Fourth Grade End of Year Expectations
NUMERACY

By the end of the year students meeting grade level expectation will be able to:

Standards for Mathematical Practice	
Makes sense of problems and perseveres in solving them	Know that doing mathematics involves solving problems and discussing how they solved them. Explain to themselves the meaning of a problem and look for ways to solve it. Use concrete objects or pictures to help them conceptualize and solve problems. Check their thinking by asking themselves, "Does this make sense?". They listen to the strategies of others and will try different approaches. Use another method to check their answers.
Discusses and critiques own and other's reasoning, representations and strategies	Construct arguments using concrete representations, such as objects, pictures, and drawings. Explain thinking and make connections between models and equations. Refine mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?" and "Why is that true?". Explain their thinking to others and respond to others' thinking through discussions and written responses.
Communicates reasoning using clear and precise language, vocabulary, and notation	Develop their mathematical communication skills, by using clear and precise language in their discussions with others and in their own reasoning. Are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, they use appropriate labels when creating a line plot.
Operations and Algebraic Thinking	
Uses the four operations with whole numbers to solve problems	Use quantitative reasoning to solve single- and multi-step problems that include all four operations using models, pictures, words and numbers. Interpret remainders within division contexts. Use various representations and models. Use estimation strategies to think about whether the solution to a problem is reasonable. Look for efficiency in computation.

Fourth Grade End of Year Expectations
NUMERACY

Operations and Algebraic Thinking (continued)	
Gains familiarity with factors and multiples	Build an understanding of factors, by composing and decomposing numbers through arrays, fluency with basic facts and extending to factor pairs beyond the basic facts. Understand and explain how multiples and factors are related. List multiples of a given number by skip counting and other strategies. Identify and define prime and composite numbers, and use patterns to make and justify generalizations.
Generates and analyzes patterns	Reason about similarities and generate rules to describe numerical and geometric patterns. Develop lists of numbers given a rule and describe any patterns in the list using appropriate vocabulary. Extend and describe patterns found, making generalizations when appropriate.
Numbers in Base Ten	
Generalizes place value understanding for multi-digit whole numbers	Understand the relationship among places in numbers, and use that understanding to read, write and say numbers up to 1,000,000. Write numbers in expanded notation. Compare numbers using <, >, and = symbols by focusing on the values of digits in any given place. Use rounding in a variety of situations, including estimation and problem solving situations.
Uses place value understanding and properties of operations to perform multi-digit arithmetic	Apply understanding of operations built in previous grades to add and subtract multi-digit numbers, multiply a one-digit number by a number up to four digits, as well as multiply a two-digit by a two-digit number. Use a variety of models (array and area models) and strategies to represent and explain multiplication and division situations. Apply and extend strategies to develop accurate and efficient procedures.

Fourth Grade End of Year Expectations
NUMERACY

Number and Operations - Fractions	
Extends understanding of fraction equivalence and ordering	Recognize equivalent fractions, and using fraction equivalence, generalize patterns to develop rules for finding equivalent fractions. Compare fractions with different numerators and denominators using a variety of representations including concrete models, benchmarks, common denominators and common numerators.
Builds fractions from unit fractions by applying and extending previous understandings of operations on whole numbers	Understand fractions as numbers composed of unit fractions (e.g. $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$). Understand fractions greater than 1 can be expressed as mixed numbers (e.g. $\frac{12}{5} = \frac{5}{5} + \frac{5}{5} + \frac{2}{5} = 2\frac{2}{5}$). Use concrete materials and pictures to solve a variety of problems involving addition and subtraction of fractions and mixed numbers, connecting the models to equations. Connect understanding of whole number multiplication to model and explain multiplying a fraction by a whole number using pictures, words and numbers. Solve a variety of problems involving multiplication of a fraction by a whole number using models (i.e. area models, fraction strips and number lines) and explain their reasoning using models, pictures, words and numbers.
Understands decimal notation for fractions, and compares decimal fractions	Build equivalent fractions with tenths and hundredths. Represent fractions in decimal notation and understand that they are two different ways of writing the same quantity ($\frac{1}{10}$ and 0.1 mean the same amount when referring to the same whole). Model, read and write decimals numbers through the hundredths place. Compare decimals using physical models, including comparing tenths to tenths, hundredths to hundredths, and tenths to hundredths. Explain reasoning using models, pictures, numbers and/or words.

Fourth Grade End of Year Expectations
NUMERACY

Measurement and Data	
Solves problems involving measurement and conversion of measurement	Understand the relationship between units within one system of measurement (standard and metric). Express measurements in a larger unit in terms of a smaller unit (e.g. 24 inches = 2 feet; 100 cm = 1 m). Solve measurement word problems including the operations of addition, subtraction, multiplication and division. Represent measurement quantities using diagrams such as number line diagram that feature a measurement scale.
Represents and interprets data	Create line plots to show a data set of objects with fractional measurements of $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$).
Understands concepts of angle and measures angles	Construct angles out of materials or sketches, including acute, obtuse, and right angles and describe them. Measure angles using a protractor. Recognize angles as geometric shapes formed wherever two rays share a common endpoint and sketch angles of specified measure.
Geometry	
Draws and identifies lines and angles, and classifies shapes	Identify, describe, and draw points, lines, line segments, rays, angles, and perpendicular and parallel lines and identify these in two dimensional shapes. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence of absence of angles of a specified size. Identify the relationship among quadrilaterals based on the number of sides, opposite sides, side lengths and angle measurement. Classify and sort shapes. Draw and identify lines of symmetry within two dimensional shapes.