

MTB4's Focus on Critical Areas in Grade 4

In Grade 4, students focus on the following areas as designated by the Common Core State Standards. Concepts and procedures are regularly revisited throughout the year as students' understanding builds and deepens.

- **Developing understanding and fluency with multidigit multiplication, and developing understanding of dividing to find quotients involving multidigit dividends.**

In Units 3–12, students systematically review and are assessed on small groups of multiplication and the related division facts that can be solved using similar strategies to maintain and increase proficiency, and to aid in their conceptual development of multidigit multiplication, division, and fractions. This practice can be found regularly in the Daily Practice and Problems and Home Practice.

Unit	Multiplication and Division Facts	Focus
3	Multiplication Facts 5s, 10s, and Square Numbers	Use strategies fluently
4	Multiplication Facts 2s, 3s, and 9s	
5	Multiplication Facts Last Six Facts	
6	Multiplication Facts Review All Division Facts 5s and 10s	
7	Division Facts 2s and 3s	
8	Division Facts 9s	
9	Division Facts Square Numbers	
10	Division Facts Last Six Facts	
11	Division Facts Last Six Facts	
12	Division Facts Review All	

In Unit 2, students find area using rectangular array models in preparation of using area models to multiply and analyze numbers.

In Unit 3, students work with the array model for multiplication which leads to an investigation of factors, multiples, primes, squares, and exponents.

In Unit 4, students deepen their understanding of number sense and place value concepts so they can choose appropriate methods to solve multidigit addition, subtraction, multiplication, and eventually division problems efficiently and accurately.

In Unit 5, students use models to divide as they find the mean of a set of values. They use models to look for patterns in the relationship between variables, and use data to make predictions and reason about multiplicative relationships. Students explore multiplicative relationships in function machines as they generalize patterns as

rules.

In Unit 6, students continue to deepen and extend their understanding of number sense and place value to develop their understanding and fluency with the operations. They estimate and round large numbers, use exponents, and analyze non-linear patterns. In this unit, students also assess their fluency with all the multiplication facts and start the systematic review of the division facts.

Unit 7 focuses on patterns in multiplication. Students explore the order of operations, divisibility rules, and multiplication methods and strategies for larger numbers. Students build on the invented mental math strategies and paper-and-pencil methods already developed to extend these strategies to larger numbers (e.g., expanded form, all-partials, compact, rectangle model, estimation, and mental math strategies). This work with multiple methods and strategies helps increase flexibility and efficiency in solving computational problems.

In Unit 11, students use mental math, rectangle models, expanded form, the all-partials method, and the compact method to multiply two-digit by two-digit numbers, and develop methods to choose appropriately among the strategies. Students develop estimation and mental math strategies as a way to check reasonableness of answers or to compute quickly.

In Unit 12, students solve problems involving division of 2- and 3- digit numbers by single-digit numbers. Students use column models and rectangle models to develop their conceptual understanding of division. These models are used to develop estimation strategies, which will then be used with more efficient paper-and-pencil methods (e.g., partial quotients).

In Unit 13, students use the context of mass and volume and solve multiplication and division problems involving the relationship between larger and smaller units.

- **Developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers.**

In Unit 8, students use multiple representations and real-world contexts to support their development of the concepts related to fractions. They represent fractions with fraction strips, number lines, circle pieces, other area models, and finally a discrete model. Students make connections and translate between these representations to compare, order, and find equivalent fractions. Students look for patterns in repeated reasoning to develop strategies to add, subtract, and multiply fractions.

In Unit 10, students connect representations to translate between decimals and their fraction equivalents.

- **Understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.**

In Unit 2, students review the concepts of area and perimeter as they investigate the relationships between perimeter, area, and side length in rectangular shapes.

In Unit 9, students explore the nature of two-dimensional geometric elements including lines, angles, and polygons. Students discover relationships within and among these elements as they advance their understanding through stages, from basic intuition to analysis and informal deduction.