Scope and Sequence
Grade K - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
1	1. Learn the routines and expectations for ST Math Summer Immersion. 2. Addition within 10 and comparing numbers.	**K.2.E** **K.2.F** **K.2.H** **K.3.B** **K.3.C**	Students: ● will develop an understanding of the Problem-Solving Process and apply this thinking as a strategy for solving puzzles in ST Math. ● will be engaged in conversations and practice that will teach them how to utilize the strategy. ● will develop an understanding of the design process and understand the purpose and expectations of the stations. ● develop their understanding of solving addition problems within 10. Students will write equations to represent the problems. ● will solve addition word problems.
2	1. Addition within 10. 2. Writing equations 3. Solve word problems 4. Compare numbers 5. Math vocabulary 6. One or two more or less strategies for adding	**K.2.I** **K.3.A** **K.3.B** **K.3.C**	Students: ● develop their understanding of solving addition problems within 10. ● will write equations to represent the problems. ● will solve addition word problems.
3	1. Subtraction within 10 2. Writing equations 3. Solve word problems 4. Math vocabulary	**K.2.I** **K.3.A** **K.3.B** **K.3.C**	Students: ● develop their understanding of solving subtraction problems within 10. ● will write equations to represent the problems. ● will solve subtraction word problems.
4	1. Making 10. 2. Writing equations 3. Solve word problems	**K.2.I** **K.3.C**	Students: ● will use different models to compose 10 when one addend is given. ● will solve problems involving making combinations of 10. ● will decompose numbers less than or equal to 10 into different pairs of addends. ● solve word problems involving making 10.
5	1. Decompose numbers to 10 2. Writing equations 3. Solve word problems	**K.2.I** **K.3.C**	Students: ● will use different models to compose 10 when one addend is given. ● will solve problems involving making combinations of 10. ● will decompose numbers less than or equal to 10 into different pairs of addends. ● solve word problems involving making 10.

ST Math.
Summer Immersion

Ongoing Math Focus		
Student Discourse	**Student Problem-Solving Strategies**	**Representations**
Students discuss: • discuss the strategies they use to solve the puzzles and problems. • discuss and the teacher charts the math concepts and vocabulary. • discuss what the drawings or manipulatives represent in the puzzle or problem. • discuss what the numbers in their equation represent in the puzzle or problem. • discuss how the jumps on a number line represent addition.	Students: • compare the number of objects in two groups. • discuss what is known and what is unknown in the puzzle and problem. • write all of the combinations that will make numbers up to and including 10. • answer questions that focus on one or two more or less strategies for adding and subtracting. • answer questions about how a different number will change the solution to a problem.	Students: • represent the puzzles on a game mat using manipulatives, drawings, or numbers to help them solve problems. • draw pictures or write numerals on blank paper to represent the puzzle and show the solution. • represent problems with numbers and symbols. • write equations to represent the problem and solution. • learn to use one ten frame to organize counters and examine the relationship of numbers using benchmark numbers 5 and 10. • use two empty ten frames to help them solve the puzzles and problems. • represent equations, puzzles, and problems as jumps on a number line.

Standards

Counting and Cardinality

K.3 Number and operations. The student applies mathematical process standards to develop an understanding of addition and subtraction situations in order to solve problems.

K.3.A Model the action of joining to represent addition and the action of separating to represent subtraction.K.3.A Model the action of joining to represent addition and the action of separating to represent subtraction.

K.3.B Solve word problems using objects and drawings to find sums up to 10 and differences within 10.

K.3.C Explain the strategies used to solve problems involving adding and subtracting within 10 using spoken words, concrete and pictorial models, and number sentences.

K.2.E Generate a set using concrete and pictorial models that represents a number that is more than, less than, and equal to a given number up to 20.

K.2.F Generate a number that is one more than or one less than another number up to at least 20.

K.2.H Use comparative language to describe two numbers up to 20 presented as written numerals

K.2.I Compose and decompose numbers up to 10 with objects and pictures

Scope and Sequence
Grade 1 - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
1	1. Learn the routines and expectations for ST Math Summer Immersion. 2. Addition and subtraction of whole numbers 3. Write equations to represent a problem 4. Determine if equations are true or false	**1.3.B** **1.3.C** **1.3.E** **1.5.D** **1.5.E** **1.5.F**	Students: ● will develop an understanding of the Problem-Solving Process and use of this thinking strategy for solving puzzles in ST Math. ● will be engaged in conversations and practice that will teach them how to utilize the strategy. ● will develop an understanding of the design process and understand the purpose and expectations of the stations. ● will begin solving problems involving addition and subtraction and writing equations to represent the problems.
2	1. Solve word problems involving addition and subtraction. 2. Meaning of the equal sign	**1.3.B** **1.3.E** **1.5.D** **1.5.E** **1.5.F**	Students: ● work with puzzles involving addition and subtraction with the result, change, or start unknown. ● determine what is known and unknown in a puzzle or problem. ● write equations to represent the problems. ● discuss the meaning of the equal sign and whether equations are true or false. ● solve addition and subtraction word problems.
3	1. Writing equations to solve problems with addition and subtraction.	**1.3.B** **1.3.E** **1.5.D** **1.5.E** **1.5.F**	Students: ● work with puzzles involving addition and subtraction with the result, change, or start unknown. ● determine the unknown. ● write equations to represent the problems. ● discuss the meaning of the equal sign and whether equations are true or false. ● solve addition and subtraction word problems. ● add ten to a solution of a problem and write an equation to show the new total.
4	1. Determining the unknown whole number in an addition or subtraction equation.	**1.3.B** **1.3.E** **1.5.D** **1.5.E** **1.5.F**	Students: ● work with puzzles involving addition and subtraction with the result, change, or start unknown. ● determine the unknown. ● write equations to represent the problems. ● discuss the meaning of the equal sign and whether equations are true or false. ● solve addition and subtraction word problems.

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
5	1. Using the relationship between addition and subtraction to solve problems.	**1.3.B** **1.3.E** **1.5.D** **1.5.G**	● work with puzzles involving missing addends. ● write equations to represent the problems. ● discuss the meaning of the equal sign and whether equations are true or false. ● discuss the relationship of addition and subtraction. ● explore the commutative property of addition.

ST Math.
Summer Immersion

Ongoing Math Focus:

Student Discourse	Student Problem-Solving Strategies	Representations
Students discuss: ● how different combinations of creatures can equal the same number of shoes. ● what the numbers in the equations represent in the puzzles. ● whether equations are true or false. ● what is known and unknown in the puzzle and problem. ● the action in the puzzle when it is solved. ● multiple solutions for one puzzle or problem. ● the relationship of addition and subtraction. ● using benchmarks of five and ten to help add and subtract. ● commutative property of addition.	Students: ● determine what is known and unknown in a problem. ● find all the possible solutions to a puzzle. ● chart the combinations that make 5 and the combinations that make 10. ● write an equation for the combinations to make the number. ● use benchmarks of five and ten to help add and subtract. ● discuss that for this situation in the puzzle, order matters. ● use the relationship of addition and subtraction to solve a puzzle or problem.	Students: ● will use the Creature Cards to help represent and solve the puzzles. ● will write equations to show that two different solutions are equal. ● represent the puzzles on a game mat using manipulatives, drawing, or numbers to help them solve problems. ● show what the puzzle would look like with visuals instead of numbers. ● write equations to represent the puzzles include a ? or ☐ for the unknown in the problem. ● write and discuss a story problem for one of the puzzles.

Standards

(3) Number and operations.

The student applies mathematical process standards to develop and use strategies for whole number addition and subtraction computations in order to solve problems. The student is expected to:

(B) use objects and pictorial models to solve word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as 2 + 4 = [ ]; 3 + [ ] = 7; and 5 = [ ] - 3;

(C) compose 10 with two or more addends with and without concrete objects;

(E) explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences; and

(5) Algebraic reasoning.

The student applies mathematical process standards to identify and apply number patterns within properties of numbers and operations in order to describe relationships. The student is expected to:

(C) use relationships to determine the number that is 10 more and 10 less than a given number up to 120;

(D) represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences;

(E) understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s);

(F) determine the unknown whole number in an addition or subtraction equation when the unknown may be any one of the three or four terms in the equation; and

(G) apply properties of operations to add and subtract two or three numbers.

Scope and Sequence
Grade 2 - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
1	1. Learn the routines and expectations for ST Math Summer Immersion. 2. Addition and subtraction of whole numbers	**2.4.A** **2.4.B** **2.4.C** **2.4.D** **2.7.C**	Students: ● will develop an understanding of the Problem-Solving Process and use of this thinking strategy for solving puzzles in ST Math. ● will be engaged in conversations and practice that will teach them how to utilize the strategy. ● will develop an understanding of the design process and understand the purpose and expectations of the stations. ● will begin solving problems involving addition and subtraction within 100. ● will write equations to represent the problems including equations with a symbol for the unknown.
2	1. Solving problems involving addition and subtraction	**2.4.A** **2.4.B** **2.4.C** **2.4.D** **2.7.C**	Students: ● develop their understanding of addition and subtraction situations within 100 to solve problems. ● use strategies involving situations of adding to, taking from, putting together, taking apart, and comparing unknowns in different positions. ● will find missing addends. ● decompose numbers to make adding easier ● practice adding one-digit and two-digit whole numbers. ● will represent situations with equations.
3	1. Solving one and two-step problems involving addition and subtraction within 100 2. Solving problems involving equal groups 3. Even and odd numbers	**2.4.A** **2.4.B** **2.4.C** **2.4.D** **2.7.A** **2.7.C**	Students: ● work with puzzles to develop their understanding of addition and subtraction situations within 100 to solve one-step and two-step problems. ● use strategies involving situations of adding to, taking from, putting together, taking apart, and comparing unknowns in different positions. ● will represent situations with equations. ● work with puzzles to develop their understanding of equal groups. ● will solve problem situations involving array and equal group models. ● will represent solutions with equations to express the total as a sum of equal addends. ● will identify multiplication expressions as equivalent to repeated addition. This will lay a foundation for the understanding of multiplication. ● will also discuss the characteristics of even and odd numbers.

Module	Objectives	Standards	Overview
4	1. Solving problems involving equal groups 2. Solving problems using arrays and repeated addition 3. Even and odd numbers	**2.4.A** **2.4.B** **2.4.C** **2.4.D** **2.7.A**	Students: ● work with puzzles to develop their understanding of equal groups. ● will solve problem situations involving array and equal group models. ● will represent solutions with equations to express the total as a sum of equal addends. ● will identify multiplication expressions as equivalent to repeated addition. ● will lay a foundation for the understanding of multiplication. ● will also discuss the characteristics of even and odd numbers.
5	1. Representing numbers with repeated addition	**2.6.A** **2.7.A**	Students: ● work with arrays to represent repeated addition. ● will find multiple ways to represent a number.

Ongoing Math Focus		
Student Discourse	**Student Problem-Solving Strategies**	**Representations**
Students discuss: ● and chart the vocabulary and the math that is happening in the puzzles. ● the relationship of numbers and how a bar model and the number line show these relationships. ● how the numbers can be decomposed as jumps on a number line and how that helps with addition and subtraction of multi-digit numbers. ● different strategies students use to solve the problem. ● and show the action in the puzzles. ● the mathematics students are using to solve the puzzles and problems. ● what the solution would look like on a number line. ● what they know about arrays and how the array models the puzzle or problem. ● and compare the mathematics in two different games. ● patterns they notice.	Students: ● share their solutions to problems and critique other student's solution strategies. ● determine how the numbers can be decomposed as jumps on a number line to help with addition and subtraction of multi-digit numbers. ● use game mats to help solve the puzzles. ● use the Creature Cards to find different solutions to the puzzles. ● try a solution that has the correct number of squares but not the correct number of rows or columns. Discuss why this does not work.	Students: ● write equations to represent the solutions. ● write equations with a symbol or letter to represent the missing addend. ● show the problem as jumps on a number line. ● continue to represent the puzzles in multiple ways, equations, bar models, and as jumps on a number line. ● represent the puzzles visually on their game mats and with an equation. ● compare their solution on the game mat to arrays. ● create an array with centimeter cubes to model a puzzle. ● write equations using repeated addition to represent the puzzles.

Standards

(4) Number and operations.

The student applies mathematical process standards to develop and use strategies and methods for whole number computations in order to solve addition and subtraction problems with efficiency and accuracy. The student is expected to:

    (A) recall basic facts to add and subtract within 20 with automaticity;

    (B) add up to four two-digit numbers and subtract two-digit numbers using mental strategies and algorithms based on knowledge of place value and properties of operations;

    (C) solve one-step and multi-step word problems involving addition and subtraction within 1,000 using a variety of strategies based on place value, including algorithms; and

    (D) generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000.

(6) Number and operations.

The student applies mathematical process standards to connect repeated addition and subtraction to multiplication and division situations that involve equal groupings and shares. The student is expected to:

    (A) model, create, and describe contextual multiplication situations in which equivalent sets of concrete objects are joined;

(7) Algebraic reasoning.

The student applies mathematical process standards to identify and apply number patterns within properties of numbers and operations in order to describe relationships. The student is expected to:

    (A) determine whether a number up to 40 is even or odd using pairings of objects to represent the number;

    (C) represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem.

Scope and Sequence
Grade 3 - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
1	1. Learn the routines and expectations for ST Math Summer Immersion. 2. Begin working with problems involving fractions. 3. Compare fractions and count by unit fractions.	3.3.A 3.3.B 3.3.C 3.3.D	Students: ● will develop an understanding of the Problem-Solving Process and use of this thinking strategy for solving puzzles in ST Math. ● will be engaged in conversations and practice that will teach them how to utilize the strategy. ● will develop an understanding of the design process and understand the purpose and expectations of the stations. ● will begin solving problems involving fractions and understanding fractions as numbers, including counting by unit fractions.
2	1. Solving problems involving partitioning a whole into equal sections (fractions).	3.3.A 3.3.B 3.3.C 3.3.D 3.3.E	Students: ● use their understanding of fair sharing whole numbers into equal groups to partition one whole into equal fractional sections. ● partition a whole into halves, thirds, fourths, and eighths. ● understand that a fraction 1/b is the quantity formed by 1 part of a whole partitioned into b equal parts. ● work with puzzles involving selecting *a* fraction of size *1/b* to create a fraction *a/b*.
3	1. Defining and partitioning one (whole) and combining unit fractions.	3.3.A 3.3.B 3.3.C 3.3.D 3.3.E	Students: ● work with puzzles involving partitioning a rectangle into equal areas. ● understand that a fraction 1/b is the quantity formed by 1 part of a whole partitioned into b equal parts and combine the unit fractions to create a/b fractions. ● work with puzzles involving representing fractions as a bar model, moving the bar model to a number line, and understanding a fraction as a number on a number line. ● represent a fraction 1/b on a number line by defining the interval from 0 to 1 and partitioning it into b equal parts. ● recognize each of these parts as 1/b. ● represent fractions *a/b* by *a length* of *1/b* from zero.

Scope and Sequence
Grade 3 - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
4	1. Comparing fractions on a number line.	**3.3.A** **3.3.B** **3.3.H** **3.3.F** **3.3.G** **3.3.H**	Students: • work with puzzles involving representing fractions as a bar model, moving the bar model to a number line, and understanding a fraction as a number on a number line. • represent a fraction 1/b on a number line by defining the interval from 0 to 1 and partitioning it into b equal parts. Recognize each of these parts as 1/b. • represent fractions a/b by a length of 1/b from zero. • use benchmark fractions and unit fractions to place fractions on a number line diagram. • understand that two fractions are equivalent when they occupy the same point on a number line. • express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. • use the number line diagram to compare fractions.
5	1. Comparing Fractions and Equivalent Fractions.	**3.3.A** **3.3.B** **3.3.F** **3.3.G** **3.3.H**	Students: • work with fraction strips to prove that two or more fractions are equivalent. • compare fractions by seeing the relative length of the fraction pieces and by relating the fraction pieces to earlier number line work. • reflect on their learning during summer school.

Ongoing Math Focus

Student Discourse	Student Problem Solving Strategies	Representations
Students discuss: ● the role of the numerator and denominator in locating the fraction on the number line. ● fractions equivalent to 1. ● how they know how many unit fractions to select. ● counting by unit fractions and how that compares to counting whole numbers. ● equivalence. ● counting by unit fractions. How many unit fractions are needed to make one whole? ● the size and number of partitions created as the cursor moves from left to right in the puzzle. ● the meaning of the denominator in the fractions. Relate this to moving left to right on the number line. ● the role of the numerator in the fractions. ● the need for each section of the rectangles to cover the same amount of area as the other sections in the rectangle in order for them to be the same fractional part. ● that each bar or number line model may not look alike or be the same size but it can represent the same number. ● the role of the denominator in partitioning the number line and counting by unit fractions to locate a number on the number line. ● the number of unit fractions that are equal to one. ● the role of the numerator and denominator in locating a fraction on the number line.	Students: ● count the unit fractions as the fraction pieces roll out on the number line. ● continue to discuss the role of the numerator and denominator in the fractions and how that helps them solve the puzzles ● identify each section as a unit fraction and discuss how many unit fractions are in the whole. ● count the different number of sections by unit fractions and name that amount as an a/b fraction. ● determine strategies for partitioning a number line into fractions and estimating the location of a number on the number line by counting by unit fractions. ● determine how to use benchmark numbers to locate a fraction on the number line. ● use directional (right or left) comparison of fractions on the number line.	Students: ● add unit fractions on a number line and write an equation to show the location of the sum. ● compare how the circles on the JiJi cycle and the number line represent the number. ● write expressions or equations to represent the puzzles. ● write numbers as fractions greater than one and mixed numbers. ● build bar models with different manipulatives. Compare the bar models and discuss what number each bar model represents and where that number would be located on the number line. ● create a number line and partition it to locate the given fractions.

Standards

(3) Number and operations.

The student applies mathematical process standards to represent and explain fractional units. The student is expected to:

(A) represent fractions greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 using concrete objects and pictorial models, including strip diagrams and number lines;

(B) determine the corresponding fraction greater than zero and less than or equal to one with denominators of 2, 3, 4, 6, and 8 given a specified point on a number line;

(C) explain that the unit fraction $1/b$ represents the quantity formed by one part of a whole that has been partitioned into b equal parts where b is a non-zero whole number;

(D) compose and decompose a fraction a/b with a numerator greater than zero and less than or equal to b as a sum of parts $1/b$;

(E) solve problems involving partitioning an object or a set of objects among two or more recipients using pictorial representations of fractions with denominators of 2, 3, 4, 6, and 8;

(F) represent equivalent fractions with denominators of 2, 3, 4, 6, and 8 using a variety of objects and pictorial models, including number lines;

(G) explain that two fractions are equivalent if and only if they are both represented by the same point on the number line or represent the same portion of a same size whole for an area model; and

(H) compare two fractions having the same numerator or denominator in problems by reasoning about their sizes and justifying the conclusion using symbols, words, objects, and pictorial models.

Scope and Sequence
Grade 4 - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
1	1. Learn the routines and expectations for ST Math Summer Immersion. 2. Begin working with problems involving fractions 3. Compare fractions; equivalent fractions; benchmark fractions 4. Solve problems involving comparing fractions, including ordering on a number line.	**4.3.A** **4.3.B** **4.3.C** **4.3.D**	Students: • will develop an understanding of the Problem-Solving Process and apply this thinking as a strategy for solving puzzles in ST Math. Students will be engaged in conversations and practice that will teach them how to utilize the strategy. • will begin solving problems involving fractions, including all 3 operations (+; -; x), and understanding fractions as numbers. • will develop an understanding of the design process and understand the purpose and expectations of the stations. • create a model of a number using paper strips, connecting cubes, or Cuisenaire rods, and build a number line using the model. • use benchmark fractions, equivalent fractions, and comparing fractions to place fractions on the number line. • justify their reasoning for where they placed the numbers.
2	1. Comparing fractions and understanding equivalence.	**4.3.A** **4.3.B** **4.3.C** **4.3.D**	Students: • create fractions using paper strips. • use the strips and the number line they created to compare fractions and find equivalent fractions. • solve problems involving comparing and ordering fractions.
3	1. Adding and subtracting fractions and mixed numbers.	**4.3.E** **4.3.F**	Students: • work with area models and number line models to add and subtract fractions and mixed numbers. • use a number line to represent addition and subtraction of fractions as jumps to the right or left. • relate this to addition and subtraction of whole numbers. • solve rich problems involving addition and subtraction of fractions.
4	1. Adding and subtracting fractions and mixed numbers.	**4.3.E** **4.3.F**	Students: • work with area models and number line models to add and subtract fractions and mixed numbers. • use a number line to represent addition and subtraction of fractions as jumps to the right or left. • relate this to addition and subtraction of whole numbers. • solve rich problems involving addition and subtraction of fractions.

Module	Objectives	Standards	Overview
5	1. Write and compare decimal fractions. 2. Represent decimal fractions on a number line and a hundred grid.	**4.2.E** **4.2.G** **4.2.H** **4.3.G**	Students: ● work with a number line and a hundred grid to represent decimal fractions. ● compare decimal and fraction forms of numbers. ● discuss the relationship of tenths and hundredths.

Ongoing Math Focus		
Student Discourse	**Student Problem-Solving Strategies**	**Representations**
Students discuss: ● the role of the denominator and numerator in placing numbers on a number line. ● the size of the fractions (denominator) and the number of unit fractions (numerator) of that size to compare equivalent fractions. ● for puzzles with fifths and tenths, discuss when there will and will not be an equivalent. ● what happens to the numerator and denominator of the fractions when they are partitioned further. ● fractions equal to one, how they know fractions are equivalent on the number line, benchmark fractions, and counting by unit fractions. ● the role of the numerator and denominator. ● what each model and number represents in the problem. ● the relationship of addition and subtraction. ● how to determine the number of partitions (denominator) needed in the pies. ● how to determine how many pies to select (whole number factor times the numerator). ● how these puzzles compare to the puzzles in Crank Pies Fraction Multiplication. (two different games) ● the relationship of tenths and hundredths.	Students: ● determine how to select the denominator to partition the number line. ● discover as the number of partitions increases the size of the partitions decreases. ● compare original unit fractions to the new fraction after it is partitioned. ● include the fraction (a/a) that they multiply the original fraction by in order to get the equivalent fraction after it is cut. (e.g., 13 × 44 = 412) ● determine how to order fractions from least to greatest. ● use counting by unit fractions and the similarity to adding whole numbers to add and subtract fractions. ● show the action of adding and subtracting fractions as jumps on a number line. ● use the relationship of addition and subtraction to solve problems. ● compare multiplying a whole number by a whole number to multiplying a whole number times a fraction. ● compare multiplying a whole number times a unit fraction to multiplying a whole number times an a/b fraction. ● compare fraction and decimal forms for writing the numbers. Change one form to the same form as the other addend to add.	Students: ● create fractions by cutting paper strips. ● write equivalent fractions and mixed numbers. ● write equations to show the equivalence of fractions. ● Write equations and inequalities to compare fractions. ● create a number line and compare and order fractions on the number line. ● write fractions greater than 1, as a fraction, and as mixed numbers. ● use a bar model and a number line to add and subtract fractions. ● write equations to represent the problems. ● compare the action of multiplying a whole number times a fraction on a number line to the action of adding fractions on a number line. ● write addition and multiplication equations to represent the puzzles. ● represent the solutions on a hundred grid. ● use the models to show the relationship of tenths and hundredths. ● write decimal and fraction forms of the numbers. ● write equations to represent the numbers (e.g., 0.53 = 0.5 + 0.03)..

Standards

(2) Number and operations. The student applies mathematical process standards to represent, compare, and order whole numbers and decimals and understand relationships related to place value. The student is expected to:

(E) represent decimals, including tenths and hundredths, using concrete and visual models and money;

(G) relate decimals to fractions that name tenths and hundredths; and

(H) determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line.

(3) Number and operations. The student applies mathematical process standards to represent and generate fractions to solve problems. The student is expected to:

(A) represent a fraction a/b as a sum of fractions $1/b$, where a and b are whole numbers and $b > 0$, including when a > b;

(B) decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations;

(C) determine if two given fractions are equivalent using a variety of methods;

(D) compare two fractions with different numerators and different denominators and represent the comparison using the symbols >, =, or <;

(E) represent and solve addition and subtraction of fractions with equal denominators using objects and pictorial models that build to the number line and properties of operations;

(F) evaluate the reasonableness of sums and differences of fractions using benchmark fractions 0, 1/4, 1/2, 3/4, and 1, referring to the same whole; and

(G) represent fractions and decimals to the tenths or hundredths as distances from zero on a number line.

Scope and Sequence
Grade 5 - TEKS (Texas)

ST Math.
Summer Immersion

Module	Objectives	Standards	Overview
1	1. Learn the routines and expectations for ST Math Immersion. 2. begin working with problems involving fractions. 3. Understand the relationship of fractions (1/2, 1/3, 1/4, 1/5, 1/10) to decimals.	**5.3.H**	Students: ● will develop an understanding of the Problem-Solving Process and use of this thinking strategy for solving puzzles in ST Math. Students will be engaged in conversations and practice that will teach them how to utilize the strategy. ● will begin solving problems involving fractions, including all 4 operations, and understanding fractions as numbers. ● will develop an understanding of the design process and understand the purpose and expectations of the stations.
2	1. Adding and Subtracting Fractions with Unlike Denominators.	**5.3.H**	Students: ● use benchmark fractions, equivalent fractions, and comparing fractions to create a number line to compare and order fractions, place them on a number line, and justify their reasoning for where they placed the numbers. ● use this to assess the reasonableness of answers as they add and subtract fractions with unlike denominators.
3	1. Solving problems involving multiplying a fraction or a whole number by a fraction.	**5.3.I**	Students: ● work with area models and number line models to multiply fractions by whole numbers and other fractions. ● work with puzzles involving the multiplication of a fraction by a whole number, a whole number by a fraction, and a fraction by a fraction. ● relate multiplication of whole numbers to multiplication with fractions.
4	1. Solving problems involving dividing fractions	**5.3.J** **5.3.L**	Students: ● work with puzzles involving multiplication and division of fractions and whole numbers. ● work a series of puzzles that help them understand the relationship of multiplication and division.

Module	Objectives	Standards	Overview
5	1. Solving problems involving dividing fractions.	**5.3.J** **5.3.L**	● work with puzzles involving multiplication and division of fractions and whole numbers. ● work a series of puzzles that help them understand the relationship between multiplication and division.

Scope and Sequence
Grade 5 - TEKS (Texas)

ST Math.
Summer Immersion

Ongoing Math Focus		
Student Discourse	**Student Problem-Solving Strategies**	**Representations**
Students discuss: ● the relationship of fractions with denominators of 2, 3, 4, 5, and 10 to decimals. ● how to compare fraction and decimal forms of numbers. ● the numerator determines the number of jumps (e.g., 3/4 × 5; 0 to 5 on the number line is partitioned into 4 equal sections; JiJi jumps to the end of 3 of those sections). ● the role of the numerator and denominator in the visual representation and the multiplication expression. ● what happens to the size of the product when multiplying a fraction times a whole number and a fraction times a fraction (fractions less than and greater than one). ● what each number in the equation represents in the puzzle. ● the relationship between multiplication and division and the role of the numerator and denominator in determining the solution.	Students: ● determine the number of unit fractions needed to equal the given decimal sum. ● recognize that there are 10 hundredths for every tenth (0.01 × 10=0.1). ● develop strategies for locating fractions on a number line by visually partitioning each whole into a number of sections based on the denominator and counting by unit fractions based on the numerator. ● develop an understanding of multiplying the numerator and denominator by the same number to find equivalent fractions. ● partition each whole on the number line into the appropriate number of partitions needed to locate the sum. ● understand that as the size of the partitions decreases the number of partitions increases to make one whole. ● determine how to partition the number line and determine the size and number of jumps to make when multiplying a fraction and whole number. ● multiply a fraction times a fraction using an area model.	Students: ● record the sum on a hundred grid to compare tenths to hundredths. ● locate fraction form (1/10; 1/100) and decimal form (0.1; 0.01) of numbers on a number line labeled 0 to 1 with tick marks for every tenth. ● locate fractions on number lines with and without partitions marked. ● write fractions greater than 1 as mixed numbers and fractions. ● understand that numbers that are located at the same point on a number line are equivalent. ● write mixed numbers as equivalent fractions. ● write equations to represent the visual problem. ● add and subtract mixed numbers and locate the sum on a number line. ● see the multiplication expression play out on the number line as taking the fraction the whole number of times (jumps) from left to right on the number line. ● solve multiplication problems with a unit fraction or an *a/b* fraction times a whole number using an area model. ● represent the problem on a number line and compare the two models.

	Ongoing Math Focus	
Student Discourse	**Student Problem-Solving Strategies**	**Representations**
	• determine how many pies one monster would eat given a number of pies for 2 or more monsters. Then determine how many pies are needed to feed the given number of monsters. • partition the pies on the game mat, and distribute the pies to the monsters. • use the relationship of multiplication and division to solve puzzles • use the relationship of multiplication and division to solve puzzles involving the division of whole numbers by fractions.	• draw the area models before solving the puzzle online. • represent the puzzles on their game mats and write equations to represent the puzzle.

Standards

(3) Number and operations.

The student applies mathematical process standards to develop and use strategies and methods for positive rational number computations in order to solve problems with efficiency and accuracy. The student is expected to:

(H) represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations;

(I) represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models;

(J) represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as 1/3 ÷ 7 and 7 ÷ 1/3 using objects and pictorial models, including area models;

(L) divide whole numbers by unit fractions and unit fractions by whole numbers.