

# MathsJam Shout

June 2024

Maths on YouTube



## Make Unbelievable Solid

The Stand-up Maths channel recently made a video about a new solid, discovered by Robin Houston in 2022, which has  $90^\circ$  angles between all its pairs of faces except for one.

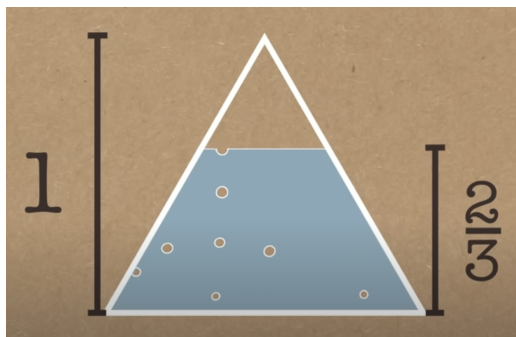
Watch the video, then use this net to make your own!



**SUM Video:** [bit.ly/YT-Shape](https://bit.ly/YT-Shape)  
**Shape net:** [bit.ly/Shape-Net](https://bit.ly/Shape-Net)

## Discuss Cone Flip

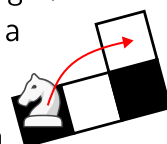
Ben Sparks recently went on Numberphile to talk about what happens when a cone, full to  $\frac{2}{3}$  its height with liquid, is inverted. How much of its height will be full of liquid now? Discuss.



**Numberphile video:** [bit.ly/YT-Cones](https://bit.ly/YT-Cones)

## Puzzles Knight's Tours

Sam Hartburn has been posting videos of knight's tours: visiting every square on a chessboard using a knight, which moves two squares in one direction, then one in a perpendicular direction.



Aylean Macdonald has also recently featured on Numberphile, talking about Magic Knight's Tours, where numbering the cells the knight visits in order gives a magic square.

### Some Knight's Tour-Related Puzzles

What's the smallest square chessboard you can make a knight's tour of?

If you have 25 knights on a 5-by-5 chessboard, can they all move simultaneously and all land on different squares?

Construct a failed knight's tour in the grid, starting and ending where shown, so that if you write the numbers in the squares it lands on in order, the product of the numbers in each row is as shown, as is the sum of the numbers in each column. (Puzzle by Paul Taylor)

20					products
				1	4480
					4896
					1710
					92664
					700
32	31	42	57	48	sums

**Sam's YouTube channel:** [bit.ly/YT-SamH](https://bit.ly/YT-SamH)  
**Aylean on Numberphile:** [bit.ly/YT-Aylean](https://bit.ly/YT-Aylean)

**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](mailto: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](https://www.mathsjam.com).