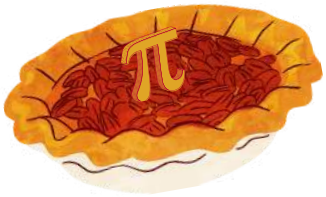
MATH CURRICULUM THROUGH THE GRADES



TOLD WITH THE STORY OF PI | MARCH 13, 2025

Math, like all curricula at the Washington Waldorf School, is a developmentally-based, spiraling curriculum, in which concepts and topics arrive, again and again, in each stage of students' development. Students progress from discovering mathematical concepts through hands-on experiences and empirical observations, to understanding and applying those concepts abstractly. Through these learnings, students generate both an emotional connection and a rigorous, contextualized, meaningful understanding of mathematics.

Children's Garden

Through hands-on learning like play and imagination, *and* practical and artistic work, mathematical foundations are laid for Children's Garden students. They develop **pattern recognition**, **rhythm,** and **sequencing** abilities.

Grades 1-5

Through the early grades, students develop numeracy and a sense of scale and pattern while gaining the tools for computation processes (**addition, subtraction, multiplication,** and **division**) which are then solidified through connection to the practical world: **weight, measurement,** and **money**. Students dive into **place value, carrying and borrowing**, and work with **calendars** and **time**. They continue with **long division, remainders, fractions, prime numbers and factoring**, and begin to explore **geometry** and **complex mental calculations**.

Middle School

In Middle School, students dig into **business math, strategic problem solving,** and **statistics.** Over the three years they deepen their understanding of **percentages, formulas, exponents, roots,** and th mathematical **order of operations.** Students begin their study of **algebra,** including **linear algebra, algebraic reasoning,** and **statements.** With more challenging work in **geometry,** students explore **visual representations of data** as well as **3D geometry.**

- *Pi is formally introduced in Grade 6, explored scientifically by gathering experiential data to find a statistical approximation of pi through measuring circles with string.*
- *Seventh graders look at how cutting circles into ever smaller and smaller pie wedges gets closer and closer to the rectangle that is how the area of the circle is calculated.*
- *Through 3D geometry, students explore pi by calculating the volume of shapes.*

High School

Throughout HS, students further their abstract understanding of mathematics through courses in **advanced algebra**, **advanced geometry**, **permutations and combinations**, **trigonometry**, **projective geometry**, **statistics**, **pre-calculus**, and **calculus**.

- *In **geometry** students use pi in a number of different situations, but especially when it comes to finding areas and volumes of circles, cones, cylinders, and spheres.*
- *Through the **trigonometry** main lesson block, students study methodical ways that the numerical value of pi has been determined and even follow through an Archimedean strategy themselves to find it with increasing precision.*
- *During **pre-calc** students not only work with pi when graphing trigonometric functions and working with trigonometric identities, but also when expressing and manipulating complex numbers as vectors in the complex plane.*

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