GATEWAYS JOURNEYS

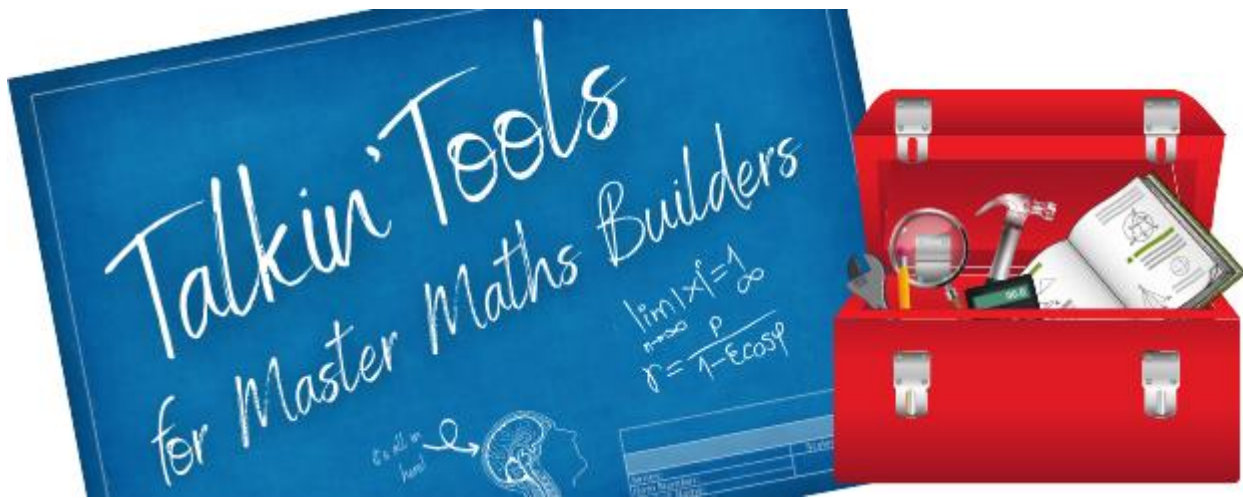*G.A.T.E.WAYS invites high-ability Year 1 & 2 students with a love of mathematics to …*

Welcome to the computation construction site. Are you ready to fill your toolkit with strategies you can count on? The best mathematicians have a range of tools they use to chip away at complex problems … no, we're not talking about Pythagoras with pliers here! The tools we will explore are those that help apprentices like you assemble the answer in the most efficient way. As we develop our maths vocabulary and knowledge of number and operations across each session, we will fill our kits with strategies to tackle unfamiliar problems and build elegant solutions. Put your hard hats on – this is no flat-pack program; it will challenge you to talk the maths talk and walk it too!

Requirements:

- Please bring a well-stocked pencil case with grey lead pencil, coloured pencils, a ruler and an eraser (a notebook will be supplied).

Session 1: Essential Equipment

What would a toolkit be without a hammer, tape measure, or screwdriver? Some tools we cannot do without. Addition and subtraction are two such maths tools that are essential in every mathematician's kit. But what makes the difference between an apprentice arithmetician and a master maths builder when it comes to using them? Anyone can DIY with digits, but a master maths builder can find a solution quickly and efficiently, often without the need for pen and paper. Like every good builder, however, we still rely on a blueprint – a structure to help us construct a solution. In our first session, we will explore the mathematical structure and language used to solve computational problems with a focus on mental maths. Let's warm-up our brains and talk shop!

Session 2: Shortcuts to Success

If you cut corners when constructing a building, the finished product may look completely different to what you pictured. Take the right shortcuts when solving mathematical problems, however, and you are well on your way to becoming a master maths builder! In our second session, we will draw attention to number relationships that help us find the sum and difference of two numbers with ease. To further our understanding of operations, we will add another tool to our kit by identifying the product of two numbers. Are you ready for us to share these shortcuts that masterful mathematicians use every day? Add everything together and this is one session about number relationships and operations that is going to provide *lots of* challenge and *bundles of* fun!

Session 3: Custom-Made Computation

We sometimes need custom-made maths solutions. When no plan, blueprint, or instructions exist for solving a problem, it is up to you to DIY. Can you draft a blueprint for crafting a solution that includes all the necessary procedural steps? Today we will explore strategies for assembling mathematic arguments from worded scenarios, before we are challenged to think in more abstract ways and identify the sum, difference, and product of numbers from visual clues. A master maths builder has an eye for detail, and you'll need to both when you're tasked to investigate pictures, identify the important information, and use this to design arguments that get the job done in the most efficient way possible.

Session 4: Tools Down!

Our job here is nearly complete but before we say, 'tools down', we have one more opportunity to apply our skills and knowledge across each area we have investigated. It is time to graduate from our apprenticeship and become accredited junior maths builders by using our maths tools in unfamiliar contexts. We will take part in a series of mini challenges that will require us to use every tool in our kit to solve them. This final session of our Journey will develop our skills even further, and in no time, you too could be a masterful maths builder, capable of applying your learning in any context – from the construction site to the classroom!

Intended Outcomes:

In this program students will develop their understanding of mathematics by:

- Engaging in number talk to encourage mathematical discourse.
- Developing reasoning about number and operations to calculate sum, difference, and product.
- Differentiating ways to organise talk across different strategies.
- Exploring the mathematical structure of computational problems.
- Developing their procedural fluency and ability to craft elegant solutions.
- Recognising number relationships to support faster mental computation.
- Using strategies to identify and record information from a given scenario and use this to construct a clearly defined mathematical argument.

About the presenter:

Annette Subhani is an enthusiastic educator who has been working with G.A.T.E.WAYS for nearly a decade. She has a passion and desire to contribute to the character development of children from an early age, as she believes this helps to build a community of motivated and responsible individuals. Drawing on maths, technology, literature, the arts and broad approaches she challenges children to relate insights and learning from across the curriculum to real-life situations, preparing students to contribute to a global community.