

## Grade 4: Math Expressions Common Core

Little Chute  
Mathematics  
Grade 4

### Course Overview

**Math Expressions** incorporate the best practices of both traditional and reform mathematics curricula. The program strikes a balance between promoting student-generated solution methods and introducing effective research-based methods. **Math Expressions** fits the learning progressions, the core-grade-level goals, and the dual focus on understanding and fluency of the Common Core State Content Standards.

### Scope and Sequence

Timeframe	Unit	Instructional Topics
Ongoing	<a href="#">Building the Math Community</a>	<ol style="list-style-type: none"> <li>1. Math Talk Community</li> <li>2. Inquiry Learning Path</li> <li>3. Student Focus</li> <li>4. Learning Path Teaching</li> </ol>
20 Day(s)	<a href="#">Unit 1- Place Value and Multidigit Addition and Subtraction</a>	<ol style="list-style-type: none"> <li>1.1: Preview and Pre-Assess</li> <li>1.2: Place Value to One Million</li> <li>1.3: Addition with Greater Numbers</li> <li>1.4: Subtraction with Greater Numbers</li> <li>1.5: Review and Assess</li> </ol>
26 Day(s)	<a href="#">Unit 2- Multiplication with Whole Numbers</a>	<ol style="list-style-type: none"> <li>2.1: Preview and Pre-Assess</li> <li>2.2: Multiplication with Tens and Hundreds (Whole Numbers)</li> <li>2.3: Multiply by One-Digit Numbers</li> <li>2.4: Multiplication with Two-Digit Numbers</li> <li>2.5: Multiplication with Greater Numbers</li> <li>2.6: Review and Assess</li> </ol>
17 Day(s)	<a href="#">Unit 3- Division with Whole Numbers</a>	<ol style="list-style-type: none"> <li>3.1: Preview and Pre-Assess</li> <li>3.2: Dividing Whole Numbers</li> <li>3.3: Division Issues and Word Problems</li> <li>3.4: Review and Assess</li> </ol>
20 Day(s)	<a href="#">Unit 4- Equations and Word Problems</a>	<ol style="list-style-type: none"> <li>4.1: Preview and Pre-Assess</li> <li>4.2: Reasoning and Solving Problems</li> <li>4.3: Comparison Word Problems</li> <li>4.4: Problems with More Than One Step</li> <li>4.5: Analyzing Patterns</li> </ol>

		4.6: Review and Assess
<b>13 Day(s)</b>	<a href="#">Unit 5- Measurement</a>	5.1: Preview and Pre-Assess 5.2: Converting Measurement 5.3: Perimeter and Area 5.4: Review and Assess
<b>16 Day(s)</b>	<a href="#">Unit 6- Fraction Concepts and Operations</a>	6.1: Preview and Pre-Assess 6.2: Fractions with Like Denominators 6.3: Mixed Numbers with Like Denominators 6.4: Multiply Fractions and Whole Numbers 6.5: Review and Assess
<b>19 Day(s)</b>	<a href="#">Unit 7- Fractions and Decimals</a>	7.1: Preview and Pre-Assess 7.2: Comparing Fractions 7.3: Equivalent Fractions 7.4: Exploring Decimals 7.5: Review and Assess
<b>19 Day(s)</b>	<a href="#">Unit 8- Geometry</a>	8.1: Preview and Pre-Assess 8.2: Measuring and Drawing Angles 8.3: Triangles and Angle Measurement 8.4: Analyzing Quadrilaterals 8.5: Analyzing Polygons 8.6: Review and Assess

## UNIT: Building the Math Community

**Duration of Unit: ONgoing**

**Description of Unit:** Effective Math Talk cannot be implemented into a classroom overnight. A teacher must work his or her students up to Level 3 Math Talk over time. It often takes two to three months to build the community.

**Essential Questions and/or Enduring Understandings:**

1. Math Talk Community
2. Inquiry Learning Path
3. Student Focus
4. Learning Path Teaching

ESSENTIAL Standards	Topics	Learning Targets
	<b>1.</b>	Students will participate in frequent collaborative conversations.
		Students will solve, discuss, question and justify at the board.
		Students will solve, discuss, question and justify in small groups.
		Students will solve, discuss, question and justify in pairs.
	<b>2.</b>	Students will participate in guided instruction.
		Students will demonstrate sense-making.
		Students will gain math fluency.
		Students will maintain fluency and relate to later topics and skills.
	<b>3.</b>	Students will demonstrate math leadership.
		Students will participate in frequent collaborative conversations.
	<b>4.</b>	Students will explore and explain student-generated methods.

		Students will explain and grow in math fluency.
		Students will demonstrate math fluency and proficiency.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 1: Place Value and Multi-Digit Addition and Subtraction

**Duration of Unit: 20 Day(s)**

**Description of Unit:** Students use place value to compare and round multi digit numbers. They use place value concepts and grouping and ungrouping methods to add and subtract multi digit numbers.

**Essential Questions and/or Enduring Understandings:**

- 1.1: Preview and Pre-Assess
- 1.2: Place Value to One Million
- 1.3: Addition with Greater Numbers
- 1.4: Subtraction with Greater Numbers
- 1.5: Review and Assess

**Essential Standards:**

- I can identify and read place value up to one million and know the value of each digit in a number.
- I can round a number up to the hundred thousand place value.
- I can add multi-digit numbers up to the hundred thousand place value.
- I can subtract multi-digit numbers up to the hundred thousand place value.

ESSENTIAL Standards	Topics	Learning Targets
	<b>1.1</b>	Students will demonstrate prior knowledge of place value.
		Students will demonstrate prior knowledge of addition and subtraction.

		Students will add four-digit numbers.
	<b>1.2</b>	Students will identify the place value of numbers through thousands.
		Students will read, write and model numbers to thousands.
		Students will round and compare multi digit whole numbers by value of the digit in each place.
		Students will identify the place value of numbers to one million.
		Students will compare and round multi digit whole numbers.
		Students will complete formative assessment - Quick Quiz 1.
	<b>1.3</b>	Students will add four-digit numbers.
		Students will add multi digit numbers.
		Students will add using estimation and mental math.
		Students will complete formative assessment - Quick Quiz 2.
	<b>1.4</b>	Students will subtract multi digit whole numbers.
		Students will relate subtraction to addition.
		Students will use methods for ungrouping to subtract any size numbers.
		Students will add and subtract multi digit numbers.
		Students will solve addition and subtraction word problems with greater numbers.
		Students will practice a variety of real world problem-solving situations.
		Students will complete formative assessment - Quick Quiz 3.
	<b>1.5</b>	Students will read, write and identify the place value of numbers through 1,000,000.
		Students will identify and describe place value patterns.

		Students will compare and round multi digit numbers.
		Students will add and subtract multi digit numbers.
		Students will solve real-world problems.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 2: Multiplication with Whole Numbers

**Duration of Unit: 26 Day(s)**

**Description of Unit:** Students use place value, area models, and numerical methods to multiply one-digit numbers by two-, three-, and four-digit numbers. They also solve two-digit by two-digit multiplication problems.

**Essential Questions and/or Enduring Understandings:**

- 2.1: Preview and Pre-Assess
- 2.2: Multiplication with Tens and Hundreds (Whole Numbers)
- 2.3: Multiply by One-Digit Numbers
- 2.4: Multiplication with Two-Digit Numbers
- 2.5: Multiplication with Greater Numbers
- 2.6: Review and Assess

**Essential Standards:**

- I can multiply a four-digit number by a one-digit number.
- I can multiply a two-digit number by a two-digit number using any method.

ESSENTIAL Standards	Topics	Learning Targets
	<b>2.1</b>	Students will demonstrate prior knowledge of multiplication with whole numbers.

	<b>2.2</b>	Students will use area models for multiplication of ones and tens.
		Students will use place value understanding to multiply tens.
		Students will use patterns in multiplication with ones, tens, and hundreds.
		Students will complete formative assessment - Quick Quiz 1.
	<b>2.3</b>	Students will represent one-digit by two-digit multiplication, using area models.
		Students will use estimation and multiplication with tens to check products and solve real world problems.
		Students will relate the area model of multiplication to numerical methods of multiplication.
		Students will relate the Distributive Property to multiplication.
		Students will use area models and numerical methods of multiplication.
		Students will model one-digit by three-digit multiplication.
		Students will solve real-world problems.
		Students will complete formative assessment - Quick Quiz 2.
	<b>2.4</b>	Students will represent two-digit by two-digit multiplication, using area models.
		Students will use different methods of two-digit by two-digit multiplication.
		Students will compare methods of multiplication and estimate products of two-digit numbers.
		Students will practice two-digit by two-digit multiplication.
		Students will complete formative assessment - Quick Quiz 3.
	<b>2.5</b>	Students will multiply with thousands.
		Students will multiply one-digit numbers by four-digit numbers.
		Students will perform multi digit multiplication with up to one-digit by four-digits.

		Students will practice in a variety of real world problem-solving situations.
		Students will complete formative assessment - Quick Quiz 4.
	<b>2.6</b>	Students will solve multiplication problems using mental math.
		Students will multiply with one-digit whole numbers.
		Students will estimate products.
		Students will multiply with a two-digit number.
		Students will solve real world multi step word problems.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 3: Division with Whole Numbers

**Duration of Unit: 17 Day(s)**

**Description of Unit:** In this unit, students adapt methods they learned for multiplying to divide with whole numbers. They interpret quotients and remainders in the context of real world problems.

**Essential Questions and/or Enduring Understandings:**

- 3.1: Preview and Pre-Assess
- 3.2: Dividing Whole Numbers
- 3.3: Division Issues and Word Problems
- 3.4: Review and Assess

**Essential Standards:**

I can divide a dividend up to four digits by a one-digit divisor using any method.



ESSENTIAL Standards	Topics	Learning Targets
	<b>3.1</b>	Students will demonstrate prior knowledge and application of division with whole numbers.
	<b>3.2</b>	Students will divide with remainders; use multiplication patterns to divide zeros.
		Students will use multiplication methods to divide.
		Students will divide with 2-digit and 4-digit quotients.
		Students will use the Digit-by-Digit Method to divide.
		Students will divide with 4-digit dividends.
		Students will solve division problems by using any method.
		Students will complete formative assessment - Quick Quiz 1.
	<b>3.3</b>	Students will determine the correct-size multiplier for a division quotient.
		Students will use rounding and estimation to check quotients.
		Students will explore different ways to interpret remainders in division.
		Students will solve word problems with mixed operations.
		Students will practice in a variety of real world problem-solving situations
		Students will complete formative assessment - Quick Quiz 2.
	<b>3.4</b>	Students will divide with up to four-digit dividends and one-digit divisors.
		Students will use rounding and estimating to check quotients.
		Students will use remainders and division to interpret remainders in the context of a problem.
		Students will solve one-step and multistep problems.
		Students will solve real world problems.

NICE TO KNOW Standards		Learning Targets

## UNIT 4: Equations and Word Problems

**Duration of Unit: 20 Day(s)**

**Description of Unit:** Students write and solve equations to solve real world problems involving addition, subtraction, multiplication, and division. They also find factors and multiples of whole numbers, and identify and extend numerical and geometric patterns.

**Essential Questions and/or Enduring Understandings:**

- 4.1: Preview and Pre-Assess
- 4.2: Reasoning and Solving Problems
- 4.3: Comparison Word Problems
- 4.4: Problems with More Than One Step
- 4.5: Analyzing Patterns
- 4.6: Review and Assess

**Essential Standards:**

No specific standards selected from this unit.

ESSENTIAL Standards	Topics	Learning Targets
	<b>4.1</b>	Students will write, solve and compare addition and multiplication comparison problems.
	<b>4.2</b>	Students will demonstrate an application of properties and algebraic notation.
		Students will read, write, and solve addition and subtraction equations.

		Students will write equations to solve multiplication and division problems.
		Students will complete formative assessment - Quick Quiz 1.
	<b>4.3</b>	Students will write and solve multiplication and division equations for comparison problems.
		Students will write and solve multiplication and division equations for comparison problems.
		Students will write, solve and compare addition and multiplication comparison problems.
		Students will answer comparison questions about a pictograph and a bar graph.
		Students will complete formative assessment - Quick Quiz 2.
	<b>4.4</b>	Students will use equations to solve two-step word problems involving all four operations.
		Students will use equations to solve mult-istep word problems involving all four operations.
		Students will use addition, subtraction, multiplication, and division to solve problems that involve more than one step.
		Students will complete formative assessment - Quick Quiz 3.
	<b>4.5</b>	Students will practice with factors, multiples and prime and composite numbers.
		Students will generate number or shape patterns.
		Students will practice in a variety of real world problem-solving situations.
		Students will complete formative assessment - Quick Quiz 4.
	<b>4.6</b>	Students will evaluate expressions and solve equations with parentheses.
		Students will write an equation to solve a problem.
		Students will solve comparison problems; interpret a pictograph and a bar graph.
		Students will solve multistep word problems.
		Students will find factor pairs and determine whether a number is prime or composite; recognize

		multiples.
		Students will identify and extend numerical, repeating, and growing patterns.
		Students will solve real world problems.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 5: Equations and Word Problems

**Duration of Unit: 13 Day(s)**

**Description of Unit:** Students develop their understanding of U.S. Customary and metric measurement units, including converting from larger units to smaller units. Students apply their knowledge to area and perimeter formulas.

**Essential Questions and/or Enduring Understandings:**

- 5.1: Preview and Pre-Assess
- 5.2: Converting Measurement
- 5.3: Perimeter and Area
- 5.4: Review and Assess

**Essential Standards:**

No specific standards selected from this unit.

ESSENTIAL Standards	Topics	Learning Targets
	<b>5.1</b>	Students will demonstrate prior knowledge of use and application metric and customary units.
	<b>5.2</b>	Students will explore the system of metric units of length.
		Students will recognize metric units of liquid volume and mass.

		Students will measure metric units of liquid volume and mass.
		Students will solve problems involving different units of time.
		Students will apply knowledge of customary units of length.
		Students will solve real world problems.
	<b>5.3</b>	Students will explore the general methods for finding the perimeter and area of rectangles.
		Students will solve real world measurement word problems involving all four operations.
		Students will practice in a variety of real world problem-solving situations.
	<b>5.4</b>	Students will convert metric units.
		Students will solve problems involving time.
		Students will convert customary units of measure.
		Students will solve perimeter and area problems.
		Students will solve real world problems.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 6: Fraction Concepts and Operations

**Duration of Unit: 16 Day(s)**

**Description of Unit:** This unit introduces basic fraction concepts and building fractions from unit fractions. Students apply fraction concepts to add and subtract fractions and mixed numbers with like denominators and multiply whole numbers by fractions.

**Essential Questions and/or Enduring Understandings:**

- 6.1: Preview and Pre-Assess
- 6.2: Fractions with Like Denominators
- 6.3: Mixed Numbers with Like Denominators
- 6.4: Multiply Fractions and Whole Numbers
- 6.5: Review and Assess

**Essential Standards:**

- I can add mixed numbers with like denominators.
- I can subtract mixed numbers with like denominators.

ESSENTIAL Standards	Topics	Learning Targets
	6.1	Students will demonstrate prior knowledge of how to solve problems involving addition, subtraction, multiplication and division of fractions and mixed numbers.
		Students will demonstrate prior knowledge of how to solve problems involving line plots.
	6.2	Students will recognize fractions as sums of unit fractions.
		Students will find pairs of fractions that add to one.
		Students will add and subtract fractions with like denominators.
	6.3	Students will recognize mixed numbers and fractions greater than one.
		Students will perform addition and subtraction with fractions greater than one and mixed numbers.
		Students will solve problems involving addition and subtraction of fractions and mixed numbers.
	6.4	Students will demonstrate multiplication of fractions by whole numbers.
		Students will solve problems that require multiplying a fraction by a whole number.
		Students will practice operations with fractions.
		Students will practice in a variety of real world problem-solving situations.

	<b>6.5</b>	Students will express a fraction as a sum of other fractions and as a product of a whole number and a unit fraction.
		Students will add and subtract fractions and mixed numbers with like denominators.
		Students will multiply unit and non-unit fractions by whole numbers.
		Students will solve real world problems, including problems involving line plots.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 7: Fractions and Decimals

**Duration of Unit: 19 Day(s)**

**Description of Unit:** Students compare fractions with like and unlike denominators. They model related fractions, mixed numbers, and decimals.

**Essential Questions and/or Enduring Understandings:**

- 7.1: Preview and Pre-Assess
- 7.2: Comparing Fractions
- 7.3: Equivalent Fractions
- 7.4: Exploring Decimals
- 7.5: Review and Assess

**Essential Standards:**

- I can generate equivalent fractions.
- I can compare fractions with unlike numerators and/or denominators using  $<$ ,  $>$ , or  $=$ .
- I can read and write decimal notations with fractions with denominators of 10 or 100.
- I can order and compare decimals to the hundredths place using  $<$ ,  $>$ , or  $=$ .

ESSENTIAL Standards	Topics	Learning Targets
	<b>7.1</b>	Students will demonstrate prior knowledge, comparison and application of fractions and decimals.
	<b>7.2</b>	Students will compare unit fractions.
		Students will use the number-line model for fractions.
		Students will recognize that the size of a fraction depends on the size of the whole.
	<b>7.3</b>	Students will find equivalent fractions using multiplication.
		Students will find equivalent fractions using division.
		Students will compare fractions with unlike denominators.
		Students will make and use line plots with fractions.
	<b>7.4</b>	Students will model-related fractions, decimals, and mixed numbers.
		Students will recognize equivalent tenths and hundredths.
		Students will model decimal numbers in tenths and in hundredths.
		Students will write decimals in tenths and in hundredths.
		Students will compare decimals in tenths and in hundredths.
		Students will read, write and model decimals greater than one.
		Students will compare decimal numbers.
		Students will practice in a variety of real world problem-solving situations.
	<b>7.5</b>	Students will write fractions in equivalent forms.
		Students will compare fractions.
		Students will read and make a line plot.



		Students will compare decimals.
		Students will recognize and relate fractions, decimals and word forms.
		Students will solve real world problems.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>

## UNIT 8: Geometry

**Duration of Unit: 19 Day(s)**

**Description of Unit:** In Unit 8, students classify and draw angles, triangles, and quadrilaterals. They identify and draw parallel and perpendicular lines, as well as, lines of symmetry in geometric figures.

**Essential Questions and/or Enduring Understandings:**

- 8.1: Preview and Pre-Assess
- 8.2: Measuring and Drawing Angles
- 8.3: Triangles and Angle Measurement
- 8.4: Analyzing Quadrilaterals
- 8.5: Analyzing Polygons

8.6: Review and Assess

**Essential Standards:**

I can accurately measure angles in degrees using a protractor.

I can draw and label lines, line segments, rays, and angles (right, acute, obtuse).

ESSENTIAL Standards	Topics	Learning Targets
	8.1	Students will demonstrate prior knowledge and application of lines, angles, degrees and symmetry for various geometric shapes.
	8.2	Students will describe and draw points, rays, angles, and other simple geometric figures.
		Students will draw and measure angles.
		Students will identify, measure and draw angles in a circle.
	8.3	Students will draw and classify triangles by their angles and sides.
		Students will find unknown angle measures.
		Students will add and subtract angle measures in real world situations.
	8.4	Students will compare and contrast parallel and perpendicular figures.
		Students will name and classify quadrilaterals based on sides and angles.
		Students will decompose quadrilaterals and triangles into other figures.
	8.5	Students will sort triangles and quadrilaterals by number of different rules.
		Students will recognize lines of symmetry.
		Students will draw lines of symmetry.
		Students will determine when figures have a line of symmetry.
		Students will practice in a variety of real world problem-solving situations.

	<b>8.6</b>	Students will draw and identify points, lines, line segments, rays, perpendicular lines, and parallel lines.
		Students will draw, classify, and measure angles; measure angles in a circle.
		Students will classify two-dimensional figures by their angles and sides.
		Students will use an addition and subtraction equation to find an unknown angle measure.
		Students will solve real world addition and subtraction problems involving angle measures.
		Students will draw and identify lines of symmetry.
<b>NICE TO KNOW Standards</b>		<b>Learning Targets</b>