



Curriculum Study PD

Authored by the team that created Zearn Math, Curriculum Study PD helps teachers plan instruction that engages all learners.

40+ SESSIONS DEEPEN CONTENT EXPERTISE

- ✓ Sessions explore the big mathematical idea of every unit of every grade
- ✓ Includes detailed study of the fluency, application, and conceptual content of each unit
- ✓ Identifies opportunities to make connections within and across grade levels

EXPLORES STRATEGIES TO ENGAGE ALL LEARNERS

- ✓ Each session examines strategies for teaching the mathematical progression of the unit
- ✓ Includes analysis of student artifacts to assess student understanding and inform feedback
- ✓ Supports precisely identifying, interpreting, and addressing student misconceptions

Capacity building, by design

Delivered through Zearn's on-demand digital platform, Zearn Curriculum Study provides flexible materials that support year-long common planning time as well as summer preparation. Each session includes interactive videos with embedded facilitation and discussion, and teachers can revisit content at any time.

Sample a Curriculum Study PD session

Preview the first unit of 3rd grade, where teachers explore how students use different representations of equal groups to understand multiplication and division.



For more information about purchasing Zearn Math Professional Development, [contact Zearn](#).

Kindergarten

The purpose of Kindergarten Curriculum Study is to deepen understanding of the K curriculum. Participants will collaboratively examine curricular materials, solving math problems using strategies from the mission, and analyze example student work.

PARTICIPANTS

Kindergarten Teachers, Kindergarten Teacher Leaders, Kindergarten Instructional Coaches. If time allows, teachers in other grades should also participate to deepen understanding of the curriculum and identify opportunities to make connections across grade levels.

DURATION/FORMAT

Kindergarten Curriculum Study consists of six sessions, one session for each Mission of the grade. Each session should take approximately 60 minutes to complete as a grade-level team. If desired, this time could be extended to allow for more in-depth discussion, completion of suggested learning extensions, and longer lesson planning time. Each session is designed to be facilitated in-person by the Teacher Leader or Instructional Coach in grade-level teams.

Missions

M1

Students analyze and observe through classification activities and order, count, and write up to ten.

Participants will:

- ✓ Explore how students interact with concrete objects from their daily lives to establish the relationship between number and quantity with a focus on counting
- ✓ Understand how students see 5 as a useful number, leading to five-groups being the basis for numbers 6 through 10

M3

Students compare and analyze length, weight, capacity and numbers.

Participants will:

- ✓ Understand how students use common measurable attributes such as length or weight to continue to build their number sense
- ✓ Explore how students extend comparison from concrete, measurable attributes to the abstract comparison of numeral

M5

Students clarify the meaning of the 10 ones and some ones within a teen number and extend that understanding to count to 100.

Participants will:

- ✓ Understand how students build an understanding of the teen numbers, seeing each teen number as ten ones and some more ones
- ✓ Explore how students see 10 as a useful number, extending their exploration of numbers and counting to 100

M2

Students seek out flat and solid shapes in their world to make connections.

Participants will:

- ✓ Understand how students explore two-dimensional and three-dimensional shapes to identify similarities and build spatial awareness
- ✓ Explore how students classify objects into categories and use this as an opportunity to count to deepen their understanding of the connection between number and quantity

M4

Students begin to harness their practiced counting abilities and knowledge of the value of numbers to reason about and solve addition and subtraction equations.

Participants will:

- ✓ Explore how students use their knowledge of composing and decomposing numbers to begin adding and subtracting within 10
- ✓ Analyze how the number bond helps students visualize the joining and separating of parts of a whole

M6

Students further develop their spatial reasoning skills and begin laying the groundwork for an understanding of area.

Participants will:

- ✓ Analyze how students decompose larger shapes into smaller shapes, just as they decomposed larger numbers into smaller numbers
- ✓ Explore how students study the connection between flats and solids, using solids to build flats

Grade 1

The purpose of Grade 1 Curriculum Study Study is to deepen understanding of the Grade 1 curriculum and make connections to previously learned concepts. Participants will deepen their understanding by collaboratively examining curricular materials, solving math problems using strategies from the mission, and analyzing example student work.

PARTICIPANTS

Grade 1 Teachers, Grade 1 Teacher Leaders, Grade 1 Instructional Coaches. If time allows, teachers in other grades should also participate to deepen understanding of the curriculum and identify opportunities to make connections across grade levels.

DURATION/FORMAT

Grade 1 Curriculum Study consists of six sessions, one session for each Mission of the grade. Each session should take approximately 60 minutes to complete as a grade-level team. If desired, this time could be extended to allot for more in-depth discussion, completion of suggested learning extensions, and longer lesson planning time. Each session is designed to be facilitated in-person by Teacher Leader or Instructional Coach in grade-level teams.

Missions

M1

Students make significant progress towards fluency with addition and subtraction of numbers to 10 as they are presented with opportunities intended to advance them from counting all to counting on.

Participants will:

- ✓ Understand how students can use a variety of strategies to add and subtract to 10
- ✓ Explore how to encourage students to move from counting all to counting on

M3

Students extend their Kindergarten experiences with direct length comparison to the new learning of indirect comparison whereby the length of one object is used to compare the lengths of two other objects.

Participants will:

- ✓ Understand how students learn to indirectly compare the length of two objects using a third object and by iterating units such as centimeter cubes
- ✓ Assess how students use concrete materials to consider word problem situations and strengthen their understanding of length

M5

Students consider part-whole relationships through a geometric lens.

Participants will:

- ✓ Analyze how students extend their understanding of part-whole relationships to work with shapes and time
- ✓ Explore how fluency activities and word problems in this mission focus on preparing students for Mission 6

M2

Students begin to solve addition and subtraction problems involving teen numbers as they go beyond counting on to learn decomposition and composition strategies, informally called make ten or take from ten.

Participants will:

- ✓ Understand how students can add using the make 10 strategy, and subtract using the take from ten strategy
- ✓ Assess how students begin to think of a group of 10 items as 1 unit of ten

M4

Students learn the role of place value in the addition and subtraction of numbers to 40.

Participants will:

- ✓ Understand how students develop place value understanding to prepare for adding and subtracting within 40
- ✓ Explore how concrete materials can help students visualize place value units, and how quick ten drawings can be used to transition students from concrete linking cubes to coins

M6

Students close out the year with adding, subtracting and comparing with numbers up to 100.

Participants will:

- ✓ Analyze how students should use place value understanding to add and subtract within 100
- ✓ Explore how to encourage students to use math drawing and equations - not only concrete models - to help them solve

Grade 2

The purpose of Grade 2 Curriculum Study is to deepen understanding of the Grade 2 curriculum and make connections to previously learned concepts. Participants will deepen their understanding by collaboratively examining curricular materials, solving math problems using strategies from the mission, and analyzing example student work.

PARTICIPANTS

Grade 2 Teachers, Grade 2 Teacher Leaders, Grade 2 Instructional Coaches. If time allows, teachers in other grades should also participate to deepen understanding of the curriculum and identify opportunities to make connections across grade levels.

DURATION/FORMAT

Grade 2 Curriculum Study consists of eight sessions, one session for each Mission of the grade. Each session should take approximately 60 minutes to complete as a grade-level team. If desired, this time could be extended to allot for more in-depth discussion, completion of suggested learning extensions, and longer lesson planning time. Each session is designed to be facilitated in-person by Teacher Leader or Instructional Coach in grade-level teams.

Missions

M1

Students master sums and differences to 20, and subsequently apply these skills to fluently add one-digit to two-digit numbers at least through 100.

Participants will:

- ✓ Analyze how students apply and extend previous understandings and skills to make easier problems to reach Grade 2 fluencies
- ✓ Explore how students will use the make ten and take from ten simplifying strategies to add and subtract within 100

M3

Students expand their skill with and understanding of units by bundling ones, tens and hundreds up to a thousand with straws.

Participants will:

- ✓ Understand how counting by ones, tens and hundreds is foundational to understanding the base ten number system
- ✓ Explore how students develop an understanding that 10 ones equal 1 ten; 10 tens equal 1 hundred; 10 hundreds equal 1 thousand

M5

Students build on their mastery of renaming place value units and extend their work with the conceptual understanding of the addition and subtraction algorithms to numbers within 1,000.

Participants will:

- ✓ Understand how students will use place value understanding to add and subtract within 1,000
- ✓ Analyze how adding and subtracting on the place value chart will prepare students to conceptually understand their work in the standard addition and subtraction algorithms

M2

Students engage in activities designed to deepen their conceptual understanding of measurement and to relate addition and subtraction to length.

Participants will:

- ✓ Understand how students progress from measuring with concrete units, to iterating one unit, and then to building and measuring with a ruler
- ✓ Analyze how students relate addition and subtraction to length using many different strategies to solve comparative word problems

M4

Students build on place value understanding to compose and decompose place value units to add and subtract within 200.

Participants will:

- ✓ Understand how students use place value understanding to add and subtract within 200
- ✓ Explore how students solve problems with a place value chart and vertical algorithm, and note connections between these two methods

M6

Students learn the conceptual foundation for multiplication and division in Grade 3 and for the idea that numbers other than 1, 10, and 100 can serve as units.

Participants will:

- ✓ Analyze how students build a foundation for multiplication and division in Grade 3 by understanding that any number can be a unit
- ✓ Understand how students recognize the number of groups, the size of each group, and the total in each representation of equal groups

Grade 2 (continued)

M7

Students practice addition and subtraction strategies within 100 and problem-solving skills as they learn to work with various types of units within the contexts of length, money, and data.

Participants will:

- ✓ Explore how students will solve a variety of problems with length, money, and data
- ✓ Understand how students build upon their addition and subtraction strategies and problem solving skills from earlier in Grade 2 to solve problems in this Mission

M8

Students extend their understanding of part-whole relationships through the lens of geometry and begin to develop an understanding of unit fractions as equal parts of a whole.

Participants will:

- ✓ Analyze how students explore part-whole relationships with shapes, time, and fractions
- ✓ Understand how fluency activities in this Mission focus on reinforcing place value strategies to add and subtract in each representation of equal groups

Grade 3

The purpose of Grade 3 Curriculum Study Study is to deepen understanding of the Grade 3 curriculum and make connections to previously learned concepts. Participants will deepen their understanding by collaboratively examining curricular materials, solving math problems using strategies from the mission, and analyzing example student work.

PARTICIPANTS

Grade 3 Teachers, Grade 3 Teacher Leaders, Grade 3 Instructional Coaches. If time allows, teachers in other grades should also participate to deepen understanding of the curriculum and identify opportunities to make connections across grade levels.

DURATION/FORMAT

Grade 3 Curriculum Study consists of seven sessions, one session for each Mission of the grade. Each session should take approximately 60 minutes to complete as a grade-level team. If desired, this time could be extended to allot for more in-depth discussion, completion of suggested learning extensions, and longer lesson planning time. Each session is designed to be facilitated in-person by Teacher Leader or Instructional Coach in grade-level teams.

Missions

M1

Students build their fluency with addition and knowledge of arrays.

Participants will:

- ✓ Analyze how students will use different representations of equal groups to understand multiplication and division
- ✓ Explore how to encourage students to see the relationship between multiplication and division

M3

Students extend their study of factors from 2, 3, 4, 5, and 10 to include all units from 0 to 10, as well as multiples of 10 within 100.

Participants will:

- ✓ Explore how students develop both an automaticity with 0-10 facts and a deep understanding of the properties of multiplication and division
- ✓ Understand how practicing the new strategies with small numbers will help students apply these strategies when they start working with larger numbers

M5

Students extend and deepen Grade 2 practice with equal shares to understanding fractions as equal partitions of a whole.

Participants will:

- ✓ Analyze how students develop an understanding that fractions are numbers representing equal parts of a whole
- ✓ Explore how students are introduced to unit fractions as the building blocks that compose other fractions

M2

Students explore measurement using kilograms, grams, liters, milliliters, and intervals of time in minutes.

Participants will:

- ✓ Explore how units of measurement provide a real-world application for mathematical problem solving
- ✓ Understand how familiar addition, subtraction, multiplication, and division strategies can be used by students in new contexts

M4

Students explore area as an attribute of two-dimensional figures and relate it to their prior understandings of multiplication.

Participants will:

- ✓ Understand how students may use a number of strategies to find the area, from counting square units to using multiplication
- ✓ Explore how the strategies that students use to find the area in this Mission will help students multiply larger numbers in future grades

M6

Students build on Grade 2 concepts to deepen understanding about data, graphing, and line plots.

Participants will:

- ✓ Understand how students can draw upon their knowledge of multiplication to represent and analyze data by drawing scaled bar graphs and picture graphs in which each picture represents more than one objects
- ✓ Explore how students can also draw upon their knowledge of fractions to represent and analyze data by estimating lengths to the nearest halves and fourths of a unit and record in line plots

Grade 3 (continued)

M7

Students practice word problems and hands-on investigation experiences with geometry and perimeter.

Participants will:

- ✓ Understand how students need to apply their knowledge of shapes and their attributes to solve problems about perimeter
- ✓ Explore how the problems in Mission 7 offer many opportunities to promote student reasoning, share different strategies, and problem solve

Grade 4

The purpose of Grade 4 Curriculum Study Study is to deepen understanding of the Grade 4 curriculum and make connections to previously learned concepts. Participants will deepen their understanding by collaboratively examining curricular materials, solving math problems using strategies from the mission, and analyzing example student work.

PARTICIPANTS

Grade 4 Teachers, Grade 4 Teacher Leaders, Grade 4 Instructional Coaches. If time allows, teachers in other grades should also participate to deepen understanding of the curriculum and identify opportunities to make connections across grade levels.

DURATION/FORMAT

Grade 4 Curriculum Study consists of seven sessions, one session for each Mission of the grade. Each session should take approximately 60 minutes to complete as a grade-level team. If desired, this time could be extended to allot for more in-depth discussion, completion of suggested learning extensions, and longer lesson planning time. Each session is designed to be facilitated in-person by Teacher Leader or Instructional Coach in grade-level teams.

Missions

M1

Students extend their work with whole numbers and develop their understanding of millions by building knowledge of the pattern of times ten in the base ten system on the place value chart.

Participants will:

- ✓ Analyze how students build and apply their place value understanding to compare, round, add and subtract whole numbers
- ✓ Explore how to scaffold problems to support students' conceptual understanding by using smaller numbers to make place value concepts more accessible

M3

Students use place value understanding and visual representations to solve multiplication and division problems with multi-digit numbers.

Participants will:

- ✓ Understand how place value understanding and properties of operations are used to multiply and divide bigger numbers
- ✓ Explore how the models and strategies used in this Mission build conceptual understanding to promote greater accuracy with multiplication and division

M5

Students build on their Grade 3 work with unit fractions as they explore fraction equivalence and extend this understanding to mixed numbers.

Participants will:

- ✓ Explore how a deep understanding of equivalent fractions is an important foundation and can help students compare fractions
- ✓ Analyze how students develop an understanding of how fractional units work just like other units, whether they are being added, subtracted or multiplied by a whole number

M2

Students explore the process of working with mixed units by focusing on length, mass and capacity in the metric system where place value serves as a natural guide for moving between larger and smaller units.

Participants will:

- ✓ Assess how students build upon place value understanding from Mission 1 to convert metric units
- ✓ Explore how students are set up for manipulating fractional units in future missions

M4

Students construct, recognize and define points, lines, line segments, rays and angles to classify figures and find unknown angle measures.

Participants will:

- ✓ Analyze how students build a deep conceptual understanding of geometric concepts and then apply these understandings to solve unknown angle problems and classify shapes
- ✓ Explore how to encourage students to use their knowledge of familiar angles and the fact that angles are additive to reason about unknown angle measures

M6

Students explore decimal numbers via their relationship to decimal fractions, expressing a given quantity in both fraction and decimal forms.

Participants will:

- ✓ Explore how students build upon their understanding of fractions to work with decimal numbers, learning to express a given quantity in both fraction and decimal form
- ✓ Understand how to encourage students to use familiar models to relate fractions to decimals

Grade 4 (continued)

M7

Students build their competencies in measurement as they relate multiplication to the conversion of measurement units.

Participants will:

- ✓ Understand how students convert, add, and subtract units of capacity, length, weight, and time
- ✓ Explore how students apply earlier work with fractions to conversion, converting fractions of a unit and adding mixed units

Grade 5

The purpose of Grade 5 Curriculum Study is to deepen understanding of the Grade 5 curriculum and make connections to previously learned concepts. Participants will deepen their understanding by collaboratively examining curricular materials, solving math problems using strategies from the mission, and analyzing example student work.

PARTICIPANTS

Grade 5 Teachers, Grade 5 Teacher Leaders, Grade 5 Instructional Coaches. If time allows, teachers in other grades should also participate to deepen understanding of the curriculum and identify opportunities to make connections across grade levels.

DURATION/FORMAT

Grade 5 Curriculum Study consists of six sessions, one session for each Mission of the grade. Each session should take approximately 60 minutes to complete as a grade-level team. If desired, this time could be extended to allot for more in-depth discussion, completion of suggested learning extensions, and longer lesson planning time. Each session is designed to be facilitated in-person by Teacher Leader or Instructional Coach in grade-level teams.

Missions

M1

Students extend their understanding of patterns in the base ten system to include decimals to the thousandths place.

Participants will:

- ✓ Analyze how students generalize place value patterns with whole numbers to work with decimals
- ✓ Explore how students extend their understanding of operations with whole numbers to perform decimal operations

M3

Students' understanding of addition and subtraction of fractions extends from earlier work with fraction equivalence and decimals as students use the full set of fractional units.

Participants will:

- ✓ Understand how drawing connections between pictorial and numerical representations of equivalent fractions will lead to a deeper understanding of equivalence for students
- ✓ Explore how understanding fraction equivalence is an important foundation for adding and subtracting fractions with unlike denominators

M5

Students work with two- and three-dimensional figures and volume is introduced to students through concrete exploration of cubic units.

Participants will:

- ✓ Analyze how students develop a deep conceptual understanding of volume and efficient ways to find volume
- ✓ Explore how students apply sophisticated logic to reason about twodimensional shapes

M2

Students apply the patterns of the base ten system to mental strategies and the multiplication and division algorithms.

Participants will:

- ✓ Analyze how students deepen their conceptual understanding of multiplication and division by using properties of operations and the base ten system
- ✓ Explore how students can work towards fluency with the division algorithm for 6th grade

M4

Students learn to multiply fractions and decimal fractions and begin working with fraction division.

Participants will:

- ✓ Analyze how students develop a deep conceptual understanding of multiplying and dividing fractions and decimals
- ✓ Explore how students' work with fractions and decimals is deeply rooted in multiple concrete examples and pictures before they move to more abstract methods for solving

M6

Students develop a coordinate system for the first quadrant of the coordinate plane and use it to solve problems.

Participants will:

- ✓ Analyze how students use the coordinate system to explore the relationship between coordinate pairs and lines
- ✓ Explore how students review the important concepts taught throughout Grade 5 during Whole Group Fluency and Word Problems

Everything we do is driven by the belief that every kid is a math kid.

Zearn is the 501(c)(3) nonprofit educational organization behind Zearn Math, the top-rated math learning platform used by 1 in 4 elementary-school students and by more than 1 million middle-school students nationwide.



For more information about purchasing Zearn Math Professional Development, [contact Zearn](#).