

**Ark Community Charter School
Math Curriculum Framework –Grade 4**

<u>Units</u>	<u>Suggested Pacing</u>	<u>New York State Content Standards</u>	<u>New York State Skills Standards</u>	<u>New York State Performance Indicators</u>	<u>Assessments (Formal/ including state assessments and Informal)</u>
What are your unit titles	When and in what order will the standards be taught and assessed?	What should students know?	What should students be able to do?	Indices of quality – What is the nature of the evidence required to demonstrate the standard has been met and the quality of the performance that will be deemed acceptable? All Key Ideas are (I) and (P) and (A) are marked in bold	What specific tools will be used to assess which content standard or skills standard at this grade level?
		Problem Solving Strand	Students will build new mathematical knowledge through problem solving. Students will solve problems that arise in mathematics and in other contexts.	<i>4.PS.1 Explore, examine, and make observations about a social problem or mathematical situation</i> <i>4.PS.2 Understand that some ways of representing a problem are more helpful than others</i> <i>4.PS.3 Interpret information correctly, identify the problem, and generate possible solutions</i> <i>4.PS.4 Act out or model with manipulatives activities involving mathematical content from literature</i>	<i>For all of the italicized problem solving strand performance indicators: They are assessed through a variety of methods; through teacher observation, one on one (or small group) consultation, student practice book, teacher checklist, Scott Foresman NYS section quizzes, and Scott Foresman NYS chapter tests.</i>

				<p><i>4.PS.5 Formulate problems and solutions from everyday situations</i></p> <p><i>4.PS.6 Translate from a picture/diagram to a numeric expression</i></p> <p><i>4.PS.7 Represent problem situations in oral, written, concrete, pictorial, and graphical forms</i></p> <p><i>4.PS.8 Select an appropriate representation of a problem</i></p> <p><i>4.PS.9 Use trial and error to solve problems</i></p> <p><i>4.PS.10 Use process of elimination to solve problems</i></p> <p><i>4.PS.11 Make pictures/diagrams of problems</i></p> <p><i>4.PS.12 Use physical objects to model problems</i></p> <p><i>4.PS.13 Work in collaboration with others to solve problems</i></p> <p><i>4.PS.14 Make organized lists to solve numerical problems</i></p> <p><i>4.PS.15 Make charts to solve numerical problems</i></p>	
--	--	--	--	---	--

			Students will apply and adapt a variety of appropriate strategies to solve problems.	<p><i>4.PS.16 Analyze problems by identifying relationships</i></p> <p><i>4.PS.17 Analyze problems by identifying relevant versus irrelevant information</i></p> <p><i>4.PS.18 Analyze problems by observing patterns</i></p> <p><i>4.PS.19 State a problem in their own words</i></p>	
			Students will monitor and reflect on the process of mathematical problem solving.	<p><i>4.PS.20 Determine what information is needed to solve a problem</i></p> <p><i>4.PS.21 Discuss with peers to understand a problem situation</i></p> <p><i>4.PS.22 Discuss the efficiency of different representations of a problem</i></p> <p><i>4.PS.23 Verify results of a problem</i></p> <p><i>4.PS.24 Recognize invalid approaches</i></p> <p><i>4.PS.25 Determine whether a solution is reasonable in the context of the original problem</i></p>	
		Reasoning and Proof Strand	Students will recognize reasoning and proof as fundamental aspects of mathematics	<p><i>4.RP.1 Use representations to support mathematical ideas</i></p> <p><i>4.RP.2 Determine whether a mathematical statement is true or false and explain why</i></p>	
			Students will recognize reasoning and proof as fundamental aspects of mathematics	<p><i>4.RP.1 Use representations to support mathematical ideas</i></p> <p><i>4.RP.2 Determine whether a mathematical statement is true or false and explain why</i></p>	
			Students will make	<i>4.RP.3 Investigate the use of</i>	

			and investigate mathematical conjectures.	<i>knowledgeable guessing by generalizing mathematical ideas</i> <i>4.RP.4 Make conjectures from a variety of representations</i>	
			Students will develop and evaluate mathematical arguments and proofs	<i>4.RP.5 Justify general claims or conjectures, using manipulatives, models, and expressions</i> <i>4.RP.6 Develop and explain an argument using oral, written, concrete, pictorial, and/or graphical forms</i> <i>4.RP.7 Discuss, listen, and make comments that support or reject claims made by other students</i>	
			Students will select and use various types of reasoning and methods of proof	<i>4.RP.8 Support an argument by trying many cases</i> <i>4.RP.9 Disprove an argument by finding counterexamples</i>	
The italicized communication strand performance indicators are done on a daily, or at least once a week	Daily or at least once a week.	<u>Communication Strand</u> •	Students will organize and consolidate their mathematical thinking through communication Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others.	<i>4.CM.1 Understand and explain how to organize their thought process</i> <i>4.CM.2 Verbally explain their rationale for strategy selection</i> <i>4.CM.3 Provide reasoning both in written and verbal form</i> <i>4.CM.4 Organize and accurately label work</i> <i>4.CM.5 Share organized mathematical ideas through the manipulation of objects, drawing, pictures, charts, graphs, tables, diagrams, models, symbols, and expressions in written and</i>	For all of the italicized communication strand performance indicators: They are assessed through a variety of methods; through teacher observation, one on one (or small group) consultation, student practice book, teacher checklist, Scott Foresman NYS section quizzes, and Scott Foresman NYS

basis throughout the year (every chapter).				<i>verbal form</i> 4.CM.6 Answer clarifying questions from others 4.CM.7 <i>Restate mathematical solutions shared by other students</i>	chapter tests.
			Students will analyze and evaluate the mathematical thinking and strategies of others.	4.CM.8 <i>Consider strategies used and solutions found in relation to their own work</i>	
			Students will use the language of mathematics to express mathematical ideas precisely.	4.CM.9 <i>Increase their use of mathematical vocabulary and language when communicating with others</i> 4.CM.10 <i>Describe objects, relationships, solutions, and rationale using appropriate vocabulary</i> 4.CM.11 <i>Decode and comprehend mathematical visuals and symbols to construct meaning</i>	

<p>The italicized connections strand performance indicators are done on a daily, or at least once a week basis throughout the year (every chapter).</p>	<p>Daily or at least once a week.</p>	<p><u>Connections Strand</u></p>	<p>Students will recognize and use connections among mathematical ideas.</p> <p>Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole.</p> <p>Students will recognize and apply mathematics in contexts outside of mathematics.</p>	<p><i>4.CN.1 Recognize, understand, and make connections in their everyday experiences to mathematical ideas</i></p> <p><i>4.CN.2 Compare and contrast mathematical ideas</i></p> <p><i>4.CN.3 Connect and apply mathematical information to solve problems</i></p> <p><i>4.CN.4 Understand multiple representations and how they are related</i></p> <p><i>4.CN.5 Model situations with objects and representations and be able to make observations</i></p> <p><i>4.CN.6 Recognize the presence of mathematics in their daily lives</i></p> <p><i>4.CN.7 Apply mathematics to solve problems that develop outside of mathematics</i></p> <p><i>4.CN.8 Recognize and apply mathematics to other disciplines</i></p>	<p>For all of the italicized connections strand performance indicators: They are assessed through a variety of methods; through teacher observation, one on one (or small group) consultation, student practice book, teacher checklist, Scott Foresman NYS section quizzes, and Scott Foresman NYS chapter tests.</p>
		<p><u>Number Sense</u></p>	<p>Students will understand numbers,</p>	<p><i>Number Systems</i> 4.N.1 Skip count by 1,000's</p>	

and Operations
Strand

multiple ways of representing numbers, relationships among numbers, and number systems.

4.N.2 Read and write whole numbers to 10,000

4.N.3 Compare and order numbers to 10,000

4.N.4 Understand the place value structure of the base ten number system: 10 ones = 1 ten

10 tens = 1 hundred

10 hundreds = 1 thousand

10 thousands = 1 ten thousand

4.N.5 Recognize equivalent representations for numbers up to four digits and generate them by decomposing and composing numbers

4.N.6 Understand, use, and explain the associative property of multiplication

4.N.7 Develop an understanding of fractions as locations on number lines and as divisions of whole numbers

4.N.8 Recognize and generate equivalent fractions (halves, fourths, thirds, fifths, sixths, and tenths) using manipulatives, visual models, and

				<p>illustrations</p> <p>4.N.9 Use concrete materials and visual models to compare and order unit fractions or fractions with the same denominator (with and without the use of a number line)</p> <p>4.N.10 Develop an understanding of decimals as part of a whole</p> <p>4.N.11 Read and write decimals to hundredths, using money as a context</p> <p>4.N.12 Use concrete materials and visual models to compare and order decimals (less than 1) to the hundredths place in the context of money</p>	
				<p><i>Number Theory</i></p> <p>4.N.13 Develop an understanding of the properties of odd/even numbers as a result of multiplication</p>	
			<p>Students will understand meanings of operations and procedures, and how they relate to one another.</p>	<p><i>Operations</i></p> <p>4.N.14 Use a variety of strategies to add and subtract numbers up to 10,000</p> <p>4.N.15 Select appropriate computational and operational methods to solve problems</p>	

				<p>4.N.16 Understand various meanings of multiplication and division</p> <p>4.N.17 Use multiplication and division as inverse operations to solve problems</p> <p>4.N.18 Use a variety of strategies to multiply two-digit numbers by one-digit numbers (with and without regrouping)</p> <p>4.N.19 Use a variety of strategies to multiply two-digit numbers by two-digit numbers (with and without regrouping)</p> <p>4.N.20 Develop fluency in multiplying and dividing multiples of 10 and 100 up to 1,000</p> <p>4.N.21 Use a variety of strategies to divide two-digit dividends by one-digit divisors (with and without remainders)</p> <p>4.N.22 Interpret the meaning of remainders</p> <p>4.N.23 Add and subtract proper fractions with common denominators</p> <p>4.N.24 Express decimals as an equivalent form of fractions to tenths and hundredths</p>	
--	--	--	--	---	--

				4.N.25 Add and subtract decimals to tenths and hundredths using a hundreds chart	
			Students will compute accurately and make reasonable estimates.	<i>Estimation</i> 4.N.26 Round numbers less than 1,000 to the nearest tens and hundreds 4.N.27 Check reasonableness of an answer by using estimation	
		<u>Algebra Strand</u>	Students will represent and analyze algebraically a wide variety of problem solving situations.	<i>Variables and Expressions</i> 4.A.1 Evaluate and express relationships using open sentences with one operation	
			Students will perform algebraic procedures accurately	<i>Equations and Inequalities</i> 4.A.2 Use the symbols $<$, $>$, $=$, and \neq (with and without the use of a number line) to compare whole numbers and unit fractions and decimals (up to hundredths) 4.A.3 Find the value or values that will make an open sentence true, if it contains $<$ or $>$	
			Students will recognize, use, and represent algebraically patterns, relations, and functions.	<i>Patterns, Relations, and Functions</i> 4.A.4 Describe, extend, and make generalizations about numeric(+, -, \times, \div) and geometric patterns	

				4.A.5 Analyze a pattern or a whole-number function and state the rule, given a table or an input/output box	
		<u>Geometry Strand</u>	Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes.	<i>Shapes</i> 4.G.1 Identify and name polygons, recognizing that their names are related to the number of sides and angles (triangle, quadrilateral, pentagon, hexagon, and octagon) 4.G.2 Identify points and line segments when drawing a plane figure 4.G.3 Find perimeter of polygons by adding sides 4.G.4 Find the area of a rectangle by counting the number of squares needed to cover the rectangle 4.G.5 Define and identify vertices, faces, and edges of three-dimensional shapes	
			Students will identify and justify geometric relationships, formally and informally	<i>Geometric Relationships</i> 4.G.6 Draw and identify intersecting, perpendicular, and parallel lines 4.G.7 Identify points and rays when drawing angles 4.G.8 Classify angles as acute, obtuse, right, and straight	
		<u>Measurement Strand</u>	Students will determine what can be measured and how, using appropriate	<i>Units of Measurement</i> 4.M.1 Select tools and units (customary and metric) appropriate for the length being measured	

		•	methods and formulas	<p>4.M.2 Use a ruler to measure to the nearest standard unit (whole, $\frac{1}{2}$ and $\frac{1}{4}$ inches, whole feet, whole yards, whole centimeters, and whole meters)</p> <p>4.M.3 Know and understand equivalent standard units of length: 12 inches = 1 foot 3 feet = 1 yard</p> <p>4.M.4 Select tools and units appropriate to the mass of the object being measured (grams and kilograms)</p> <p>4.M.5 Measure mass, using grams</p> <p>4.M.6 Select tools and units appropriate to the capacity being measured (milliliters and liters)</p> <p>4.M.7 Measure capacity, using milliliters and liters</p>	
			Students will use units to give meaning to measurements.	<p><i>Units</i></p> <p>4.M.8 Make change, using combined coins and dollar amounts</p> <p>4.M.9 Calculate elapsed time in hours and half hours, not crossing A.M./P.M.</p> <p>4.M.10 Calculate elapsed time in days and weeks, using a calendar</p>	

		<u>Statistics and Probability Strand</u>	Students will collect, organize, display, and analyze data	<i>Collection of Data</i> 4.S.1 Design investigations to address a question from given data 4.S.2 Collect data using observations, surveys, and experiments and record appropriately	
				<i>Organization and Display of Data</i> 4.S.3 Represent data using tables, bar graphs, and pictographs	
				<i>Analysis of Data</i> 4.S.4 Read and interpret line graphs	
			Students will make predictions that are based upon data analysis	<i>Predictions from Data</i> 4.S.5 Develop and make predictions that are based on data 4.S.6 Formulate conclusions and make predictions from graphs	
<u>Chapter One</u> Place Value and Money	15 Days			4.N.1 Skip count by 1,000's 4.N.2 Read and write whole numbers to 10,000 4.N.3 Compare and order numbers to 10,000 4.N.4 Understand the place value structure of the base ten number	Scott Foresman Program NYS Test 1/3 Quiz A 2/3 Quiz B Chapter Test Informal small group assessment daily

				<p>system:</p> <p>10 ones = 1 ten</p> <p>10 tens = 1 hundred</p> <p>10 hundreds = 1 thousand</p> <p>10 thousands = 1 ten thousand</p> <p>4.N.5 Recognize equivalent representations for numbers up to four digits and generate them by decomposing and composing numbers</p> <p>4.A.4 Describe, extend, and make generalizations about numeric and geometric patterns.</p> <p>4.N.15 Select appropriate computational and operational methods to solve problems</p> <p>4.A.2 Use the symbols $<$, $>$, $=$, and \neq (with and without the use of a number line) to compare whole numbers and unit fractions and decimals (up to hundredths)</p> <p>4.A.3 Find the value or values that will make an open sentence true, if it contains $<$ or $>$</p> <p>4.N.26 Round numbers less than 1,000 to the nearest tens and hundreds</p> <p>4.N.15 Select appropriate</p>	<p>Math Practice Book Homework assessed daily</p> <p>Daily Spiral Test Prep Math journal writing weekly</p>
--	--	--	--	--	---

				<p>computational and operational methods to solve problems</p> <p>4.N.11 Read and write decimals to hundredths, using money as a context</p> <p>4.M.8 Make change, using combined coins and dollar amounts</p> <p>4.N.24 Express decimals as an equivalent form of fractions to tenths and hundredths</p> <p>4.N.27 Check reasonableness of an answer by using estimation</p>	
<p><u>Chapter 2</u></p> <p>Adding and Subtracting Whole Numbers and Money</p>				<p>4.N.14 Use a variety of strategies to add and subtract numbers up to 10,000</p> <p>4.N.27 Check reasonableness of an answer by using estimation <i>Patterns, Relations, and Functions</i></p> <p>4.A.4 Describe, extend, and make generalizations about numeric(+, -, ×, ÷) and geometric patterns</p> <p>4.A.5 Analyze a pattern or a whole-number function and state the rule, given a table or an input/output box</p> <p>4.N.15 Select appropriate computational and operational methods to solve problems</p>	<p>Scott Foresman Program NYS Test</p> <p>1/3 Quiz A 2/3 Quiz B</p> <p>Chapter Test</p> <p>Informal small group assessment daily</p> <p>Math Practice Book Homework assessed daily</p> <p>Daily Spiral Test Prep Math journal writing weekly</p>

<p><u>Chapter 3</u></p> <p>Multiplication and Division Concepts and Facts</p>	<p>16 Days</p>			<p>4.N.16 Understand various meanings of multiplication and division <i>Number Theory</i></p> <p>4.N.13 Develop an understanding of the properties of odd/even numbers as a result of multiplication <i>Functions</i></p> <p>4.A.4 Describe, extend, and make generalizations about numeric(+, -, ×, ÷) and geometric patterns</p> <p>4.A.5 Analyze a pattern or a whole-number function and state the rule, given a table or an input/output box</p> <p>4.S.3 Represent data using tables, bar graphs, and pictographs</p> <p>4.N.15 Select appropriate computational and operational methods to solve problems</p> <p>4.N.16 Understand various meanings of multiplication and division</p> <p>4.N.17 Use multiplication and division as inverse operations to solve problems</p> <p>4.A.1 Evaluate and express relationships using open sentences with one operation</p>	<p>Scott Foresman Program NYS Test</p> <p>1/3 Quiz A 2/3 Quiz B</p> <p>Chapter Test</p> <p>Informal small group assessment daily</p> <p>Math Practice Book Homework assessed daily</p> <p>Daily Spiral Test Prep Math journal writing weekly</p>
<p><u>Chapter 4</u></p>					
<p><u>Chapter 5</u></p>					
<p><u>Chapter 6</u></p>					
<p><u>Chapter 7</u></p>					

