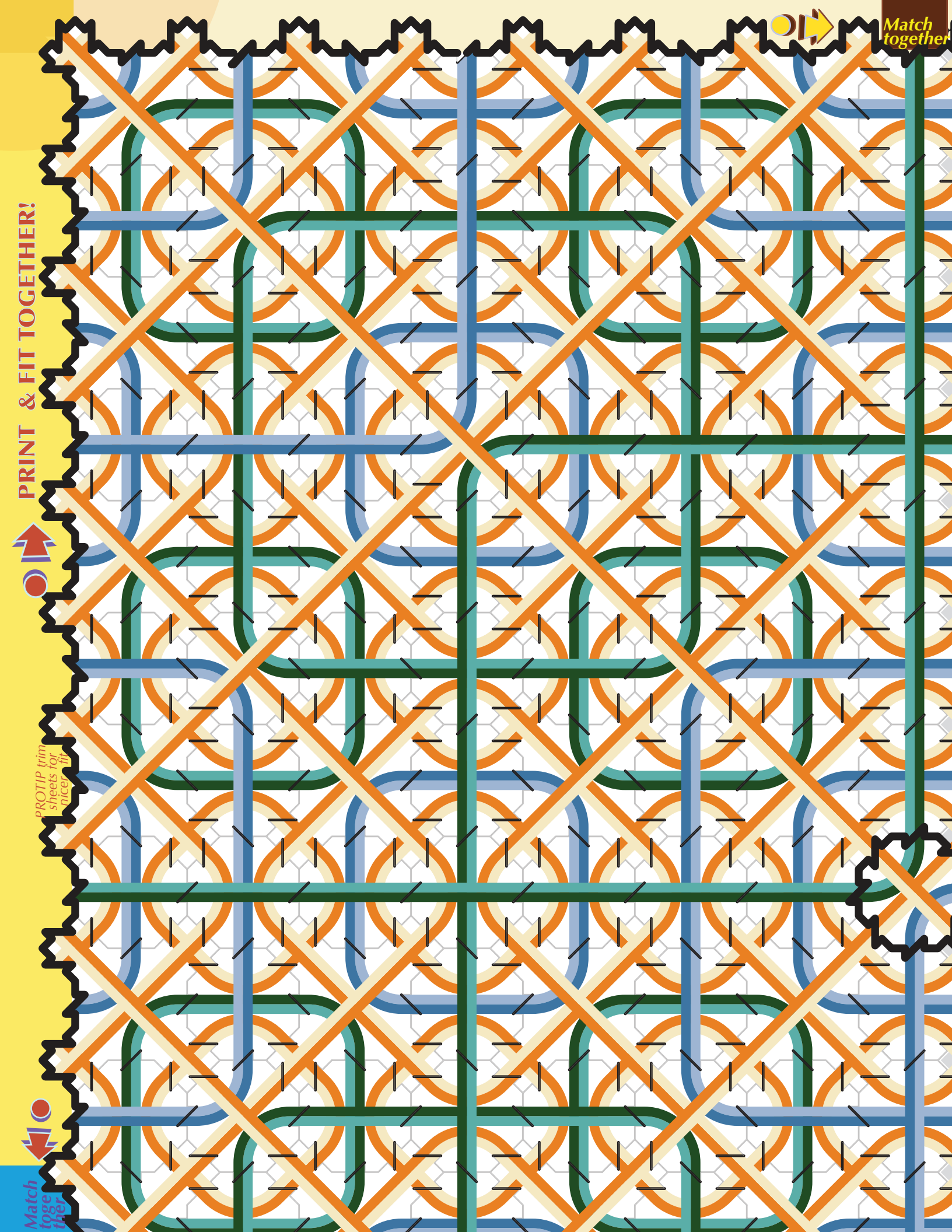
PRINT & FIT TOGETHER!



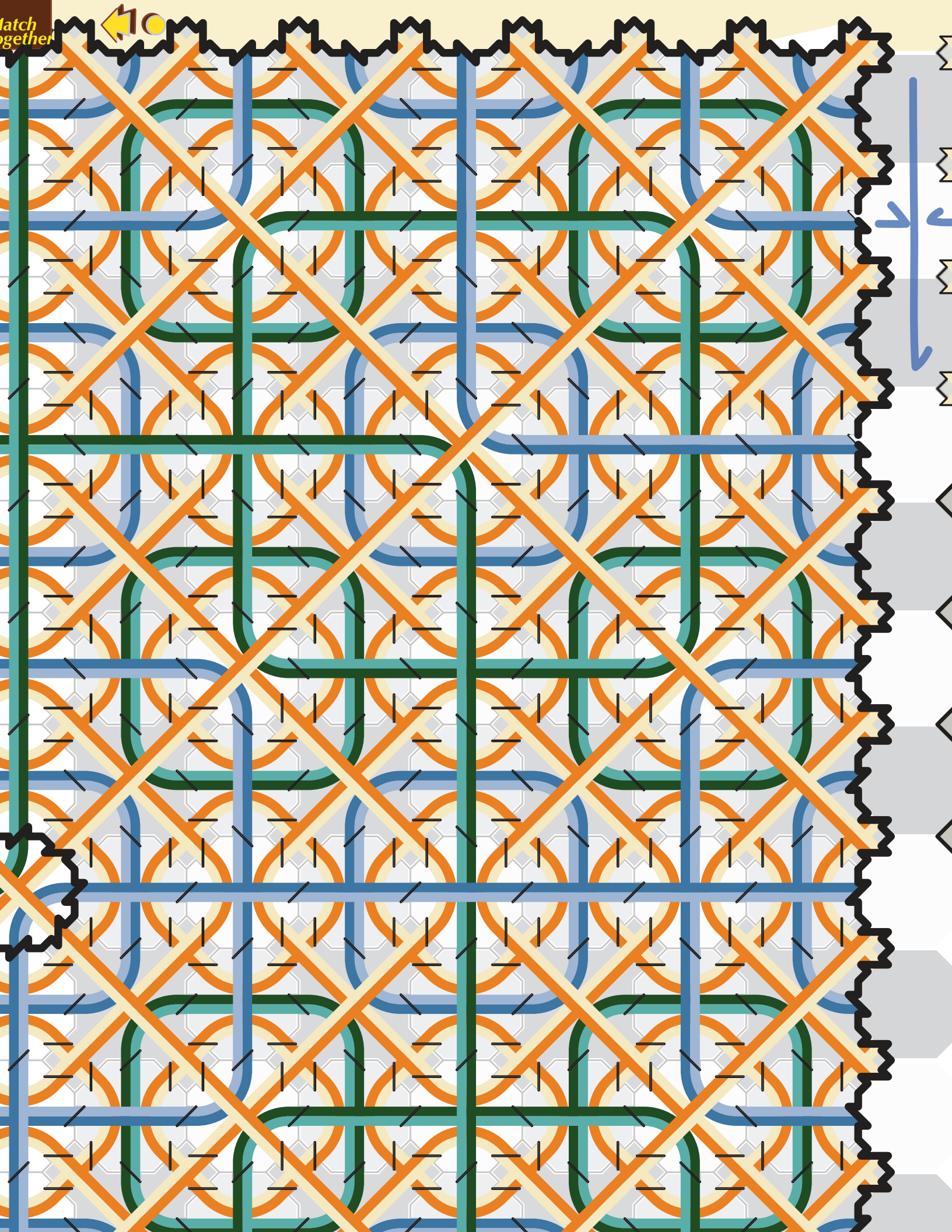
PRO TIP
trim
sheets for
nicer fit

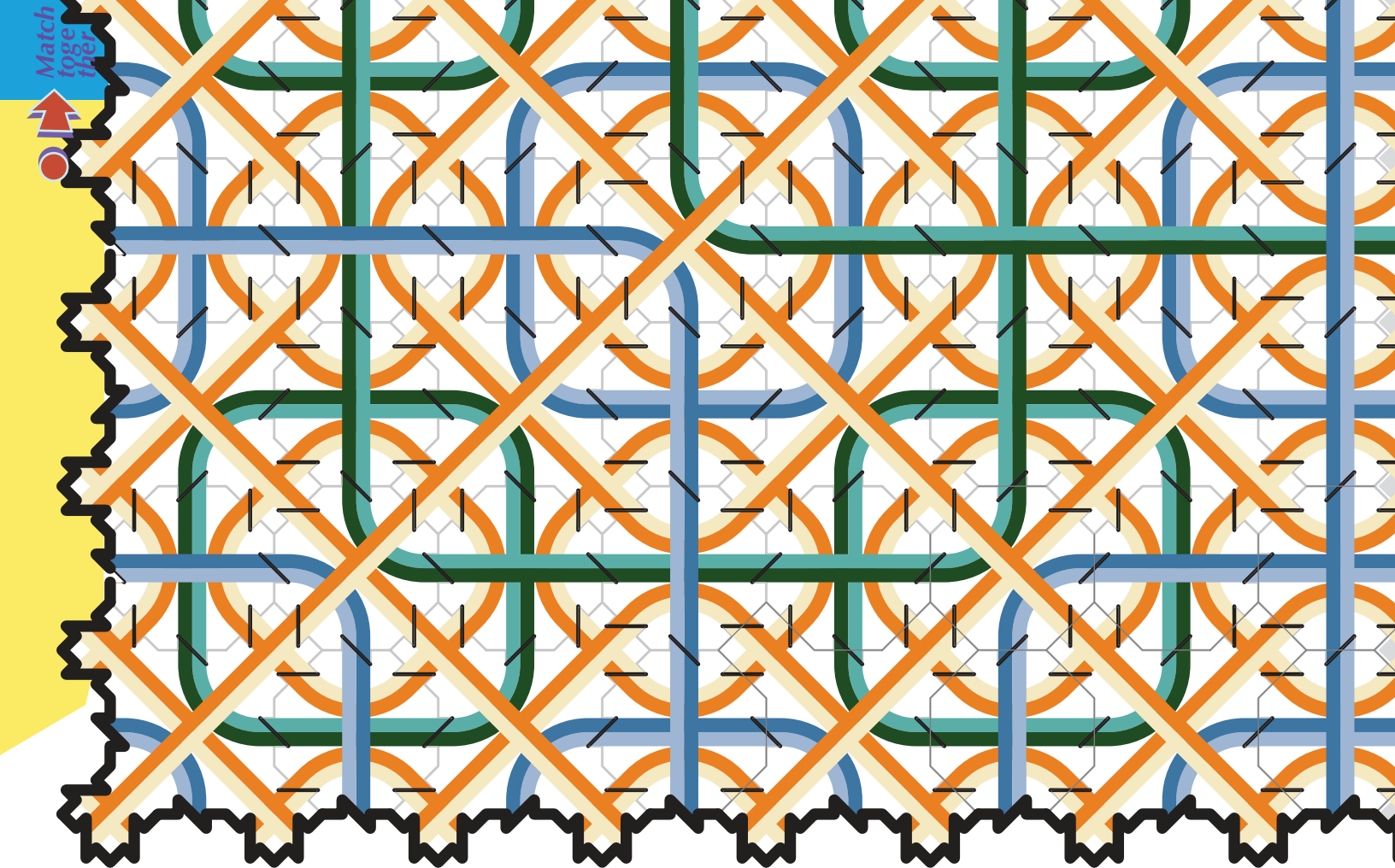


Match
together



Match together





Doubly Marked Robinson Tiles

What Patterns
Can You Find?

drawn by Chaim Goodman-Strauss

for further information:



Gathering 4 Gardner.

PRESENTS
Celebration of Mind

For more activities, visit: www.CelebrationOfMind.org

M. Gardner, *Martin Gardner's Mathematical Games: The Entire Collection of His Scientific American Columns on one CD* Mathematical Association of America (2008)

B. Grünbaum and G.C. Shepherd, *Tilings and Patterns*, W.H. Freeman and Co. (1987) — definitive overview.

R. Robinson, *Undecidability and nonperiodicity of tilings in the plane*, *Inv. Math.* 12 (1971), 177-209

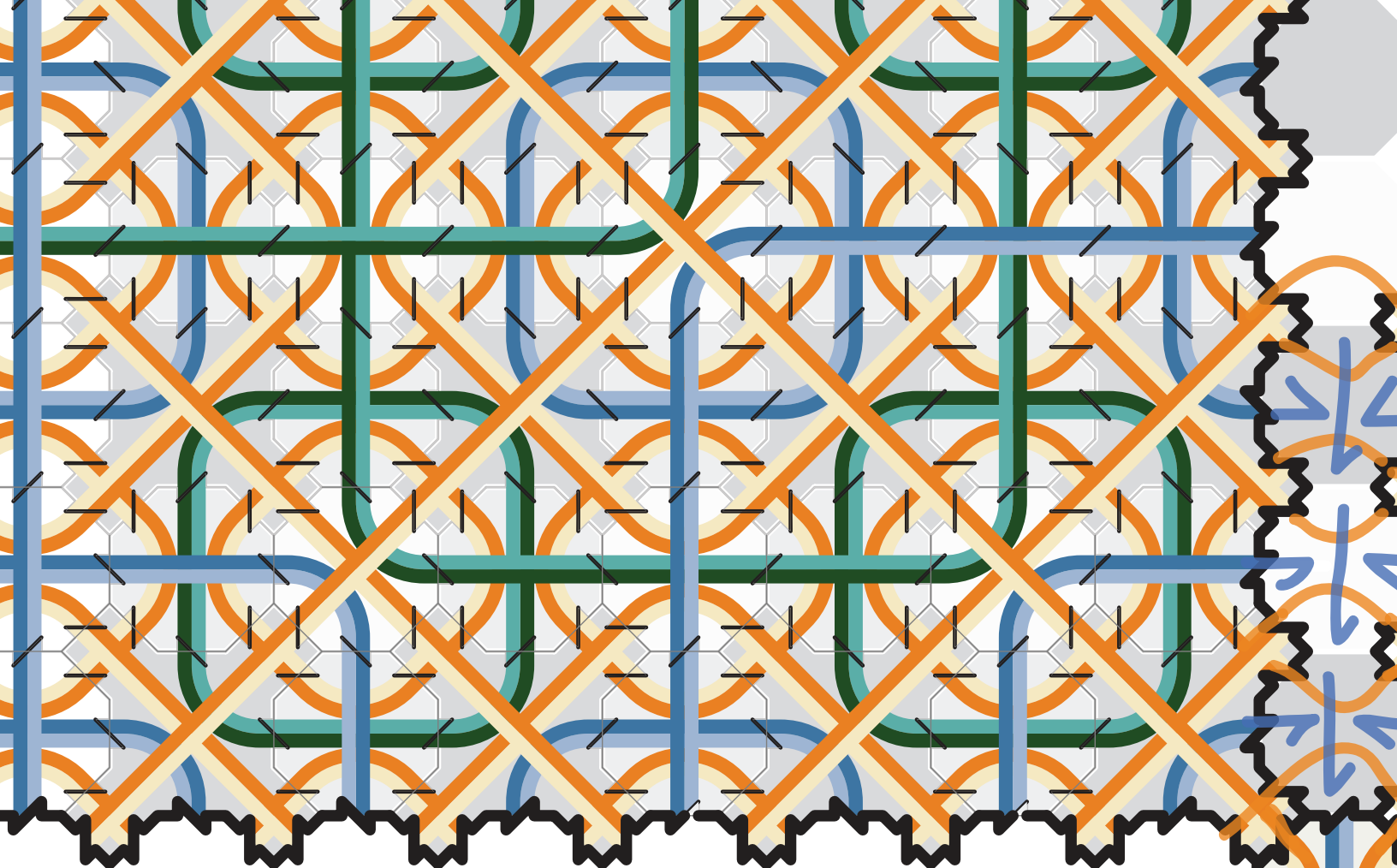
C. Goodman-Strauss, *A small aperiodic set of planar tiles*, *Europ. J. Combinatorics* 20 (1999), 375-384

————— *Lots of aperiodic sets of tiles*, (2016) arXiv:1608.07165 — literally lots.

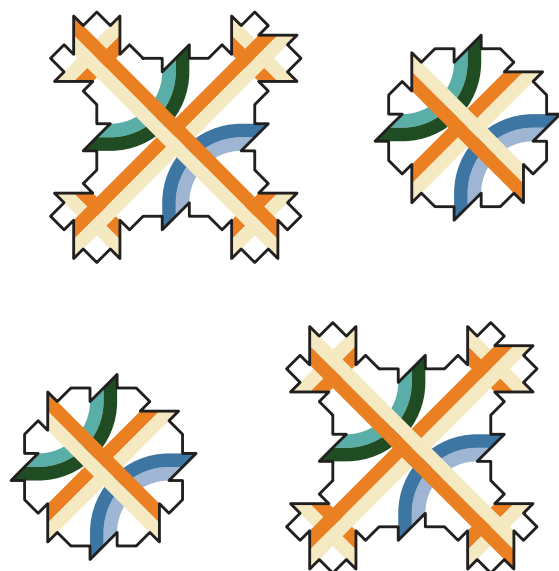
————— *Tassellazioni*, in *La Matematica v3*, Einaudi (2011), Turin, Italian;

English original: *Tessellations*, arXiv:1606.04459 — an extensive survey.

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How do these pieces fit?

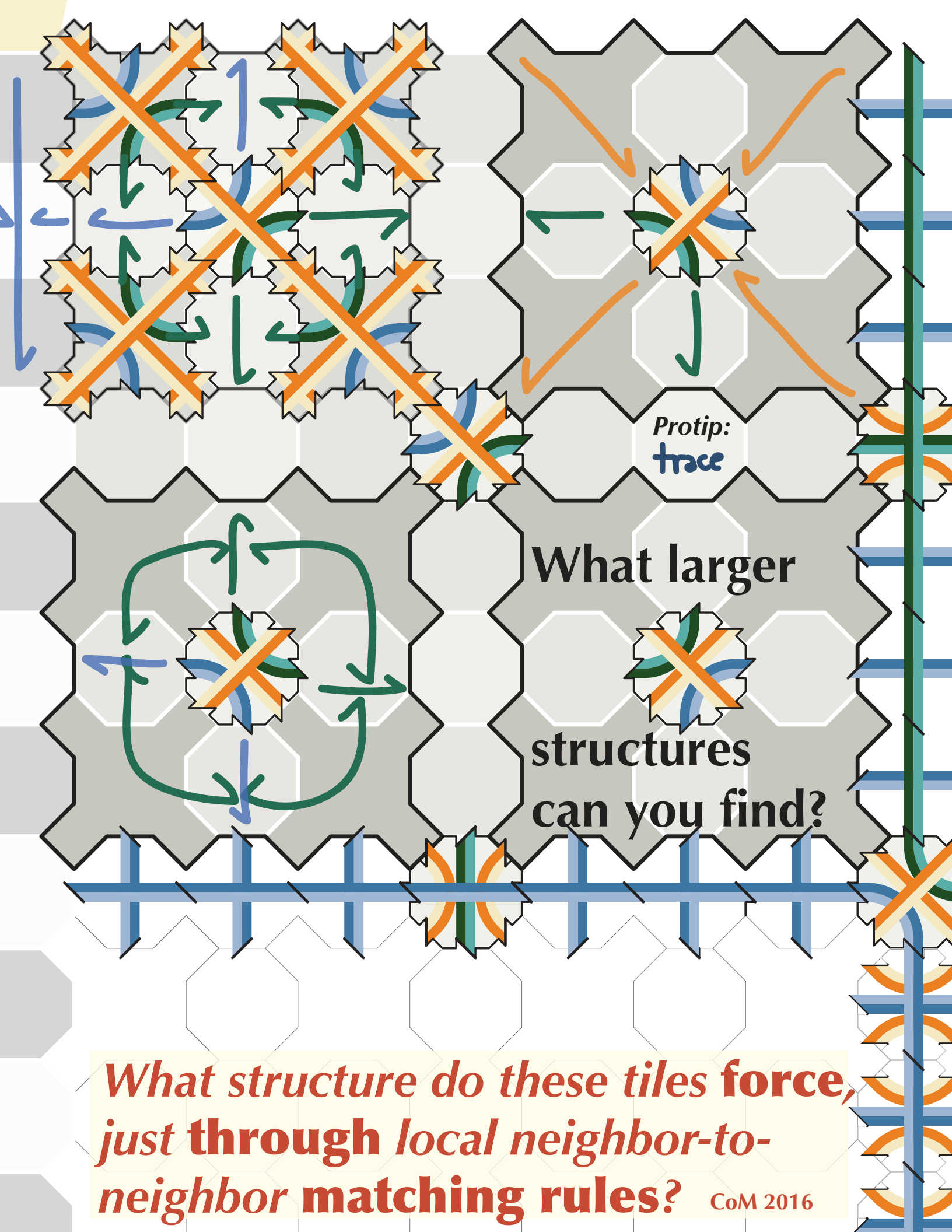


You'll need to flip them over for all possible arrangements!

CoM 2016

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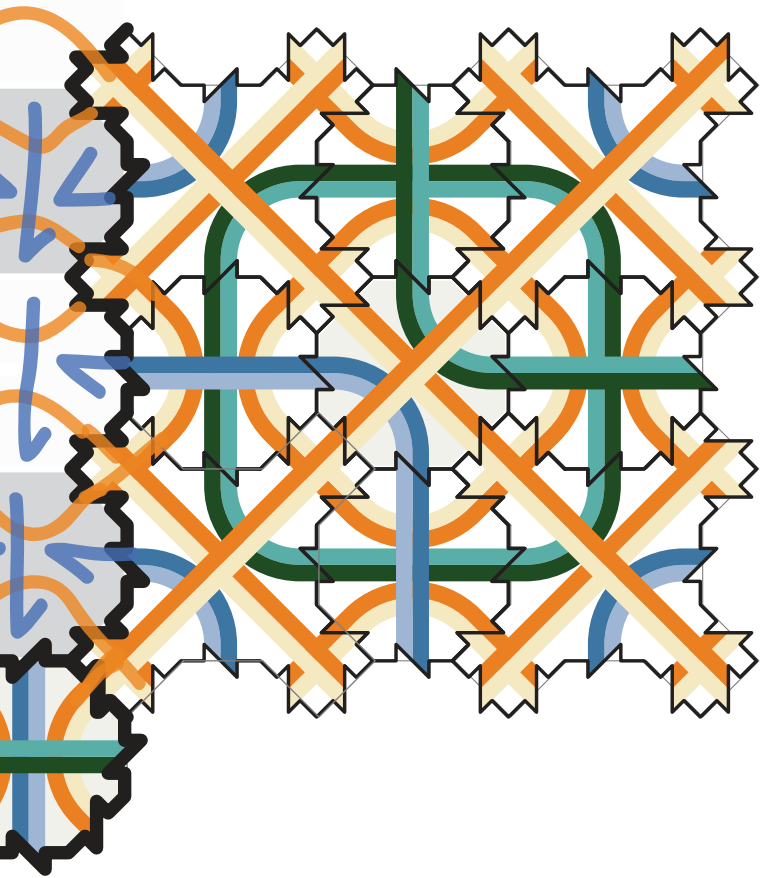
Try tracing paper! Scratch sheets are at the end of this packet!



Protip:
trace

What larger
structures
can you find?

*What structure do these tiles force,
just through local neighbor-to-
neighbor matching rules?* CoM 2016



*The Robinson tiles, in all their variants, are an **aperiodic** set of tiles: not only can they form, but they can only form, these hierarchical, hence non-periodic structures.*

This is an amazing yet universal phenomenon: global structure arising from local constraints.



*Print out a bunch of this stuff and figure it out!
Cut it up and rearrange the pieces!
Assemble into bigger chunks!*

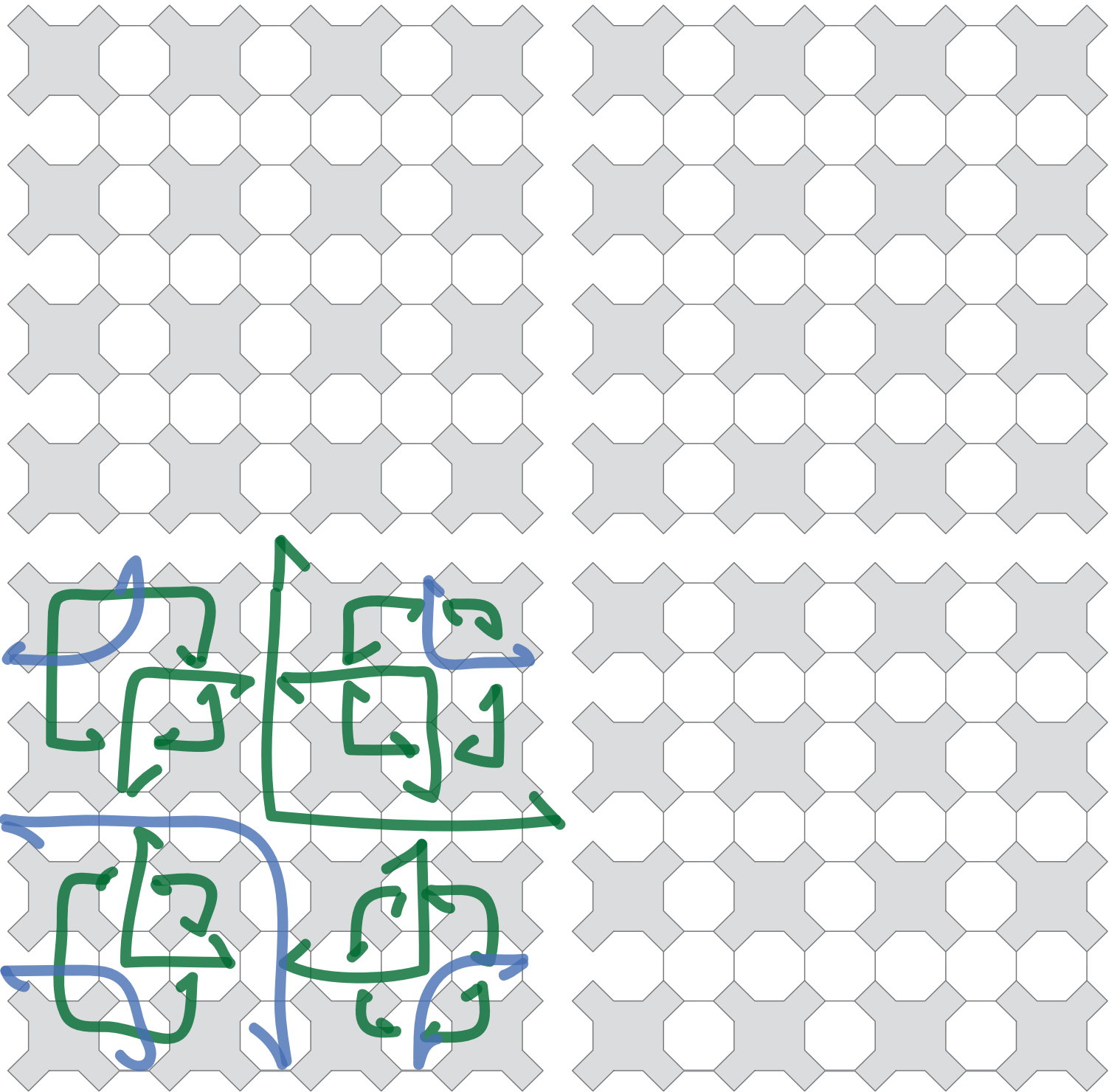
Draw your own!

Share your pix!



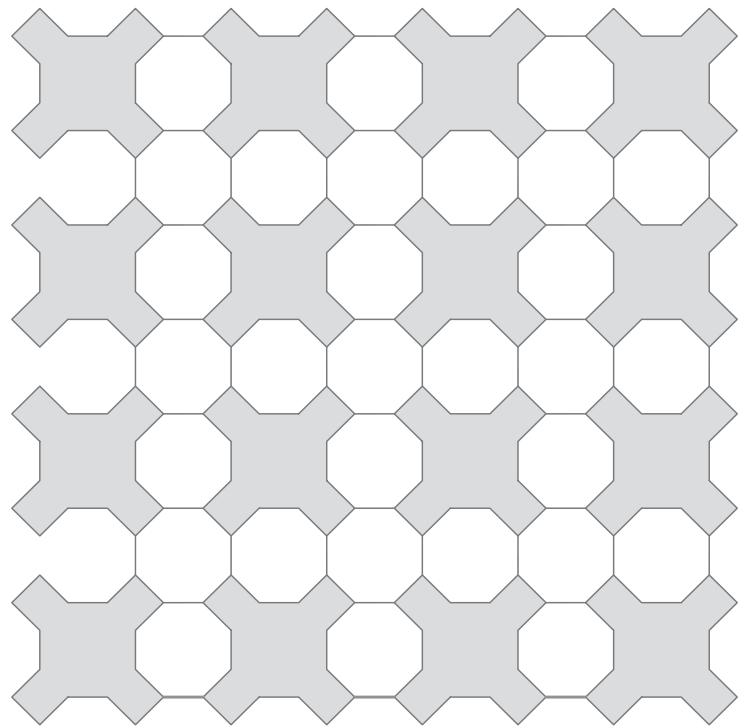
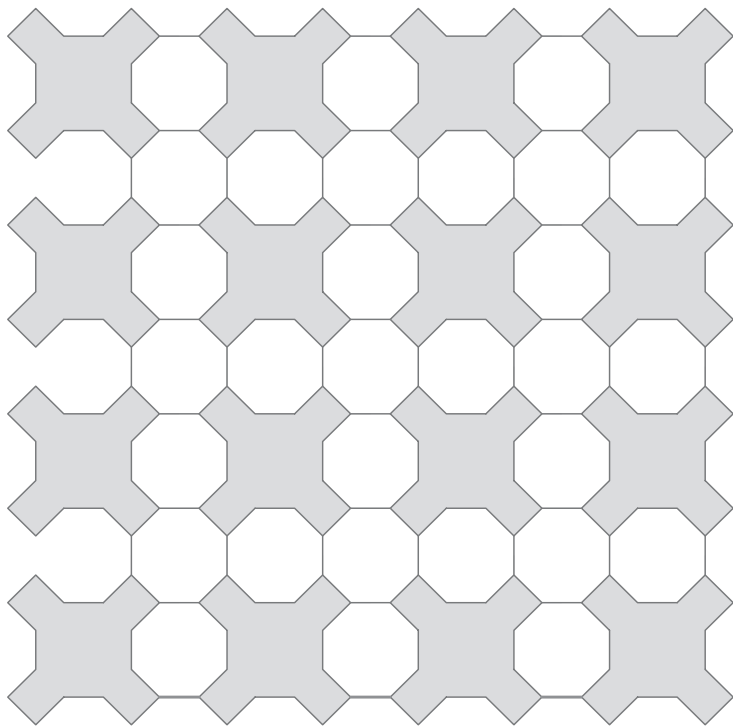
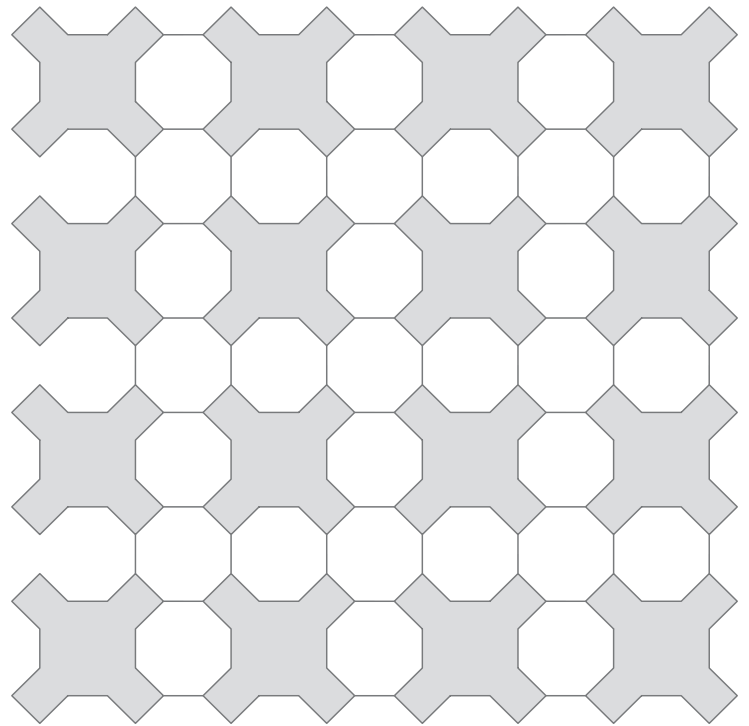
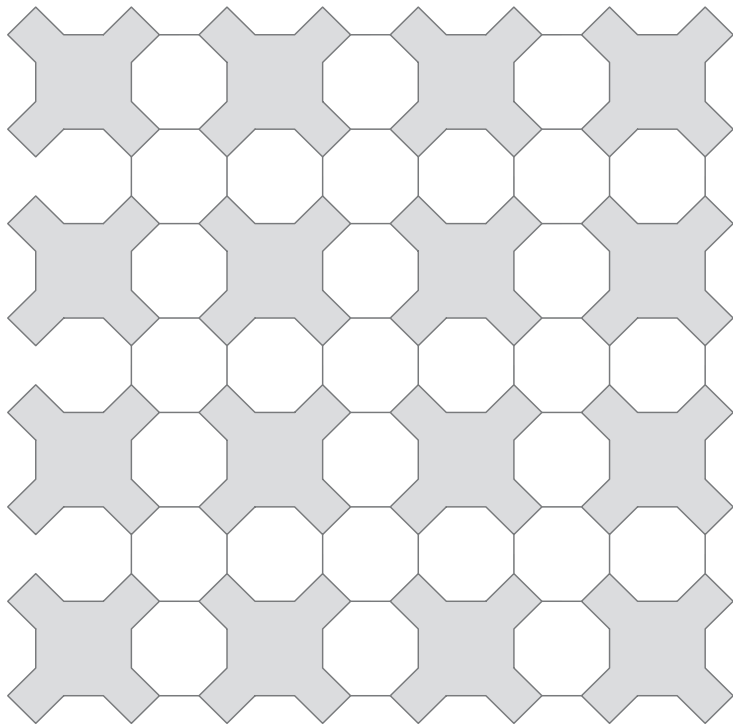
Protip: best to be sloppy!
(Can worry more about the big stuff!)

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Draw your own!

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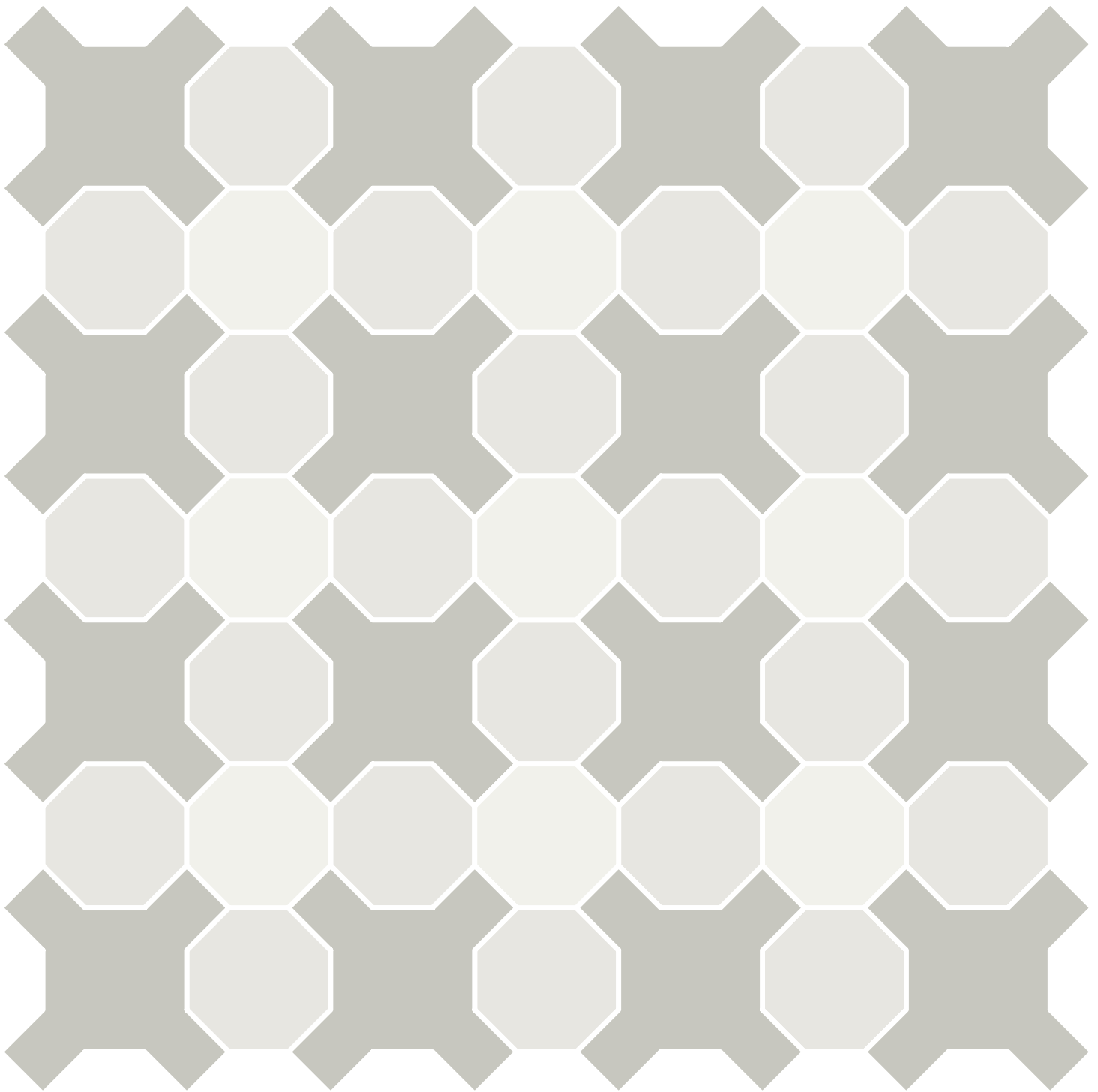


Protip: print out a bunch of these to sketch on!

Assemble your drawings into larger ones!

Draw your own!

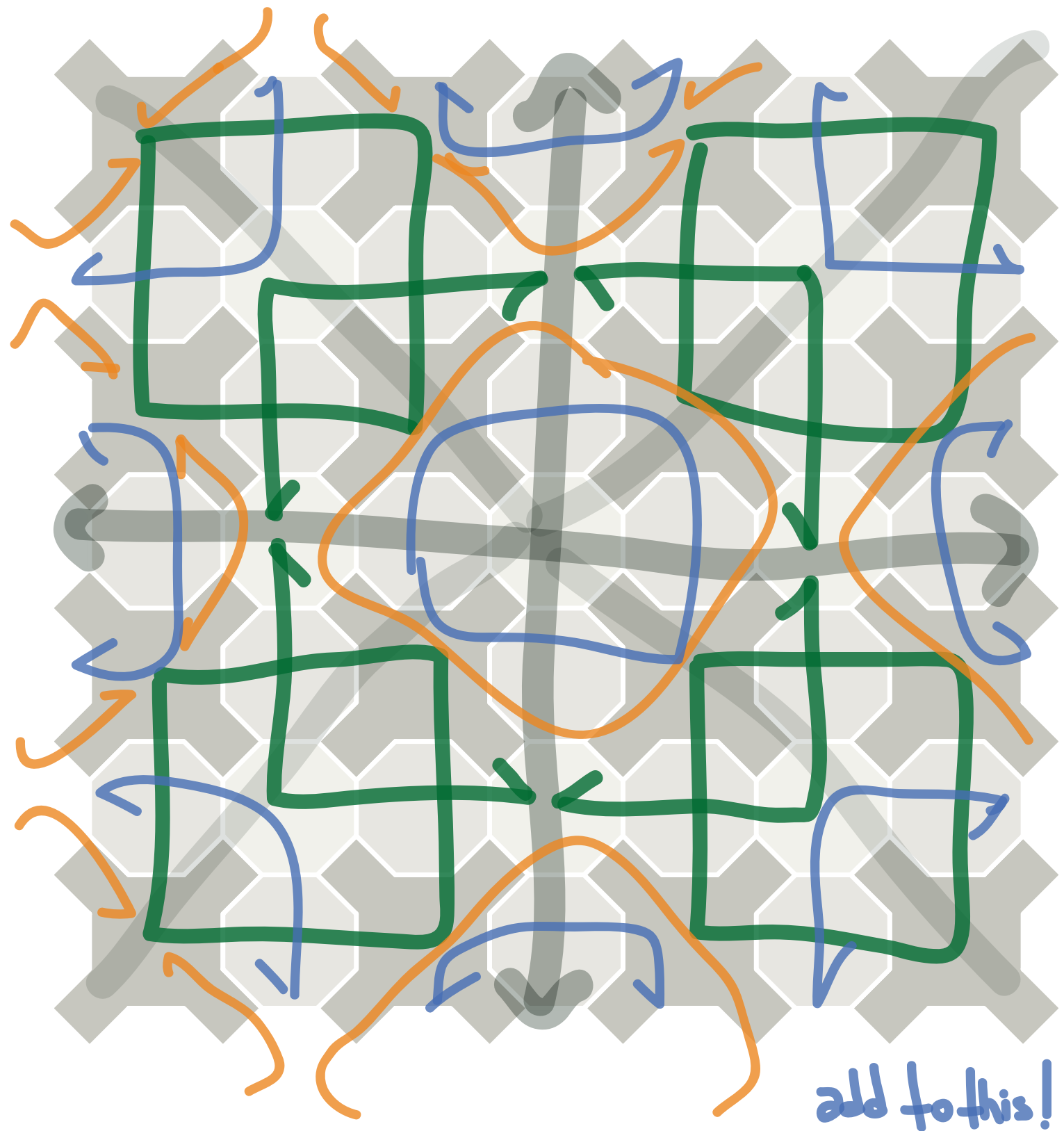
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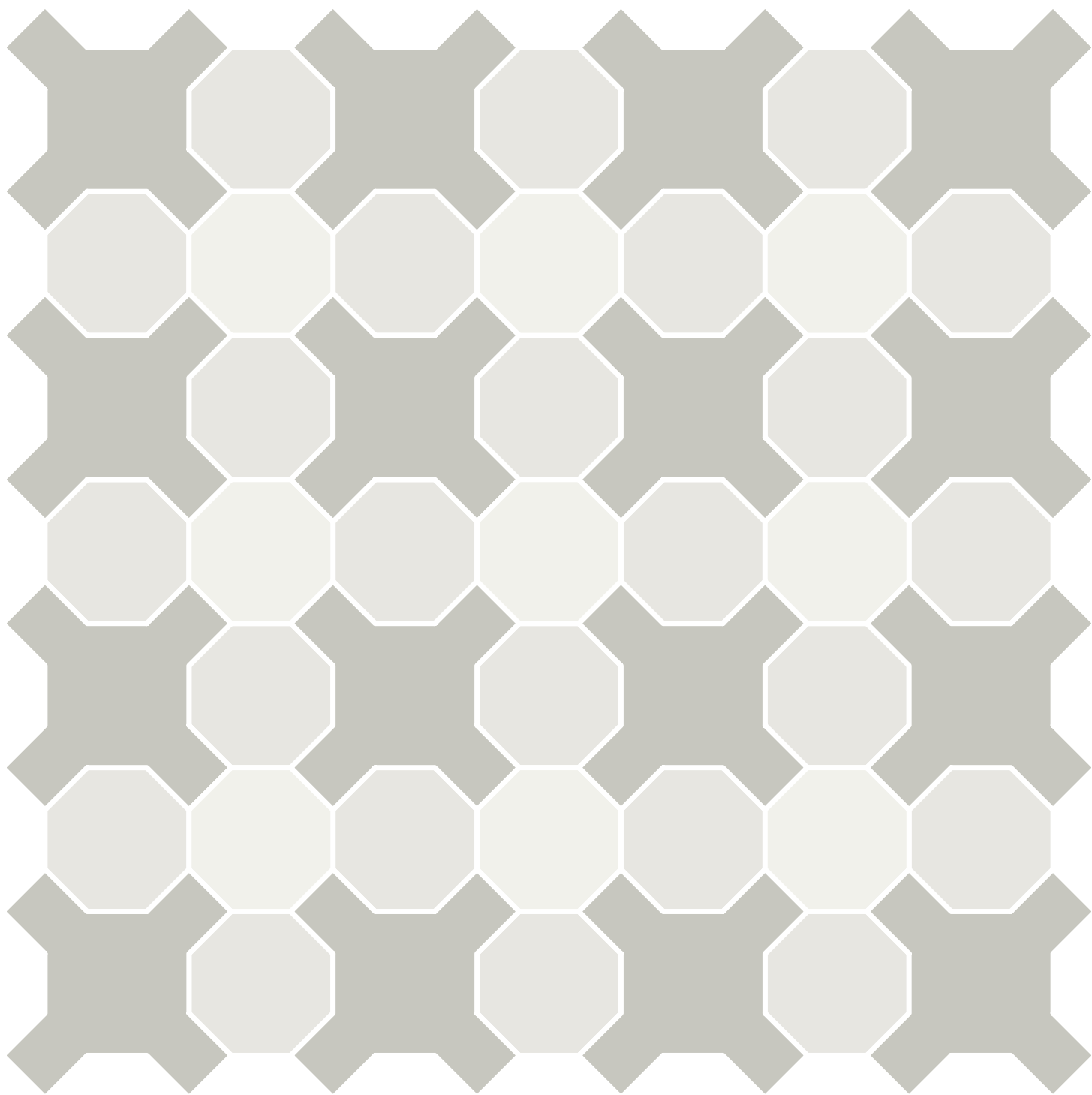
Draw your own!

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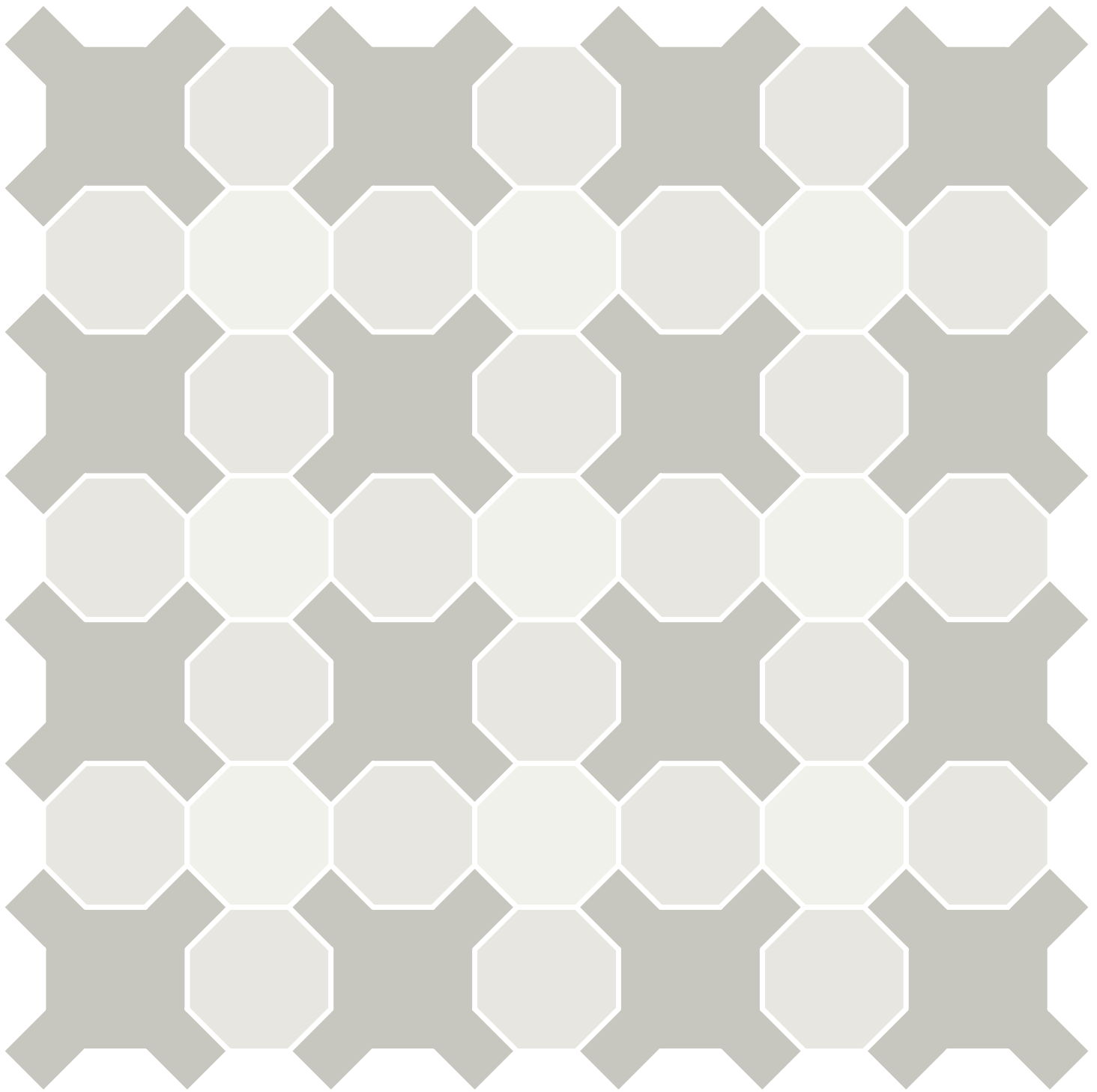
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