



A G.A.T.E.WAYS JOURNEY

for imaginative Year 1 and 2 gifted children

with a love of mathematics

'Tessa of Mathomat

and the Masterful Quest'

G.A.T.E.WAYS is an independent organisation offering challenging and enriching activities and experiences to develop and extend highly able children. This *JOURNEY* for both girls and boys will run over four sessions.

Past the rolling hills of North Derivative is the busy kingdom of Mathomat. For countless years, the Master of Mathomat has ruled this kingdom, dazzling all with mathematical skill and amazing problem solving ability.

Great 'mathomatiician' Master Matrix, the current ruler, has decided to retire and has announced that from this day forward the kingdom will be ruled by a group of great minds rather than an individual. Eager to become the new Masters of Mathomat, the kingdom's brightest have been called together to face a test. Master Matrix has decided to send teams on a quest within his great palace, The Pentagon. The first group of 'mathomatiicians' to successfully explore the palace and solve a series of mathematical tasks will become the next rulers.

Amongst all of these brilliant minds, is Tessa. Tessa is a leader, and a born mathematician but she needs *you* to join her team and help her solve the challenges ahead. Are you a budding mathematician who loves to problem-solve and learn new things? Can you help Tessa negotiate her way through the Pentagon? Are you up for the challenge?

Session One: The Quest Begins - Master Matrix and The Fool Proof Gates.

Join Tessa outside the courtyard of the Pentagon as we begin our quest. It is here that you will face your very first mathematical task. Together with Tessa you must explore and solve The Problem of the Fool Proof Gates. Master Matrix has revealed that the courtyard's ornate gates and their markings are the key.

Determined to master the meaning of the mysterious numbers etched in the gates, Tessa has concluded that the markings are a series of arithmetic and geometric number sequences. To open the fool proof gates, cross the courtyard, enter the Pentagon and proceed to the next task you must help Tessa to find the 'next term', the 'common ratio' or the 'common difference' for each of the number sequences in front of you.

This session's task explores the finer points of multiplication and number patterns. Engaging in complex mental multiplication and with a focus on learning the difference between arithmetic and geometric sequences, students will learn how to find the "common difference" of arithmetic sequences and state the "common ration" of a geometric number pattern. Once these techniques are cemented, we will apply our expertise in a number of tasks and games proving to Master Matrix that we are ready to fling open the gates and tackle something even harder. Can you complete this week's tasks, open the fool proof gates, and get one step closer to becoming a Master of Mathomat?

Session Two: The Quest Continues - The Passages of Possibility

Success.. you have made it! Inside the Pentagon your group is faced with a series of long passages. But which one should you take? Master Matrix has informed Tessa that the 'correct' one can only be revealed once you have answered his questions on probability. But what is probability? Using a pack of cards, dice and a colourful spinner we will explore the world of probability. We will define key term such as *outcome, event, probability and experiment* as we gather data, learn how to predict outcomes and modify problems in order to challenge each other. Which passage will lead us to the next task and what are the chances that we can learn a lot whilst we are having so much fun?

Session Three: On We Go - The Clock of Opposing Angles

We did it! Only a few tasks remain on our quest to greatness. At the end of the passage way we must pick up a mathomat, investigate some angles and then use the knowledge we gain to decipher a message.

We will begin today's tasks by examining all aspects of angles- we'll learn to classify, name and measure them. Once we are comfortable with our knowledge of angles (what was task 3) it will be time to take on our very last task.

A grandfather clock stands against the wall; its face will give us the answers we need. With some times that Tessa has been given, we will use the clock face to measure and identify the angles that Master Matrix has asked us to measure. Then we will need to order them and transpose the message for Tessa. Can we do it? Only time will tell if we are up to these tasks! Are we worthy of becoming the masters of Mathomat?

Session Four: Masters of Mathomat and the Flags of Celebration

Success! We have completed the incredible tasks that Master Matrix set for us. We are to be proclaimed the new Masters of Mathomat. A big celebration is to be held in the public square. Preparations have begun, but decisions need to be made. Decorations are high on the list but no one in the kingdom including Tessa can decide on the design for the *Flags of Celebration*. For some reason they *just* don't look mathematical enough. Tessa likes everything balanced and so the search begins for some mathematical designs based on symmetry and tessellations to adorn the flags. Snowflakes and colourful kaleidoscopes serve as our springboard to explore line symmetry, rotational symmetry and reflective symmetry before we move on to some spectacular mathomat tessellations. 'Tessellation', 'plane', 'vertex' and 'adjacent' will become part of our everyday vocabulary investigate the three main attributes of 2D and 3D tessellations. It's going to be an exciting end to a masterful journey for Tessa and the Masters of Mathomat.

Homework: Between sessions, children may be asked to complete some homework.

Requirements:

- ***Participants in this journey will need to bring along their own Mathomat to each session***
- Bring a well-stocked pencil case including a pair of scissors and glue stick.
- Also bring a snack (no nut products please), a small labelled photograph of yourself and a stamped, self-addressed DL envelope for your report.

ABOUT THE PRESENTER

Adele Costello has a passion for teaching. Graduating with Honours in her double degree of Education and Arts, Adele is a creative teacher who strives to continually further her own education in new and innovative teaching methods. She credits her regular work with G.A.T.E WAYS as her inspiration for creating valuable new learning experiences for high achievers of any age.