



Progression of Core Mathematical Concepts from Kindergarten through Eighth Grade

Course Syllabus

Course Description

This course will take you through the Common Core Math Standards from kindergarten through eighth grade. The standards are grouped into eight domains, each a module of the course. Starting in kindergarten with counting, you will see how the standards progress and build students' mathematical thinking and skills. An in-depth knowledge of where students came from and where they are going in their math learning benefits elementary and secondary math teachers. After this course, educators can confidently scaffold material for learners who are struggling and prioritize instruction for acceleration.

This course enhances classroom teaching effectiveness and supports improved student outcomes by introducing new knowledge in the progression and instructional application of the Common Core Math Standards from kindergarten through eighth grade.

Course Objectives

At the end of this course you should be able to:

1. Understand the concepts of early numeracy in the kindergarten standards, such as counting and cardinality, and identify their importance in a student's mathematical foundation.
2. Deepen understanding of how mathematical operations and algebraic thinking develop across grade levels, and identify their progression within the broader trajectory of students' mathematical reasoning and problem-solving.
3. Analyze the progression of the standards in the domain number and operations in base ten, and see how it evolves to support mathematical reasoning.
4. Explore the number and operations—fractions standards, identify effective teaching practices, and plan strategies to support struggling learners.
5. Investigate what operations students will need to master in middle school with an expanded number system including integers, rational, and irrational numbers.
6. Examine the sixth and seventh grade ratios and proportional relationships standards.
7. Explore the breadth of the expressions and equations standards and view them as the culmination of students' K-8 math journey.
8. Survey the standards in Geometry, Measurement and Data, and Statistics and Probability to learn how these standards provide opportunities for real-world mathematical application.



Modules

- Module 1: Counting and Cardinality (Kindergarten), Quiz 1
- Module 2: Operations and Algebraic Thinking (Kindergarten through Fifth Grade), Quiz 2
- Module 3: Numbers and Operations in Base Ten (Kindergarten through Fifth Grade), Quiz 3
- Module 4: Number and Operations- Fractions (Third through Fifth Grades), Quiz 4
- Module 5: The Number System (6-8), Quiz 5
- Module 6: Ratios and Proportional Relationships (6-7), Quiz 6
- Module 7: Expressions and Equations (6 - 8), Quiz 7
- Module 8: Geometry, Measurement and Data, and Statistics and Probability (K - 8), Quiz 8

Grading

Each quiz must be passed at an 80% or higher (three attempts allowed).

Format

This is a self-paced, asynchronous (no required live meetings) course. Throughout the PD course, you will find it helpful to take notes along the way to assist with the quizzes. Within each module, you will find reflection assessments that are not graded but will help in your journey through the course. There is an interactive forum in the course to help you connect with peers and instructors, share ideas, and collaborate on best practices throughout your learning journey.