'Equations that Changed the World'

Years 4, 5 and 6 - Term 2, 2018

Fee $100

Thursday, 14 June **Heathdale Christian College, Derrimut Rd, Werribee** **8:45am-3:10pm**

The brightest minds in history from Sir Isaac Newton to Albert Einstein and beyond, have used mathematics to lay the foundation for how we measure and understand our universe. In this term's Eureka program, curious gifted students will explore some of these important maths equations.

'Imagine That!' with Emma Carter

We can count for as long as we like and break numbers into fractions and decimals. We are even able to use irrational numbers like pi which have never ending decimal places. But do these numbers really exist or are they just ideas in our heads? There is another type of number called an 'imaginary' number, which is the square root of a negative number. Join us as we use imaginary numbers to make patterns and find out how the combination of 'real' and 'imaginary' numbers called 'complex numbers' changed mathematics completely and brought a new tool to the fields of electronics and quantum mechanics.

***Emma** has bachelor's degrees in Science and Engineering from the University of Melbourne, with majors in Physics and Electrical Engineering. She has taught secondary school maths, science and physics, and has worked at Scienceworks as well as the Discovery Science and Technology Museum. Emma now enjoys presenting workshops for G.A.T.E.WAYS.*

'It's Relatively Simple' with Sanjin Dedic`

Some 130 years ago a 16-year-old Albert Einstein fantasised about what would happen if an object were to speed up and travel at the speed of a wave of light. Ten years later, this thought experiment eventually led to Einstein publishing a ground-breaking paper on the equivalence of mass and energy, encapsulated by the equation $E=mc^2$. At first glance this equation may appear straightforward, involving nothing more complicated than multiplication, but there is much more understanding required to appreciate how we can use this equation to discover wonderous things about the world around us. To apply this equation, we need to use scientific notion to manipulate some very large and very small numbers – not your everyday multiplication! Join us as we explore the maths behind this famous equation and its implications.

***Sanjin** is a robotics engineer and a teacher who loves combining programming and mathematics into educational games, robots and interactive electric circuits. He has turned his house and backyard into a high-tech experiment where gadgets grow seedlings, feed fish and scare cats. Now, many of these life hacks are finding their way into G.A.T.E.WAYS programs so watch out!*

'Mathematical Powers' with Shane Lawrence

How would you manage if you were required to do thousands of very long, very difficult calculations without a calculator? This was the problem facing John Napier, a Scottish mathematician and engineer. After twenty years working on the problem, Napier discovered an elegant solution when he invented logarithms (a system of calculating numbers and bases). Astronomers of the time who were required to carry out huge computations, were able to breathe a collective sigh of relief! Their huge calculations were easily completed using Napier's simple, almost miraculous, slide rule! Join us as we discover how we can use addition to perform multiplication and explore the mathematical powers and exponents that form the basis of this world-changing equation.

***Shane** is an educator with over 20 years' experience teaching both locally and internationally - most recently at an International Baccalaureate school in South East Asia. He holds a Master of Education and a Bachelor of Science with a major in Applied Mathematics. Shane is passionate about promoting lifelong learning in students and assisting them to appreciate the relevance of maths and its application in everyday life.*

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Program: Equations that Changed the World **Venue:** Heathdale Christian College **Year Levels:** 4, 5 and 6

Time: 9.00 – 3.10 (Registration 8.45am) **Date:** Thursday, 14 June **Cost:** $100

Child's name: _____ **Year Level:** _____ **Parent Mobile:** _____

Parent's name: _____ **Contact email address:** _____

- ☐ Please nominate my child **OR** ☐ Please **do not** nominate my child
- ☐ I have checked the dates of the program to ensure they do not conflict with school commitments (e.g. school photos, excursions etc.). Once enrolments are finalised, G.A.T.E.WAYS is **unable to give refunds or credits.**
- ☐ I understand that once nominated, online payment must be made to confirm my child's place in the program. *Please do this as soon as possible as places fill very quickly.*
- ☐ I understand that I will need to arrange transport to and from the venue listed above.

Parent's/Guardian's signature: _____ **Date**: _____