

Editorial

Tradition can be a difficult thing. On the one hand, there's significant value in maintaining a sense of continuity and preserving cultural heritage. On the other hand, tradition can become a hiding place for outdated ideas that only serve to reinforce prejudice and intolerance.

Whilst I can readily see the importance of discussing which traditions should be preserved and which should be replaced, personally, I find such discussions difficult to navigate. I'm always wary of unintentionally causing offence. This, I have discovered, is especially easy to do when considering arrangements for the Christmas holidays. If I'm not careful, questions around who should be visited when and what should be served as part of which meal can become dominant factors of the holiday period, when I don't really think they should be.

Given the above, it is with some trepidation that I approach the subject of this editorial. You see, I'm going to write about something that people feel very strongly about: Christmas crackers and, more particularly, Christmas cracker jokes.

For some people, I guess the best bit of a cracker is the bang when they're pulled. I certainly enjoyed that when I was younger, so much so that I remember taking the inner strips out of several crackers and pulling them all at the same time. It seems that I'm not alone in having focused on the explosive aspect of the cracker, as they're an age restricted item, so not everyone can buy them. Fortunately, not even the most inquisitive shop assistant could think I'm younger than the required 12 years of age.

Other people might like the gifts that come with the crackers. I can't deny that I've occasionally made use of a sewing kit and a miniature screwdriver set, both of which have allowed running repairs to be made when visiting relatives, the first to a shirt and the second to my spectacles. But, generally speaking, it's rare that these items last into the New Year.

I'm pretty sure there will also be people whose favourite part of the cracker is the paper hat. However, for me, they're a tradition that I could happily do without. In my experience, they're either much too big, or much too flimsy, or much too itchy, or much too purple. Hence, it's rare that they survive more than a few minutes on my head.

Regardless of the attractions of (very) small explosions, gifts or paper hats, for me, the best bit of the cracker is the joke. I love the way that so much meaning can be packed into so few words. And, I think there's a genuine art form in finding jokes that work for the multiple generations, from grandparents to grandchildren, which you often find around a Christmas table.

Jokes can also be a great way of beginning conversations. They provide an easy introduction into topics that otherwise might not arise naturally. So, as a service to mathematicians who'd like to talk about their subject more (and, dare I say it, as a service to mathematics as a whole!) I'd like to use this editorial to offer you my four favourite mathematical Christmas cracker jokes.

We begin with one that should work amongst any group of people:

Did you hear about the mathematician who was scared of negative numbers? They would stop at nothing to avoid them.

... I think one of the best tangential conversations you can have relates to shapes of constant width ...



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As well as (at least, in my opinion) being funny, this joke can provide a route into conversations about why some people are scared of maths and why they don't need to be.

It's also a great example of how mathematicians can build something concrete from an abstract idea. Generally, the natural numbers are introduced via their correspondence with physical objects: there are three apples; there are 12 Christmas crackers; there are 52 playing cards. From that perspective, it's hard to see the value of negative numbers (if you'll excuse the pun!). Nevertheless, their utility is readily apparent to anyone who's ever owed money, and they're handy in lots of other situations as well. From negative numbers, it's only a short step to imaginary numbers and all of the beauty and utility they can provide.

This discussion of types of numbers can naturally lead on to a discussion of the properties of numbers, which is where our next joke resides. To be honest, I'm not sure this would work perfectly as a cracker joke, because it relies on just a bit too much mathematical knowledge, but I've included it here partly because I think it's funny and partly because, on occasion, I have a habit of talking too much:

Why should you never talk to π ? Because it'll go on forever.

The properties of the digits of π are nothing less than extraordinary. (If we had space then I might wonder why extraordinary means strange, whereas something that displayed lots of ordinariness – that is, something extra-ordinary – would not be strange at all, but such wonderments would be a significant distraction from our theme.) Knowing that there's no end to π is one thing, knowing that there are no repeating patterns, is another thing entirely. I've found it just the thing to inspire, if only briefly, even the most recalcitrant teenager.

The notion of going on forever means that, in some sense, π is limitless and, as we know, limits are important in mathematics. The way that an infinite series of terms can sum to a finite value has always seemed a little bit magical to me. Likewise, the way that a circle can be considered as the limit of a series of polygons with increasing numbers of vertices is, to me, something special. That construction is at the heart of our next cracker joke:

It's a waste of time talking to circles. There's no point.

Obviously, there are other ways of constructing circles and there's lots you can talk about, so much so that you need to be careful to avoid going round and round (sorry!). Circles can also link back to π , illustrating how different branches of mathematics can be connected, often in unexpected ways. But, I think one of the best tangential conversations you can have relates to shapes of constant width, for example, the Reuleaux triangle and the 50p piece. That these shapes have practical utility, for example as manhole covers that cannot fall down the hole, or in vending machines, makes them even more interesting.

Finally, with your permission, I'd like to finish on a joke that seems to have been repeated in primary school playgrounds for at least the last 50 years. I sincerely hope that it lasts another

50 years as well, because I think it's definitely a tradition that's worth preserving. It's a joke that is well suited for meal times and, once it's been read out, it needs no further discussion whatsoever:

Why is six afraid of seven? Because seven, eight, nine!

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