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.

#### 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 Title
**Add and Subtract Bigger Numbers**

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.

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<th>Topics</th>
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<td>Topic A: Tens and Ones</td>
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<tr>
<td>1.NBT.1</td>
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<td>Topic B: Comparison of Pairs of Two-Digit Numbers</td>
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<td>1.NBT.2</td>
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<td>Topic C: Addition and Subtraction of Tens</td>
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<td>1.NBT.3</td>
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<td>Topic D: Addition of Tens or Ones to a Two-Digit Number</td>
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<td>1.NBT.4</td>
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<td>Topic E: Varied Problem Types Within 20</td>
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<td>1.NBT.5</td>
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<td>Topic F: Addition of Tens and Ones to a Two-Digit Number</td>
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<tr>
<td>1.NBT.6</td>
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</table>
**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.

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</table>
| 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 |

**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.

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| 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 |
Find the Area

In this Mission, students explore area as an attribute of two-dimensional figures and relate it to their prior understandings of multiplication.

3.MD.5
3.MD.6
3.MD.7

G3M4

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.

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

G4M5

Content for Rising 5th Graders: 53 Lessons

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<td>4.OA.2, 4.NBT.6, 4.NF.1, 4.NF.2, 4.NF.3, 4.NF.4</td>
<td>38</td>
<td>Topic A: Decomposition and Fraction Equivalence</td>
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<td></td>
<td>Topic B: Fraction Equivalence Using Multiplication and Division</td>
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<td>Topic C: Fraction Comparison</td>
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<td>Topic D: Fraction Addition and Subtraction</td>
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<td>Topic E: Extending Fraction Equivalence to Fractions Greater Than 1</td>
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<td></td>
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<td>Topic F: Addition and Subtraction of Fractions by Decomposition</td>
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<td>Topic G: Repeated Addition of Fractions as Multiplication</td>
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<td>Topic H: Exploring a Fraction Pattern</td>
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</tbody>
</table>

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G4M6  
**Decimal Fractions**

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.

### Content:

- **4.NF.5**
- **4.NF.6**
- **4.NF.7**
- **4.MD.2**

<table>
<thead>
<tr>
<th>Mission</th>
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</table>
| G5M3    | Add and Subtract Fractions | 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 |
### Multiply and Divide Fractions and Decimals

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.

**Standards:** 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

**Lessons:** 32

**Topics:**
- 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

### 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.

<table>
<thead>
<tr>
<th>Mission</th>
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<th>Standards</th>
<th>Lessons*</th>
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</table>
| G6M3    | Unit Rates and Percentages | 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 |
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.

**6.NS.1**
**6.NS.2**
**6.NS.3**
**6.EE.4**

**G6M5**

**Arithmetic in Base Ten**

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.

**6.NS.1**
**6.NS.2**

**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.

**G7M4**

**Proportional Relationships and Percentages**

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.

**7.RP.1**
**7.RP.2**
**7.RP.3**

**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
with double number line diagrams and tables.

**G7M5**

**Rational Number Arithmetic**

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.

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<td>Topic A: Interpreting Negative Numbers</td>
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<tr>
<td>7.NS.2</td>
<td></td>
<td>Topic B: Adding and Subtracting Rational Numbers</td>
</tr>
<tr>
<td>7.NS.3</td>
<td></td>
<td>Topic C: Multiplying and Dividing Rational Numbers</td>
</tr>
<tr>
<td>7.EE.4</td>
<td></td>
<td>Topic D: Four Operations with Rational Numbers</td>
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<tr>
<td></td>
<td></td>
<td>Topic E: Solving Equations Where There are Negative Numbers</td>
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<td>Topic F: Let’s Put It to Work</td>
</tr>
</tbody>
</table>

**G7M6**

**Expressions, Equations, and Inequalities**

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.

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<tr>
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<tr>
<td>7.NS.1</td>
<td>7</td>
<td>Topic A: Representing Situations of the Form px + q = r and p(x + q) = r</td>
</tr>
<tr>
<td>7.EE.1</td>
<td></td>
<td>Topic B: Solving Equations of the Form px + q = r and p(x + q) = r and Problems That Lead to Those Equations</td>
</tr>
<tr>
<td>7.EE.2</td>
<td></td>
<td>Topic C: Inequalities</td>
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<tr>
<td>7.EE.3</td>
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<td>Topic D: Writing Equivalent Expressions</td>
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<tr>
<td>7.EE.4</td>
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</table>

**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.

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<td></td>
<td>Content for Rising 9th Graders: 49 Lessons</td>
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</tbody>
</table>
### G8M3 - Linear Relationships

In this Mission, students learn to 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

#### 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

#### 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

#### 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