How to fit over a thousand poems on a single sheet of paper

This was an activity I created for G4G15, but feel free to modify it however you like.

It's a booklet containing a set of limericks celebrating puzzles. Each follows the traditional AABBA limerick rhyme scheme. But in addition, I've carefully designed them so that corresponding lines across the poems rhyme as well – a three-dimensional rhyme scheme! You can make new poems by picking any of the first lines, followed by any of the second lines, and so on.

The inner pages of the booklet are made from a single sheet of paper, folded and cut (but not cut all the way through, so it always remains a single sheet). There are three poems printed on the sheet, and these become three pages. With the poems provided, that's three choices for each line. However, there's a blank fourth page. Your challenge is to compose a fourth limerick to fit in with the first three. Once you've done that, there will be four choices for each line, giving a colossal $4 \times 4 \times 4 \times 4 \times 4 = 1{,}024$ poems contained in this little book!

I also provided a cover sheet with a title and some additional explanation. Fitting over a thousand limericks onto a single sheet of paper is pretty impressive. But that's nothing compared to the French writer Raymond Queneau's 1961 book Cent mille milliards de poèmes. He did what we've done here, except with ten sonnets of fourteen lines. That gives a possible 10^{14}, or 100 trillion, poems.

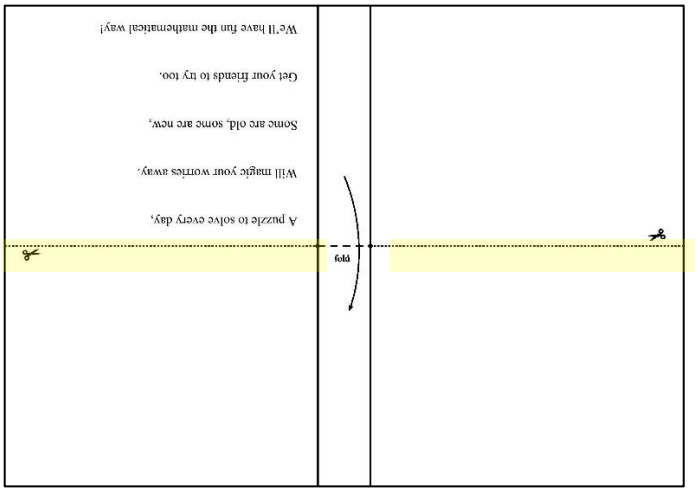
Detailed instructions

- You'll need the inner page and the cover page. For the cover, each printed cover page should be cut in half lengthways to give you two covers.
- I've provided both inner page and cover, feel free to modify as you wish. I'm from the UK where our paper sizes are slightly different from the US; I was working with A4 paper, 210 x 297mm. You may need to adjust accordingly. You'll need to watch the print margins and possibly have an argument with your printer/photocopier to get things lined up centrally on the page and printed double-sided with the correct orientations.
- To create the inner page, I typed the poems in Word and then imported the text as images into Powerpoint so I could rotate it and assemble the pages and add other instructions. There's almost certainly a way to do it all in Word! I can only apologise. I've provided the Word file and the Powerpoint in case it's useful.
- To assemble the inner part of the booklet, it's basically cut, fold, fold again, and cut the strips. Pictures over the page.
- To complete the booklet, just fold the cover in half, insert the inner, staple along the line (I recommend two staples), and you're done.

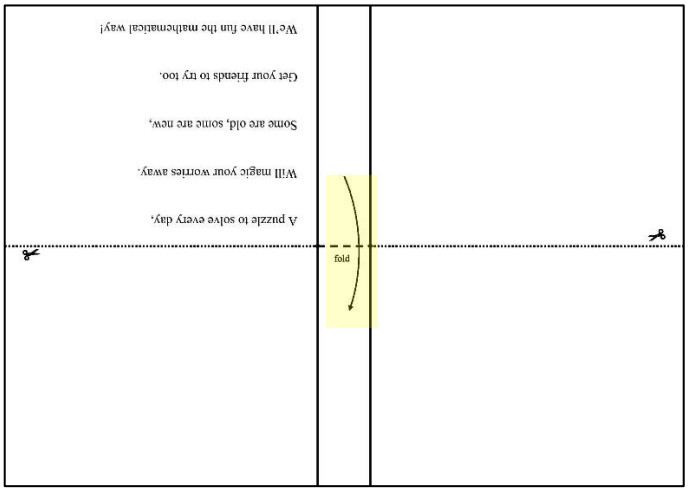
I hope you enjoy these limericks. If you'd like to find out more about the fascinating links between mathematics and literature, you might like to check out my book *Once Upon a Prime*.

Sarah Hart

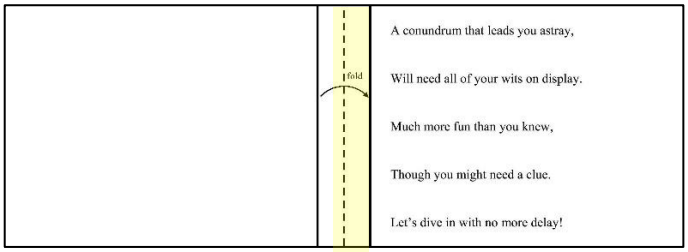
Step 1: cut along the two dotted lines up to the solid line (don't cut the whole page in half)



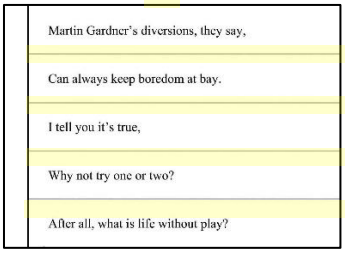
Step 2: fold the top half onto the bottom half along the centre line



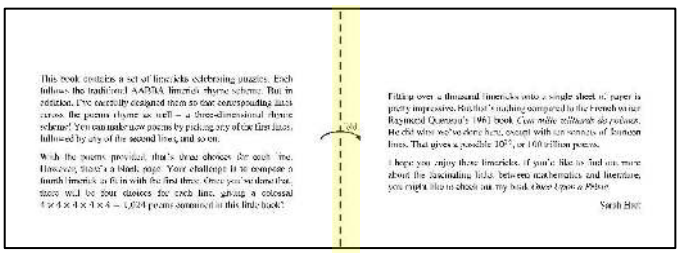
Step 3: fold along the vertical centre line.



Step 4: Cut along the four horizontal lines to divide the pages into five strips, each with a single line of the limerick on them.



Step 5: fold the cover in half



Step 6: insert the inner and staple on the solid line to complete.