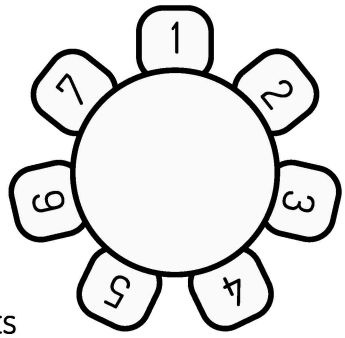
MathsJam Shout

April 2024
Guildford MathsJam

Puzzle
Vive La Différence

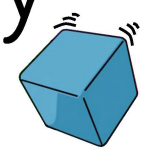
by Christian Lawson-Perfect, from New Scientist Headscratchers



The seats around a restaurant table are numbered, and each customer gets a discount equal to the difference between the numbers of the seats either side of them. For example, a guest seated between seats 6 and 1 would get a discount of €5.

With seats numbered 1-7 arranged around a table, it's possible to arrange the diners so they get a combined discount of €20. But by swapping one pair of diners, they can do better. How much more discount can they get?

Play
Tumbly Match

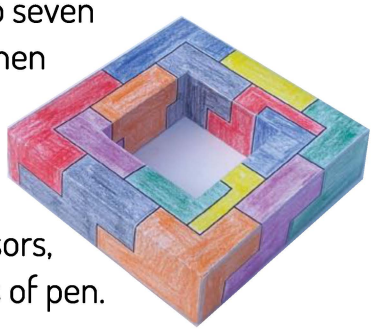


Play with this cube rolling game, developed by a Guildford MathsJam attendee.

iPhone App: tumblymatch.com

Make
7-colour torus

Use this printable activity from Exeter Mathematics School's website to make a 3D torus that's divided into seven regions all touching - then see if you can colour it in so no two adjacent regions are the same colour. You'll need scissors, tape and seven colours of pen.



Printable: bit.ly/7-colour-torus
More info: bit.ly/7-colour-torus-info

Fun
Calculator Fun

Bring your calculators to the pub, and share your favourite calculator games (and words you can spell upside down). Then look at this list of ideas for more calculator fun.

List of ideas: bit.ly/calc-fun

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**.

SEVEN COLOUR TORUS PUZZLE

EXETER MATHS SCHOOL

What you'll need

A copy of "7 colour torus net" printed out on white card

Seven colouring pencils or pens of different colours

Optional: a craft knife to cut the inner lines really neatly.

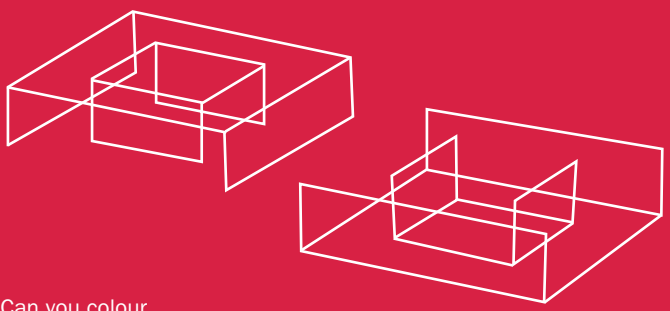
Scissors

Step by Step Instructions

1 Print out the "7 colour torus net" on white card.

2 The black double lines will be the lines you cut. The grey dotted lines are the lines you will fold. The black solid lines are boundaries between the countries.

3 **Imagine** cutting out (but don't cut yet!) the two parts of the torus, cutting the black double lines and folding the grey dotted lines to get two pieces which look like this:



4 There is only one way the two pieces can fit together so that the edges of the countries match up. Remember that a country will continue over a fold line but may not continue over a cut line.

5 Now the challenge! Can you colour in the 7 countries in seven different colours, continuing from one piece of card to the other?

6 When you have coloured it all in, cut it out and put it together to see if you are right. The two pieces can be stuck together with sticky tape. Each country should wind around the torus and touch every other colour.

Quick Tips

If it just feels too hard to do, do the easier challenge of cutting out the two shapes first, fold them and fit them together so the edges of the countries agree, and then colour it in.

The H cut in the middle of each rectangle is very hard to do with scissors. When giving this to students I cut the H shape with a craft knife and metal ruler in advance.

I labelled the outer sides of the rectangles as I worked out what would touch what, so that I didn't have to keep working it out again as I got confused myself. An example of the colouring can be seen in the "solution" file.