

SCHOOL DISTRICT OF THE CHATHAMS

Mathematics

Grade 4

Full Year

Course Overview

In Grade 4 mathematics, students will focus on three critical areas in alignment with the New Jersey Student Learning Standards for Mathematics. First, students will develop an understanding and demonstrate fluency with multi-digit multiplication and dividing to find quotients involving multi-digit dividends. Next, students will gain deep conceptualization with fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers. Finally, students will gain an understanding that geometric figures can be analyzed and classified based on their properties and attributes. Students will engage in a variety of differentiated activities throughout the year, aligned with the Standards for Mathematical Practice.

New Jersey Student Learning Standards

The New Jersey Student Learning Standards (NJSLS) can be located at www.nj.gov/education/cccs/2020/.

Operations and Algebraic Thinking:

- 4.OA.A. Use the four operations with whole numbers to solve problems.
- 4.OA.B. Gain familiarity with factors and multiples.
- 4.OA.C. Generate and analyze patterns.

Number and Operations in Base Ten:

- 4.NBT.A. Generalize place value understanding for multi-digit whole numbers.
- 4.NBT.B. Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations–Fractions:

- 4.NF.A. Extend understanding of fraction equivalence and ordering.
- 4.NF.B. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- 4.NF.C. Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data:

- 4.MD.A Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- 4.MD.B. Represent and interpret data.
- 4.MD.C. Geometric measurement: understand concepts of angle and measure angles.

Geometry:

- 4.G.A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles

Technology Standards

- 9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.8.IML.7: Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose

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9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a).

9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6).

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global

Career Ready Practices

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP6. Demonstrate creativity and innovation.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

CRP12. Work productively in teams while using cultural global competence.

Interdisciplinary Connections

English Language Arts:

- NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

Science:

- 4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents
- 4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Units of Study

Unit 1 - Generalize Place Value Understanding (~10 days)

- How can place value be used to compare numbers?
- How are greater numbers written?
- How are place values related?

Unit 2 - Use Strategies and Properties to Multiply by 1-Digit Numbers (~16 days)

- How can you multiply by multiples of 10, 100, and 1,000?
- How can you estimate when you multiply?

Unit 3 - Use Strategies and Properties to Multiply by 2-Digit Numbers (~16 days)

- How can you use a model to multiply?
- How can you use the Distributive Property to multiply?
- How can you use multiplication to solve problems?

Unit 4 - Use Strategies and Properties to Divide by 1-Digit Numbers (~16 days)

- How can mental math be used to divide?

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- How can quotients be estimated?
- How can the steps for dividing be explained?

Unit 5 - Factors & Multiples (~12 days)

- How can you use arrays, or multiplication to find the factors of a number?
- How can you identify prime and composite numbers?
- How can you find multiples of a number?

Unit 6 - Extend Understanding of Fraction Equivalence and Ordering (~14 days)

- What are some ways to name the same part of a whole?
- How can you compare fractions with the same denominator?

Unit 7 - Understand Addition and Subtraction of Fractions (~17 days)

- How do you add and subtract fractions and mixed numbers with like denominators?
- How can fractions be added and subtracted on a number line?

Unit 8 - Extend Multiplication Concepts to Fractions (~12 days)

- How can you describe a fraction using a unit fraction?
- How can you multiply a whole number by a mixed number?

Unit 9 - Represent and Interpret Data on Line Plots (~10 days)

- How can you read data on a line plot?
- How can you make a line plot?

Unit 10 - Understand and Compare Decimals (~13 days)

- How can you write a fraction as a decimal?
- How can you locate points on a number line?
- How do you compare decimals?

Unit 11 - Measurement: Find Equivalence in Units of Measure (~15 days)

- How can you convert from one unit to another?
- How can you be precise when solving math problems?

Unit 12 - Understand Concepts of Angle and Angle Measure (~15 days)

- What are some common geometric terms?
- How can you measure angles?

Unit 13 - Lines, Angles, and Shapes (~14 days)

- How can you classify triangles and quadrilaterals?
- What is line symmetry?

Learning Objectives/Discipline Standards of Practice

Learning Objectives:

- Identify the values of digits in multi-digit numbers
- Read and write multi-digit numbers in different forms
- Use place value to compare two multi-digit numbers
- Use place value to round multi-digit numbers
- Use rounding to estimate sums and differences

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- Add multi-digit numbers
- Subtract multi-digit numbers
- Solve two step addition and subtraction word problems
- Use multiplication to compare two numbers
- Use place value to multiply by tens, hundreds, or thousands
- Use the Distributive Property to multiply
- Multiply multi-digit numbers by one-digit numbers
- Use properties to multiply
- Solve multi-step word problems involving multiplication
- Use area models to multiply
- Multiply two-digit numbers by two-digit numbers
- Solve multi-step word problems involving two-digit multiplication
- Use place value to divide tens, hundreds, or thousands
- Use partial quotients to divide and find remainders
- Divide multi-digit numbers by one-digit numbers
- Solve multi-step word problems involving division
- Use models and division to find factor pairs
- Determine whether a number is prime or composite
- Create and describe number and shape patterns
- Write and model equivalent fractions
- Use multiplication and division to find equivalent fractions
- Write a fraction as a sum of fractions
- Add and subtract fractions, decimals, and mixed numbers
- Write mixed numbers as fractions and fractions as mixed numbers
- Solve multi-step word problems involving fractions and mixed numbers
- Write decimals as fractions and fractions as decimals
- Write amounts of money in different ways
- Operate arithmetically with money
- Identify different units of length and measurement
- Compare sizes of units of length
- Solve word problems involving measurement
- Define and find perimeter and area of a given shape
- Name and measure angles
- Define symmetry of shapes
- Compare and contrast angles and shapes

Discipline Standards of Practice:

MP.1: Make sense of problems and persevere in solving them

MP.2: Reason abstractly and quantitatively

MP.3: Construct viable arguments

MP.4: Model with Mathematics

MP.5: Use appropriate tools strategically

MP.6: Attend to precision

MP.7: Look for and make use of structure

MP.8: Look for and express regularity in repeated reasoning

Instructional Resources and Materials

Whole class resources have been identified with an asterisk.

Resources

- *Big Ideas Math MRL CC Grade 4, 2022*

Materials

- Illustrative Mathematics
- Inside Mathematics
- IXL
- Beast Academy
- Trade Books
- Manipulatives*
- Math Word Wall*

Assessment Strategies

Assessment is designed to measure a student's mastery of a course standard and learning objective. Assessment can be used for both instructional purposes (formative assessment) and for evaluative purposes (summative assessment).

The following is a general list of the many forms assessment may take in learning.

- Tests
- Quizzes
- Projects
- Unit Assessments