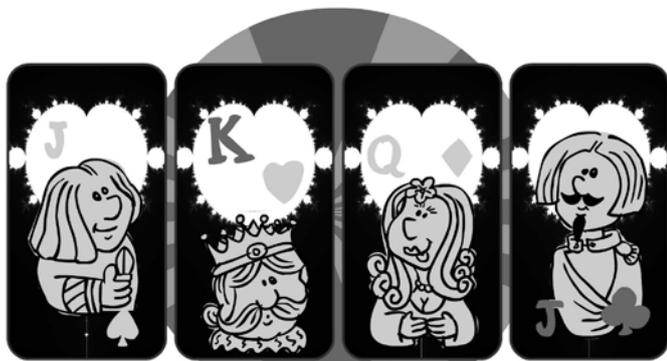


A G.A.T.E.WAYS JOURNEYS PROGRAM

for gifted Year 3 and 4 children

with a love of maths

‘MAGIC MATHS’



G.A.T.E.WAYS is an independent organization offering challenging, enriching activities and experiences to develop and extend highly able children. This program will run over four sessions. Are you amazed by magic card tricks? Do you know how they work? Magic card tricks are great to learn, but they are even more fun when you actually understand what makes them work. Mathematics is behind a lot of magic tricks. In this very hands-on and entertaining Journey we learn a number of magic card tricks. We then discover the secret to the tricks using a combination of motivational facts, mathematical challenges, and some very interesting maths, including geometry, number sequences, binary numbers and algebra.

Session One: The Mandelbrot Shuffle

This shuffling trick uses a deck of cards with alternating red and black colours. After randomly shuffling, we see some nice ‘magic’ appear. This magic is related to the Mandelbrot set, a set of numbers in mathematics that produces the most beautiful geometric designs and patterns.

Session Two: Roulette Cards

It is fun when you win at a chance game, and Roulette is just that. Or is it? Is there a way you can always win at Roulette? Here we replace the Roulette wheel with a pack of cards, and ‘bet’ on a red or a black outcome. Tallying the results, the answer is clear. How does it work? Some simple adding and subtracting using algebra will tell us.

Session Three: Four Card Chaos

Using four cards we learn some moves such as flipping and cutting, and then apply these in a completely random way to our cards. What happens? Something very predictable. Why? To answer this, we need to take a look at the mathematics of sequences. Patterns in odd and even numbers will also help us find the order amongst the chaos of our random shuffles.

Session Four: Psychic Cards

Binary numbers are very important in maths, and in digital communication. But they are just as important in this magic trick. This card trick is guaranteed to amaze any audience. A pack of cards is handed out to different participants, who randomly take a card, cut the deck and pass it on. The mathe-magician then predicts what card each of the participants has in their hands. A magic trick indeed, but so easily explained by mathematics.

Homework Requirements: As it is best if they fully understand the tricks they are learning; students will be required to practice their magic card tricks at home. They will also be given some mathematical tasks to practice.

About the presenter:

Anne Eastaugh is passionate about teaching students the magic and wonders of mathematics. She is currently teaching first and second year maths at Monash University. She holds a Bachelor of Science and recently completed her Honours in Mathematics. She has taught G.A.T.E.WAYS programs for many years, focussing on maths and physics. She believes that creativity and imagination are essential tools for learning. Anne has recently finished writing a book of mathematical adventures for middle year students, to be published this year.

Requirements: Please bring a complete deck of cards, a fully stocked pencil case and an exercise book to write in. Also bring a snack (no nuts please); a small labelled photograph and a stamped, self-addressed DL envelope for your report.