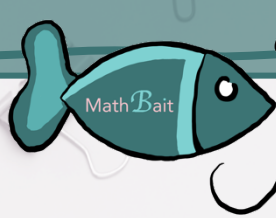


MATHBAIT® HOOKED



WELCOME TO NUMBerville

PREALGEBRA

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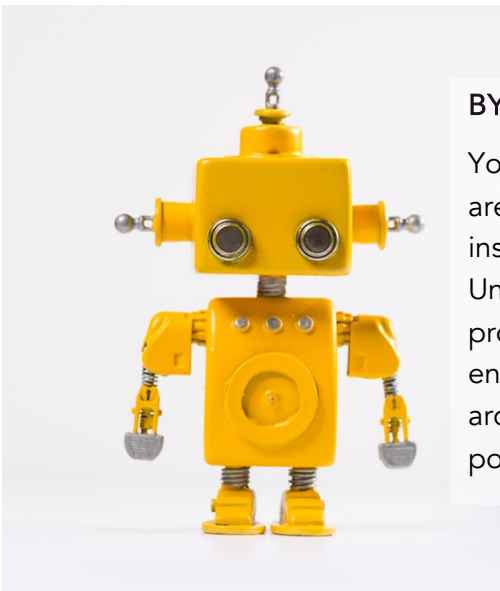
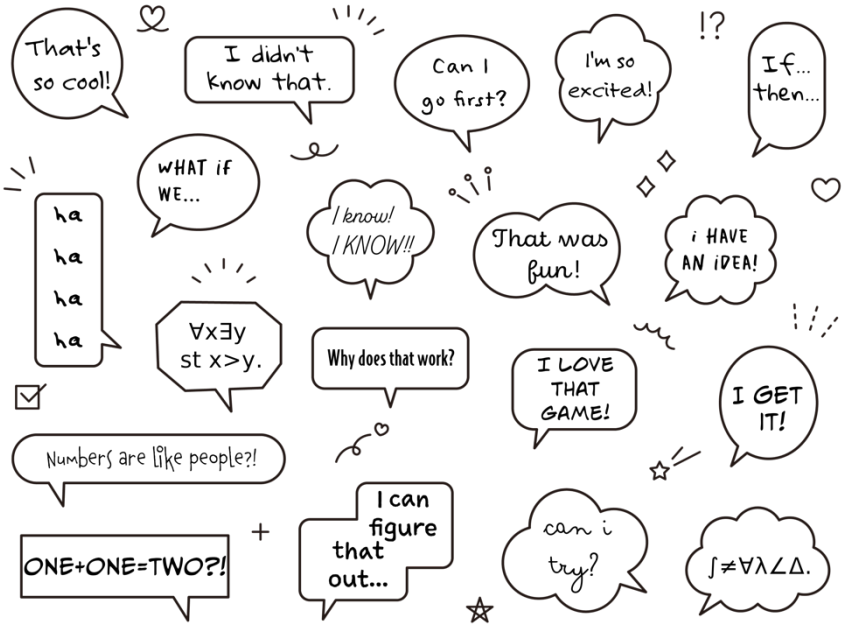
WHAT PARENTS
SAY

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METHODOLOGIES

Math is everywhere, from the petals on a flower to the architecture of a building to the intricacies of space. Understanding numbers allows us to strengthen the connections in our brains to solve tomorrow's toughest problems.

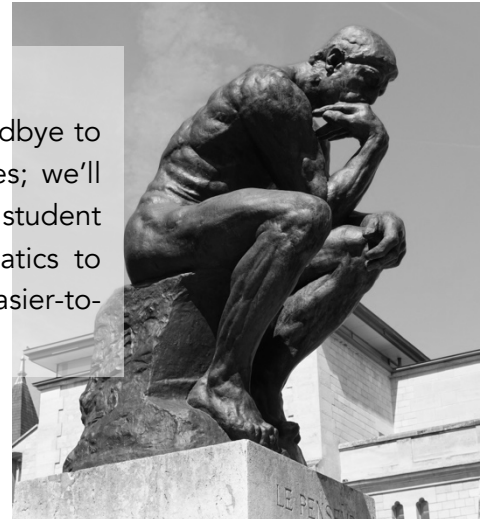
Our unique courses do not use traditional methods. Instead, we used research-backed methodology, rooted in cognitive science (how the brain works and how humans best learn) to help students relate mathematical concepts and structures to their everyday lives. We'll find number besties based on what two numbers have in common. We'll command our armies to points on the battlefield. We'll see how math is simply a tool to describe things we already know and understand and, in the process, improve enjoyment, retention, and comprehension. We will provide your student with the key to unlock the universe allowing them to soar in both traditional problems as well as novel and interesting situations and empowering students to find joy, beauty, and utility in mathematics all through a simple change in perspective.



Your child won't be memorizing formulas or algorithms. We aren't interested in creating human-robots! Our goal is to inspire the next generation of thinkers and problem-solvers. Unlike other programs that encourage following steps and procedures, with MathBait® your child will enter an enchanted door enabling them to see mathematics all around. They'll use their own experiences to uncover the power of numbers and make sense of complex ideas.

[INSERT YOUR NAME]'S THEOREM

That's not Pythagoras' theorem – it's mine! Say goodbye to blindly accepting mathematical properties and rules; we'll use relationships, patterns, and play to help your student discover their own theorems as they use mathematics to describe our complex universe in simpler and easier-to-understand terms.

**STUDENT LEADERS**

Never the “sage on stage”, our instructor will provide prompts, leading questions, activities, and thought experiments to help guide your child to their own discoveries. We consider a class most successful when students have more talk time than the instructor. Come ready to participate and share your ideas! We strive to create a safe and welcoming environment where mistakes are encouraged (how else are we supposed to learn?), every idea is a good idea, and students drive our exploration down untraveled paths.

SMALL GROUP PHILOSOPHY

Small groups are optimal for learning. While larger classes are the most profitable, we place learning at the forefront as we strive to create the ideal learning experience. Our classes are limited to 8 students* allowing each child space to grow and share their thoughts, while also providing the opportunity for peer-to-peer interaction and multiple perspectives.

However, this means space is limited! Make sure to secure your spot early.

* Some exceptions may be made for homeschool co-ops and siblings.

Imagine a world where your child talks about numbers like an old friend; wanting to play, build, and transform them into new and interesting structures. MathBait® *Welcome to Numberville* focuses on building a strong foundation for all subsequent math courses (from Algebra, to Calculus, to college courses including Abstract Algebra and Real Analysis) as well as helping students to master finding hidden numbers in equations and inequalities.

WELCOME TO NUMBERVILLE



PREALGEBRA

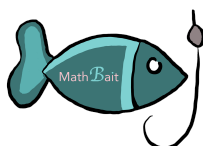
	Prerequisites	Familiarity with Numerals, Place Value, and Counting
	Reading Age	9-12 years*
	Length	8/16/18 Weeks
	Weekly Class Time	1.5 hours
	Weekly Dedication	3 Hours
	Books	Marco the Great and the History of Numberville
	Maximum Class Size	8
	Skills	Prime Numbers Decoding Mathematical Notation Working with Variables Integer and Rational Operations Inequalities and Absolutes Solving Linear Equations

Welcome to Numberville covers topics traditionally aligned to grades 6, 7, and 8. We focus on building number sense by first developing an understanding of different types of numbers before moving to operations. We then extend our knowledge to solving equations and inequalities.

Upon completion of the course, students will have developed a strong familiarity with numbers and the ability to manipulate numbers into various forms. They will be able to solve significantly complex linear equations and inequalities, including those involving absolute value as well as systems of equations.

We do not cover exponents, graphing, statistics, or geometry concepts in this course. For more information, please see [Methodologies](#).

* Reading age is based on information from the publisher. Placement should be based on students' mathematical level. Additional reading support may be provided for any class.

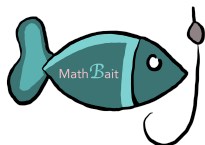


Welcome to Numberville focuses on the following course objectives:

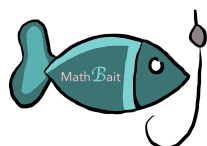
- Determine number-traits (aka Prime Numbers)
- Identify number DNA (aka Prime Factorization)
- Determine if a natural number has a certain trait (divisibility)
- Identify what two numbers have in common
- Calculate the common costume of a group of numbers (aka determine a value two numbers will both "fit" into)
- Develop a real-world understanding of positive and negative values and fluently compute sums and products
- Identify evil twins and the power of zero (additive inverse and identity)
- Order numbers based on their power (inequalities and integers)
- Determine a number's status using absolute value
- Understand the concept of a ratio and use ratios in real-world situations
- Determine the unit ratio
- Analyze proportional relationships
- Understand multiplication as scaling and use this to manipulate values
- Recognize "magic mirrors" and use them to uncover numbers (multiplicative identity and inverse)
- Develop a conceptual understanding of rational numbers and their operations
- Utilize numbermasks (commonly called variables) to represent unknown values
- Decode real-world and English statements into Numberspeak (for example "5 less than a number as $x - 5$)
- Identify the common parts of an expression (terms, variables, coefficients)
- Utilize substitution to find the value of an expression
- Identify if a pattern is increasing or decreasing
- Use manipulation to form equivalent expressions
- Solve equations in the forms $x + p = q$, $px = q$, $p(x + q) = r$ as well as more complex scenarios which are equivalent to one of these forms
- Solve equations involving absolute value
- Determine what numbers are valid for inequalities in all forms and express in various notations
- Analyze and solve systems of linear equations

In addition, students will build their logic and problem-solving skills by tackling novel questions and interesting situations. *

* Schedule is tentative. We reserve the right to make changes to topics based on student understanding and engagement.



8 WEEK SUMMER	16 WEEK FALL	18 WEEK SPRING	TOPICS
WEEK 1	WEEK 1	WEEK 1	Welcome to Numberville Get to each other, the course, and Numberville.
WEEK 2	WEEK 2	WEEK 2	Numberfolk DNA What are numbers made of? (Finding Primes)
	WEEK 3	WEEK 3	DNA Sequencing Let's solve a crime! (Prime Factorization)
WEEK 3	WEEK 4	WEEK 4	Besties and Costumes Are they friends? Can we all fit? (GCF/LCM)
	WEEK 5	WEEK 5	Decoding the Universe A hidden message (Order of Operations)
		WEEK 6	Bye Bye Baby Algebraic Notation
ONLINE	WEEK 6	WEEK 7	The Greatest Power You Have Substitution and Identifying Patterns
WEEK 4	WEEK 7	WEEK 8	Dueling Particles What is addition really? (Integer Operations I)
		WEEK 9	Numberbabes and Genetics Building trait diagrams (Integer Operations II)
WEEK 5	WEEK 8	WEEK 10	The Great Scale Can we make it balance?
WEEK 6	WEEK 9	WEEK 11	The Rationalites What are fractions?
	WEEK 10	WEEK 12	Spies and Not Numbers Secret Missions and disguises
WEEK 7	WEEK 11	WEEK 13	Wizards, Shrink Rays, and Growth Lasers Antman can do it, we can too!
	WEEK 12	WEEK 14	Hide and Go Seek Hiding a number in plain sight
ONLINE	WEEK 13	WEEK 15	Numberfolk Jail Solving Inequalities, Set Theory, Interval Notation
	WEEK 14	WEEK 16	La, La, La! I Can't Hear You! Situations with Absolutes
	WEEK 15	WEEK 17	Worm Holes and Lynch Pins Find the Infinity Mask! (Systems of Equations)
WEEK 8	WEEK 16	WEEK 18	The Final Hunt Culminating Task



Our courses are designed in a three-tiered structure:

- I. The Preview
- II. The Exploration
- III. The Expansion

THE PREVIEW

Students begin through self-exploration and discovery. They will be provided with a mission for the week (available in our online platform). Missions are a mix of text, images, and digital activities and exploration.

The Preview is akin to watching a movie trailer. Students are not expected to know the entire plot, have an intimate understanding of the characters, or know how the movie will end. The goal is to provide a sneak peek and prime their brains for our exploration.

THE EXPLORATION

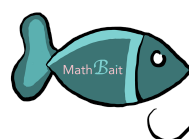
After completing their mission, students log in to our weekly live class. During this time, we explore the concepts introduced through activities and games. The goal of this time is to allow students to work together, to gain additional insight from the instructor, and to practice applications of the topics in new and novel ways.

THE EXPANSION

The final leg of the journey is the expansion. This is when students expand their understanding. Students will have additional games, challenges, and debriefs in the platform to continue practicing their skill and ultimately showing mastery.



Bonus! Your instructor will arrive 10 minutes early and stay 10 minutes after our formal class time! This time is optional and can be used to answer any additional questions, explore more deeply, or just chat and get to know each other! Our online platform also includes a discussion forum, to easily contact your instructor when you're stuck!



MathBait® courses are a mix of guided discovery, independent learning, and self-paced exploration which include a wealth of resources for your student.



GUIDED DISCOVERY

20 hours of live instruction with an award-winning teacher facilitating student ideas and engagement



SELF-PACED EXPLORATION

Courses include access to our Learning Management System where students will engage in text-based missions, games and activities, knowledge checks, and debriefs.



INDEPENDENT LEARNING

Our secure server houses video recordings of each live class for student review or make up if a course is missed.



ONLINE FORUM

Within the online course, students have access to a discussion board, allowing them an additional platform to ask questions and work with their classmates.

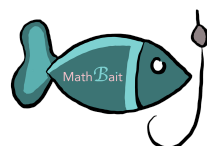


CERTIFICATE OF COMPLETION

All students will receive a certificate of completion indicating their participation along with documentation of course topics. Students who also complete all course challenges will win an award for their impressive accomplishment.

EARNING CREDIT

Any class (MathBait® or otherwise) cannot promise credit to a student regardless of accreditation or institution. Families must work with their school to negotiate whether the school will award credit for their MathBait® course. Parents may request a full transcript and/or a letter of recommendation to help facilitate this process. Certain states are more rigid than others. In the past, parents have received credit for their students as well as state resources (homeschooling and other educational funds) for MathBait® courses. However, this will vary widely based on location and institution.





Shayla Heavner is an award-winning teacher and author dedicated to improving mathematics education and fostering a love of mathematics in every student she interacts with.

EDUCATION

- ∞ Bachelor of Science in Mathematics – Indiana University
- ∞ Graduate Certificate in Mathematics – Indiana University
- ∞ Master of Science in Education – Johns Hopkins University

EXPERIENCE

Shayla has been a mathematics instructor and curriculum designer of mathematics courses for over 15 years. After working for the New York City School system, she became an upper-level mathematics professor at Indiana University teaching and designing some of the most notoriously difficult classes including Differential Equations, Abstract Algebra, and Computational Methods, among others. Wanting to inspire younger students, she moved to the Johns Hopkins Center for Talented Youth where she was awarded the prestigious Sarah D. Barder fellowship for excellence in teaching. Advancing to Mathematics Supervisor, Shayla designed and taught what would come to be the most popular programs for the institution including her Algebra II and Introduction to Logic and Proof courses. After being hired to lead the development of a brand new high-engagement curriculum, she realized full-time instructional design left out the best part of her job – the students! With the desire to get back into the classroom she began teaching for The Art of Problem Solving's virtual campus.

Inspired by her colleagues' reviews of her work, Shayla decided to take a leap and design her own unique mathematics program focusing on conceptual understanding, problem-solving, and enjoyment of learning. Her books have been sold all over the world, helping students to find the joy and power in math. She continues to teach for Indiana University, The Art of Problem Solving, and MathBait and loves the smiles, laughter, and aha moments each class brings.

Shayla is a certified online instructor.

I just love the
math class!

-AS, Age 11

She makes it
so much fun!

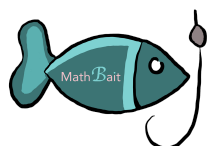
-Leela

10 out of 10!
Favorite class ever!

-Jameson

I love your class and the
way you teach! The classes
are interactive and fun,
and I feel like everything
sticks in my brain so well.

-N&S Kaur



My kid just loves the math class and looks forward to it. He especially enjoys the overall fun way of approaching math which doesn't make it boring. It's so fun that at times my younger kid also wants to sit in.

Krishna S.

We're very happy with the classes and the growth we've seen in our kids! They always get excited about class and look forward to it all week. I'm so happy they no longer see math as boring and even enjoy doing homework. Visually understanding graphs and equations through games in class has been so enlightening – as a parent, I also learned a lot from it!

Vinit K.

As a pediatrician of 20 years and a homeschool parent of 5 years, I've observed countless educational methodologies and curriculums, but Ms. Shayla's math program stands as a singular achievement in pedagogical innovation. Her unique fusion of logic, critical thinking, and joy has completely reshaped my children's relationship with math. Shayla has transformed math from a dreaded subject to an eagerly anticipated adventure in our household, proving that deep conceptual understanding and genuine enthusiasm aren't mutually exclusive in childhood education.

Archana C.

I can't recommend Shayla enough! My kids absolutely love her math classes – they look forward to them every week and always come out smiling, laughing, and having a great time. They even beg me to sign them up for more! But the best part is that they're actually learning so much.

Adriana R.

Thank you all so much!
It is such an honor to
work with such amazing
kiddos!

Absolutely amazing learning experience making math so much more interesting and fun, reinforcing, and expanding fundamentals and abstract thinking in very accessible ways.

Parent of upper elementary child



A MathBait® course is highly unique. Not only for our engaging strategies, but also our methodologies. Here are the answers to a few commonly asked questions.

WHY DO YOU USE STRANGE WORDS?

We'll admit, words like "besties", "Numberfolk", and even using DNA to describe prime numbers is highly unusual. While this is a part of MathBait® many students love, some students may find the transition more than a little strange.

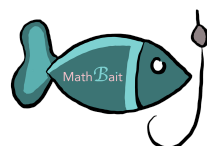
Our non-standard terminology is at the heart of our methodology. We do not approach mathematics through algorithms and processes, but rather through understanding the world around us. By using words students already have some familiarity with, they can quickly and more easily grasp the associated mathematical topic. For example, we ask students "if you meet someone new, what do you think will determine if they will be a fast friend?" While the answers differ, every student settles on the idea of commonality. Our lesson next extends this idea to help students see numbers can too have "besties" – friends in which they share a lot in common. This transforms a strange and foreign idea with varying jumbles of letters to represent it (sometimes it might be called GCD other times GCF) to something approachable and even intuitive.

WHY ARE SOME TOPICS MISSING?

While our courses as a whole cover the vast majority of topics included in traditional curricular material, our sequence often differs. For instance, a grade 6 standard is to solve equations in the form $x + p = q$ and $px = q$, while in grade 7 students are expected to solve equations in the form $px + q = r$ and $p(x + q) = r$. In grade 8, students are then introduced to functions in these forms.

This disjoint sequence fails to allow students to see the connection between all forms of linear equations, or to develop a clear foundational understanding, as there is often a year or more between the two standards. Our Prealgebra curriculum instead introduces students to all forms of linear equations, allowing them to recognize the patterns and understand the impact of multiplication and addition more easily and more intuitively.

Similarly, rather than provide students with handfuls of geometry and graphing, we introduce these ideas where they make the most sense. Our algebra curriculum begins with an introduction to Cartesian coordinates and functions, building an understanding of how to move objects on the plane. Rather than teaching each type of function in a silo (linear, quadratic, polynomial, rational, radical, sinusoidal etc.), we help students to build an intuitive understanding of all functions, which they can then apply to any and all functional graphs. Where a traditional



curriculum builds floor by floor, we build the “bones” of the entire structure to ensure a solid foundation.

Finally, our geometry curriculum is notably different as we do not simply teach Euclidean (or flat plane) geometry. Although traditional to introduce concepts like the Pythagorean Theorem in early grades, we have found this actually severely limits student understanding. These common theorems only apply to an area with no curvature. As we live on a sphere, we believe it is important to help students see the “big picture”. MathBait® geometry heavily focuses on the standard Euclidean view, but also provides insight into geometry on a sphere as well as hyperbolic geometry. For students continuing to courses like calculus, this view is greatly helpful as they will tackle concepts like hyperbolic sine and cosine.

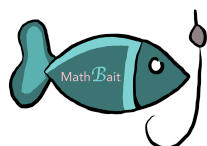
Thus, while our sequence may differ from other curricular material, our scope is akin to standard courses and in many instances much wider as we also include spherical and hyperbolic geometry, abstract algebra, number theory, and college-level logic throughout our content. Currently, the only topic not covered in the MathBait® progression is Statistics.

WHY DON'T YOU INCLUDE DUE DATES?

While due dates are helpful in keeping students on track and building executive functioning skills, our goal is to help students master mathematical concepts and build their frontal lobe connections through creative problem solving.

A due date forces a student to complete a task at a specific time regardless of their readiness. We want all students to be successful. Some students will work quickly through topic A and need more time to truly master topic B, while others will be the exact opposite. Our recommendation is for students to complete their knowledge checks and debriefs when they feel ready and prepared.

However, we do ask students complete their preparation work before our live classes and ask students and parents to work together on a schedule that makes sense for them. Students may use the calendar in our online platform to add their own “due dates”, reminders, and goals.



MODALITY

Our sessions will occur in Zoom. Once registered, parents will receive a welcome packet with information on how to join.

USE OF IMAGES

Each class will be recorded and posted to our Learning Management System. Only students in your child's class will have access to this platform. The purpose of this is to provide students with an additional resource to review classes or to catch up on missed classes as well as for MathBait® to evaluate and improve our live courses.

CANCELLATIONS

Due to the group nature of our summer programs, rescheduling is not possible. Parents may cancel or drop a class with more than 14 days' notice for a partial refund (full refund – fees incurred through payment and refund processing). If a student must miss a session, they can review the video recording as well as the additional information posted on our class page.

In the event of an emergency or sickness of the instructor, parents will be notified as soon as possible. We will attempt to schedule a substitute instructor. If our substitutes are unavailable, a video lesson will be provided for students to complete the week asynchronously with access to their instructor for help and questions.

LEARNING MANAGEMENT SYSTEM

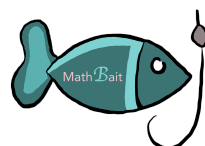
Upon enrollment, students will be added to our Learning Management System. This is a private class, only available to registered students. Here they will find additional information, games, and activities, as well as class recordings. As part of their welcome packet, parents will receive instructions on setting up this account.

DIRECT NOTICE

We value the privacy of our users and adhere to the Children's Online Privacy and Protection Act (COPPA). This notice describes our practices of collecting, using, and disclosing personal information for children under the age of 13. In using our platform, we must collect certain information from your child in order for us to provide high-quality services.

PROVIDING CONSENT

We need your consent before we create your student an account for a child under the age of 13. By enrolling your student and providing payment for class, parents are providing consent to allowing MathBait® to collect, use, and/or disclose relevant information about your child for



the purpose of fulfillment of your child's registration for the relevant course your child is enrolled. As part of the registration process, you will be prompted to accept our site terms and policies on behalf of your child.

WHAT INFORMATION DO WE COLLECT?

By enrolling in a MathBait® course we require:

Parent Full Name and Email Address

Student Name

As your student interacts in the online classroom and our live sessions we will collect:

IP Address

Cookies

Audio and video of your child's participation in live sessions

Areas of our Learning Management System include space for your child to express themselves such as the "Description" and "Notes" in their profile. This information is for the child's personal reference only and is never shared with third-parties or other users

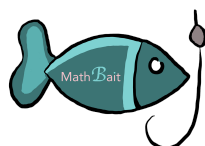
In live events, students will have access to chat with an educator and other students. Our live events are organized over Zoom which provide the host with the ability to monitor communications. Your child may provide information about themselves to the educator.

If your child contacts us through email, or by telephone, we may collect your child's name, username, email address, phone number, physical address, and any other content your child chooses to provide to us. We will only use this data to provide the customer service as requested.

HOW DO WE USE THIS INFORMATION?

The information we collect is used solely to provide your student with an outstanding learning experience. Student username is used to login and access the educational content, IP information and Cookies are used to generate student and parent reports and to track student accomplishments, and Zoom recordings are used to provide students with reference material for their review.

Parent information is collected to contact you regarding any important information or updates to our platform or services as well as provide you with information that we believe would be of interest or benefit to you or your child.



Please note that your child's progress will be linked to Parent email address through our learning management system.

DISCLOSURE OF INFORMATION TO THIRD PARTIES

Except as stated in this Notice and our Privacy Policy, we do not share or sell your or your child's information. Parent emails are shared with a third-party (Mailer-Lite) in which we contract with in order to deliver our email communications. They are required to keep your parent information in strict confidence. ***We do not sell your information for any purpose, and we do not exchange mailing lists with other organizations.***

