

MathsJam Shout

February 2024
Cambridge MathsJam

The MathsJam in Cambridge, UK, has been on hiatus but will potentially be restarting soon. If you'd be interested in joining, email cambridge@mathsjam.com to be contacted when it restarts.

Puzzle

Shapes Around A Point

A regular hexagon (120°), an equilateral triangle (60°) and two squares (90° and 90°) can all fit together exactly around a point, since their angles sum to 360° . Which other regular polygons can fit together around a point? What is the maximum number of sides such a regular polygon can have?



Printable PDF:

bit.ly/polygon-stencils

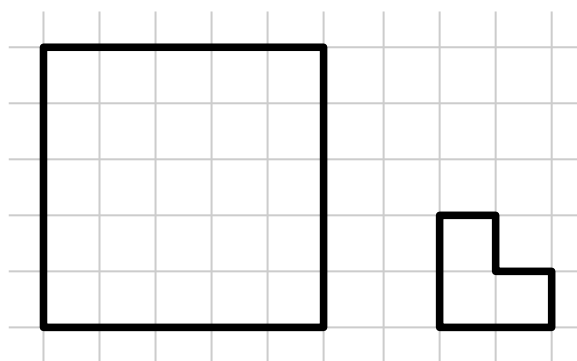
Make Polygon Stencils

Print out this sheet and cut out the polygons carefully using a craft knife, leaving polygon-shaped holes in your paper. To make it more robust, stick it to a piece of card first. Use your polygon stencil to create tiling patterns, join vertices to make patterns inside the shapes, or overlap different shapes to create weird and wonderful symmetries!

Puzzle

Tiling with Triominoes

Imagine tiling a 5-by-5 bathroom with L-shaped triomino tiles.

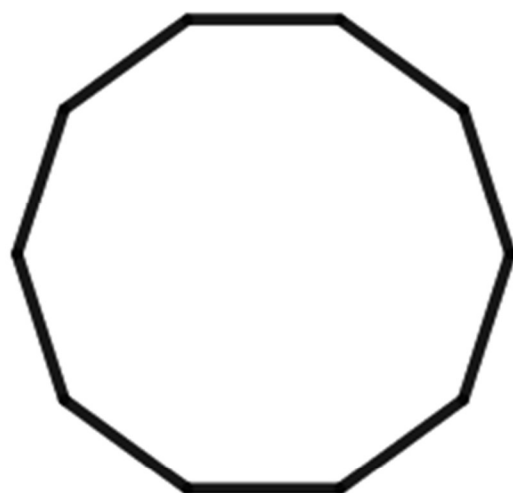
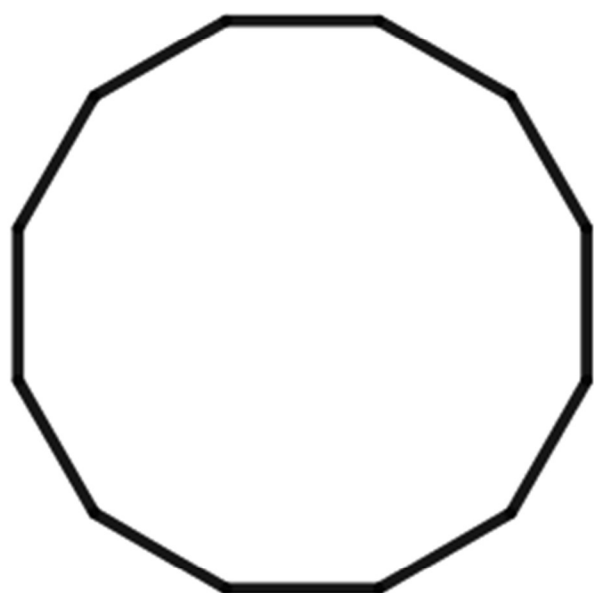
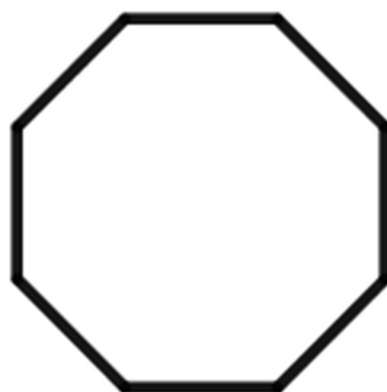


Clearly, not every square can be covered, since 3 doesn't divide exactly into 25. Can you find a way to cover 24 of the 25 squares? What are the possible positions for the un-tiled square?

Explore other square grids. Which can be tiled completely? Which have an un-tiled square, and where can the un-tiled square be positioned?

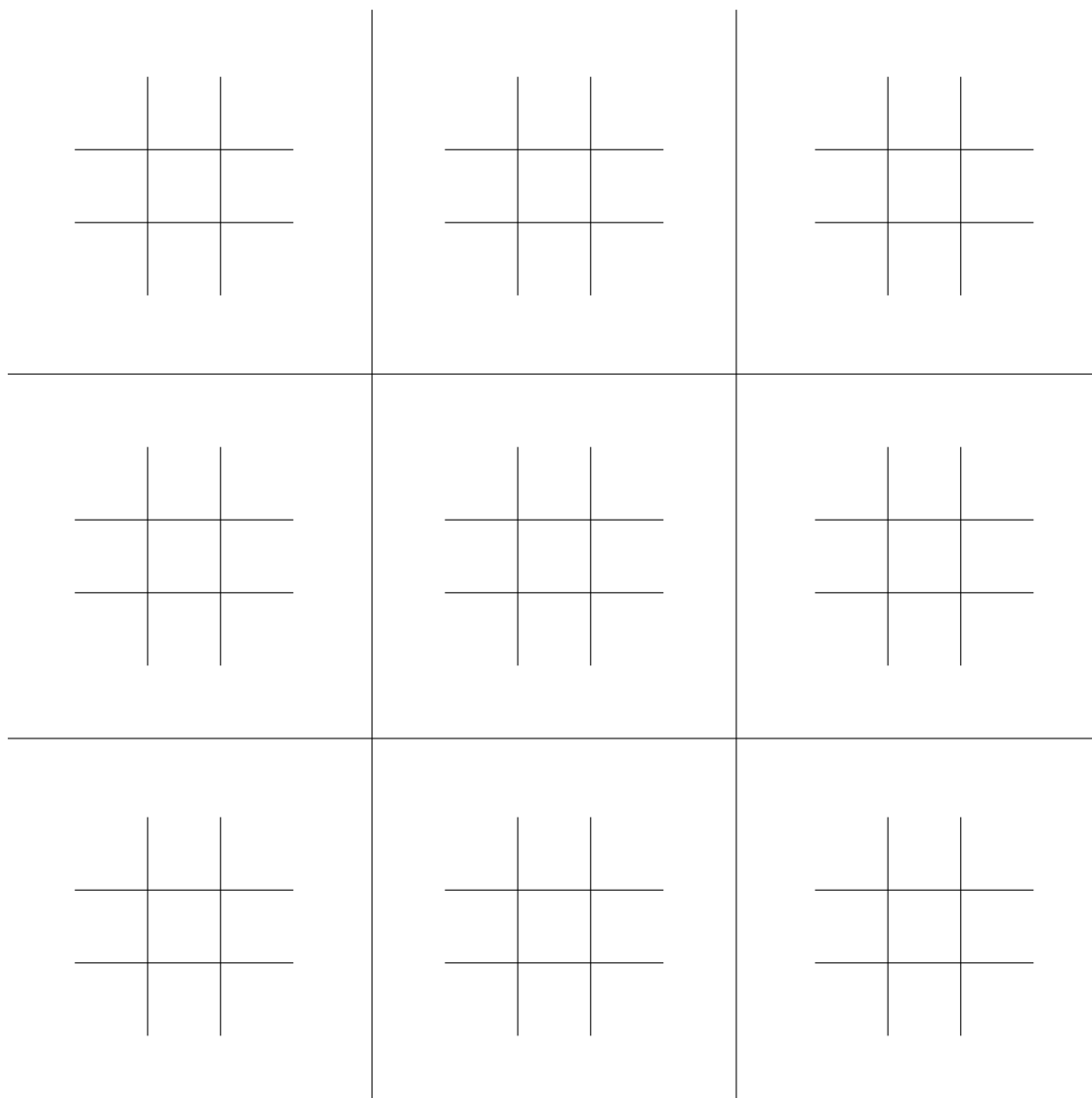
MathsJam Shout is a monthly sheet of ideas for activities to do at a MathsJam night. It's created using suggestions from a different MathsJam each month, and if you'd like to submit suggestions for a month in the future, email katie@mathsjam.com for details.

MathsJam is a monthly opportunity for like-minded self-confessed maths enthusiasts to get together in a pub and share stuff they like. Puzzles, games, problems, or just anything they think is cool or interesting. Monthly MathsJam nights happen in over 70 locations around the world, on the second-to-last Tuesday of each month. To find your nearest MathsJam, visit the website at www.mathsjam.com.



Ultimate Tic-Tac-Toe¹

1. Each turn you mark a square on a mini-board.
2. You don't get to pick which of the nine boards to play on. That's determined by your opponent's previous move. Whichever square he picks, that's the board you must play in next. The exception to this rule is if the board you are sent to has already been won, you can go to any mini-board you wish.
3. When you get three in a row on a mini-board, you win that board.
4. When you get three mini-boards in a row, you win the game.



¹From Math with Bad Drawings by Ben Orlin