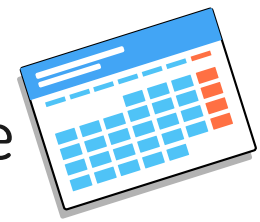
# MathsJam Meta Shout

**February 2022**
**MathsJam**

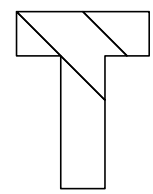
## Puzzle Jam Date



MathsJam takes place on the second-to-last Tuesday of each month, and this month it's on 15th February. What's the earliest and latest date a MathsJam can fall within a calendar month?

## Make T puzzle

First, cut out the T-shape. For an additional level of challenge, do so by folding the paper and making one straight cut.

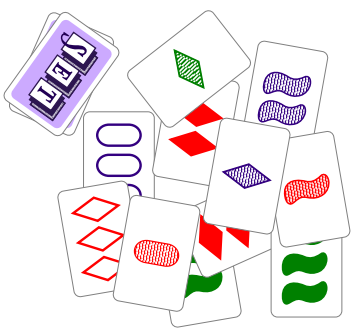


Next, turn over the T-shape and draw two diagonal lines across it as follows: One from the top left corner, touching the concave corner diagonally below it and continuing to the far side of the stem; a second, from the midpoint of the top edge to the midpoint of the bottom edge of the right overhanging shoulder.

Cut the T into four pieces along these lines.
Can you rearrange them into:
- The original T-shape again, having taken it apart
- This house shape, or this mountain shape?

## Play Inter-Jam SET games

Bring along a deck of SET cards and play a game. Take photos of the table with the cards laid out, and send a tweet tagging in @MathsJam - we'll retweet them to all our followers and other Jams, who can reply if they find a SET!



## Proof By MathsJam

In response to a maths problem shared at MathsJam it's often possible to deduce, by MathsJam logic, that we can reject boring answers like 'No' or 'Not possible', since otherwise you wouldn't be sharing this and calling it an interesting fact or puzzle.

Here are some examples - and hopefully this basic deduction is enough to get you started.

Given two lines $Ax + By + C = 0$ and $ax + by + c = 0$, is there a simple link between the vectors (A, B, C), (a, b, c) and the point where the lines cross?
(From Colin Beveridge's 2016 MJ Gathering talk)

An ant starts at one end of a metre-long rubber band and crawls at 1cm per second towards the other end. At the end of each second the ant's nemesis stretches the band by one metre. Does the ant ever reach the end?
(From David Bedford's 2012 MJ Gathering talk)

Can you make a total of 21 using the numbers 1, 5, 6 and 7 exactly once each (as separate numbers) by applying basic arithmetic operations (+ − × ÷)?
(From Stefania Delprete's 2018 MJ Gathering talk, via Bristol MJ)

Is there an elegant way to find all solutions of $n^2 + 20n + 11$ as a perfect square?
(From Colin Wright, via Liverpool MJ)

Can you arrange the numbers 1-15 in a line so that adjacent pairs of numbers sum to a perfect square number?

**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**.