



A G.A.T.E.WAYS Journey
for gifted children in Year 1 and 2
with a love of maths
‘Polly The Zookeeper’s
Perplexing Problem’

G.A.T.E.WAYS is an independent organisation offering challenging and enriching activities and experiences to develop and extend highly able children.

It’s a bright sunny day and you’re off to the zoo! You can’t wait to see your favourite animals – the monkeys in the trees, the frogs in the pond, the snakes in their tanks and the kangaroos hopping about. But wait - the habitats are bare – the animals are nowhere to be found - and Polly the Zookeeper is very upset. “The animals refuse to come out of their night quarters,” she wails. “They’re bored and tired of being stared at all day – they want to have some fun for a change. Can you help?”

Luckily, you remember you have a Poly Plug set in your backpack!! It’s time to introduce the animals to some activities that will give them hours of fun as well as teach them about number, algebra and chance at the same time. Polly dries her eyes and leads the way, ready to help however she can on your mathematical mission!

Over the course of this Journey you’ll be working with the Poly Plugs – a fun mathematical manipulative which will help develop your understanding of some very tricky maths concepts. You’ll learn how to use them to find number patterns using the four number functions, put together algebraic formulae, and test strategies for effectiveness when playing games of chance. Get ready to get hands-on!

Session One - Monkeying Around!

Maths focus: Identifying & adapting patterns in games with changing parameters

Your first task is to play a game with the chimpanzees. You’re pretty sure you can beat them at naughts and crosses – everyone knows how to play that, right? But what if we change the rules? What if the board looks a bit different from the kind you’re used to? You size it up quickly and decide you can still win with the help of the Poly Plug set and some careful new strategies - it’s time to teach these chimps a thing or two about how to win games!

Session Two – Frogs In A Bog

Maths focus: Problem solving using number patterns & probability

It’s time to cool off in the shady frog bog. The tree frogs and the bell frogs are very happy where they are and don’t show any signs of wanting to budge – but you come to an agreement. The frogs will take turns being on display during the day, and once everyone has had a turn they can go back to splashing around in the bog! You pull out your trusty Poly Plugs and a die to show them how to make a team challenge out of it, giving the two groups of frogs strategies to win against each other to see which group will all be out of the frog bog first (and hence have more swimming time later!). Ribbit – let the competition begin!

Session Three – Bounce!

Maths focus: Problem solving using number patterns & expressing them using the four number functions

The monkeys are merry, the amphibians are amused - now it's time to turn your attention to the kangaroos. You find some of them playing 'leap-kangaroo', hopping over each other on a row of stepping stones. You set up your Poly Plugs to show Polly how to work out how many bounces it would take the kangaroos to cross from one side to the other if two groups started on either end of the row of stepping stones. The roos come over to watch, and they make a deal – if you can work out how many bounces it will take for all of them to cross the stones before they work it out by trial and error, they'll come out to see the visitors. There's a number pattern at work here that will help you speed things up, and it's up to you and Polly to use the Poly Plug set to prove it before the roos do!

Session Four – Sneaky Snakes

Maths focus: Finding number patterns using the four number functions & expressing them using algebraic equations

Sssss.... Your final stop of the day is with the giant boa constrictor, Bea. She promises to come out and see the zoo's visitors if you can correctly guess how many stripes of different coloured scales she and each of her family of slithery siblings have. You remember that the Poly Plugs in your pocket kind of look like the sections of the snakes' scales... and you are sure there is a pattern and a secret (algebraic) formula that will help, if only you can work it out. Could it also help you calculate how old some of the snakes are and REALLY impress Bea? You're Polly's only hope to straighten out this puzzling python!

Homework Requirements & Assessment

Homework may be set after each session to give students extra time to explore the new concepts. At the end of the program a short, written report will be completed on each student and forwarded home to parents. A copy should be made and forwarded to the school.

What to bring: Please bring a labelled, small photograph of yourself; a snack (no nuts please), a hat, and a stamped, self-addressed DL envelope for your report (please also write the student's name on the back). Also bring a well-stocked pencil case (grey lead pencils, coloured pencils or textas, a rubber, sharpener, glue and scissors) and a notebook (at least A5 size).

About the Presenter

Ang Hewasiribaddana is a Montessori and mainstream qualified primary and secondary teacher, currently studying for her Masters of Education (Gifted Education). She has a passion for bringing unusual, abstract maths to life in innovative and creative contexts for the students she has the privilege of working with.



