State of Texas Assessments of Academic Readiness

TEKS Curriculum Framework for STAAR Alternate 2

Grade 4 Mathematics Assessment

Updated Fall 2024

Note: This curriculum framework document has been updated to include the student expectations eligible for assessment on this STAAR Alternate 2 Mathematics test.

STAAR Reporting Category 1 – Numerical Representations and Relationships: The student will demonstrate an understanding of how to represent and manipulate numbers and expressions.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.2) 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: (A) interpret the value of each place-value position as 10 times the position to the right and as one-tenth of the value of the place to its left; Supporting Standard (B) represent the value of the digit in whole numbers through 1,000,000,000 and decimals to the hundredths using expanded notation and numerals; Readiness Standard (C) compare and order whole numbers to 1,000,000,000 and represent comparisons using the symbols >, <, or =; Supporting Standard (D) round whole numbers to a given place value through the hundred thousands place; Supporting Standard (E) represent decimals, including tenths and hundredths, using concrete and visual models and money; Supporting Standard (F) compare and order decimals using concrete and visual models to the hundredths; Supporting Standard (G) relate decimals to fractions that name tenths and hundredths; Readiness Standard (H) determine the corresponding decimal to the tenths or hundredths place of a specified point on a number line. Supporting Standard	Uses number relationships to demonstrate an understanding of place value.

4.2	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Representing and Using Fractions, Decimals, Percents and Probability • 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 (3)

Continued

4.2	Prerequisite Skills/Links to TEKS Vertical Alignment

- represent equivalent fractions with denominators of 2, 3, 4, 6, and 8 using a variety of objects and pictorial models, including number lines (3)
- 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 (3)
- 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* (3)
- 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 (3)
- 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 (3)
- identify examples and non-examples of halves, fourths, and eighths (2)
- use concrete models to count fractional parts beyond one whole using words and recognize how many parts it takes to equal one whole (2)
- explain that the more fractional parts used to make a whole, the smaller the part: the fewer the fractional parts, the larger the part (2)
- partition objects into equal parts and name the parts, including halves, fourths, and eighths, using words (2)
- identify examples and non-examples of halves and fourths (1)
- partition two-dimensional figures into two and four fair shares or equal parts and describe the parts using words (1)

Determining and Simplifying Numeric and Algebraic Expressions

- describe the mathematical relationships found in the base-10 place value system through the hundred thousands place (3)
- compose and decompose numbers up to 100,000 as a sum of so many ten thousands, so many thousands, so many hundreds, so many tens, and so many ones using objects, pictorial models, and numbers, including expanded notation as appropriate (3)
- use standard, word, and expanded forms to represent numbers up to 1,200 (2)
- use concrete and pictorial models to compose and decompose numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones (2)
- apply properties of operations to add and subtract two or three numbers (1)
- use objects, pictures, and expanded and standard forms to represent numbers up to 120 (1)

Continued

4.2	Prerequisite Skills/Links to TEKS Vertical Alignment

- use concrete and pictorial models to compose and decompose numbers up to 120 in more than one way as so many hundreds, so many tens, and so many ones (1)
- compose and decompose numbers up to 10 with objects and pictures (K)
- begin to understand that numbers 0-10 can be composed and decomposed in various ways to represent a quantity (PK4.V.A.7)

Comparing, Ordering, and Rounding Numbers Using Place Value

- compare and order whole numbers up to 100,000 and represent comparisons using the symbols >, <, or = (3)
- use an understanding of place value to determine the number that is 10 or 100 more or less than a given number up to 1,200 (2)
- use place value to compare and order whole numbers up to 1,200 using comparative language, numbers, and symbols (>, <, or =) (2)
- use relationships to determine the number that is 10 more and 10 less than a given number up to 120 (1)
- represent the comparison of two numbers to 100 using the symbols >, <, or = (1)
- order whole numbers up to 120 using place value and open number lines (1)
- use place value to compare whole numbers up to 120 using comparative language (1)
- use comparative language to describe two numbers up to 20 presented as written numerals (K)
- compare sets of objects up to at least 20 in each set using comparative language (K)
- compare sets of objects up to 10 using comparative language (e.g., greater/more than, less/fewer than, equal to/same number of) (PK4.V.A.8)
- compare sets of objects up to 5 using comparative language (e.g., more than, less than, same number of) (PK3.V.A.8)

Identifying Points and Distances on Number Lines

- represent fractions of halves, fourths, and eighths as distances from zero on a number line (3)
- 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 (3)
- 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 (3)
- represent a number on a number line as being between two consecutive multiples of 10; 100; 1,000; or 10,000 and use words to describe relative size of numbers in order to round whole numbers (3)

Continued

4.2	Prerequisite Skills/Links to TEKS Vertical Alignment

- represent whole numbers as distances from any given location on a number line (2)
- name the whole number that corresponds to a specific point on a number line (2)
- locate the position of a given whole number on an open number line (2)
- demonstrate use of position words (PK4.V.C.3)
- begin to use language to describe position of objects (PK3.V.C.3)

Recognizing Numbers and Counting

- determine if a number is even or odd using divisibility rules (3)
- determine whether a number up to 40 is even or odd using pairings of objects to represent the number (2)
- generate a number that is greater than or less than a given whole number up to 1,200 (2)
- skip count by twos, fives, and tens to determine the total number of objects up to 120 in a set (1)
- recite numbers forward and backward from any given number between 1 and 120 (1)
- generate a number that is greater than or less than a given whole number up to 120 (1)
- recognize instantly the quantity of structured arrangements (1)
- recite numbers up to at least 100 by ones and tens beginning with any given number (K)
- generate a number that is one more than or one less than another number up to at least 20 (K)
- 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)
- recognize instantly the quantity of a small group of objects in organized and random arrangements (K)
- count a set of objects up to at least 20 and demonstrate that the last number said tells the number of objects in the set regardless of their arrangement or order (K)
- read, write, and represent whole numbers from 0 to at least 20 with and without objects or pictures (K)
- count forward and backward to at least 20 with and without objects (K)
- represent quantities up to 10 (PK4.V.A.6)
- recognize numerals 0-10 (PK4.V.A.5)
- instantly recognize the quantity of up to 6 objects without counting (subitizes) (PK4.V.A.4)
- demonstrate understanding that when counting, the items can be chosen in any order
- count up to 10 items and demonstrate cardinality by communicating that the last number indicates how many items are in the set (PK4.V.A.3)

Continued

4.2	Prerequisite Skills/Links to TEKS Vertical Alignment
	• count up to 10 objects with one-to-one correspondence (PK4.V.A.2) • rote count from 1 to 30 (PK4.V.A.1) • represent quantities up to 5 (PK3.V.A.6) • recognize numerals 0-5 (PK3.V.A.5) • instantly recognize the quantity of up to 3 objects without counting (subitizes) (PK3.V.A.4) • count up to 5 items and demonstrate cardinality by communicating that the last number indicates how many items are in the set (PK3.V.A.3) • count up to 5 objects with one-to-one correspondence (PK3.V.A.2) • rote count from 1 to 10 (PK3.V.A.1)

STAAR Reporting Category 1 – Numerical Representations and Relationships: The student will demonstrate an understanding of how to represent and manipulate numbers and expressions.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.3) 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; Supporting Standard (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; Supporting Standard (C) determine if two given fractions are equivalent using a variety of methods; Supporting Standard (D) compare two fractions with different numerators and different denominators and represent the comparison using the symbols >, =, or <; Readiness Standard (G) represent fractions and decimals to the tenths or hundredths as distances from zero on a number line. Supporting Standard	Models and finds relationships among fractional units.

4.3	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Representing and Using Fractions, Decimals, Percents and Probability • 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 (3) • represent equivalent fractions with denominators of 2, 3, 4, 6, and 8 using a variety of objects and pictorial models, including number lines (3) • 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 (3) • 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* (3)

Continued

4.3	Prerequisite Skills/Links to TEKS Vertical Alignment

- 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 (3)
- 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 (3)
- identify examples and non-examples of halves, fourths, and eighths (2)
- use concrete models to count fractional parts beyond one whole using words and recognize how many parts it takes to equal one whole (2)
- explain that the more fractional parts used to make a whole, the smaller the part: the fewer the fractional parts, the larger the part (2)
- partition objects into equal parts and name the parts, including halves, fourths, and eighths, using words (2)
- identify examples and non-examples of halves and fourths (1)
- partition two-dimensional figures into two and four fair shares or equal parts and describe the parts using words (1)

Identifying Points and Distances on Number Lines

- represent fractions of halves, fourths, and eighths as distances from zero on a number line (3)
- 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 (3)
- 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 (3)
- represent a number on a number line as being between two consecutive multiples of 10; 100; 1,000; or 10,000 and use words to describe relative size of numbers in order to round whole numbers (3)
- represent whole numbers as distances from any given location on a number line (2)
- name the whole number that corresponds to a specific point on a number line (2)
- locate the position of a given whole number on an open number line (2)
- demonstrate use of position words (PK4.V.C.3)
- begin to use language to describe position of objects (PK3.V.C.3)

Recognizing Numbers and Counting

- determine if a number is even or odd using divisibility rules (3)
- determine whether a number up to 40 is even or odd using pairings of objects to represent the number (2)

Continued

4.3	Prerequisite Skills/Links to TEKS Vertical Alignment
	• generate a number that is greater than or less than a given whole number up to 1,200 (2) • skip count by twos, fives, and tens to determine the total number of objects up to 120 in a set (1) • recite numbers forward and backward from any given number between 1 and 120 (1) • generate a number that is greater than or less than a given whole number up to 120 (1) • recognize instantly the quantity of structured arrangements (1) • recite numbers up to at least 100 by ones and tens beginning with any given number (K) • generate a number that is one more than or one less than another number up to at least 20 (K) • 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) • recognize instantly the quantity of a small group of objects in organized and random arrangements (K) • count a set of objects up to at least 20 and demonstrate that the last number said tells the number of objects in the set regardless of their arrangement or order (K) • read, write, and represent whole numbers from 0 to at least 20 with and without objects or pictures (K) • count forward and backward to at least 20 with and without objects (K) • represent quantities up to 10 (PK4.V.A.6) • recognize numerals 0-10 (PK4.V.A.5) • instantly recognize the quantity of up to 6 objects without counting (subitizes) (PK4.V.A.4) • count up to 10 items and demonstrate cardinality by communicating that the last number indicates how many items are in the set (PK4.V.A.3) • count up to 10 objects with one-to-one correspondence (PK4.V.A.2) • rote count from 1 to 30 (PK4.V.A.1) • represent quantities up to 5 (PK3.V.A.6) • recognize numerals 0-5 (PK3.V.A.5) • instantly recognize the quantity of up to 3 objects without counting (subitizes) (PK3.V.A.4) • count up to 5 items and demonstrate cardinality by communicating that the last number indicates how many items are in the set (PK3.V.A.3) • count up to 5 objects with one-to-one correspondence (PK3.V.A.2) • rote count from 1 to 10 (PK3.V.A.1)

STAAR Reporting Category 2 – Computations and Algebraic Relationships: The student will demonstrate an understanding of how to perform operations and represent algebraic relationships.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.3) Number and operations. The student applies mathematical process standards to represent and generate fractions to solve problems. The student is expected to: (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; Readiness Standard (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. Supporting Standard	Solves addition or subtraction problems involving fractions.

4.3 Prerequisite Skills/Links to TEKS Vertical Alignment

Representing and Using Fractions, Decimals, Percents and Probability

- 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 (3)
- represent equivalent fractions with denominators of 2, 3, 4, 6, and 8 using a variety of objects and pictorial models, including number lines (3)
- 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 (3)
- 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* (3)
- 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 (3)
- 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 (3)
- identify examples and non-examples of halves, fourths, and eighths (2)
- use concrete models to count fractional parts beyond one whole using words and recognize how many parts it takes to equal one whole (2)

Continued

4.3	Prerequisite Skills/Links to TEKS Vertical Alignment

- explain that the more fractional parts used to make a whole, the smaller the part: the fewer the fractional parts, the larger the part (2)
- partition objects into equal parts and name the parts, including halves, fourths, and eighths, using words (2)
- identify examples and non-examples of halves and fourths (1)
- partition two-dimensional figures into two and four fair shares or equal parts and describe the parts using words (1)

Adding and Subtracting Whole Numbers, Fractions, and Decimals

- round to the nearest 10 or 100 or use compatible numbers to estimate solutions to addition and subtraction problems (3)
- solve with fluency one- step and two-step problems involving addition and subtraction within 1,000 using strategies based on place value, properties of operations, and the relationship between addition and subtraction (3)
- 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 (2)
- 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 (2)
- recall basic facts to add and subtract within 20 with automaticity (2)
- explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences (1)
- apply basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10 (1)
- compose 10 with two or more addends with and without concrete objects (1)
- 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 (1)
- use concrete and pictorial models to determine the sum of a multiple of 10 and a one-digit number in problems up to 99 (1)
- explain the strategies used to solve problems involving adding and subtracting within 10 using spoken words, concrete and pictorial models, and number sentences (K)
- solve word problems using objects and drawings to find sums up to 10 and differences within 10 (K)
- model the action of joining to represent addition and the action of separating to represent subtraction (K)
- use objects, pictorial models, and/or a verbal word problem to represent subtracting objects from a set of 5 (PK4.V.B.2)
- use objects, pictorial models, and/or a verbal word problem to represent adding up to 5 objects (PK4.V.B.1)

Continued

4.3	Prerequisite Skills/Links to TEKS Vertical Alignment

- use objects to demonstrate that taking away one or more objects from a set will decrease the number of objects in the set (PK3.V.B.2)
- use objects to demonstrate that adding one or more objects to a set will increase the number of objects in the set (PK3.V.B.1)

Recognizing Numbers and Counting

- determine if a number is even or odd using divisibility rules (3)
- determine whether a number up to 40 is even or odd using pairings of objects to represent the number (2)
- generate a number that is greater than or less than a given whole number up to 1,200 (2)
- skip count by twos, fives, and tens to determine the total number of objects up to 120 in a set (1)
- recite numbers forward and backward from any given number between 1 and 120 (1)
- generate a number that is greater than or less than a given whole number up to 120 (1)
- recognize instantly the quantity of structured arrangements (1)
- recite numbers up to at least 100 by ones and tens beginning with any given number (K)
- generate a number that is one more than or one less than another number up to at least 20 (K)
- 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)
- recognize instantly the quantity of a small group of objects in organized and random arrangements (K)
- count a set of objects up to at least 20 and demonstrate that the last number said tells the number of objects in the set regardless of their arrangement or order (K)
- read, write, and represent whole numbers from 0 to at least 20 with and without objects or pictures (K)
- count forward and backward to at least 20 with and without objects (K)
- represent quantities up to 10 (PK4.V.A.6)
- recognize numerals 0-10 (PK4.V.A.5)
- instantly recognize the quantity of up to 6 objects without counting (subitizes) (PK4.V.A.4)
- count up to 10 items and demonstrate cardinality by communicating that the last number indicates how many items are in the set (PK4.V.A.3)
- count up to 10 objects with one-to-one correspondence (PK4.V.A.2)
- rote count from 1 to 30 (PK4.V.A.1)

Continued

4.3	Prerequisite Skills/Links to TEKS Vertical Alignment
	• represent quantities up to 5 (PK3.V.A.6) • recognize numerals 0-5 (PK3.V.A.5) • instantly recognize the quantity of up to 3 objects without counting (subitizes) (PK3.V.A.4) • count up to 5 items and demonstrate cardinality by communicating that the last number indicates how many items are in the set (PK3.V.A.3) • count up to 5 objects with one-to-one correspondence (PK3.V.A.2) • rote count from 1 to 10 (PK3.V.A.1)

STAAR Reporting Category 2 – Computations and Algebraic Relationships: The student will demonstrate an understanding of how to perform operations and represent algebraic relationships.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.4) Number and operations. The student applies mathematical process standards to develop and use strategies and methods for whole number computations and decimal sums and differences in order to solve problems with efficiency and accuracy. The student is expected to: (A) add and subtract whole numbers and decimals to the hundredths place using the standard algorithm; Readiness Standard (B) determine products of a number and 10 or 100 using properties of operations and place value understandings; Supporting Standard (C) represent the product of 2 two-digit numbers using arrays, area models, or equations, including perfect squares through 15 by 15; Supporting Standard (D) use strategies and algorithms, including the standard algorithm, to multiply up to a four-digit number by a one-digit number and to multiply a two-digit number by a two-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties; Supporting Standard (E) represent the quotient of up to a four-digit whole number divided by a one-digit whole number using arrays, area models, or equations; Supporting Standard (F) use strategies and algorithms, including the standard algorithm, to divide up to a four-digit dividend by a one-digit divisor; Supporting Standard (G) round to the nearest 10, 100, or 1,000 or use compatible numbers to estimate solutions involving whole numbers; Supporting Standard (H) solve with fluency one- and two-step problems involving multiplication and division, including interpreting remainders. Readiness Standard	Solves problems using operations involving whole numbers or decimals.

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4.4	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Adding and Subtracting Whole Numbers, Fractions, and Decimals

- round to the nearest 10 or 100 or use compatible numbers to estimate solutions to addition and subtraction problems (3)
- solve with fluency one-step and two-step problems involving addition and subtraction within 1,000 using strategies based on place value, properties of operations, and the relationship between addition and subtraction (3)
- 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 (2)
- 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 (2)
- recall basic facts to add and subtract within 20 with automaticity (2)
- explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences (1)
- apply basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10 (1)
- compose 10 with two or more addends with and without concrete objects (1)
- 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 (1)
- use concrete and pictorial models to determine the sum of a multiple of 10 and a one-digit number in problems up to 99 (1)
- explain the strategies used to solve problems involving adding and subtracting within 10 using spoken words, concrete and pictorial models, and number sentences (K)
- solve word problems using objects and drawings to find sums up to 10 and differences within 10 (K)
- model the action of joining to represent addition and the action of separating to represent subtraction (K)
- use objects, pictorial models, and/or a verbal word problem to represent subtracting objects from a set of 5 (PK4.V.B.2)
- use objects, pictorial models, and/or a verbal word problem to represent adding up to 5 objects (PK4.V.B.1)
- use objects to demonstrate that taking away one or more objects from a set will decrease the number of objects in the set (PK3.V.B.2)
- use objects to demonstrate that adding one or more objects to a set will increase the number of objects in the set (PK3.V.B.1)

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4.4	Prerequisite Skills/Links to TEKS Vertical Alignment
	Multiplying Whole Numbers, Fractions, and Decimals • describe a multiplication expression as a comparison such as 3 × 24 represents 3 times as much as 24 (3) • use strategies and algorithms, including the standard algorithm, to multiply a two-digit number by a one-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties (3) • recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts (3) • represent multiplication facts by using a variety of approaches such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line, and skip counting (3) • determine the total number of objects when equally-sized groups of objects are combined or arranged in arrays up to 10 by 10 (3) • model, create, and describe contextual multiplication situations in which equivalent sets of concrete objects are joined (2) *Dividing Whole Numbers, Fractions, and Decimals* • solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts (3) • determine a quotient using the relationship between multiplication and division (3) • determine the number of objects in each group when a set of objects is partitioned into equal shares or a set of objects is shared equally (3) • model, create, and describe contextual division situations in which a set of concrete objects is separated into equivalent sets (2)

STAAR Reporting Category 2 – Computations and Algebraic Relationships: The student will demonstrate an understanding of how to perform operations and represent algebraic relationships.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.5) Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to: (A) represent multi-step problems involving the four operations with whole numbers using strip diagrams and equations with a letter standing for the unknown quantity; Readiness Standard (B) represent problems using an input-output table and numerical expressions to generate a number pattern that follows a given rule representing the relationship of the values in the resulting sequence and their position in the sequence. Readiness Standard	Models or solves problems involving whole number relationships.

4.5	**Prerequisite Skills/Links to TEKS Vertical Alignment**

Representing and Solving Algebraic Relationships

- represent real-world relationships using number pairs in a table and verbal descriptions (3)
- determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is either a missing factor or product (3)
- represent and solve one- and two-step multiplication and division problems within 100 using arrays, strip diagrams, and equations (3)
- represent one- and two-step problems involving addition and subtraction of whole numbers to 1,000 using pictorial models, number lines, and equations (3)
- represent and solve addition and subtraction word problems where unknowns may be any one of the terms in the problem (2)
- generate and solve problem situations for a given mathematical number sentence involving addition and subtraction of whole numbers within 1,000 (2)
- 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 (1)
- understand that the equal sign represents a relationship where expressions on each side of the equal sign represent the same value(s) (1)

Continued

4.5	Prerequisite Skills/Links to TEKS Vertical Alignment

- represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences (1)
- generate and solve problem situations when given a number sentence involving addition or subtraction of numbers within 20 (1)
- recognize, duplicate, extend, and create patterns (PK4.V.E.3)
- recognize and duplicate patterns (PK3.V.E.3)

Adding and Subtracting Whole Numbers, Fractions, and Decimals

- round to the nearest 10 or 100 or use compatible numbers to estimate solutions to addition and subtraction problems (3)
- solve with fluency one-step and two-step problems involving addition and subtraction within 1,000 using strategies based on place value, properties of operations, and the relationship between addition and subtraction (3)
- 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 (2)
- 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 (2)
- recall basic facts to add and subtract within 20 with automaticity (2)
- explain strategies used to solve addition and subtraction problems up to 20 using spoken words, objects, pictorial models, and number sentences (1)
- apply basic fact strategies to add and subtract within 20, including making 10 and decomposing a number leading to a 10 (1)
- compose 10 with two or more addends with and without concrete objects (1)
- 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 (1)
- use concrete and pictorial models to determine the sum of a multiple of 10 and a one-digit number in problems up to 99 (1)
- explain the strategies used to solve problems involving adding and subtracting within 10 using spoken words, concrete and pictorial models, and number sentences (K)
- solve word problems using objects and drawings to find sums up to 10 and differences within 10 (K)
- model the action of joining to represent addition and the action of separating to represent subtraction (K)
- use objects, pictorial models, and/or a verbal word problem to represent subtracting objects from a set of 5 (PK4.V.B.2)
- use objects, pictorial models, and/or a verbal word problem to represent adding up to 5 objects (PK4.V.B.1)

Continued

4.5	Prerequisite Skills/Links to TEKS Vertical Alignment
	• use objects to demonstrate that taking away one or more objects from a set will decrease the number of objects in the set (PK3.V.B.2) • use objects to demonstrate that adding one or more objects to a set will increase the number of objects in the set (PK3.V.B.1) *Multiplying Whole Numbers, Fractions, and Decimals* • describe a multiplication expression as a comparison such as 3×24 represents 3 times as much as 24 (3) • use strategies and algorithms, including the standard algorithm, to multiply a two-digit number by a one-digit number. Strategies may include mental math, partial products, and the commutative, associative, and distributive properties (3) • recall facts to multiply up to 10 by 10 with automaticity and recall the corresponding division facts (3) • represent multiplication facts by using a variety of approaches such as repeated addition, equal-sized groups, arrays, area models, equal jumps on a number line, and skip counting (3) • determine the total number of objects when equally-sized groups of objects are combined or arranged in arrays up to 10 by 10 (3) • model, create, and describe contextual multiplication situations in which equivalent sets of concrete objects are joined (2) *Dividing Whole Numbers, Fractions, and Decimals* • solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects; pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts (3) • determine a quotient using the relationship between multiplication and division (3) • determine the number of objects in each group when a set of objects is partitioned into equal shares or a set of objects is shared equally (3) • model, create, and describe contextual division situations in which a set of concrete objects is separated into equivalent sets (2)

STAAR Reporting Category 3 – Geometry and Measurement: The student will demonstrate an understanding of how to represent and apply geometry and measurement concepts.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.5) Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to: (D) solve problems related to perimeter and area of rectangles where dimensions are whole numbers. Readiness Standard	Solves problems involving perimeter or area of rectangles.

4.5 Prerequisite Skills/Links to TEKS Vertical Alignment

Measuring Length, Area, Volume, and Weight/Mass

- determine liquid volume (capacity) or weight using appropriate units and tools (3)
- determine when it is appropriate to use measurements of liquid volume (capacity) or weight (3)
- determine the perimeter of a polygon or a missing length when given perimeter and remaining side lengths in problems (3)
- decompose two congruent two-dimensional figures into parts with equal areas and express the area of each part as a unit fraction of the whole and recognize that equal shares of identical wholes need not have the same shape (3)
- decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area (3)
- determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row (3)
- use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit (2)
- determine a solution to a problem involving length, including estimating lengths (2)
- determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes (2)
- describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object (2)
- find the length of objects using concrete models for standard units of length (2)
- describe a length to the nearest whole unit using a number and a unit (1)
- measure the same object/distance with units of two different lengths and describe how and why the measurements differ (1)

Continued

4.5	Prerequisite Skills/Links to TEKS Vertical Alignment
	• illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other (1) • use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement (1) • compare two objects with a common measurable attribute to see which object has more of/less of the attribute and describe the difference (K) • give an example of a measurable attribute of a given object, including length, capacity, and weight (K) • recognize and compare weights of objects (PK4.V.D.3) • recognize and compare capacity based on how much space exists within an object (PK4.V.D.2) • recognize and compare heights or lengths of people or objects (PK4.V.D.1) • understand that weights of objects can vary and be compared (PK3.V.D.3) • begin to recognize capacity based on how much space exists within an object (PK3.V.D.2) • understand that lengths of objects can vary and be compared (PK3.V.D.1)

STAAR Reporting Category 3 – Geometry and Measurement: The student will demonstrate an understanding of how to represent and apply geometry and measurement concepts.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.6) Geometry and measurement. The student applies mathematical process standards to analyze geometric attributes in order to develop generalizations about their properties. The student is expected to: (A) identify points, lines, line segments, rays, angles, and perpendicular and parallel lines; Supporting Standard (B) identify and draw one or more lines of symmetry, if they exist, for a two-dimensional figure; Supporting Standard (C) apply knowledge of right angles to identify acute, right, and obtuse triangles; Supporting Standard (D) 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. Readiness Standard	Identifies one- and two-dimensional geometric figures using attributes.

4.6	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Identifying and Using Attributes of Geometric Figures • use attributes to recognize rhombuses, parallelograms, trapezoids, rectangles, and squares as examples of quadrilaterals and draw examples of quadrilaterals that do not belong to any of these subcategories (3) • classify and sort two- and three-dimensional figures, including cones, cylinders, spheres, triangular and rectangular prisms, and cubes, based on attributes using formal geometric language (3) • decompose two-dimensional shapes such as cutting out a square from a rectangle, dividing a shape in half, or partitioning a rectangle into identical triangles and identify the resulting geometric parts (2) • compose two-dimensional shapes and three-dimensional solids with given properties or attributes (2) • classify and sort polygons with 12 or fewer sides according to attributes, including identifying the number of sides and number of vertices (2) • classify and sort three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes as special rectangular prisms), and triangular prisms, based on attributes using formal geometric language (2) • create two-dimensional shapes based on given attributes, including number of sides and vertices (2)

Continued

4.6	Prerequisite Skills/Links to TEKS Vertical Alignment
	• compose two-dimensional shapes by joining two, three, or four figures to produce a target shape in more than one way if possible (1) • identify three-dimensional solids, including spheres, cones, cylinders, rectangular prisms (including cubes), and triangular prisms, and describe their attributes using formal geometric language (1) • identify two-dimensional shapes, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons, and describe their attributes using formal geometric language (1) • create two-dimensional figures, including circles, triangles, rectangles, and squares, as special rectangles, rhombuses, and hexagons (1) • distinguish between attributes that define a two-dimensional or three-dimensional figure and attributes that do not define the shape (1) • classify and sort regular and irregular two-dimensional shapes based on attributes using informal geometric language (1) • create two-dimensional shapes using a variety of materials and drawings (K) • classify and sort a variety of regular and irregular two- and three-dimensional figures regardless of orientation or size (K) • identify attributes of two-dimensional shapes using informal and formal geometric language interchangeably (K) • identify two-dimensional components of three-dimensional objects (K) • identify three-dimensional solids, including cylinders, cones, spheres, and cubes, in the real world (K) • identify two-dimensional shapes, including circles, triangles, rectangles, and squares as special rectangles (K) • create shapes using materials and/or manipulatives (PK4.V.C.2) • name and describe common 2D shapes and name at least 1 solid 3D shape (PK4.V.C.1) • attempt to create shapes using materials and/or manipulatives (PK3.V.C.2) • name and describe common 2D shapes (PK.3.V.C.1) *Using Similarity and Transformational Geometry* • recognize common shapes, regardless of orientation and size (PK4.V.C.4) • recognize common shapes, regardless of size (PK3.V.C.4) *Identifying Points and Distance on Number Lines* • demonstrate use of position words (PK4.V.C.3) • begin to use language to describe position of objects (PK3.V.C.3)

STAAR Reporting Category 3 – Geometry and Measurement: The student will demonstrate an understanding of how to represent and apply geometry and measurement concepts.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.7) Geometry and measurement. The student applies mathematical process standards to solve problems involving angles less than or equal to 180 degrees. The student is expected to: (C) determine the approximate measures of angles in degrees to the nearest whole number using a protractor; Readiness Standard (D) draw an angle with a given measure; Supporting Standard (E) determine the measure of an unknown angle formed by two non-overlapping adjacent angles given one or both angle measures. Supporting Standard	Finds the measures of angles.

4.7	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Measuring Length, Area, Volume, and Weight/Mass • determine liquid volume (capacity) or weight using appropriate units and tools (3) • determine when it is appropriate to use measurements of liquid volume (capacity) or weight (3) • determine the perimeter of a polygon or a missing length when given perimeter and remaining side lengths in problems (3) • decompose two congruent two-dimensional figures into parts with equal areas and express the area of each part as a unit fraction of the whole and recognize that equal shares of identical wholes need not have the same shape (3) • decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area (3) • determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row (3) • use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit (2) • determine a solution to a problem involving length, including estimating lengths (2) • determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes (2) • describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object (2)

Continued

4.7	Prerequisite Skills/Links to TEKS Vertical Alignment
	• find the length of objects using concrete models for standard units of length (2) • describe a length to the nearest whole unit using a number and a unit (1) • measure the same object/distance with units of two different lengths and describe how and why the measurements differ (1) • illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other (1) • use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement (1) • compare two objects with a common measurable attribute to see which object has more of/less of the attribute and describe the difference (K) • give an example of a measurable attribute of a given object, including length, capacity, and weight (K) • recognize and compare weights of objects (PK4.V.D.3) • recognize and compare capacity based on how much space exists within an object (PK4.V.D.2) • recognize and compare heights or lengths of people or objects (PK4.V.D.1) • understand that weights of objects can vary and be compared (PK3.V.D.3) • begin to recognize capacity based on how much space exists within an object (PK3.V.D.2) • understand that lengths of objects can vary and be compared (PK3.V.D.1)

STAAR Reporting Category 3 – Geometry and Measurement: The student will demonstrate an understanding of how to represent and apply geometry and measurement concepts.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.8) Geometry and measurement. The student applies mathematical process standards to select appropriate customary and metric units, strategies, and tools to solve problems involving measurement. The student is expected to: (A) identify relative sizes of measurement units within the customary and metric systems; Supporting Standard (B) convert measurements within the same measurement system, customary or metric, from a smaller unit into a larger unit or a larger unit into a smaller unit when given other equivalent measures represented in a table; Supporting Standard (C) solve problems that deal with measurements of length, intervals of time, liquid volumes, mass, and money using addition, subtraction, multiplication, or division as appropriate. Readiness Standard	Solves problems involving length, time, liquid volume, mass/weight, or money.

4.8	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Measuring Length, Area, Volume, and Weight/Mass • determine liquid volume (capacity) or weight using appropriate units and tools (3) • determine when it is appropriate to use measurements of liquid volume (capacity) or weight (3) • determine the perimeter of a polygon or a missing length when given perimeter and remaining side lengths in problems (3) • decompose two congruent two-dimensional figures into parts with equal areas and express the area of each part as a unit fraction of the whole and recognize that equal shares of identical wholes need not have the same shape (3) • decompose composite figures formed by rectangles into non-overlapping rectangles to determine the area of the original figure using the additive property of area (3) • determine the area of rectangles with whole number side lengths in problems using multiplication related to the number of rows times the number of unit squares in each row (3) • use concrete models of square units to find the area of a rectangle by covering it with no gaps or overlaps, counting to find the total number of square units, and describing the measurement using a number and the unit (2)

Continued

4.8	Prerequisite Skills/Links to TEKS Vertical Alignment
	• determine a solution to a problem involving length, including estimating lengths (2) • determine the length of an object to the nearest marked unit using rulers, yardsticks, meter sticks, or measuring tapes (2) • describe the inverse relationship between the size of the unit and the number of units needed to equal the length of an object (2) • find the length of objects using concrete models for standard units of length (2) • describe a length to the nearest whole unit using a number and a unit (1) • measure the same object/distance with units of two different lengths and describe how and why the measurements differ (1) • illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other (1) • use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement (1) • compare two objects with a common measurable attribute to see which object has more of/less of the attribute and describe the difference (K) • give an example of a measurable attribute of a given object, including length, capacity, and weight (K) • recognize and compare weights of objects (PK4.V.D.3) • recognize and compare capacity based on how much space exists within an object (PK4.V.D.2) • recognize and compare heights or lengths of people or objects (PK4.V.D.1) • understand that weights of objects can vary and be compared (PK3.V.D.3) • begin to recognize capacity based on how much space exists within an object (PK3.V.D.2) • understand that lengths of objects can vary and be compared (PK3.V.D.1) *Measuring Time* • determine the solutions to problems involving addition and subtraction of time intervals in minutes using pictorial models or tools such as a 15-minute event plus a 30-minute event equals 45 minutes (3) • read and write time to the nearest one-minute increment using analog and digital clocks and distinguish between a.m. and p.m. (2) • tell time to the hour and half hour using analog and digital clocks (1) • use language to describe concepts associated with the passing of time (PK4.V.D.4) • show awareness of the passage of time within a day (PK3.V.D.4)

STAAR Reporting Category 4 – Data Analysis and Personal Financial Literacy: The student will demonstrate an understanding of how to represent and analyze data and how to describe and apply personal financial concepts.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.9) Data analysis. The student applies mathematical process standards to solve problems by collecting, organizing, displaying, and interpreting data. The student is expected to: (A) represent data on a frequency table, dot plot, or stem-and-leaf plot marked with whole numbers and fractions; Readiness Standard (B) solve one- and two-step problems using data in whole number, decimal, and fraction form in a frequency table, dot plot, or stem-and-leaf plot. Supporting Standard	Uses graphs to organize and interpret data.

4.9	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	Collecting and Representing Data • summarize a data set with multiple categories using a frequency table, dot plot, pictograph, or bar graph with scaled intervals (3) • organize a collection of data with up to four categories using pictographs and bar graphs with intervals of one or more (2) • explain that the length of a bar in a bar graph or the number of pictures in a pictograph represents the number of data points for a given category (2) • use data to create picture and bar-type graphs (1) • collect, sort, and organize data in up to three categories using models/representations such as tally marks or T-charts (1) • use data to create real-object and picture graphs (K) • collect, sort, and organize data into two or three categories (K) • collect data and organize it in a graphic representation (PK4.V.E.2) • sort objects that are the same and different into groups and use language to describe how the groups are similar and different (PK4.V.E.1) • participate in group activities of collecting data and organizing it into graphic representations (PK3.V.E.2) • sort objects that are the same and different (PK3.V.E.1)

Continued

4.9	Prerequisite Skills/Links to TEKS Vertical Alignment
	Using Data • solve one- and two-step problems using categorical data represented with a frequency table, dot plot, pictograph, or bar graph with scaled intervals (3) • draw conclusions and make predictions from information in a graph (2) • write and solve one-step word problems involving addition or subtraction using data represented within pictographs and bar graphs with intervals of one (2) • draw conclusions and generate and answer questions using information from picture and bar-type graphs (1) • draw conclusions from real-object and picture graphs (K)

STAAR Reporting Category 4 – Data Analysis and Personal Financial Literacy: The student will demonstrate an understanding of how to represent and analyze data and how to describe and apply personal financial concepts.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	**STAAR Alternate 2 Essence Statement**
(4.10) Personal financial literacy. The student applies mathematical process standards to manage one's financial resources effectively for lifetime financial security. The student is expected to: (A) distinguish between fixed and variable expenses; Supporting Standard (B) calculate profit in a given situation; Supporting Standard (E) describe the basic purpose of financial institutions, including keeping money safe, borrowing money, and lending. Supporting Standard	Recognizes how money can be obtained, spent, and used to make a profit.

4.10 Prerequisite Skills/Links to TEKS Vertical Alignment

Understanding the Connections Among Income, Expenses, and Careers

- explain the connection between human capital/labor and income (3)
- identify income as a means of obtaining goods and services, oftentimes making choices between wants and needs (1)
- define money earned as income (1)
- distinguish between wants and needs and identify income as a source to meet one's wants and needs (K)
- list simple skills required for jobs (K)
- differentiate between money received as income and money received as gifts (K)
- identify ways to earn income (K)

Managing Finances

- identify decisions involving income, spending, saving, credit, and charitable giving (3)
- list reasons to save and explain the benefit of a savings plan, including for college (3)
- explain that credit is used when wants or needs exceed the ability to pay and that it is the borrower's responsibility to pay it back to the lender, usually with interest (3)
- identify the costs and benefits of planned and unplanned spending decisions (3)

Continued

4.10	Prerequisite Skills/Links to TEKS Vertical Alignment
	• describe the relationship between the availability or scarcity of resources and how that impacts cost (3) • differentiate between producers and consumers and calculate the cost to produce a simple item (2) • identify examples of lending and use concepts of benefits and costs to evaluate lending decisions (2) • identify examples of borrowing and distinguish between responsible and irresponsible borrowing (2) • distinguish between a deposit and a withdrawal (2) • explain that saving is an alternative to spending (2) • calculate how money saved can accumulate into a larger amount over time (2) • consider charitable giving (1) • distinguish between spending and saving (1) *Determining Values of Coins and Bills* • determine the value of a collection of coins and bills (3) • use the cent symbol, dollar sign, and the decimal point to name the value of a collection of coins (2) • determine the value of a collection of coins up to one dollar (2) • use relationships to count by twos, fives, and tens to determine the value of a collection of pennies, nickels, and/or dimes (1) • write a number with the cent symbol to describe the value of a coin (1) • identify U.S. coins, including pennies, nickels, dimes, and quarters, by value and describe the relationships among them (1) • identify U.S. coins by name, including pennies, nickels, dimes, and quarters (1)

Mathematical Process Standards – Mathematical process standards will not be listed under a separate reporting category. Instead, they will be incorporated into test questions across reporting categories since the application of mathematical process standards is part of each knowledge statement.	
TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	
(4.1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: (A) apply mathematics to problems arising in everyday life, society, and the workplace; (B) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution; (C) select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems; (D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate; (E) create and use representations to organize, record, and communicate mathematical ideas; (F) analyze mathematical relationships to connect and communicate mathematical ideas; and (G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.	
4.1	**Prerequisite Skills/Links to TEKS Vertical Alignment**
	• display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication (K-Alg) • analyze mathematical relationships to connect and communicate mathematical ideas (K-Alg) • create and use representations to organize, record, and communicate mathematical ideas (K-Alg) • communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate (K-Alg) • select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems (K-Alg) • use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution (K-Alg) • apply mathematics to problems arising in everyday life, society, and the workplace (K-Alg)