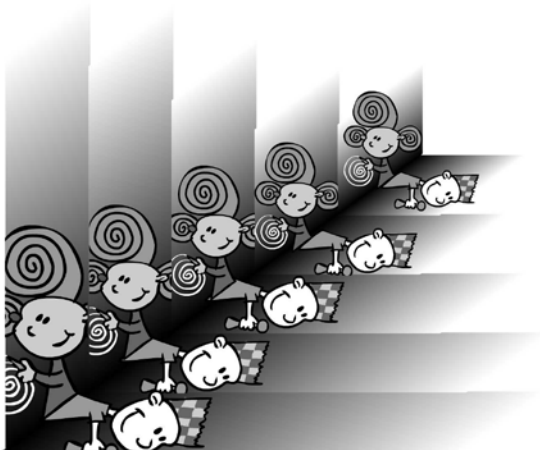




A G.A.T.E.WAYS JOURNEY

for gifted Year 3 and 4 children

with a love of maths to

‘Mind-Boggling, Mesmerising Maths!’

G.A.T.E.WAYS is an independent organisation offering challenging and enriching activities and experiences to develop and extend highly able children. Established in 1994, G.A.T.E.WAYS runs a range of stimulating school programs as well as the *Saturday Brainwaves Club*. This *JOURNEY* for both girls and boys will run over four sessions. What do you know about infinity? Is it even or odd? Does that question make sense? In this Journey we will search for number patterns and complex ideas and discover some unbelievable facts about mathematics. There are some patterns that appear wherever we look. We can find them in number lists, on chessboards, in spirals and in reflections. This program uses a combination of mathematical stories, role-play, drawing and written challenges to help students develop their understanding of some of the more obscure and amazing areas of mathematics.

Requirements:

* writing materials, including a grey lead pencil, an eraser; a calculator, coloured pencils, a keen inquiring mind, a morning tea snack (no nuts please), a small photograph (of the enrolled child); and a stamped, self-addressed DL envelope for your report.

Session 1 – Hotel Infinity

Welcome to Hilbert’s infinite hotel. With an infinite number of rooms and an infinite number of sausages, will the hotel be able to hold an infinite number of guests and will it ever become full? What if it was full and then more people arrived? We will investigate what is possible in such a strange place and try our own hands at putting together an infinite story.

Session 2 – Hunting For Patterns

There are a number of ancient stories in mathematics that have been used to demonstrate some very important concepts. One such story is ‘The Grain and Chessboard’. This story demonstrates just how mighty exponential numbers are. Following on with the theme of chessboards, we will set off to hunt for patterns, and try to discover just how many are hidden in the eight by eight grid. After leaving our physical chessboard behind, and as we contemplate the patterns continuing towards infinity, what happens to the numbers?

Session 3 – The Beauty of Infinity

Many people consider that mathematics is very straightforward and that it concerns right and wrong answers. However maths is much, much more than this! Get ready for your imagination to take flight. In this session we will look at the art of infinity, exploring spirals and making our own beautiful picture patterns. A mirror can turn one picture into two. Can you use two mirrors to look into infinity? Make your own infinity box to take home. We’ll also explore some other ways that artists have used to draw infinity.

Session 4 – This Makes My Head Hurt!

How many whole numbers can you think of? How many whole numbers exist? What about decimal numbers and fractions? Are there more fractions than whole numbers? How do we know? By investigating questions like these we find out that infinity isn’t just one thing, there are different kinds of infinities! Can you have one infinity that is bigger than another one? Does this question make sense? We’ll experiment with numbers on a line and discover that something very strange is going on. Trust me, you’ll be surprised!

Work requirements

Children may be asked to complete some homework between sessions.

ABOUT THE PRESENTER

Emma Carter studied Mathematics and Physics at the University of Melbourne. She has taught secondary school maths up to VCE. She has also worked at Scienceworks and as an outreach education officer for the Discovery Science and Technology Museum. Emma has been presenting science and mathematics workshops with G.A.T.E.WAYS for many years.