

Northpoint Horizons

CAVS™ (Content Academic Vocabulary System) Math – 3-5 Correlated to the Texas State Mathematics Standards for Texas Essential Knowledge and Skills

Grade 4

This document provides a correlation to the extensive math directives offered throughout the *CAVS* program that meet the Texas Mathematics Standards for TEKS.

Math Content Standard	CAVS Math Grades 3-5 Teacher’s Guide Lessons
Knowledge and Skills	
4.1 Number, operation, and quantitative reasoning. The student uses place value to represent whole numbers and decimals	
a. use place value to read, write, compare, and order whole numbers through 999,999,999	Students have opportunities to read and write whole numbers in <i>CAVS</i> lessons. They study place value to hundred thousands in: Lesson 1 – TG pp. 1-6 <i>How can you put numbers in order?</i>
b. use place value to read, write, compare, and order decimals involving tenths and hundredths, including money, using concrete objects and pictorial models	Students use the math vocabulary words: <i>decimal, percent, and equivalent</i> to identify and write decimals; to identify and write percents; to interpret decimals and percents from a picture; to convert percents into decimals; and to convert decimals into percents (tenths, hundredths, thousandths): Lesson 6- TG pp. 31-36 <i>How else can you show less than one whole?</i>
4.2 Number, operation, and quantitative reasoning. The student describes and compares fractional parts of whole objects or sets of objects.	
a. use concrete objects and pictorial models to generate equivalent fractions	Students use the math vocabulary words: <i>fraction, numerator, denominator, improper fraction, and mixed number</i> to identify a fraction and its numerator and denominator; to understand that an improper fraction is a value greater than one; and to know that a mixed number consists of a whole number and a fraction: Lesson 5 – TG pp. 25-30 <i>How do you show that a number is not a whole?</i>
b. model fraction quantities greater than one using concrete objects and pictorial models	Students use the math vocabulary words: <i>fraction, numerator, denominator, improper fraction, and mixed number</i> to identify a fraction and its numerator and denominator; to understand that

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	<p>an improper fraction is a value greater than one; and to know that a mixed number consists of a whole number and a fraction: Lesson 5 – TG pp. 25-30 <i>How do you show that a number is not a whole?</i></p>
<p>c. compare and order fractions using concrete objects and pictorial models</p>	<p>Students use the math vocabulary words: <i>fraction, numerator, denominator, improper fraction, and mixed number</i> to identify a fraction and its numerator and denominator; to understand that an improper fraction is a value greater than one; and to know that a mixed number consists of a whole number and a fraction: Lesson 5 – TG pp. 25-30 <i>How do you show that a number is not a whole?</i></p>
<p>d. relate decimals to fractions that name tenths and hundredths using concrete objects and pictorial models</p>	<p>Students use the math vocabulary words: <i>decimal, percent, and equivalent</i> to identify and write decimals; to identify and write percents; to interpret decimals and percents from a picture; to convert percents into decimals; and to convert decimals into percents (tenths, hundredths, thousandths): Lesson 6- TG pp. 31-36 <i>How else can you show less than one whole?</i></p>
<p>4.3 Number, operation, and quantitative reasoning. The student adds and subtracts to solve meaningful problems involving whole numbers and decimals.</p>	
<p>a. use addition and subtraction to solve problems involving whole numbers</p>	<p>Students use the math vocabulary words: <i>addends, sum, number sentence, and equation</i> to calculate the sum of two whole numbers; to identify the addends in an equation; to understand that an equation is made up of numbers, an operation sign, and an equal sign; and to know that another name for a number sentence is an equation: Lesson 2 – TG pp.7-12 <i>How do numbers tell a story?</i></p>
<p>b. add and subtract decimals to the hundredths place using concrete objects and pictorial models</p>	<p>Students are introduced to addition by using the math vocabulary words: <i>addends, sum, number sentence, and equation</i> to calculate the sum of two whole numbers; to identify the addends in an equation; to understand that an equation is made up of numbers, an operation sign, and an equal sign; and to know that another name for a number sentence is an equation: Lesson 2 – TG pp.7-12 <i>How do numbers tell a story?</i></p>

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	<p>Students are introduced to the math vocabulary word: <i>decimal</i> to identify and write decimals in: Lesson 6- TG pp. 31-36 <i>How else can you show less than one whole?</i></p>
4.4 Number, operation, and quantitative reasoning. The student multiplies and divides to solve meaningful problems involving whole numbers	
<p>a. model factors and products using arrays and area models</p>	<p>Students use the math vocabulary words: <i>multiplication, factor, product, array, prime number, and multiples</i> to define and understand multiplication; to determine the factors and the product of an equation; to understand and define multiples of a number; to define and recognize prime numbers; and to understand, read, and draw arrays: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i></p> <p>Students identify and understand <i>area</i> in: Lesson 12 - TG pp. 67-72 <i>How do you measure flat shapes?</i></p>
<p>b. represent multiplication and division situations in picture, word, and number form</p>	<p>Students use the math vocabulary words: <i>multiplication, factor, product, array, prime number, and multiples</i> to define and understand multiplication; to determine the factors and the product of an equation; to understand and define multiples of a number; to define and recognize prime numbers; and to understand, read, and draw arrays: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i></p> <p>Students use the math vocabulary words: <i>division, dividend, divisor, quotient, and remainder</i> to divide whole numbers with and without a remainder; to understand the meaning of division; to identify and label the divisor, dividend, quotient, and remainder; and to describe examples of division in: Lesson 4 – TG pp. 19-24 <i>How do we make equal groups?</i></p>
<p>c. recall and apply multiplication facts through 12 x 12</p>	<p>Students use the math vocabulary words: <i>multiplication, factor, product, array, prime number, and multiples</i> to define and</p>

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	<p>understand multiplication; to determine the factors and the product of an equation; to understand and define multiples of a number; to define and recognize prime numbers; and to understand, read, and draw arrays: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i></p>
<p>d. use multiplication to solve problems (no more than two digits times two digits without technology)</p>	<p>Students use the math vocabulary words: <i>multiplication, factor, product, array, prime number, and multiples</i> to define and understand multiplication; to determine the factors and the product of an equation; to understand and define multiples of a number; to define and recognize prime numbers; and to understand, read, and draw arrays: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i></p>
<p>e. use division to solve problems (no more than one-digit divisors and three-digit dividends without technology)</p>	<p>Students use the math vocabulary words: <i>division, dividend, divisor, quotient, and remainder</i> to divide whole numbers with and without a remainder; to understand the meaning of division; to identify and label the divisor, dividend, quotient, and remainder; and to describe examples of division in: Lesson 4 – TG pp. 19-24 <i>How do we make equal groups?</i></p>
<p>4.5 Number, operation, and quantitative reasoning. The student estimates to determine reasonable results</p>	
<p>a. round whole numbers to the nearest ten, hundred, or thousand to approximate reasonable results in problem situations</p>	<p>Students use the math vocabulary words: <i>place value, round, even number, odd number, positive number, and negative number</i> to identify the place value of numbers; to round numbers; to recognize and use positive and negative numbers; and to recognize and use even and odd numbers: Lesson 1 – TG pp. 1-6 <i>How can you put numbers in order?</i></p>
<p>b. use strategies including rounding and compatible numbers to estimate solutions to multiplication and division problems</p>	<p>Students use the math vocabulary words: <i>place value, round, even number, odd number, positive number, and negative number</i> to identify the place value of numbers; to round numbers; to recognize and use positive and negative numbers; and to recognize and use even and odd numbers: Lesson 1 – TG pp. 1-6 <i>How can you put numbers in order?</i></p>

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	Students learn estimation skills: Unit 24 – TG pp. 139-144 <i>How can you solve problems?</i>
4.6 Patterns, relationships, and algebraic thinking. The student uses patterns in multiplication and division.	
a. use patterns and relationships to develop strategies to remember basic multiplication and division facts (such as the patterns in related multiplication and division number sentences (fact families) such as $9 \times 9 = 81$ and $81 \div 9 = 9$)	Students use the math vocabulary words: <i>multiplication, factor, product, array, prime number, and multiples</i> to define and understand multiplication; to determine the factors and the product of an equation; to understand and define multiples of a number; to define and recognize prime numbers; and to understand, read, and draw arrays: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i> Students use the math vocabulary words: <i>division, dividend, divisor, quotient, and remainder</i> to divide whole numbers with and without a remainder; to understand the meaning of division; to identify and label the divisor, dividend, quotient, and remainder; and to describe examples of division in: Lesson 4 – TG pp. 19-24 <i>How do we make equal groups?</i>
b. use patterns to multiply by 10 and 100	Students use the math vocabulary words: <i>multiplication, factor, product, array, prime number, and multiples</i> to define and understand multiplication; to determine the factors and the product of an equation; to understand and define multiples of a number; to define and recognize prime numbers; and to understand, read, and draw arrays: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i> Lesson 7 – TG pp. 37-42 <i>What is a pattern?</i> (Reader Card B)
4.7 Patterns, relationships, and algebraic thinking. The student uses organizational structures to analyze and describe patterns and relationships.	
a. describe the relationship between two sets of related data such as ordered pairs in a table	Students use the math vocabulary words: <i>repeating pattern</i> and <i>extend</i> to identify a repeating pattern; to extend patterns; and to explore number patterns; and to find the rule for a given pattern:

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	<p>Lesson 7 – TG pp. 37-42 <i>What is a pattern?</i></p> <p>Students use the math vocabulary words: <i>grid</i>, <i>x-axis</i>, <i>y-axis</i>, <i>coordinate</i>, and <i>ordered pair</i> to identify and interpret a grid; to distinguish between the <i>x-axis</i> and <i>y-axis</i>; and to identify a location on a grid by using coordinates:</p> <p>Unit 8 – TG pp. 43-48 <i>How can you use models?</i></p>
4.8 Geometry and spatial reasoning. The student identifies and describes attributes of geometric figures using formal geometric language	
a. identify and describe right, acute, and obtuse angles	Lesson 17 – TG pp. 97-102 <i>How do we describe shapes with three sides?</i>
b. identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models	Lesson 16 - TG pp. 91-96 <i>How do we describe shapes with straight sides?</i>
c. use essential attributes to define two- and three-dimensional geometric figures	<p>Lesson 18 – TG pp. 103-108 <i>How do we draw different shapes?</i></p> <p>Lesson 19 - TG pp. 109-114 <i>What attributes do solid shapes share?</i></p>
4.9 Geometry and spatial reasoning. The student connects transformations to congruence and symmetry.	
a. demonstrate translations, reflections, and rotations using concrete models	<p>Students use the math vocabulary words: <i>slide</i>, <i>flip (reflection)</i>, and <i>turn (rotation)</i> to predict and describe the results of sliding, flipping, and turning 2-dimensional shapes:</p> <p>Lesson 20 – TG pp. 115-120 <i>How can you change shapes?</i></p>
b. use translations, reflections, and rotations to verify that two shapes are congruent	<p>Students use the math vocabulary words: <i>attribute</i>, <i>congruent</i>, <i>similar</i>, and <i>symmetry</i> to identify and compare attributes of 2-dimensional shapes; to explore and describe congruence and similarity; and to identify and describe line symmetry in 2-dimensional shapes and designs:</p> <p>Lesson 18 – TG pp. 103-108 <i>How do we draw different shapes?</i></p> <p>Students use the math vocabulary words: <i>slide</i>, <i>flip (reflection)</i>, and <i>turn (rotation)</i> to predict and describe the results of sliding,</p>

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	flipping, and turning 2-dimensional shapes: Lesson 20 – TG pp. 115-120 <i>How can you change shapes?</i>
c. use reflections to verify that a shape has symmetry	Students use the math vocabulary words: <i>attribute, congruent, similar, and symmetry</i> to identify and compare attributes of 2-dimensional shapes; to explore and describe congruence and similarity; and to identify and describe line symmetry in 2-dimensional shapes and designs: Lesson 18 – TG pp. 103-108 <i>How do we draw different shapes?</i> Students use the math vocabulary words: <i>slide, flip (reflection), and turn (rotation)</i> to predict and describe the results of sliding, flipping, and turning 2-dimensional shapes: Lesson 20 – TG pp. 115-120 <i>How can you change shapes?</i>
4.10 Geometry and spatial reasoning. The student recognizes the connection between numbers and their properties and points on a line.	
a. locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths	Lesson 1 – TG p. 2 Reader- Card B: <i>How can you put numbers in order?</i> Students use the math vocabulary words: <i>fraction, numerator, denominator, improper fraction, and mixed number</i> to identify a fraction and its numerator and denominator; to understand that an improper fraction is a value greater than one; and to know that a mixed number consists of a whole number and a fraction: Lesson 5 – TG pp. 25-30 <i>How do you show that a number is not a whole?</i> Students find equivalent fractions, decimals and percents: Lesson 6 – TG pp. 31-36 <i>How else can you show less than one whole?</i>
4.11 Measurement. The student applies measurement concepts. The student is expected to estimate and measure to solve problems involving length (including perimeter) and area.	
a. estimate and use measurement tools to determine length (including perimeter), area, capacity and weight/mass using standard units SI (metric) and	Lesson 10 - TG pp. 55-60 <i>What do you use to measure things?</i>

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customary	<p>Lesson 11 - TG pp. 61-66 <i>How do you measure?</i></p> <p>Lesson 12 - TG pp. 67-72 <i>How do you measure flat shapes</i></p> <p>Lesson 13 - TG pp. 73-78 <i>How do you measure solid shapes?</i></p> <p>Lesson 14 - TG pp. 79-84 <i>What are units of measurement?</i></p>
b. perform simple conversions between different units of length, between different units of capacity, and between different units of weight within the customary measurement system	<p>Lesson 11 - TG pp. 61-66 <i>How do you measure?</i></p> <p>Lesson 14 - TG pp. 79-84 <i>What are units of measurement?</i></p>
c. use concrete models of standard cubic units to measure volume	<p>Students use the math vocabulary words: <i>capacity</i>, <i>volume</i>, and <i>mass</i> to identify capacity, volume, and mass of objects; to give examples of things measured by capacity, volume, or mass; to measure capacity, using cups of liquid; and to measure volume, using rice, sand or pasta: Lesson 13 - TG pp. 73-78 <i>How do you measure solid shapes?</i></p>
d. estimate volume in cubic units	<p>Students use the math vocabulary words: <i>capacity</i>, <i>volume</i>, and <i>mass</i> to identify capacity, volume, and mass of objects; to give examples of things measured by capacity, volume, or mass; to measure capacity, using cups of liquid; and to measure volume, using rice, sand or pasta: Lesson 13 - TG pp. 73-78 <i>How do you measure solid shapes?</i></p>
e. explain the difference between weight and mass	<p>Teachers have the opportunity to explain the difference between "weight" and "mass" in: Lesson 10 - TG pp. 55-60 <i>What do you use to measure things?</i></p> <p>Lesson 13 - TG pp. 73-78 <i>How do you measure solid shapes?</i></p>

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4.12 Measurement. The student applies measurement concepts. The student measures time and temperature (in degrees Fahrenheit and Celsius).	
a. use a thermometer to measure temperature and changes in temperature	<p>Students study the weather report in the newspaper or from a web site in: Lesson 1 – TG pp. 1-6 <i>How can you put numbers in order?</i> (Activity Placemat 1)</p> <p>Students are introduced to a thermometer (Concept Poster) and temperature in: The <i>CAVS</i> Math program Grades K-2.</p>
b. use tools such as a clock with gears or a stopwatch to solve problems involving elapsed time	<p>Students use the math vocabulary word: <i>elapsed time</i> to define elapsed time; to give examples of elapsed time; and to tell time, using elapsed time: Lesson 15 - TG pp. 85-90 <i>How long does it take?</i></p> <p>This standard is also addressed in the <i>CAVS</i> Math program Grades K-2.</p>
4.13 Probability and statistics. The student solves problems by collecting, organizing, displaying, and interpreting sets of data.	
a. use concrete objects or pictures to make generalizations about determining all possible combinations of a given set of data or of objects in a problem situation	<p>Lesson 21 – TG pp. 121-126 <i>Why do you need information?</i></p> <p>Lesson 23 – TG pp. 133-138 <i>Do you think it will happen?</i></p>
b. interpret bar graphs	Lesson 21 – TG pp. 121-126 <i>Why do you need information?</i>
4.14 Underlying processes and mathematical tools. The student applies Grade 4 mathematics to solve problems connected to everyday experiences and activities in and outside of school.	
a. identify the mathematics in everyday situations.	<p>In the <i>CAVS</i> program there are many examples of using mathematics for everyday situations to help students apply their math skills and solve problems. Some examples: Lesson 2 – TG pp. 7-12 <i>How do numbers tell a story?</i></p> <p>Lesson 7 – TG pp. 37-42 <i>What is a pattern?</i></p>

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	Lesson 10 – TG pp. 55-60 <i>What do you use to measure things?</i>
c. solve problems that incorporate understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness	During each CAVS Math Lesson, the teacher helps students determine the approach, materials, and strategies to be used to solve problems using the 5-E Instructional Approach while highlighting math content academic vocabulary. The 5-E Approach:
b. select or develop an appropriate problem-solving plan or strategy, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out, making a table, working a simpler problem, or working backwards to solve a problem	<p><i>Engage:</i> Concept Posters and Math Vocabulary Cards are used to introduce the math concept and vocabulary as a whole group activity.</p> <p><i>Explore and Learn:</i> Students use hands-on Activity Placemats with manipulatives as a small group inquiry activity. Students complete the Record Sheet and then discuss the activity and compare observations with classmates.</p> <p><i>Explain Concepts and Vocabulary:</i> Teacher and students read and discuss the academic vocabulary words in context on the Reader Cards. Reader Card A is targeted to the reading levels of Beginning/Emerging English language learners. Reader Card B is targeted to the reading levels of the Intermediate/Expanding English language learners and native English speakers.</p> <p><i>Elaborate:</i> Students apply newly learned concepts when working with a partner to complete the Concept Webs. As a small group activity, students practice listening to, reading, writing, and speaking each academic vocabulary word with the Radius Audio System™.</p> <p><i>Evaluate:</i> Teachers review the lesson's academic vocabulary words through Interactive Transparencies (whole group activity) and assess each lesson through the Lesson Review sheets (individual activity). Some examples:</p> <p>Lesson 6 – TG pp. 31-36 <i>How else can you show less than one whole?</i></p> <p>Lesson 11 - TG pp. 61-66 <i>How do you measure?</i></p> <p>Lesson 24 – TG pp. 139-144</p>

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<p>c. use tools such as real objects, manipulatives, and technology to solve problems</p>	<p><i>How can you solve problems?</i></p> <p>In the <i>CAVS</i> Math program, students use real objects, manipulatives, and technology in each lesson. During the <i>Explore and Learn</i> section of each lesson, children use real objects and manipulatives such as newspapers, computers, interlocking blocks, chairs, maps, coins, measuring cups, rulers, straws, etc. in hands-on, small group, inquiry activities.</p> <p>During the <i>Elaborate</i> section of each lesson, students practice listening to, reading, writing, and speaking each academic vocabulary word with the Radius Audio System™. Children then complete one or more of the small group activities in their Math Journals using the lesson's math vocabulary. Some examples: Lesson 1 – TG pp. 1-6 <i>How can you put numbers in order?</i></p> <p>Lesson 4 – TG pp. 19-24 <i>How do we make equal groups?</i></p> <p>Lesson 9 – TG pp. 49-54 <i>How can math rules help you solve equations?</i></p>
<p>4.15 Underlying processes and mathematical tools. The student communicates about Grade 4 mathematics using informal language.</p>	
<p>a. explain and record observations using objects, words, pictures, numbers, and technology</p>	<p>Students explain and record observations in each <i>CAVS</i> lesson. They have opportunities to communicate in whole group, small group, and individual/teacher activities. Each section of the lesson includes the following materials: <i>Engage</i>: Concept Posters and Math Vocabulary Cards. <i>Explore and Learn</i>: Activity Placemats with manipulatives, Record Sheet (Students complete the Record Sheet – many times by drawing pictures or completing charts to record their observations and then discuss the activity and compare observations with classmates). <i>Explain Concepts and Vocabulary</i>: Reader Cards and Math Content Picture Dictionary <i>Elaborate</i>: Concept Webs, Radius Audio System™ and Math Journals</p>
<p>b. relate informal language to mathematical language and symbols</p>	

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	<p><i>Evaluate</i>: Interactive Transparencies and Lesson Review sheets Some examples: Lesson 3 – TG pp. 13-18 <i>How do we count large amounts?</i></p> <p>Lesson 12 - TG pp. 67-72 <i>How do you measure flat shapes?</i></p> <p>Lesson 21 – TG pp. 121-126 <i>Why do you need information?</i></p>
4.16 Underlying processes and mathematical tools. The student uses logical reasoning.	
<p>a. make generalizations from patterns or sets of examples and nonexamples</p>	<p>Some examples: Lesson 7 – TG pp. 37-42 <i>What is a pattern?</i></p> <p>Lesson 9 – TG pp. 49-54 <i>How can math rules help you solve equations?</i></p> <p>Lesson 24 – TG pp. 139-144 <i>How can you solve problems?</i></p>
<p>b. justify why an answer is reasonable and explain the solution process</p>	<p>Some examples: Lesson 22 – TG pp. 127-132 <i>How do you compare facts and information?</i></p> <p>Lesson 23 – TG pp. 133-138 <i>Do you think it will happen?</i></p> <p>Lesson 24 – TG pp. 139-144 <i>How can you solve problems?</i></p>