Southern York County School District

One Warrior at a Time

Course/Subject: Math Comprehensive Units   Grade Level: 4

Textbook(s)/Materials Used: Ready Pennsylvania Math Instruction, Practice Problem Solving, Assessment, i-Ready Diagnostic & Instruction

Month(s): September			Unit 1			
Number and Operations in Base Ten						
Big Idea	**Standard**	**Eligible Content**	**Essential Questions & Lesson Essential Question**	**Concepts**	**Vocabulary**	**Competencies**
- Mathematical relationships among numbers can be represented, compared, and communicated. - Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. - Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. - Patterns exhibit relationships that can be extended,	CC.2.1.4.B.1 Apply place value concepts to show an understanding of multi-digit whole numbers. CC.2.1.4.B.2 Use place-value understanding and properties of operations to perform multi-digit arithmetic. CC.2.2.4.A.1 Represent and solve problems involving the four operations	M04.A-T.1.1.1 Demonstrate an understanding that in a multi-digit whole number (through 1,000,000), a digit in one place represents ten times what it represents in the place to its right. M04.A-T.1.1.2 Read and write whole numbers in expanded, standard, and word form through 1,000,000. M04.A-T.1.1.3 Compare two multi-digit numbers through 1,000,000	Lesson 0: • Identify and explain models or strategies used to solve problems. • Use math talk practices to efficiently share and compare strategies for solving problems. • Apply math knowledge and modeling techniques to new, similar problems. • Evaluate models of three-digit numbers to determine whether numbers are greater than, less than, or equal to each other. • Break apart numbers and use place-value models to add and subtract three-digit numbers. Lesson 1: • Use a place-value chart to understand the value of each digit in a number. • Identify the value of a digit	Place Value and Properties of Operations	*compare* To decide if one number is greater than, less than, or equal to another number. *greater than symbol* (<) A symbol used to compare two numbers when the first is greater than the second *less than symbol* (>) A symbol used to compare two numbers when the first is less than the second *equal sign* (=) A symbol used to compare two numbers that	Demonstrate an understanding of multi-digit whole numbers. Compare and round multi-digit numbers. Perform multi-digit arithmetic.

described, and generalized.		based on meanings of the digits in each place using $>$,=, and $<$ symbols. M04.A-T.1.1.4 Round multi-digit whole numbers (through 1,000,000) to any place. M04.A-T.2.1.1 Add and subtract multi-digit whole numbers (limit sums and subtrahends up to and including 1,000,000). M04.A-T.2.1.4 Estimate the answer to addition and subtraction problems using whole numbers through 6 digits (for multiplication, no more than 2 digits x 1 digit, excluding powers of 10.)	based on its position in a number. • Demonstrate how moving a digit from one place-value position to the next changes the value of the digit. • Show that any number can be represented in different ways. • Use standard form, word form, and expanded form to read and write multi-digit whole numbers. • Read and write multi-digit whole numbers in standard form, word form, and expanded form. • Tell the value of each digit in a number using a place value chart. • Tell how the value of a digit changes when it moves one place to the left or right. Lesson 2: •Use symbols (>, <, =) to show the relationship between two multi-digit numbers. • Compare multi-digit numbers in order to solve word problems.		have the same value *regroup* To compose or decompose ones, tens, or hundreds. For example, 10 ones can be regrouped as 1 ten, or 2 hundreds can be regrouped as 20 tens. *period* A group of three places in a number, usually separated by commas. The first three periods are the ones period, thousands period, and the millions period. *word form* The way a number is written with words or said aloud. *standard form* The way a number is written with numerals. *expanded form*	

| | | | • Read aloud inequality statements comparing two whole numbers.

• Compare multi-digit numbers using place value charts and expanded form.

• Write inequality statements using symbols >,<, and = to compare numbers.

• Orally define and use the key vocabulary terms compare, greater than, less than, and equal to when discussing comparisons.

Lesson 3:
Use the standard algorithm to add multi-digit whole numbers.

• Use the standard algorithm to subtract multi-digit whole numbers.

• Tell when and how to use regrouping in adding or subtracting multi-digit whole numbers.

• Record sums and differences using the standard algorithms and explain the meaning of | | The way a number is written to show the place value of each digit; for example 234= (2x100) + (3X10) + (4x1).

sum
The result of addition.

difference
The result of subtraction.

round
To approximate the value of a number by finding the nearest ten, hundred, or other place value.

to estimate
To give an approximate number or answer based on mathematical thinking.

an estimate
A close guess made using mathematical thinking.

place value | |

			regrouping notation. • Tell which operation to use to solve a word problem. Lesson 4: Round multi-digit whole numbers. • Explain how to round a multi-digit whole number to a specific place value. • Use rounded numbers to estimate a sum or difference in a word problem. • Tell how to round a given multi-digit number to a specific place value. • Draw a number lines to round multi-digit numbers. • Summarize word problems that ask for rounded numbers. How is mathematics used to quantify, compare, represent, and model numbers? How can mathematics support effective communication? How are relationships represented mathematically? What does it mean to		The value of the place a digit occupies in a number.	

estimate or analyze numerical quantities?

When is it is appropriate to estimate versus calculate?

What makes a tool and/or strategy appropriate for a given task?

How can patterns be used to describe relationships in mathematical situations?

Month(s): October	Unit 2

Operations and Algebraic Thinking

<u>Big Idea</u>	<u>Standard</u>	<u>Eligible Content</u>	<u>Essential Questions & Lesson Essential Question</u>	<u>Concepts</u>	<u>Vocabulary</u>	<u>Competencies</u>
-Mathematical relationships among numbers can be represented, compared, and communicated. -Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. -Patterns exhibit relationships that can be extended, described, and generalized.	CC.2.2.4.A.1 Represent and solve problems involving the four operations. CC.2.2.4.A.2 Develop and/or apply number theory concepts to find factors and multiples. CC.2.2.4.A.4 Generate and analyze patterns using one rule.	M04.B-O.1.1.1 Interpret a multiplication equation as a comparison. Represent verbal statements of multiplicative comparisons as multiplication equations. M04.B-O.1.1.2 Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison	Lesson 5: Use a multiplication sign to represent the relationship between two numbers as a multiplicative comparison. • Identify a multiplication equation as showing two ways to describe a product as a comparison between two factors. • Understand the difference between multiplicative comparison and additive comparison. • Write an equation to represent a multiplicative comparison described in a word problem. • Write a word problem using a	Number Theory Patterns	*multiplicative comparison* A comparison that tells how many times as many; for example; 7 3 3 5 21 represents that 21 is 3 times as many as 7, and that 21 is 7 times as many as 3. *product* The result of multiplication. *factor* A number that is multiplied. *equation* A mathematical	*Represent and solve problems verbally as equations. *Use factors to represent numbers in various ways. *Recognize that a whole number is a multiple of each of its factors. *Generate and analyze patterns that follow a single rule.

-Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. -Data can be modeled and used to make inferences.		from additive comparison. M04.B-O.1.1.3 Solve multi-step word problems posed with whole numbers using the four operations. Answers will be either whole numbers or have remainders that must be interpreted yielding a final answer that is a whole number. Represent these problems using equations with a symbol or letter standing for the unknown quantity. M04.B-O.1.1.4 Identify the missing symbol (+, -, X, ÷, =, < and >) that makes a number sentence true (single-digit divisor only). M04.B-O.2.1.1 Find all factor pairs for a	multiplicative comparison to describe a given multiplication equation. • Write a multiplication equation to represent a multiplicative comparison between two numbers. • Write a multiplication equation to represent a multiplicative comparison described in a word problem. • Describe a real-world comparison situation that can be represented by a given multiplication equation. Lesson 6: Use drawings and symbols to represent a word problem involving multiplicative comparison. • Use an equation to solve for the unknown in a multiplicative comparison problem. • Solve word problems involving multiplicative comparisons by using multiplication or division. • Discuss multiplicative comparisons using the phrase "times as many." • Draw a diagram to represent a word problem involving multiplicative comparison problem.		statement that uses an equal sign (=) to show that two expressions have the same value. *unknown* The value you need to find to solve a problem. *symbol* A character, such as a letter or question mark, which can be used to stand for an unknown number in an equation. *factors of a number* Whole numbers that multiply together to get the given number. *factor pair* Two numbers that are multiplied together to give a product. *multiple* The product of a given number and any other whole number;	

		whole number in the interval 1 through 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the interval 1 through 100 is a multiple of a given one-digit number. Determine whether a given whole number in the interval 1 through 100 is prime or composite. M04.B-O.3.1.1 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. M04.B-O.3.1.2 Determine the missing elements in a function table	• Write an equation to solve for the unknown in a multiplicative comparison problem. • Summarize word problems involving a multiplicative comparison and tell whether to use multiplication or division to solve. Lesson 7: • Use basic multiplication facts to list all the factors of a number. • Use basic multiplication facts to determine whether a number is a multiple of another number. • Apply understanding of multiples and factors to solving problems. • List the factors of a whole number. • Skip count aloud or silently to find multiples of 2, 5, and 10. • Draw diagrams to justify arguments about factors, multiples, prime numbers, and composite numbers. • Orally define and use in discussion the key mathematical terms factor, factor pair, multiple, composite number, and prime number. Lesson 8: • Use rules to generate or		for example, 0, 4, 8, 12, and so on are multiples of 4. *composite number* A number that has more than one pair of factors. *prime number* A whole number that has only one pair of factors: itself and 1. *rule* A procedure that is followed to go from one number or shape to the next in a pattern. *pattern* A series of numbers or shapes that follow a rule to repeat or change. *function* A relationship between two variables; A rule is applied to one variable in order to determine the other variable.	

| | | (limit to 1, 2, or 3 and to whole numbers or money).

M04.B-O.3.1.3 Determine the rule for a function given a table (limit to 1, 2, or 3 and to whole numbers). | extend a number pattern.

• Use manipulatives or drawings to show a shape pattern.

• Describe, analyze, and extend patterns in numbers and shapes.

• Extend a shape or number pattern.

• Describe attributes of numbers or shapes in a pattern to help identify the rule for the pattern.

• Tell the rule for a pattern.

• Determine a rule from a function table and find missing values in a function table.

Lesson 9:
Use equations with a letter standing for the unknown to represent multi-step word problems.

• Draw a bar model to represent multi-step word problems.

• Write equations with a letter standing for the unknown to represent multi-step word problems.

• Compare the different approaches used by others and identify connections among the approaches. | | *expression*
A group of one or more numbers, unknowns, and/or operation symbols that represents a quantity; for example, 3 x 4.

unknown
The value you need to find to solve a problem.

equation
A mathematical statement that uses an equal sign (=) to show that two expressions have the same value.

remainder
The amount left over that cannot be divided evenly by the divisor.

reasonable
Something that makes sense when given facts are taken into account. | |

			Lesson 10: Write and solve an equation in order to solve a multi-step word problem. • Complete an equation by inserting the symbols that make it true. • Interpret the remainder in a division word problem. • Use estimation strategies to check that an answer is reasonable. • Draw a diagram to represent a multi-step word problem. • Solve multi-step word problems using an equation or a diagram. • Justify the approach used to solve a word problem. • Tell whether a solution is reasonable by comparing the result to an estimate. • Orally define and use in discussion the key term reasonable. • Tell the specific meaning of a remainder in a division word problem and how it affects the answer to the problem. How is mathematics used to quantify, compare, represent, and model numbers?			

			Essential Questions & Lesson Essential Question			
			How can mathematics support effective communication?			
			How are relationships represented mathematically?			
			How can patterns be used to describe relationships in mathematical situations?			
			How is mathematics used to quantify, compare, represent, and model numbers?			
			How can mathematics support effective communication?			
			How can patterns be used to describe relationships in mathematical situations?			
			How can recognizing repetition or regularity assist in solving problems more efficiently?			
			How can data be organized and represented to provide insight into the relationship between quantities?			
			How can probability and data analysis be used to make predictions?			

Month(s): November - January			**Unit 3**			
Number and Operations in Base Ten						
Big Idea	**Standard**	**Eligible Content**	**Essential Questions & Lesson Essential Question**	**Concepts**	**Vocabulary**	**Competencies**

-Mathematical relationships among numbers can be represented, compared, and communicated. -Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. -Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. -Patterns exhibit relationships that can be extended, described, and generalized.	CC.2.1.4.B.2 Use place-value understanding and properties of operations to perform multi-digit arithmetic. CC.2.2.4.A.1 Represent and solve problems involving the four operations.	M04.A-T.2.1.2 Multiply a whole number of up to four digits by a one-digit whole number and multiply 2 two-digit numbers. M04.A-T.2.1.4 Estimate the answer to addition, subtraction, and multiplication problems using whole numbers through six digits (for multiplication, no more than 2 digits 3 1 digit, excluding powers of 10). M04.B-O.1.1.2 Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. M04.A-T.2.1.2 Multiply a whole number of up to four digits by one-digit whole	Lesson 11: Multiply whole numbers of up to four digits by one-digit whole numbers. • Multiply a two-digit number by a two-digit number. • Use area models and partial products to multiply. • Estimate the product of a two-digit number and a one-digit number. Language Objectives • Read aloud multiplication problems. • Draw an area model to multiply. • Write out a solution to a multiplication problem using partial products. • Tell how each part of an area model relates to the factors, partial products, and product of a multiplication problem. Lesson 12: Divide up to four-digit dividends by one-digit divisors, with remainders. • Use area models, subtraction of partial products, and partial quotients to divide. • Recognize the relationship between multiplication and	Place Value Properties of Operations	*partial products* A strategy used to multiply multi-digit numbers; the products you get in each step are called "partial products". For example, the partial products for 124 x 3 are 3 x 100 or 300, 3 x 20 or 60, and 3 x 4 or 12. *multiplication* An operation used to find the total number of items in equal sized groups. *product* The result of multiplication. *factor* A number that is multiplied. *multiple* The product of a given number and any other whole number; for example, 0, 4, 8, 12, and so on are multiples of 4. *dividend* The number that	*Demonstrate an understanding of multi-digit whole numbers. *Compare and round multi-digit numbers. Perform multi-digit arithmetic.

		number and multiply two digit number. M04-A-T.2.1.3 Divide up to four-digit dividends by one-digit divisors with answers written as whole-number quotients and remainders.	division. • Read aloud division problems. • Draw an area model to show the relationship between multiplication and division. • Draw an area model to divide. • Write out a solution to a division problem using partial quotients. • Tell how each part of an area model relates to the dividend, divisor, partial quotients, and quotient for a division problem. • Use the key vocabulary quotient, dividend, divisor, and remainder in discussions about division. How is mathematics used to quantify, compare, represent, and model numbers? How can mathematics support effective communication? How are relationships represented mathematically? What does it mean to estimate or analyze numerical quantities? When is it is appropriate to estimate versus calculate?		is divided by another number. *divisor* The number by which another number is divided. *divisor* The number you divide by in a division problem *partial quotient* A strategy used to divide multi-digit numbers; the quotients you get in each step are called "partial quotients". For example, the partial quotients for 2124 / 4 are 2000 /4 or 500, 100 /4 or 25, and 24 / 4 or 6. *division* An operation used to separate a number of items into equal-sized groups. *quotient* The result of division. *remainder* In division, the	

					amount left over that cannot be divided evenly by the divisor.	
			What makes a tool and/or strategy appropriate for a given task? How can patterns be used to describe relationships in mathematical situations.			

Month(s): February - March | **Unit 4**

Numbers and Operations: Fractions

Big Idea	**Standard**	**Eligible Content**	**Essential Questions & Lesson Essential Question**	**Concepts**	**Vocabulary**	**Competencies**
-Mathematical relationships among numbers can be represented, compared, and communicated. -Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. -Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. -Mathematical relationships	CC.2.1.4.C.1 Extend the understanding of fractions to show equivalence and ordering. CC.2.1.4.C.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. CC.2.1.4.C.3 Connect decimal notation to fractions, and compare decimal fractions (base 10 denominator, e.g., 19/100).	M04.A-F.1.1.1 Recognize and generate equivalent fractions. M04.A-F.1.1.2 Compare two fractions with different numerators and different denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100) using the symbols >, <, =, and justify the conclusions. M04.A-F.2.1.1 Add and subtract fractions with a common denominator	Lesson 13 Understand the value of a fraction. • Understand how a fraction model represents a fraction. • Use models to demonstrate that two fractions are equivalent. • Represent equivalent fractions using models. • Multiply and divide to find equivalent fractions. • Draw different fraction models to represent the value of the same fraction. • Demonstrate that two fractions are equivalent using visual models. • Communicate effectively with a partner about equivalent fractions.	Fractions Decimals	*benchmark fraction* A common fraction that you might compare other fractions to; for example, ½ or ¾. *common denominator* A number that is a common multiple of the denominators of two or more fractions. *mixed number* A number with a whole number part and a fractional part. *tenths* The parts formed when a whole is divided into ten equal	*Demonstrate an understanding of fraction equivalence. *Compare and order fractions. *Solve problems involving fractions and mixed numbers. *Use decimal notation for decimal fractions. *Compare decimal fractions. Compare decimals.

among numbers can be represented, compared, and communicated. -Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. -Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.		(denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; answers do not need to be simplified; and no improper fractions as the final answer). M04.A-F.2.1.2 Decompose a fraction or a mixed number into a sum of fractions with the same denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100), recording the decomposition by an equation. Justify decompositions (e.g., by using a visual fraction model). M04.A-F.2.1.3 Add and subtract mixed numbers with a common denominator (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100; no regrouping with	Lesson 14 Use symbols (>, <, =) to compare fractions with different numerators and denominators. • Recognize that fractions with different denominators and the same numerators represent different values. • Use benchmark fractions to compare fractions. • Recognize that you can only compare two fractions when both refer to the same whole. • Write fraction comparison statements using the symbols <, >,=. • Draw an area model to show that ⅔ > 2/4. • Orally explain how comparing both ¾ and ⅖ to ½ can be used to determine if ¾ or ⅕ is greater. Lesson 15: • Understand addition as joining parts. • Understand subtraction as separating parts. • Extend their understanding of addition and subtraction of whole numbers to addition and subtraction of fractions. • Use fraction models to add		parts. *hundredths* The parts formed when a whole is divided into one hundred equal parts. *decimal* A number containing a decimal point that separates a whole from fractional place values (tenths, hundredths, thousandths, and so on). *decimal point* The dot used in a decimal that separates the ones place from the tenths place. *fraction* A ratio of two values, numbers, or expressions. It is written in the form a}b, where b is not equal to 0. *numerator* The dividend in a ratio or fraction.	

		subtraction; fractions do not need to be simplified; and no improper fractions as the final answers). M04.A-F.2.1.4 Solve word problems involving addition and subtraction of fractions referring to the same whole or set and having like denominators (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100). M04.A-F.2.1.5 Multiply a whole number by a unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number). M04.A-F.2.1.6 Multiply a whole number by a	and subtract fractions with like denominators. • Create number line and area models to represent adding or subtracting fractions with like denominators. • Compare different models for the same problem and describe how they are the same and different. Lesson 16: Add fractions with like denominators. • Subtract fractions with like denominators. • Use fraction models, number lines, and equations to represent word problems • Draw pictures or diagrams to represent word problems involving fraction addition and subtraction. • Use fraction vocabulary, including numerator and denominator, to explain how to add and subtract fractions with like denominators. • Orally define and use the key mathematical terms add, subtract, equal parts, fraction, numerator, and denominator when reasoning and arguing about fraction addition and subtraction.		*denominator* The divisor in a ratio or fraction. *equivalent fraction* Two or more fractions that name the same part of a whole or the same point on a number line *unit fraction* A fraction with a numerator of 1. Other fractions are built from unit fractions. *compare* To decide if one number is greater than, less than, or equal to another number. *Product* The result of multiplication. *greater than/less than* One number is larger than another number or smaller than a number.	

		non-unit fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100 and final answers do not need to be simplified or written as a mixed number). M04.A-F.2.1.7 Solve word problems involving multiplication of a whole number by a fraction (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, and 100). M04.A-F.3.1.1 Add two fractions with Respective denominators 10 and 100. M04.A-F.3.1.2 Use decimal notation for fractions with denominators 10 or 100. M04.A-F.3.1.3 Compare two decimals to hundredths	• Write and solve equations to represent word problems involving fraction addition or subtraction. Lesson 17: Break apart fractions greater than 1 into a fraction equivalent to 1 and a fraction less than 1. • Write a mixed number as a fraction and write a fraction greater than 1 as a mixed number. • Add and subtract mixed numbers with like denominators. • Write and solve an equation with mixed numbers with like denominators in order to solve a word problem. • Rewrite mixed numbers as fractions greater than 1 and rewrite fractions greater than 1 as mixed numbers. • Orally define the key mathematical term mixed number and use it in context in discussions with a partner. • Draw pictures or diagrams to represent word problems involving fraction addition or subtraction. • Write and solve equations to represent word problems involving fraction			

		using the symbols >, =, or <, and justify the conclusions.	addition or subtraction. Lesson 18: Multiply a unit fraction (numerator of 1) by a whole number. • Multiply a fraction with a numerator greater than 1 by a whole number. • Draw diagrams to model multiplying a whole number and a fraction. • Multiply a fraction by a whole number using the strategy of repeated addition. • Listen to the arguments of others about the meaning of multiplying a whole number and a fraction and ask questions to clarify. Lesson 19: Solve word problems that involve multiplying a fraction by a whole number. Restate word problems involving multiplication of a whole number and a fraction. Draw a diagram and write an equation to represent and solve a world problem involving multiplication of a whole number and a fraction. Lesson 20: Rewrite a fraction that has a denominator of 10 as an			

			equivalent fraction with a denominator of 100. • Rewrite a fraction that has a denominator of 100 as an equivalent fraction with a denominator of 10. • Explain the relationship between tenths and hundredths. • Add two fractions with denominators of 10 and 100. • State the relationship between tenths and hundredths. • Write a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100. • Write a fraction with a denominator of 100 as an equivalent fraction with a denominator of 10. • Draw hundredths grids to represent word problems that involve adding fractions with denominators of 10 and 100. Lesson 21: Convert decimals into fractions, with denominators of 10 or 100. • Convert fractions into decimals, with denominators of 10 or 100.			

			• Write decimals as fractions with denominators of 10 or 100.			
			• Draw a hundredths grid to represent a decimal number.			
			• Write a decimal number in a place value table.			
			• Read decimal numbers as fractions or mixed numbers, using "and" to read the decimal point.			
			• Locate decimal fractions on a number line.			
			Lesson 22: Compare two decimals up to hundredths, using the >, <, and = symbols.			
			• Solve word problems involving comparisons of tenths and hundredths decimals.			
			• Compare decimal numbers and support comparison statements by referring to decimal grids and place value charts.			
			• Read aloud and write statements comparing decimals using <, >, and = symbols.			
			• Listen to the arguments of others about comparing decimals and ask questions to clarify or present a			

			different idea.			
			• Summarize solve word problems that involve comparing decimals.			
			How is mathematics used to quantify, compare, represent, and model numbers?			
			How can mathematics support effective communication?			
			How are relationships represented mathematically?			
			What does it mean to estimate or analyze numerical quantities?			
			What makes a tool and/or strategy appropriate for a given task?			
			How can patterns be used to describe relationships in mathematical situations?			

Month(s): May			**Unit 5**			

<p style="color:red">**Measurement and Data**</p>

<u>**Big Idea**</u>	<u>**Standard**</u>	<u>**Eligible Content**</u>	<u>**Essential Questions & Lesson Essential Question**</u>	<u>**Concepts**</u>	<u>**Vocabulary**</u>	<u>**Competencies**</u>
-Patterns exhibit relationships that can be extended, described, and generalized. -Geometric relationships can be described,	CC.2.3.4.A.1 Solve problems involving measurement and conversions from a larger unit to a smaller unit. CC.2.3.4.A.2	M04.C-G.1.1.1 Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular	Lesson 23: Identify the units of measurement within a measurement system. • Convert measurements from a larger unit to a smaller unit within the same system.	Geometric Shapes and Figures Data Displays Measurement	*convert (units)* To write an equivalent measurement using a different unit. *metric system* The	*Draw and identify lines and angles. *Classify shapes by properties of their lines and angles.

analyzed, and classified based on spatial reasoning and/or visualization. -Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. -Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. -Data can be modeled and used to make inferences. -Measurement attributes can be quantified, and estimated using customary and noncustomary units of measure.	Classify two-dimensional figures by properties of their lines and angles. CC.2.4.4.A.1 Solve problems involving measurement and conversations from a larger unit to a smaller unit. CC.2.4.4.A.2 Translate information from one type of data display to another. CC.2.4.4.A.4 Represent and interpret data involving fractions using information provided in a line plot. CC.2.4.4.A.6 Measure angles and use properties of adjacent angles to solve problems.	and parallel lines. Identify these in two-dimensional figures. M04.D-M.1.1.1 Know relative sizes of measurement units within one system of units including standard units (in., ft, yd, mi; oz., lb; and c, pt, qt, gal), metric units (cm, m, km; g, kg; and mL, L), and time (sec, min, hr, day, wk, mo, and yr). within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. A table of equivalencies will be provided. M04.D-M.1.1.2 Use the four operations to solve word problems involving	• Use a conversion table showing equivalent measurements within the same system. • List the units of measurement within a given system in order of size. • Draw diagrams to visually represent the relationship between units of measure. • Describe the multiplicative relationship between different-sized units verbally or with equations. • Create tables to show equivalent measurements. Lesson 23A: Identify and recognize the relationship between different units of time, including seconds, minutes, hours, days, weeks, months, and years. • Identify time (analog or digital) as the number of minutes before or after the hour. • Convert larger units of time measurement to smaller units. • Use a table of equivalencies to represent the relationship between units of time. • Use the four operations to solve word problems involving	measurement system that measures length based on meters, liquid volume based on liters, and mass based on grams. *customary system* The measurement system commonly used in the United States that measures length in inches, feet, yards, and miles; liquid volume in cups, quarts, pints, and gallons; and weight in ounces and pounds. *formula* A mathematical relationship that is expressed in the form of an equation; for example: a=lxw *perimeter* The distance around a two dimensional shape; the perimeter is equal to the sum	*Solve problems involving measurements. *Convert larger unit to smaller unit. *Translate one type of data display to another. *Represent and interpret data involving fractions.

		distances, intervals of time (such as elapsed time), liquid volumes, masses of objects; money, including problems involving simple fractions or decimals; and problems that require expressing measurements given in a larger unit in terms of a smaller unit. M04.D-M.1.1.3 Apply the area and perimeter formulas for rectangles in real-world and mathematical problems (may include finding a missing side length). Whole numbers only. M04.D-M.1.1.4 Identify time (analog or digital) as the amount of minutes before or after the hour.	intervals of time. • Tell the time shown on an analog or digital clock as the number of minutes before or after the hour. • Describe the multiplicative relationship between different-sized units of time verbally or with equations. • Draw a diagram, make a table, or write an equation to represent and solve a word problem about time. Lesson 24: Solve word problems involving money. Convert amounts of money in bills and coins to solve word problems about money. Describe the multiplicative relationship between different sized units of money. Summarize word problems about money and determine which operation to use. Draw a diagram or write an equations to represent and solve a word problems about money. Lesson 25: Convert larger units of measurement to smaller units in order to solve word problems involving length,		of the lengths of the sides. *area* The amount of space inside a closed two dimensional figure. *angle* A geometric shape formed by two rays, lines, or line segments that meet at a common point. *ray* A straight row of points that starts at one point and goes on forever in one direction. *vertex* The point where two rays, lines, or line segments meet to form an angle. *degree* (°) A unit used to measure angles; there are 360° in a circle. *right angle* An angle that looks like a square corner and measures	

			liquid volume, or mass.	90°.	
		M04.D-M.2.1.1 Make a line plot to display a data set of measurements in fractions of a unit 1 e.g., intervals of ½, ¼ or ⅛.	Write and solve equations in order to solve word problems involving length, liquid volume, and mass. Summarize word problems about length, liquid volume, or mass and determine which operation to use.	*acute angle* An angle that measures more than 0° but less than 90°. *obtuse angle* An angle that measures more than 90° but less than 180°.	
		M04.D-M.2.1.2 Solve problems involving addition and subtraction of fractions by using information presented in line plots (line plots must be labeled with common denominators, such as ¼, 2/4, ¾).	Draw a diagram, make a table, or write an equation to represent and solve word problems about length, liquid volume, or mass. Lesson 26: Use the formula for perimeter to solve problems. Use the formula for area to solve problems. Summarize in writing how to find the perimeter of a rectangle using words or diagrams and equations.	*protractor* A tool used to measure angles. *compose* To make by combining parts. *decompose* To split up into parts. l*ine plot* A data display that uses a number line to show measurement data	
		M04.D-M.2.1.3 Translate information from one type of data display to another (table, chart, bar graph or pictograph).	Summarize in writing how to find the area of a rectangle using words or diagrams and equations. Restate word problems about area or perimeter and determine which to find.	*bar graph* A type of data display that represents a frequency distribution. The class intervals (buckets) in a bar graph	
		M04.D-M.3.1.1 Measure angles in whole-number	Draw a diagram or write an equation to represent and solve a word problem.		

		degrees using a protractor. With the aid of a protractor, sketch angles of specified measure. M04.D-M.3.1.2 Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems (angles must be adjacent and non-overlapping).	Lesson 27 Make a line plot that displays data in fractional units. • Solve addition word problems by using a line plot. • Solve subtraction word problems by using a line plot. • Draw a line plot to represent listed data. • Analyze data shown on line plots. Lesson 27a Create a data display to represent information shown in a different type of data display (tally chart, table, pictograph, bar graph, or line plot). Read data shown in a table, chart, or graph. Describe how data shown in one display is represented in a different type of display. Write labels on graphs. Lesson 28 • Recognize an angle as a geometric shape. • Identify acute, right, and obtuse angles. • Recognize the relationship between the measure of an angle and the part of a circle that the angle turns through.		represent categorical data. Bar graphs may either be vertical or horizontal. *scale* On a graph, the difference between numbers labeling the graph *tally chart* A table or chart in which tally marks (in contrast to numbers or pictures) are used to record data. *Pictograph* A chart that uses pictures or drawings to represent quantities. KEY *Elapsed time* The time that has passed between a start time and an end time *AM-morning* The time from midnight until	

			• Use the key vocabulary terms angle, right angle, acute angle, and obtuse angle to communicate precisely.		noon	
					PM The time from noon until midnight	
			• Describe a 360' turn as a full circle and a 180' turn as a half circle.			
					liquid volume The amount of space a liquid takes up	
			Lesson 29: Use a protractor to measure an angle.			
					mass The amount of matter in an object. Measuring the mass of an object is one way to measure how heavy it is. Units of mass include the gram and kilogram	
			Draw an angle of a specific degree.			
			Use benchmark angle measures to estimate the measure of an angle.			
			Record measures of angles.			
			Compare an angle to a right angle and a straight line.			
			Define the key mathematical terms protractor, vertex, ray, and right angle and use the terms in discussion.			
			Lesson 30 Recognize that an angle can be split up into several smaller angles.			
			Recognize that several smaller angles can be combined to form a larger angle.			
			Add and subtract to find angle measures.			

			Use addition and subtraction to solve word problems about angle measures.			
			List the smaller angles that compose a larger angle.			
			List angle information given in diagrams and use addition and subtraction to find unknown angle measures.			
			How can patterns be used to describe relationships in mathematical situations?			
			How can recognizing repetition or regularity assist in solving problems more efficiently?			
			How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?			
			How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?			
			How can geometric properties and theorems be used to describe, model, and analyze situations?			
			What does it mean to estimate or analyze numerical quantities?			
			What makes a tool and/or			

			strategy appropriate for a given task? How can data be organized and represented to provide insight into the relationship between quantities? How does the type of data influence the choice of display? How can probability and data analysis be used to make predictions? In what ways are the mathematical attributes of objects or processes measured, calculated, and/or interpreted? When it is appropriate to estimate versus calculate? Why does "what" we measure influence "how" we measure? How precise do measurements and calculations need to be?			

Month(s): April			Unit 6			
Geometry						
Big Idea	**Standard**	**Eligible Content**	**Essential Questions & Lesson Essential Question**	**Concepts**	**Vocabulary**	**Competencies**

-Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. -Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.	CC.2.4.4.A.1 Draw lines and angles and identify these in two-dimensional figures. CC.2.3.4.A.3 Recognize symmetric shapes and draw lines of symmetry.	M04.C-G.1.1.1 Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. M04.C-G.1.1.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. M04.C-G.1.1.3 Recognize a line of symmetry for a two-dimensional figure as a line	Lesson 31 • Identify and draw points, lines, line segments, rays, and angles, and identify them in two-dimensional figures. • Identify and draw parallel and perpendicular lines, distinguish between the two, and identify them in two-dimensional figures. • Identify points, lines, line segments, rays, and angles in two- dimensional figures. • Draw points, lines, line segments, rays, and angles. • Identify parallel and perpendicular lines in two-dimensional figures. • Use the terms point, line segment, line, ray, parallel, and perpendicular to communicate effectively. Lesson 32 Sort two-dimensional figures based on parallel or perpendicular sides and on acute, obtuse, or right angles. • Recognize that triangles can be classified based on the lengths of their sides (isosceles, equilateral, scalene). • Name a triangle based on the kind of angles it has (acute, obtuse, right).	Geometric Shapes and Figures	*point* A single location in space. *line segment* A straight row of points that starts at one point and ends at another; a part of a line. *line* A straight row of points that goes on forever in both directions. *ray* A straight row of points that starts at one point and goes on forever in one direction. *angle* A geometric shape formed by two rays, lines, or line segments that meet at a common point. *parallel lines* Two lines that are always the same distance apart and will never meet. *perpendicular lines* Two lines that cross at a 90°	*Draw and identify lines and angles. *Classify shapes by properties of their lines and angles. *Recognize symmetric shapes and draw lines of symmetry. *Measure and draw angles. *Apply area and perimeter formulas.

		across the figure such that the figure can be folded along the line into mirroring parts. Identify line symmetric figures and draw lines of symmetry (up to two lines of symmetry).	• Describe two-dimensional figures by using terms such as parallel or perpendicular sides, acute, obtuse or right angles, and equal length. • Use the key vocabulary terms equilateral, isosceles, scalene, acute, and triangle in discussions. • Tell how to sort two-dimensional figures into groups based on their properties. What does it mean to estimate or analyze numerical quantities? When is it is appropriate to estimate versus calculate? What makes a tool and/or strategy appropriate for a given task? Why does "what" we measure influence "how" we measure? In what ways are the mathematical attributes of objects or processes measured, calculated and/or interpreted? How precise do measurements and calculations need to be? Lesson 33 Recognize lines of symmetry		angle. *polygon* A two-dimensional closed shape made with three or more line segments. *rectangle* A quadrilateral with four right angles; opposite sides of a rectangle are the same length. *equilateral triangle* A triangle that has all three sides the same length. *isosceles triangle* A triangle that has at least two sides the same length. *scalene triangle* A triangle that has no sides the same length. *acute triangle* A triangle that has three acute angles. *right triangle*	

			in two-dimensional figures. Draw lines of symmetry in two-dimensional figures. Draw a line of symmetry. Listen to the arguments of others about lines of symmetry and offer reasons for agreeing or disagreeing. How can patterns be used to describe relationships in mathematical situations? How can recognizing repetition or regularity assist in solving problems more efficiently? How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? How can geometric properties and theorems be used to describe, model, and analyze situations?		A triangle that has one right angle. *obtuse triangle* A triangle that has one obtuse angle. *line of symmetry* A line that divides a shape into two mirror images. *line segment* A straight row of points that starts at one point and ends at another point, or, a part of a line *right angle* An angle that forms a square corner and measures 90 degrees *acute angle* An angle with a measure less than 90 degrees *obtuse angle* An angle that measures more than 90 degrees but less than 180 degrees *quadrilateral*

| | | | | | A polygon with exactly four sides and four angles

parallelogram
A quadrilateral with opposite sides parallel and equal in length

rhombus
A parallelogram with all four sides the same length

trapezoid
A type of quadrilateral. A trapezoid always has a pair of parallel sides | |