

Northfield Community School
MATHEMATICS CURRICULUM FRAMEWORK
 BOE APPROVED AUGUST 2024

GRADE : GRADE 4

PACING

PACING	MP 1	MP 2	MP 3	MP 4
	Topic: Understand place value. Understand adding and subtracting numbers. Understand multiplying one-digit numbers. Understand multiplying two-digit numbers.	Topic: Divide Multi-Digit Numbers. Understand factors, multiples, and patterns. Understand Fraction Equivalence and Comparison.	Topic: Add and Subtract Fractions. Multiply Whole Numbers and Fractions. Relate Fractions and Decimals.	Topic: Relate Fractions and Decimals. Understand Measurement Equivalence Use Perimeter and Area Formulas. Identify and Draw Lines and Angles. Identify Symmetry and Two-Dimensional Shapes
NJSLA Domain	4.NBT.A.1, 4.NBT.A.2, 4.NBT.A.3, 4.NBT.B.4, 4.NBT.B.5, 4.OA.A.1	4.NBT.B.6, 4.OA.A.2, 4.OA.A.3, 4.OA.B.4, 4.NF.A.1	4.NF.A.2, 4.NF.B.3, 4.NF.B.4, 4.NF.C.5, 4.NF.C.6, 4.NF.C.7	4.MD.A.1, 4.MD.A.2, 4.MD.A.3, 4.MD.B.4, 4.MD.C.5, 4.MD.C.6, 4.MD.C.7, 4.G.A.1, 4.G.A.2, 4.G.A.3
District Assessments	Big Ideas Chapter 1-4 Tests PreCourse Test Course Benchmark 1 Test	Big Ideas Chapter 5-7 Tests Course Benchmark 2 Test	Big Ideas Chapter 8-10 Tests	Big Ideas Chapter 11-14 Tests Course Benchmark 3 Test Post Course Test
NJSLS Technology	8.1.5.AP.1, 8.1.5.DA.3	8.1.5.AP.1, 8.1.5.DA.3	8.1.5.AP.1, 8.1.5.DA.3	8.1.5.AP.1, 8.1.5.DA.3
NJSLS Career Readiness Practices	9.2.5.CAP.6, 9.2.5.CAP.7	9.2.5.CAP.6, 9.2.5.CAP.7	9.2.5.CAP.6, 9.2.5.CAP.7	9.2.5.CAP.6, 9.2.5.CAP.7

9.1 Personal Financial Literacy Standards	9.1.5.CR.1 , 9.1.5.FL.1, 9.1.5.FP.1, 9.1.5.FP.3, 9.1.5.FP.4, 9.1.5.PB.1, 9.1.5.PB.2	9.1.5.CR.1 , 9.1.5.FL.1, 9.1.5.FP.1, 9.1.5.FP.3, 9.1.5.FP.4, 9.1.5.PB.1, 9.1.5.PB.2	9.1.5.CR.1 , 9.1.5.FL.1, 9.1.5.FP.1, 9.1.5.FP.3, 9.1.5.FP.4, 9.1.5.PB.1, 9.1.5.PB.2	9.1.5.CR.1 , 9.1.5.FL.1, 9.1.5.FP.1, 9.1.5.FP.3, 9.1.5.FP.4, 9.1.5.PB.1, 9.1.5.PB.2
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In Grade 4, instructional time should focus on three critical areas:

- (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends;
- (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers;
- (3) 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.

(1) Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

(2) Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., $15/9 = 5/3$), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

(3) Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry

Grade 4 Overview:

Operations and Algebraic Thinking

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

Number and Operations in Base Ten

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

Number and Operations—Fractions

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

Measurement and Data

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

Geometry

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

Mathematical Practices:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning

Social Emotional Learning (SEL) in MATHEMATICS:

Provide students with opportunities to express themselves through discussions that connect to each topic and allow them to explore their feelings about math. Thinking deeply about each topic will help students apply problem solving and critical thinking strategies that will help them reflect on their work and overall performance as well as confidence in mathematics.

- What parts of math make you feel successful?
- What can we learn from our mistakes?
- What self-talk can you use to help you persevere?
- What are positive ways to respond when math starts to feel challenging?
- What can friends say to help us feel better and more successful in math?
- What can we learn from our mistakes in math?
- How can you be a good group member?
- How will you help yourself get “unstuck?”
- Where or when can you use today’s math lesson when you are not in school?
- How do we respond if we don’t agree with someone’s answer or if we know the answer is incorrect?
- How do we feel about solving problems in a different way when asked?
- Did everyone get a fair chance to talk and/or use the manipulatives?

UNIT 1

Unit Summary	NJSL Standards	Essential Questions
<p>Understand place value. Understand adding and subtracting numbers. Understand multiplying one-digit numbers. Understand multiplying two-digit numbers. Understand dividing one-digit numbers. Understand factors, multiples, and patterns</p>	<p>4.NBT.A.1, 4.NBT.A.2, 4.NBT.A.3,4.NBT.B.4, 4.NBT.B.5, 4.NBT.B.6, 4.OA.A.1, 4.OA.A.2, 4.OA.A.3, 4.OA.B.4, 4.OA.C.5,</p>	<p>How can you use place value to compare, add, subtract, and estimate with whole numbers? What strategies can you use to multiply by 1-digit numbers? What strategies can you use to multiply 2-digit numbers? How can you divide 1-digit numbers? How can you find factors and multiples? How can you generate and describe number patterns?</p>

Learning Goals: Compare the value of two identical digits in a number. Read and write multi-digit numbers in multiple forms. Write a sum or difference. Solve addition and subtraction problems. Write multiplication problems. Solve a problem using an equation. Write multiplication problems. Solve a problem using an equation. Write and solve division problems. Compare the different features of different numbers and shapes. Apply an appropriate strategy to show relationships in numbers and shapes.

Fluency Expectations: Understand Place Value, Read and Write Multi-Digit numbers, Compare Multi-Digit Numbers, Round Multi-Digit Numbers, Add and Subtract Multi-Digit Numbers, Estimate Sums and Differences, Add Multi-Digit Numbers, Subtract Multi-Digit Numbers, Use Strategies to Add and Subtract, Problem Solving: Addition and Subtraction, Multiply by One-Digit Numbers, Understand Multiplicative Comparisons, Multiply Tens, Hundreds, and Thousands, Estimate Products by Rounding, Use the Distributive Property to Multiply, Use Expanded Form to Multiply, Use Partial Products to Multiply, Multiply Two-Digit Numbers by One-Digit Numbers, Multiply Three and Four Digit Numbers by One-Digit Numbers, Use Properties to Multiply, Problem Solving: Multiplication, Multiply by Two-Digit Numbers, Multiply by Tens, Estimate Products, Use Area Models to Multiply Two-Digit Numbers, Use the Distributive Property to Multiply Two-Digit Numbers, Use Partial Products to Multiply Two-Digit Numbers, Multiply Two-Digit Numbers, Practice Multiplication Strategies, Problem Solving: Multiplication with Two-Digit Numbers, Divide Tens, Hundreds, and Thousands, Estimate Quotients, Understand Division and Remainders, Divide Two-Digit Numbers by One-Digit Numbers, Divide Multi-Digit Numbers by One-Digit Numbers, Divide by One-Digit Numbers, Problem Solving: Division, Understand Factors, Relate Factors and Multiples, Identify Prime and Composite Numbers, Number Patterns, Shape Patterns

Modifications and Accommodations (ELL, SE, BSI, G&T, 504): Reteach and Enrichment activities from Big Ideas Math. Small group instruction. Use of manipulatives, visuals, and other teaching tools. Flexible grouping centers. Check for comprehension and understanding. Repeating, clarifying or rewording directions. Teacher modeling of what is expected and necessary steps to complete tasks. Provide students with open ended questions that stimulate higher order thinking. Tiered assignments.

Vocabulary: Vocabulary Practice, Vocabulary Cards

Resources: Big Ideas: Modeling Real Life

IXL Math

Khan Academy

Manipulatives

UNIT 2**Unit Summary**

Understand fractions. Understand adding and subtracting fractions. Understand multiplying whole numbers and fractions. Understand fractions and decimals.

NJSLS Standards

4.NF.A.1, 4.NF.A.2, 4.NF.B.3, 4.NF.B.4, 4.NF.C.5, 4.NF.C.6, 4.NF.C.7

Essential Questions

What strategies can you use to compare fractions and write equivalent fractions? How do you add or subtract fractions and mixed numbers that have the same denominator? How do you multiply fractions by whole numbers and mixed numbers? How can you record decimal notation for fractions, and compare decimal fractions? What strategies can you use when problem solving with fractions and decimals? How can you relate fractions and decimals to the hundredths place?

Learning Goals: Compare the numerators and denominators of two fractions. Find the factors of a number. Solve a problem using fractions. Model different types of fractions. Find the product of a whole number and a fraction. Compare two decimals. Justify the operation used to solve a problem.

Fluency Expectations: Model Equivalent Fractions, Generate Equivalent Fractions by Multiplying, Generate Equivalent Fractions by Dividing, Compare Fractions, Use Models to Add Fractions, Decompose Fractions, Add Fractions with Like Denominators, Use Models to Subtract Fractions, Subtract Fractions with Like Denominators, Add Mixed Numbers, Subtract Mixed Numbers, Problem Solving: Fractions, Multiply Whole Numbers and Fractions, Understand Multiples of Unit Fractions, Understand Multiples of Fractions, Multiply Whole Numbers and Fractions, Multiply Whole Numbers and Mixed Numbers, Problem Solving: Fraction Operations, Understand Tenths, Understand Hundredths, Compare Decimals, Add Decimal Fractions, Operations with Money

Modifications and Accommodations (ELL, SE, BSI, G&T, 504): Reteach and Enrichment activities from Big Ideas Math. Small group instruction. Use of manipulatives, visuals, and other teaching tools. Flexible grouping centers. Check for comprehension and

understanding. Repeating, clarifying or rewording directions. Teacher modeling of what is expected and necessary steps to complete tasks. Provide students with open ended questions that stimulate higher order thinking. Tiered assignments.

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Manipulatives

UNIT 3

Unit Summary	NJSL Standards	Essential Questions
Understand measurement and equivalence. Understand perimeter and area formulas. Understand lines and angles. Understand symmetry and two-dimensional shapes.	4.MD.A.1, 4.MD.A.2, 4.MD.A.3, 4.MD.B.4, 4.MD.C.5, 4.MD.C.6, 4.MD.C.7, 4.G.A.1, 4.G.A.2, 4.G.A.3	How can you draw and identify lines and angles? How can you classify shapes? How can you measure angles and solve problems involving angle measures? How can you use relative sizes of measurements to solve problems and to generate measurement tables that show a relationship? How can you use formulas for perimeter and area to solve problems?

Learning Goals: Compare sizes of units of length. Solve a problem using measurements. Compare perimeter and area. Model perimeter and area. Compare sizes of angles to create different patterns. Measure and draw angles. Compare angles and shapes. Draw different angles and shapes.

Fluency Expectations: Understand Length in Metric Units, Mass and Capacity in Metric Units, Length in Customary Units, Weight in Customary Units, Capacity in Customary Units, Make and Interpret Line Plots, Units of Time, Problem Solving: Elapsed Time, Use Perimeter and Area Formulas, Perimeter Formula for a Rectangle, Area Formula for a Rectangle, Find Unknown Measures, Problem Solving: Perimeter and Area, Identify and Draw Lines and Angles, Understand Degrees, Find Angle Measures, Measure and Draw Angles, Add Angle Measures, Find Unknown Angle Measures, Identify Symmetry and Two-Dimensional Shapes, Draw Symmetric Shapes, Classify Triangles by Sides, Classify Triangles by Angles, Classify Quadrilaterals

Modifications and Accommodations (ELL, SE, BSI, G&T, 504): Reteach and Enrichment activities from Big Ideas Math. Small group instruction. Use of manipulatives, visuals, and other teaching tools. Flexible grouping centers. Check for comprehension

and understanding. Repeating, clarifying or rewording directions. Teacher modeling of what is expected and necessary steps to complete tasks. Provide students with open ended questions that stimulate higher order thinking. Tiered assignments.

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