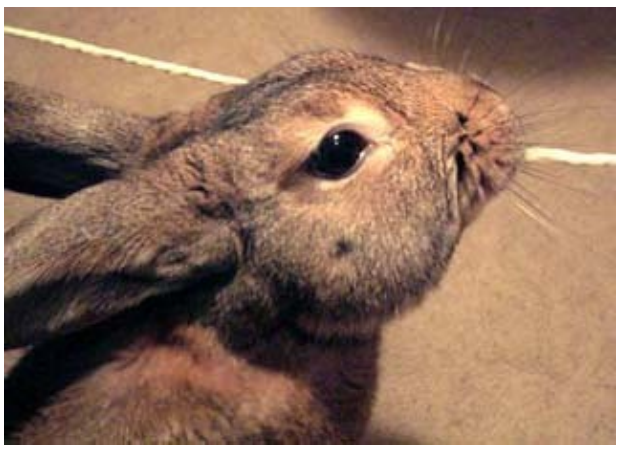
November 2003
Regulars

Puzzle page

Rabbit and string



A shaggy rabbit story

This is a story about rabbits. It doesn't have to be, it's just that I have a suitable photo and I've been told rabbits make excellent mathematicians (apparently they're very good at multiplying).

Buster is a very large rabbit. One day he is given a ball to play with. This ball happens to be the planet Earth − Buster is, after all, a very large rabbit. He's also given a piece of string which we could, if it didn't confuse matters greatly, call a cosmic string. Being a clever sort of rabbit, Buster decides to wrap the string around the ball and is pleased to discover that it fits neatly round the fattest part of the planet − let's call it the equator for convenience − with a tiny bit left over. This tiny extra bit is exactly 1 metre long.

Now, let's make some assumptions. Let's assume that Buster, being a very large rabbit, is also very cunning and can seamlessly join the two ends of the piece of string to make a large loop. Let's also assume that the planet Earth is not a slightly squashed ball with a bumpy surface but rather a perfectly smooth sphere − this is, after all, how it appears to big Buster.

Now, supposing Buster evens out the gap between the equator and his piece of string (which is, remember, only 1 metre longer than the equator − which is about 40,000 kilometres long), how big will the gap between them be?

Work quickly now or Buster may well have eaten the piece of string before you've finished!

If you are stumped by last issue's puzzle, here is the solution.

For some challenging mathematical puzzles, see the NRICH puzzles from this month or last month.

Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.