## Podcast Puzzle

Do you have a favourite puzzle to share with our listeners?

I have two. One pure, and one applied. The applied one first. It concerns the anglepoise lamp (Cundy, 1942). It is relatively straightforward to design an anglepoise lamp with two opposed springs. At a workshop I attended in the late 1970s, Douglas Quadling suggested that it was possible to design an anglepoise lamp with just a single spring. It took me several months of Sunday afternoons to come up with a solution.

The pure puzzle concerns two (very smart!) mathematicians, Petra and Sam and two whole numbers, x and y, which are each greater than 1, and less than 100. Petra has been told their product, and Sam has been told their sum. The following exchange takes place:

Petra: I don’t know what the numbers are.

Sam: I know you don’t. I don’t either.

Petra: Now I know them.

Sam: Now I do too.

What are the numbers?

This problem was first posed in this form in Dutch by Hans Freudenthal (1969), although earlier variants had featured in the American Mathematical Monthly using the idea that one person is told the area of a field and one person is told the perimeter (Hockings, 1955; Pennington, 1954). The problem was brought to a non-Dutch speaking audience when it was posed by David Sprows in Mathematics Magazine (Sprows, 1976), and became more widely known still when it was discussed by Martin Gardner in his Mathematical Games column in Scientific American three years later (Gardner, 1979). Gardner called it the impossible problem “because it seems to lack sufficient information for a solution” (p. 22). For an extended discussion of the problem and its generalizations, see Born, Hurkens, and Woeginger (2006).