Trinity Area School District
Curriculum Mapping

Course: Elementary Math **Grade 3** **Designer(s): Math Committee**	**Overview of Course: Students will understand computation with whole numbers, fractions, geometry, and measurement and be able to solve real world problems using these concepts and procedures.**

Overarching Big Ideas, Enduring Understandings, and Essential Questions

- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- **Construct viable arguments and critique reasoning of others.**
- **Model with mathematics.**
- **Use appropriate tools strategically.**
- **Attend to precision.**
- **Look for and make use of structure.**
- **Look for and express regularity in repeated reasoning.**

Big Idea Connections	Standard(s) Addressed	Enduring Understanding(s)	Essential Questions
Problem Solving	**CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic**	Doing mathematics involves a variety of processes including problem solving, reasoning, communicating, connecting, and representing. • *There are many different ways to solve the same problem.* • *Knowing key words in a math problem can help you understand what*	How can words and phrases be translated into numerical expressions? How can information and computation be shown visually using pictures or diagrams?

		steps to do to solve it. *It is more important to know HOW to solve a problem than it is to just get the right answer.*	
Writing to Explain	**CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic**	Mathematical explanations can be given using words, pictures, numbers, or symbols. A good explanation should be correct, simple, complete, and easy to understand. • *It is not enough to KNOW the answer, you need to SHOW and explain how you got it.* *Explaining your thinking well shows true understanding.*	How can computational steps be explained to demonstrate understanding of mathematical thinking and processes?
Proof Predictions Order	**CC.2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line plots, and bar graphs.**	Some questions can be answered by collecting, representing, and analyzing data, and the question to be answered determines the data to be collected, how best to collect it, and how best to represent it. • *Data is information and can be shown in many ways.* • *Data is collected and studied to answer questions*	How can using graphs help us to solve problems and describe data we collect? How can we use collected data to predict the outcome of experiments?

		and make predictions. The likelihood of an event occurring can be described numerically and used to make predictions. • *Events can or cannot happen.* • *Key words can help you decide what an event is.* *You can use data to predict what can or cannot happen.*	
Interactions **Patterns** **Order** **Systems**	**CC.2.1.3.B.1** **Apply place value understanding and properties of operations to perform multi-digit arithmetic.**	The base-ten number system is a way to organize, represent, and compare numbers using groups of ten and place value. • *All numbers can be made with the digits 0-9.* • *Digits have different values in different places in a number.* • *Numbers can be written with digits, words, or values.* • *Numbers can be used to show order.* • *Our money system uses bills and coins with different values.* • *Money amounts are shown using special symbols.*	How do we name, read, and write numbers and money amounts? How can place value help you compare and order whole numbers?

		• *Skip counting by 5's, 10's, and 25's can be used to count money amounts.* *Change is money you get back when you pay more than an item costs.*	
Connections **Patterns** **Order** **Prediction**	**CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic** **CC.2.4.3.A.3 Solve problems and make change involving money using a combination of coins and bills**	There are multiple interpretations of addition and subtraction and each operation is related to the other. • *Addition puts numbers together to find a total.* • *There are rules that are always true and can be followed when you add.* • *Subtraction takes away a part from a total to find what is left.* • *Addition and subtraction facts are related in fact families that use the same numbers.* Numerical quantities and calculations can be estimated by using numbers that are close to the actual values, but easier to compute. • *Numbers that end in zero are easy to*	How are addition and subtraction related? How can approximated numbers be used to accurately make mental calculations?

		add and subtract in your head. *Using numbers that are close to the real numbers you are adding or subtracting helps to check if your answer is reasonable.*	
Connections **Patterns** **Order**	**CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic** **CC.2.4.3.A.3 Solve problems and make change involving money using a combination of coins and bills**	The same number sentence can be associated with different concrete or real world situations. • *Key words for addition are sum, total, in all, both, altogether.* • *Key words for subtraction are difference, is/are left, how many/much more.* Different number sentences can be associated with the same concrete or real world situation. • *Because addition and subtraction are related, you may be able to use either to solve the same problem.* • *Problems may need more than one step or operation to be solved.* *Finding change can be done by counting on*	How can numbers be joined together or separated to solve problems? How are addition and subtraction used in real-life situations?

		from the cost of the item or by subtracting the cost of the item from the amount paid.	
Correlation **Patterns** **Order**	**CC.2.2.3.A.1 Represent and solve problems involving multiplication and division** **CC2.2.3.A.2 Understand properties of multiplication and the relationship between multiplication and division** **CC.2.2.3.A.3 Demonstrate multiplication and division fluency** **CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic**	There are multiple interpretations of multiplication and division and each operation is related to the other. • *Multiplication is a faster way to add equal groups to find a total.* • *There are rules that are always true and can be followed when you multiply.* • *Numbers can be multiplied in any order.* • *There are patterns in the products of multiplication facts.* • *Key words for multiplication are product, times as many, equal groups, repeated.* • *Division shares groups equally.* • *Key words for division are quotient, half, sharing equally, separate.* *When you try to share equally, sometimes there are leftovers that*	What strategies and models help us understand how to solve multiplication and division problems? How are multiplication and division related/connected?

		can't be shared called remainders.	
Symbol	**CC.2.3.3.A.1 Identify, compare, and classify shapes and their attributes**	Two-and-three dimensional objects can be described, classified, and analyzed by their attributes. • *Shapes are made from and named by their angles and line segments.* • *Solids have length, width, and height.* • *You can use shapes to describe some solids.* The location of shapes and solids can be described quantitatively. • *Figures can be moved in many ways.* • *Moving a figure does not change its original shape.* Spatial reasoning and visualization are ways to orient thinking about the physical world. • *Symmetry **folds** a figure in half so that both parts **match exactly**.* • *A figure can have one line of symmetry, more than one line of symmetry, or no lines of symmetry.*	How can we describe two-dimensional and three-dimensional shapes? How can putting shapes together and breaking large shapes into smaller shapes help us understand them?

Order Patterns	**CC2.1.3.C.1 Explore and develop an understanding of fractions as numbers.** **CC.2.3.3.A.2 Use the understanding of fractions to partition shapes into parts with equal areas and express the area of each part as a unit of the fraction as a whole.**	The base-ten number system is a way to organize, represent, and compare numbers using groups of ten and place value. • *A fraction divides a whole region or set into equal parts.* • *The more times a whole is divided, the smaller the pieces become.* • *A fraction is relative to the size of the whole.* • *To compare two fractions, the whole must be the same size.* • *Fractions can be counted on a number line.* Parts can be put together in different ways to form a whole. • *Different fractions can show the same amount.* *To add or subtract fractions, the denominator must be the same.*	What are all the meanings of fractions? Why do we use fractions? How can the same fraction show two different amounts? How can two different fractions show the same amount?
Order Patterns	**CC2.1.3.C.1 Explore and develop an understanding of fractions as numbers.** **CC.2.3.3.A.2 Use the understanding of**	Some attributes of objects are measureable, e.g., length, mass, capacity, and can be quantified.	How are different attributes used to describe the size of an object? What strategies can we use to find

	fractions to partition shapes into parts with equal areas and express the area of each part as a unit of the fraction as a whole.	• *Standard units of measurement are always the same.* • *Fractions can be used to measure objects and are closer to the actual measurements than whole units.* • *Different shapes can have the same perimeter.* • *Area can be found by counting square units or sometimes by multiplying.* • *Many clock times can be expressed in more than one way.* • *The starting and ending times of an event are used to tell how long the event lasted.* Measures can be estimated by using known referents. *Real world objects can be used to estimate measurements..*	measurements of objects? How are fractions used in determining measurements?
Patterns **Order** **Prediction**	**CC.2.4.3.A.1** **Solve problems involving measurement and estimation of temperature, liquid volume, mass, or length**	Patterns exhibit relationships that can be extended, described, and generalized. • *Some patterns are made of repeating symbols, shapes, or numbers.*	How can you describe relationships and make generalizations for mathematical situations with numbers or objects that repeat in predictable ways?

		CC.2.4.3.A.2 Tell and write time to the nearest minute and solve problems by calculating time intervals. **CC.2.4.3.A.5 Determine the area of a rectangle and apply the concept to multiplication and to addition** **CC.2.4.3.A.6 Solve problems involving perimeters of polygons and distinguish between linear and area measures**	• *Some patterns have rules that tell how to continue the sequence.* • *Patterns can be predicted.* Numbers, expressions, equations, and inequalities can represent mathematical situations in many equivalent forms. • Math phrases can be written as number sentences. • Key words in the math phrase tell you whether to add, subtract, multiply, or divide when you write a number sentence. • Equal means same on both sides. A number sentence can be greater than, less than, or equal to another number sentence.	How can mathematical situations be represented abstractly using expressions and equations? How can you use patterns to find a missing piece?		
Sept./Oct./ Nov.	**Multiplication and Division**	**Correlation** **Patterns** **Order**	**CC.2.2.3.A.1 Represent and solve problems involving multiplication and division** **M03.B-O.1.1.1 and 2** **M03.B-O.1.2.1 and 2**	There are multiple interpretations of multiplication and division and each operation is related to the other. • *Multiplication is a faster way to add equal groups to find a total.*	What strategies and models help us understand how to solve multiplication and division problems? How are multiplication and	**TBA**	**Units 1 and 2** ***Vocabulary*** • ***multiplication*** • ***factors*** • ***product*** • ***array*** • ***Commutative (Order) Property of Multiplication***

			CC2.2.3.A.2 Understand properties of multiplication and the relationship between multiplication and division **M03.B-O.2.1.1 and 2** **M03.B-O.2.2.1** **CC.2.2.3.A.3 Demonstrate multiplication and division fluency** **CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic** **M03.B-O.3.1.1, 2, 3, 4, 5, 6, and 7.**	• *There are rules that are always true and can be followed when you multiply.* • *Numbers can be multiplied in any order.* • *There are patterns in the products of multiplication facts.* • *Key words for multiplication are product, times as many, equal groups, repeated.* • *Division shares groups equally.* • *Key words for division are quotient, half, sharing equally, separate.* • *When you try to share equally, sometimes there are leftovers that can't be shared called remainders.*	division related/connected?		• ***twice*** • ***multiples*** • ***Identity (One) Property of Multiplication*** • ***Zero Property of Multiplication*** • ***Associative (Grouping) Property of Multiplication*** • ***division*** • ***remainder*** • ***dividend*** • ***divisor*** • ***quotient*** counters grid paper
November/ December	**Measurement, Time, and Graphs**	**Proof** **Predictions** **Order**	**CC.2.4.3.A.4 Represent and interpret data using tally charts, tables, pictographs, line**	Some questions can be answered by collecting, representing, and analyzing data, and the question to be answered determines	How can using graphs help us to solve problems and describe data we collect?	**TBA**	**Unit 3** **Vocabulary** • **data** • **survey** • **tally mark**

			plots, and bar graphs. **M03.D-M.2.1.1, 2, 3, and 4**	the data to be collected, how best to collect it, and how best to represent it. • Data is information and can be shown in many ways. • Data is collected and studied to answer questions and make predictions. The likelihood of an event occurring can be described numerically and used to make predictions. • Events can or cannot happen. • Key words can help you decide what an event is. • You can use data to predict what can or cannot happen.	How can we use collected data to predict the outcome of experiments?		• **tally chart** • **pictograph** • **key** • **bar graph** • **scale** • **coordinate grid** • **ordered pair** • **plot** • **line graph** • **likely** • **unlikely** • **certain** • **impossible** • **outcome** • **predict** • **line plot** **grid paper**
January	**Multidigit Addition and Subtraction**	**Interactions** **Patterns** **Order** **Systems**	**CC.2.1.3.B.1** **Apply place value understanding and properties of operations to perform multi-digit arithmetic.** **M03.A-T.1.1.1.1, 2, 3, and 4**	The base-ten number system is a way to organize, represent, and compare numbers using groups of ten and place value. • All numbers can be made with the digits 0-9. • Digits have different values in	How do we name, read, and write numbers and money amounts? How can place value help you compare and order whole numbers?	**TBA**	**Unit 4** **Vocabulary** • **digits** • **place value** • **standard form** • **expanded form** • **word form** • **period** • **ordinal number** • **compare** • **order** • **dollar sign**

				different places in a number. • Numbers can be written with digits, words, or values. • Numbers can be used to show order. • Our money system uses bills and coins with different values. • Money amounts are shown using special symbols. • Skip counting by 5's, 10's, and 25's can be used to count money amounts. • Change is money you get back when you pay more than an item costs.			• **decimal point** **place value charts** **coins** **bills**
January		**Connections** **Patterns** **Order**	**CC.2.2.3.A.4 Solve problems involving the four operations, and identify and explain patterns in arithmetic** **M03.B-O.3.1.1, 2, 3, 4, 5, 6, and 7** **CC.2.4.3.A.3 Solve problems and make change involving money using a**	The same number sentence can be associated with different concrete or real world situations. • Key words for addition are sum, total, in all, both, altogether. • Key words for subtraction are difference, is/are left, how many/much more.	How can numbers be joined together or separated to solve problems? How are addition and subtraction used in real-life situations?	**TBA**	**Unit 4** **place value blocks** **coins** **bills**

			combination of coins and bills **M03.D-M.1.3.1, 2, and 3**	Different number sentences can be associated with the same concrete or real world situation. • Because addition and subtraction are related, you may be able to use either to solve the same problem. • Problems may need more than one step or operation to be solved. • Finding change can be done by counting on from the cost of the item or by subtracting the cost of the item from the amount paid.			
February	**Writing Equations to Solve Word Problems with all 4 Operations**	**Problem Solving** **Writing to Explain**	**CC.3.0A.A.3** **CC.3.OA.A.4** **Represent and solve problems involving multiplication and division.** **CC.3.NBT.1** **CC.3.NBT.2** **Use place value, understanding, and**	• An expression is a combination of numbers, variables, and/or operation signs. Expressions do not have an equal sign. • An equation is made of two equal quantities or expressions. An equal sign is used to show that two sides are equal.	How can numbers be joined together or separated to solve problems? How are addition and subtraction used in real-life situations? How are multiplication and	**TBA**	**Unit 5** **Vocabulary** • **Expression** • **Equation** • **Addend** • **Sum** • **Product** • **Quotient** • **Factor** • **Divisor** • **dividend**

			properties of operations to perform multi-digit arithmetic. **CC.3.0A.8** **Solve problems involving the four operations, and identify and explain patterns and arithmetic.**	• Problems may need more than one step or operation to be solved. • Math Mountains can be used to solve problems with unknown addends.	division used in real-life situations? How do you know what operation to use and why?		**place value blocks** **manipulatives** **Student Activity Books** **Homework and Remembering Books**
March	**Polygons, Perimeter, and Area**	**Symbol**	**CC.3.G.1 and 2** **Reason with shapes and their attributes.** **CC.3.MD.5-6** **Geometric measurement: understand concepts of area and relate area to multiplication and addition.** **CC.3.MD.8** **Geometric measurement: recognize perimeter as an attribute of plane figures and**	Two- and three-dimensional objects can be described, classified, and analyzed by their attributes. • Shapes are made from and named by their angles and line segments. • Solids have length, width, and height. • You can use shapes to describe some solids. The location of shapes and solids can be described quantitatively.	How can we describe two-dimensional and three-dimensional shapes? How can putting shapes together and breaking large shapes into smaller shapes help us understand them?	**TBA**	**Unit 6** **Vocabulary** • **solid figure (cone cube, cylinder, sphere, rectangular prism, pyramid)** • **shape (circle, triangle, square, rectangle, pentagon, hexagon, octagon)** • **face** • **edge** • **vertex** • **side** • **point** • **line** • **line segment** • **parallel** • **intersecting** • **ray**

			distinguish between linear and area measures.	• Figures can be moved in many ways. • Moving a figure does not change its original shape. Spatial reasoning and visualization are ways to orient thinking about the physical world. • Symmetry folds a figure in half so that both parts match exactly. • A figure can have one line of symmetry, more than one line of symmetry, or no lines of symmetry. • Area is the number of square units inside a polygon. • Area can be found by multiplying length by width. • Some polygons can have the same area but different side lengths. • Perimeter is the number of units around the outside of a polygon. • Perimeter can be found by adding the sides of a polygon.			• **angle** • **right angle** • **less than a right angle (acute)** • **more than a right angle (obtuse)** • **polygon** • **congruent** • **line of symmetry** • **symmetric** • **rectangles** • **Squares** • **Rhombuses** • **Quadrilaterals** • **Triangles** • **Parallelograms** • **Decompose** • **Perimeter** • **Area** • **Rectilinear** **solids** **geoboards** **pattern blocks** **tangrams**

April/May	**Fractions**	**Order** **Patterns**	**CC.3.NF.1-2** **Develop understanding of fractions as numbers.** **CC.3.G.2** **Reason with shapes and their attributes** **CC.3.NF.A.3** **Explain equivalence of fractions in special cases and compare fractions by reasoning about their size.**	The base-ten number system is a way to organize, represent, and compare numbers using groups of ten and place value. • A fraction divides a whole region or set into equal parts. • The more times a whole is divided, the smaller the pieces become. • A fraction is relative to the size of the whole. • To compare two fractions, the whole must be the same size. • Fractions can be counted on a number line. Parts can be put together in different ways to form a whole. • Different fractions can show the same amount. • To add or subtract fractions, the denominator must be the same.	What are all the meanings of fractions? Why do we use fractions? How can the same fraction show two different amounts? How can two different fractions show the same amount?	**TBA**	**Unit 7** **Vocabulary** • **fraction** • **numerator** • **denominator** • **halves** • **thirds** • **fourths** • **mixed numbers** • **unit fraction** **fraction strips**