

At Zearn, we believe that Summer 2022 is an important opportunity to accelerate our collective work to help all students catch-up and move forward with their learning.

Introducing Zearn Summer 2022 Math Intensive Series

Zearn's Summer 2022 Intensive Series are designed based on learnings of the over 8.5B math problems completed on our math platform: where students struggle and the specific foundational support that kids need to access grade-level math content. During the academic year, we identify and recommend these foundational lessons to teachers so they can be used for deeper interventions. Our Summer Series pulls-forward these recommendations into coherent summer math experiences. Each Summer 2022 Intensive Series offers coherent, focused 4-week sequences that build the strong foundations all rising 1st through 9th graders need to move forward during the 22-23 academic year.

Comprehensive materials for 4-6 week programs

Each Series consists of top-rated materials that can be used flexibly across summer programs:

- **Daily digital math lessons** offer a consistent structure of learning activities, designed to accelerate learning by integrating unfinished learning into the context of new learning. Students explore new concepts with real on-screen teachers, visualization of every math concept, interactive problem solving, and guided paper-and-pencil Student Notes.
- **Materials for hands-on problem solving** offer teachers and tutors daily application problems they can use to facilitate lively math discussions where students explore different ways to solve problems, unlocking creativity and joy with math.
- **Real-time reports on student learning** provide visibility into student learning and where students need additional support to move forward in their learning.

Focused on the big ideas of math

Each Summer 2022 Math Intensive Series deeply explores the big ideas of math to build the dense connections students need during the upcoming school year. In younger grades, students explore one big idea, like addition and subtraction. In older grades, students tackle longer sequences covering a few big ideas, building a strong foundation in critical capstone content that they will need for success in later grades.

Recommended Usage: In each 4-6 week program, rising 1st through 3rd graders should complete 1 lesson each day (~30 minutes). Rising 4th graders through rising 9th graders should double up on lessons, completing 2 lessons each day (~60 minutes) throughout the summer program.

Explore the content of Zearn Summer 2022 Math Intensive Series on the following pages.

Summer Math Intensive Series: Rising 1st Graders

For rising 1st graders, the K Summer Intensive Series focuses on the essentials of kindergarten content: counting! The Summer Intensive Series can be tackled digitally and is intended to build the number sense that rising 1st graders need.

Content for Rising 1st Graders: 170 Digital Activities			
K Digital Activities	Kindergarten is all about learning to count with deep understanding. Completing all Kindergarten Digital Activities will enable students to practice counting, addition, embedded numbers, and decomposing and composing numbers up to 20 using interactive five frames, ten frames, number bonds, and more.	Kindergarten Digital Activities are short and engaging, and they're designed to build number sense. Each Activity takes ~10 minutes. Rising 1st graders should complete all Kindergarten Digital Activities.	Numbers to 5 50 activities
			Numbers to 10 50 activities
			Numbers to 15 35 activities
			Numbers to 20 35 activities

Summer Math Intensive Series: Rising 2nd Graders

For rising 2nd graders, the G1 Summer Intensive Series focuses on counting, composing, and decomposing with large enough numbers to prepare them for 2nd grade. The G1 Summer Intensive Series is intended to build a strong foundation of flexible strategies for all students to fall back on as they engage with Grade 2 content and beyond.

Content for Rising 2nd Graders: 23 Total Lessons				
Mission	Mission Title	Standards	Lessons	Topics
G1M4	Add and Subtract Bigger Numbers	1.OA.1 1.NBT.1	23	Topic A: Tens and Ones
	This Mission builds on the foundations of counting on, decomposing, and counting strategies that were established in Mission 1 and Mission 2. This gives students the opportunity to work with numbers up to 40. Students will learn many new strategies to identify tens and ones, and they'll compare, add, and subtract numbers up to 40. Reinforce this new content by using the provided word problem each day.	1.NBT.2 1.NBT.3 1.NBT.4 1.NBT.5 1.NBT.6		Topic B: Comparison of Pairs of Two-Digit Numbers Topic C: Addition and Subtraction of Tens Topic D: Addition of Tens or Ones to a Two-Digit Number Topic E: Varied Problem Types Within 20 Topic F: Addition of Tens and Ones to a Two-Digit Number

Summer Math Intensive Series: Rising 3rd Graders

For rising 3rd graders, the G2 Summer Intensive Series focuses on the capstone content of K–2: a deep understanding of the base ten system and flexibly being able to add and subtract. This is content that 3rd grade standards assume kids can access.

Content for Rising 3rd Graders: 20 Total Lessons				
Mission	Mission Title	Standards	Lessons	Topics
G2M5	Add and Subtract Big Numbers	2.NBT.7 2.NBT.8 2.NBT.9	20	Topic A: Strategies for Adding and Subtracting Within 1,000 Topic B: Strategies for Composing Tens and Hundreds Within 1,000 Topic C: Strategies for Decomposing Tens and Hundreds Within 1,000 Topic D: Student Explanations for Choice of Solution Methods
	Students are now well on their way to mastering flexible addition and subtraction. This Mission builds on those skills, now using numbers up to 1,000 and increasing the focus on efficiency and checking their work.			

Summer Math Intensive Series: Rising 4th Graders

For rising 4th graders, the G3 Summer Intensive Series focuses on multiplication and division, which is key to their success in later grades.

Content for Rising 4th Graders: 37 Total Lessons				
Mission	Mission Title	Standards	Lessons	Topics
G3M3	Multiply and Divide Tricky Numbers	3.OA.1 3.OA.2 3.OA.3 3.OA.4 3.OA.5 3.OA.6 3.OA.7 3.OA.8 3.OA.9 3.NBT.3	21	Topic A: The Properties of Multiplication and Division Topic B: Multiplication and Division Using Units of 6 and 7 Topic C: Multiplication and Division Using Units up to 8 Topic D: Multiplication and Division Using Units of 9 Topic E: Analysis of Patterns and Problem Solving Including Units of 0 and 1 Topic F: Multiplication of Single-Digit Factors and Multiples of 10
	This Mission extends multiplication and division to all factors between 0 and 10. Students work deeply with the commutative, distributive, and associative properties, and they'll have problem-solving opportunities at the close of each topic.			

G3M4	Find the Area	3.MD.5 3.MD.6 3.MD.7	29	Topic A: Foundations for Understanding Area Topic B: Concepts of Area Measurement Topic C: Arithmetic Properties Using Area Models Topic D: Applications of Area Using Side Lengths of Figures
	In this Mission, students explore area as an attribute of two-dimensional figures and relate it to their prior understandings of multiplication.			

Summer Math Intensive Series: Rising 5th Graders

For rising 5th graders, the G4 Summer Intensive Series focuses on fractions and decimals. Students evaluate equivalence, and they learn to extend that understanding to decimal operations. The Summer Intensive Series is intended to ensure students have a solid grasp of these ideas to close out 5th grade successfully.

Content for Rising 5th Graders: 53 Lessons				
Mission	Mission Title	Standards	Lessons	Topics
G4M5	Equivalent Fractions This Mission teaches students how to manipulate fractions. Students compare fractions, evaluate equivalence, and learn that the same methods they used for whole number operations can be used to add, subtract, and multiply fractions.	4.OA.2 4.NBT.6 4.NF.1 4.NF.2 4.NF.3 4.NF.4	38	Topic A: Decomposition and Fraction Equivalence Topic B: Fraction Equivalence Using Multiplication and Division Topic C: Fraction Comparison Topic D: Fraction Addition and Subtraction Topic E: Extending Fraction Equivalence to Fractions Greater Than 1 Topic F: Addition and Subtraction of Fractions by Decomposition Topic G: Repeated Addition of Fractions as Multiplication Topic H: Exploring a Fraction Pattern

G4M6	Decimal Fractions	4.NF.5 4.NF.6 4.NF.7 4.MD.2	15	Topic A: Exploration of Tenths Topic B: Tenths and Hundredths Topic C: Decimal Comparison Topic D: Addition with Tenths and Hundredths Topic E: Money Amounts as Decimal Numbers
	Students learn a new and special notation for fractions in this Mission: decimals! They extend their understanding of the base ten system by first exploring equivalence between fractions and decimals. This understanding extends to comparing decimals and adding money.			

Summer Math Intensive Series: Rising 6th Graders

For rising 6th graders, the G5 Summer Intensive Series focuses on essential fractions and decimal operations work. The Summer Intensive Series is intended to ensure students are prepared for 6th grade math to be an extension of elementary school work.

Content for Rising 6th Graders: 48 Lessons				
Mission	Mission Title	Standards	Lessons	Topics
G5M3	Add and Subtract Fractions In this Mission, students will develop flexibility with addition and subtraction of fractions so they can mentally or numerically solve, reason, and estimate their calculations. The Mission begins with concrete and pictorial work (using area models and number lines) and moves to numeric work with word problems by the end.	5.NF.1 5.NF.2	16	Topic A: Equivalent Fractions Topic B: Making Like Units Pictorially Topic C: Making Like Units Numerically Topic D: Further Applications

G5M4	<p>Multiply and Divide Fractions and Decimals</p> <p>Students tackled equivalency in adding and subtracting fractions in Mission 3, and now they're ready to focus on multiplying and dividing fractions. Their understanding will be deeply rooted in multiple concrete examples and pictures before they generalize to more abstract methods.</p>	5.OA.1 5.OA.2 5.NBT.7 5.NF.3 5.NF.4 5.NF.5 5.NF.6 5.MD.1 5.MD.2	32	Topic A: Line Plots of Fraction Measurements Topic B: Fractions as Division Topic C: Multiplication of a Whole Number by a Fraction Topic D: Fraction Expressions and Word Problems Topic E: Multiplication of a Fraction by a Fraction Topic F: Multiplication with Fractions and Decimals as Scaling and Word Problems Topic G: Division of Fractions and Decimal Fractions Topic H: Interpretation of Numerical Expressions
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Summer Math Intensive Series: Rising 7th Graders

For rising 7th graders, the G6 Summer Intensive Series begins by developing understanding of ratios and rates so that students can represent and think about them in multiple, flexible ways. This is important because these concepts will be the foundations of proportional relationships and linear equations. The Summer Intensive Series also includes additional Missions that focus on bridging arithmetic from 3rd to 5th grade to the 7th grade arithmetic that requires students to deeply understand and have a higher fluency with operations.

Content for Rising 7th Graders: 44 Lessons				
Mission	Mission Title	Standards	Lessons*	Topics
G6M3	<p>Unit Rates and Percentages</p> <p>In this Mission, students extend their developing understanding of ratios to dig deeper into ratio relationships and learn about rates and unit rates. Students are introduced to the idea of a percentage, which allows them to solve a variety of real-world problems.</p>	6.RP.2 6.RP.3	14	Topic A: Using Unit Rate to Solve Problems Topic B: Unit Conversion Topic C: Rates Topic D: Percentages Topic E: Let's Put It to Work

G6M4	Dividing Fractions	6.NS.1 6.G.1 6.G.2	16	Topic A: Making Sense of Division Topic B: Meanings of Fraction Division Topic C: Algorithm for Fraction Division Topic D: Fractions in Lengths, Areas, and Volumes Topic E: Let's Put It to Work
	In this Mission, students culminate their study of fractions as they learn to divide a fraction by a fraction, using concrete examples and real-world contexts to help them make sense of the mathematics.			
G6M5	Arithmetic in Base Ten	6.NS.2 6.NS.3 6.EE.4	14	Topic A: Warming up to Decimals Topic B: Adding and Subtracting Decimals Topic C: Multiplying Decimals Topic D: Dividing Decimals Topic E: Let's Put It to Work
	In this Mission, students use various models and representations to add, subtract, multiply, and divide decimals and formalize their work with the appropriate standard algorithms.			

Math Intensive Series: Rising 8th Graders

For rising 8th graders, the Summer Intensive Series focuses on 3 big ideas introduced in G7: proportional relationships, arithmetic with signed numbers and solving multi-step equations. Proportional relationships are revisited and extended in G8 to introduce students to the concept of a function which is arguably the most important concept students will study for the remainder of their mathematical careers. Additionally, students work with rational number arithmetic and solving multi-step equations is woven throughout 8th grade, requiring students to have a certain degree of fluency with each to allow their working memory to focus on the new learning of G8.

Content for Rising 8th Graders: 50 Lessons				
Mission	Mission Title	Standards	Lessons	Topics
G7M4	Proportional Relationships and Percentages	7.RP.1 7.RP.2 7.RP.3	14	Topic A: Proportional Relationships with Fractions Topic B: Percent Increase and Decrease Topic C: Applying Percentages Topic D: Let's Put It to Work
	In this Mission, Students use ratios, scale factors, unit rates, and proportional relationships to solve multi-step, real-world problems that involve fractions and percentages. Students represent amounts and corresponding percent rates			

				with double number line diagrams and tables.
G7M5	Rational Number Arithmetic	7.NS.1 7.NS.2 7.NS.3 7.EE.4	15	<p>Topic A: Interpreting Negative Numbers</p> <p>Topic B: Adding and Subtracting Rational Numbers</p> <p>Topic C: Multiplying and Dividing Rational Numbers</p> <p>Topic D: Four Operations with Rational Numbers</p> <p>Topic E: Solving Equations Where There are Negative Numbers</p> <p>Topic F: Let's Put It to Work</p>
				In this Mission, students use tables and number line diagrams to represent sums and differences of signed numbers or changes in quantities represented by signed numbers such as temperature or elevation, becoming more fluent in writing different numerical addition and subtraction equations that express the same relationship.
G7M6	Expressions, Equations, and Inequalities	7.NS.1 7.EE.1 7.EE.2 7.EE.3 7.EE.4	16	<p>Topic A: Representing Situations of the Form $px + q = r$ and $p(x + q) = r$</p> <p>Topic B: Solving Equations of the Form $px + q = r$ and $p(x + q) = r$ and Problems That Lead to Those Equations</p> <p>Topic C: Inequalities</p> <p>Topic D: Writing Equivalent Expressions</p>
				In this Mission, Students learn algebraic methods for solving equations. Students solve linear inequalities in one variable and represent their solutions on the number line. They understand and use the terms "less than or equal to" and "greater than or equal to," and the corresponding symbols.

Math Intensive Series: Rising 9th Graders

For rising 9th graders, the Summer Intensive Series focuses on linear functions and linear equations, ensuring students have both the foundational understanding and procedural fluency needed to access the new learning of Algebra I. Algebra I is largely the study of functions that behave similarly and linear functions serve as the launch point for the course. Students need a deep understanding of linear relationships/functions in addition to being able to manipulate algebraic equations and expressions, making these topics the natural choice for the G8 Summer Intensive Series.

Content for Rising 9th Graders: 49 Lessons				
Mission	Mission Title	Standards	Lessons	Topics

G8M3	Linear Relationships In this Mission, students learn deepen their understanding of slope, and they learn to recognize connections among rate of change, slope, and constant of proportionality, and between linear and proportional relationships	8.EE.5 8.EE.6 8.EE.8 8.G.1	13	Topic A: Proportional Relationships Topic B: Representing Linear Relationships Topic C: Finding Slopes Topic D: Linear Equations
G8M4	Linear Equations and Systems In this Mission, students write and solve linear equations in one variable. These include equations in which the variable occurs on both sides of the equal sign, and equations with no solutions, exactly one solution, and infinitely many solutions.	8.EE.7 8.EE.8	15	Topic A: Puzzle Problems Topic B: Linear Equations in One Variable Topic C: Systems of Linear Equations Topic D: Linear Equations
G8M5	Functions and Volume In this Mission, students are introduced to the concept of a function. They describe functions as increasing or decreasing between specific numerical inputs, and they consider the inputs of a function to be values of its independent variable and its outputs to be values of its dependent variable.	8.F.1 8.F.2 8.F.3 8.F.4 8.F.5 8.G.9	21	Topic A: Inputs and Outputs Topic B: Representing and Interpreting Functions Topic C: Linear Functions and Rates of Change Topic D: Cylinders and Cones Topic E: Dimensions and Shapes