Grade 4 Math KUDs

Unit KUDs	Number corner KUDs
• Unit 1: Multiplicative Thinking • Unit 2: Multi Digit Multiplication & Early Division • **Unit 3: Fractions & Decimals** • **Unit 4: Addition, Subtraction, & Measurement** • **Unit 5: Geometry & Measurement** • Unit 6: Multiplication & Division, Data, Fractions • Unit 7:Reviewing & Extending Fractions, Decimals & Multi-Digit Multiplication • **Unit 8: Playground Design**	• September-October • **November - January** • **February - March** • **April - May**

Know	Understand	Do
• "Times as many" • Multiplicative comparison • Factor • Product • Array • Area • Area Model • Dimension • Multiply • Open number line • Quotient • Distributive property • Remainders • Interpret • Dividend • Divisor • Equation • Fraction • Unit Fraction • Equivalent • Benchmark Fractions	The language "times as much" (many, tall or long) is representing how many of a single sized unit fits inside a larger unit. In an equation expressing multiplicative comparison, the product is a multiple of each of the other values. Additive comparison is how many more (extra); multiplicative comparison is how many times more. Multiplication and division are inverse operations. A number of groups with an equal number of items in each group can be represented as rows and columns in an array or the dimensions of an area model. When using arrays or area models, the product	I can use the following to represent multiplicative comparison: Physical model, visual representation, equation, verbal statement, and context. I can tell the difference between additive situations and multiplicative situations. I can multiply or divide to solve problems involving multiplicative comparisons. I can multiply and divide whole numbers usings strategies based on place value and properties of operations. I can solve multistep problems with whole numbers using the four operations. I can interpret remainders when dividing.

• Numerator • Denominator	(total) refers to the number of square units inside the model. Numbers in an equation can be decomposed into smaller values to help in multiplying and dividing. Multiplication of single-digit numbers can help with multiplication of multi-digit numbers. A larger area can be decomposed into smaller areas to make multiplication easier. Labels can help maintain meaning of the numbers in a problem. Breaking a total number of items into equal groups is an example of division. A remainder represents leftovers when quantities are put into equal groups and these can be interpreted in multiple ways. An area model or array can be used to represent the distributive property. Multiplying the numerator and denominator of a fraction by the same number (n), means that the whole is partitioned into (n) times as many pieces and that there are (n) times as many smaller unit fractions as in the original fraction. When comparing fractions, the comparisons are only valid when the two fractions refer to the same whole. Reasoning about the size of a fraction can help compare them.	I can represent the multiplication and division of whole numbers using equations, arrays, and/or the area model. I can explain the meaning of the numbers in my representations. I can represent multistep word problems with a letter standing for the unknown quantity. I can use mental computation and estimation strategies to assess the reasonableness of answers to word problems. I can explain why a fraction is equivalent to another fraction (n x a)/(n x b) by using a visual fraction model. I can explain how the number and size of the parts are different in equivalent fractions. I can use what I know about how the number and size of parts are different to recognize equivalent fractions. I can use what I know about how the number and size of parts are different to generate equivalent fractions. I can compare two fractions with different numerators and different denominators by creating common denominators or numerators. I can compare two fractions with different numerators and different denominators by

	Fractions can be decomposed into a sum of fractions with the same denominator in more than one way. Using what you know about whole number multiplication can extend to multiplying unit fractions by whole numbers.	comparing to a benchmark fraction such as ½. I can record comparison of fractions using the symbols >,<, =. I can justify comparison of these fractions using a visual model. I can decompose a fraction into a sum of fractions with the same denominator in more than one way. I can record addition equations to represent the decompositions. I can justify the decomposition using a visual model. I can describe a fraction (including fractions >1) as a multiple of a unit fraction. I can use a visual fraction model to represent a fraction (including fractions >1)as the product of unit fractions. I can record a multiplication equation to represent a fraction (including fractions >1) as the product of unit fractions.