

Achievements in the field of mathematics

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*Each achievement has
mathematical and geometric proofs.*

- Identified the causal factor of the problem of the Pythagorean comma.
- Calculated the correct mathematical expression of the progression of fifths, the progression of tones in the 12-tone octave, and the sequence of the harmonic series.
- A theorem which explains the congruence of the 3–4–5 triangle, including an explanation for why the 3–4–5 triangle is unique for being three consecutive whole numbers.
- 19 new proofs of the Pythagorean theorem, 3 of which explain why all right triangles conform to the Pythagorean theorem.
- 28 constants applicable to all right triangles.
- Explanation of why pi is the ratio between a circle's diameter and its circumference, how pi achieves that unique role, and its connection to the form of the circle.
- Explanation of why pi manifests in the 'needle dropping' phenomenon.
- How to manifest pi in periodic functions, and an explanation of why pi is manifested.
- How to calculate pi through $\sqrt{2}$, $\sqrt{3}$, or through the square roots of 0.11111111 and 0.88888888.
- Multiple ways to calculate pi through the Golden Ratio, and the Golden Ratio through pi to as many decimal places as desired.
- Explanation of how the Golden Ratio achieves Unity around 1.
- A framework for quantifying, measuring and understanding logarithmic spirals, with multiple ways to calculate the length of arcs.
- Integration of pi into the Pythagorean theorem.
- New procedures for the calculation of the circumference or area of an ellipse.
- Discovery of a set of numbers called the *pontes divini*, which advance knowledge of pi, $\sqrt{2}$, the Fibonacci sequence and simple harmonic motion.
- A proof of how the Fibonacci sequence generates into its additive sequence without using a series or summation.
- Identification of the role of zero which explains its even property .