Vertical Alignment Document

Mathematics

Grade 6 – Grade 8

2012 – 2013

CSCOPE®
Texas Education Service Center Curriculum Collaborative

GRADE 6	GRADE 7	GRADE 8
§111.21. Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 6-8. *Source: The provisions of this §111.21 adopted to be effective September 1, 1998, 22 TexReg 7623; amended to be effective August 1, 2006, 30 TexReg 4479.*		
§111.22. - §112.24. Mathematics, Grade 6 – Grade 8.		
(a) Introduction.		
(1) Within a well-balanced mathematics curriculum, the primary focal points at Grade 6 are using ratios to describe direct proportional relationships involving number, geometry, measurement, probability, and adding and subtracting decimals and fractions.	(1) Within a well-balanced mathematics curriculum, the primary focal points at Grade 7 are using direct proportional relationships in number, geometry, measurement, and probability; applying addition, subtraction, multiplication, and division of decimals, fractions, and integers; and using statistical measures to describe data.	(1) Within a well-balanced mathematics curriculum, the primary focal points at Grade 8 are using basic principles of algebra to analyze and represent both proportional and non-proportional linear relationships and using probability to describe data and make predictions.
(2) Throughout mathematics in Grades 6-8, students build a foundation of basic understandings in number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; measurement; and probability and statistics. Students use concepts, algorithms, and properties of rational numbers to explore mathematical relationships and to describe increasingly complex situations. Students use algebraic thinking to describe how a change in one quantity in a relationship results in a change in the other; and they connect verbal, numeric, graphic, and symbolic representations of relationships. Students use geometric properties and relationships, as well as spatial reasoning, to model and analyze situations and solve problems. Students communicate information about geometric figures or situations by quantifying attributes, generalize procedures from measurement experiences, and use the procedures to solve problems. Students use appropriate statistics, representations of data, reasoning, and concepts of probability to draw conclusions, evaluate arguments, and make recommendations.		
(3) Problem solving in meaningful contexts, language and communication, connections within and outside mathematics, and formal and informal reasoning underlie all content areas in mathematics. Throughout mathematics in Grades 6-8, students use these processes together with graphing technology and other mathematical tools such as manipulative materials to develop conceptual understanding and solve problems as they do mathematics.		

	GRADE 6		GRADE 7		GRADE 8
6.1	***Number, operation, and quantitative reasoning. The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to:***	***7.1***	***Number, operation, and quantitative reasoning. The student represents and uses numbers in a variety of equivalent forms. The student is expected to:***	***8.1***	***Number, operation, and quantitative reasoning. The student understands that different forms of numbers are appropriate for different situations. The student is expected to:***

6.1A	**Compare and order non-negative rational numbers.**
	
	Supporting Standard
	
	Compare, Order, Represent, Use
	
	NON-NEGATIVE RATIONAL NUMBERS
	
	Including, but not limited to:
	• Number sets
	  • Natural numbers (counting)
	  • Zero
	  • Whole numbers
	  • Non-negative rational numbers
	• Decimals (greater than or equal to zero)
	• Fractions (positive, unit, equivalent, proper, improper, and mixed numbers)
	• Relationships to benchmarks of 0, $\frac{1}{2}$, and 1
	• Verbal, numerical, and written expressions to compare numbers
	• Number lines to compare numbers (non-negative rational numbers)
	• Place value
	• Various representations of a number
		7.1A	**Compare and order integers and positive rational numbers.**
			
			Supporting Standard
			
			Compare, Order, Represent, Use
			
			INTEGERS AND POSITIVE RATIONAL NUMBERS
			
			Including, but not limited to:
			• Number sets
			  • Natural numbers (counting)
			  • Zero
			  • Whole numbers
			  • Positive rational numbers
			  • Integers
			• Decimals (greater than or equal to zero)
			• Fractions (positive, unit, equivalent, proper, improper, and mixed numbers)
			• Relationships to benchmarks of 0, $\frac{1}{2}$, and 1
			• Percents (0% to 100%, inclusive, and greater than 100%)
			• Verbal, numerical, and written expressions to compare numbers
				8.1A	**Compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals.**
					
					Readiness Standard
					
					Compare, Order, Understand
					
					RATIONAL NUMBERS
					
					Including, but not limited to:
					• Number sets
					  • Natural numbers (counting)
					  • Zero
					  • Whole numbers
					  • Integers
					  • Rational numbers
					• Decimals (greater than, less than, equal to zero)
					• Fractions (positive and negative, unit, equivalent, proper, improper, and mixed numbers)
					• Percents (0% to 100%, inclusive, and greater than 100%)
					• Verbal, numerical, and written expressions to compare numbers
					• Number lines to compare numbers

Bold, italic black: Knowledge and Skills Statement (TEKS); **Bold black: Student Expectation (TEKS)**
Bold, italic red: Student Expectation identified by TEA as a ***Readiness Standard*** for STAAR.
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	GRADE 6		GRADE 7		GRADE 8
	that have the same value • Ex: 5.8 is 5 ones and 8 tenths, 5 ones and 80 hundredths, or 5 ones and 800 thousandths, etc. • Comparative language • Equality and inequality symbols (=, >, <, ≥, ≤) • Equality and inequality words (equal to, greater than, less than, greater than or equal to, less than or equal to) • Quantifying descriptors (e.g., least to greatest, ascending/descending order, slowest to fastest, etc.) • Multiple forms of non-negative rational numbers within a single problem • Real-life problems TxCCRS Note: I. Numeric Reasoning A1 – Compare real numbers. (Grade 6 only requires the students to compare non-negative rational numbers.)		• Number lines to compare numbers (integers and positive rational numbers) • Place value • Various representations of a number that have the same value • Ex: 5.8 is 5 ones and 8 tenths, 5 ones and 80 hundredths, or 5 ones and 800 thousandths, etc. • Comparative language • Equality and inequality symbols (=, >, <, ≥, ≤) • Equality and inequality words (equal to, greater than, less than, greater than or equal to, less than or equal to) • Quantifying descriptors (e.g., least to greatest, ascending/descending order, slowest to fastest, etc.) • Multiple forms of positive rational numbers within a single problem • Real-life problems TxCCRS Note: I. Numeric Reasoning A1 – Compare real numbers. (Grade 7 only requires the students to compare integers and positive rational numbers.)		(rational numbers) • Place value • Various representations of a number that have the same value • Ex: 5.8 is 5 ones and 8 tenths, 5 ones and 80 hundredths, or 5 ones and 800 thousandths, etc. • Comparative language • Equality and inequality symbols (=, >, <, ≥, ≤) • Equality and inequality words (equal to, greater than, less than, greater than or equal to, less than or equal to) • Quantifying descriptors (e.g., least to greatest, ascending/descending order, slowest to fastest, etc.) • Multiple forms of rational numbers within a single problem • Real-life problems TxCCRS Note: I. Numeric Reasoning A1 – Compare real numbers. (Grade 8 only requires the students to compare rational numbers.)
				8.1E	**Compare and order real numbers with a calculator.** Compare, Order, Understand REAL NUMBERS

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					Including, but not limited to:
					• Real number sets
					  • Natural numbers (counting)
					  • Whole numbers
					  • Integers
					  • Rational numbers (e.g.,$-\frac{2}{3}$, 25, 15%, 2.375, $\frac{1}{2}$, 32, -8, $\sqrt{4}$, 52, -2.5, etc.)
					  • Irrational numbers (with a calculator) (e.g., $\sqrt{3}$, 0.121121112..., π, etc.)
					• Verbal, numerical, and written expressions to compare numbers
					  • Comparative language
					  • Equality and inequality symbols (=, >, <, ≥, ≤)
					  • Equality and inequality words (equal to, greater than, less than, greater than or equal to, less than or equal to)
					• Multiple forms of real numbers within a single problem
					• Real-life problems
					
					STAAR Note:
					• 8.1E is not tested in STAAR. However, this student expectation is foundational for supporting and readiness standards tested in this grade level and/or other grade levels.

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	GRADE 6		GRADE 7		GRADE 8
					TxCCRS Note: I. Numeric Reasoning A1 – Compare real numbers.
6.1B	**Generate equivalent forms of rational numbers including whole numbers, fractions, and decimals.** ***Readiness Standard*** Generate, Represent, Use EQUIVALENT FORMS OF NON-NEGATIVE RATIONAL NUMBERS Including, but not limited to: • Whole numbers, fractions, and decimals • Various representations of equivalent forms of non-negative rational numbers • Various representations of whole numbers, fractions, and decimals • Real-life problems Note: • Grade 5 makes connections between equivalent mixed numbers and improper fractions on an abstract level.	**7.1B**	**Convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator.** ***Readiness Standard*** Convert, Represent, Use POSITIVE RATIONAL NUMBERS Including, but not limited to: • Whole numbers, fractions, decimals, and percents • Various representations of whole numbers, fractions, decimals, and percents • Terminating and repeating decimals (bar notation) • Multiple forms of rational numbers within a single problem • Mental, paper/pencil, and calculator computation • Real-life problems	**8.1B**	**Select and use appropriate forms of rational numbers to solve real-life problems including those involving proportional relationships.** ***Supporting Standard*** Select, Use, Understand FORMS OF RATIONAL NUMBERS IN REAL-LIFE PROBLEM SITUATIONS Including, but not limited to: • Appropriate forms of rational numbers • Operations (+, − , ×, ÷) on all rational numbers • Multiple forms of rational numbers within a single problem Solve REAL-LIFE PROBLEM SITUATIONS WITH RATIONAL NUMBERS Including, but not limited to: • Appropriate forms of rational numbers • Operations (+, − , ×, ÷) on all rational numbers • Order of operations • Multiple forms of rational numbers within a single problem • Real-life problems, including

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	GRADE 6		GRADE 7		GRADE 8
					proportional relationships

		7.1C	**Represent squares and square roots using geometric models.**
			
			Supporting Standard
			
			Represent
			
			SQUARES AND SQUARE ROOTS
			
			Including, but not limited to:
			• Geometric models of perfect squares
			• Geometric models to demonstrate examples and non-examples of squares and square roots
			• Connection of square numbers to their square roots
			
			Note:
			• Grade 7 introduces squares and square roots using geometric models.
				8.1C	**Approximate (mentally [and with calculators]) the value of irrational numbers as they arise from problem situations (such as π, $\sqrt{2}$).**
					
					Supporting Standard
					
					Approximate, Understand
					
					IRRATIONAL NUMBERS
					
					Including, but not limited to:
					• Number sets
					  • Natural numbers (counting)
					  • Whole numbers
					  • Integers
					  • Rational numbers
					  • Irrational numbers
					  • Real numbers
					• Irrational number approximations in problem situations (mentally and with calculators)
					• Geometric formulas
					• Mental approximation: use $\pi \approx 3$
					• Calculator approximation: use π and round final answer as appropriate
					
					STAAR Note:
					• 8.1C is tested in STAAR. However, the bracketed part of this student expectation **[and with calculators]** will not be tested.

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	GRADE 6		GRADE 7		GRADE 8
					Note: • Grade 8 introduces irrational numbers.
6.1	***Number, operation, and quantitative reasoning. The student represents and uses rational numbers in a variety of equivalent forms. The student is expected to:***	***7.2***	***Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, or divides to solve problems and justify solutions. The student is expected to:***	***8.1***	***Number, operation, and quantitative reasoning. The student understands that different forms of numbers are appropriate for different situations. The student is expected to:***

6.1C	**Use integers to represent real-life situations.**
	
	Supporting Standard
	
	Use, Represent
	
	INTEGERS IN REAL-LIFE SITUATIONS
	
	Including, but not limited to:
	• Whole numbers and their opposites
	• Number lines (horizontal and vertical)
	• Verbal descriptions
	• Verbal actions expressed symbolically
	• Integers to quantify
	  • Ex: temperature, deposit/withdrawal, above/below sea level, up/down, elevations, etc.
	• Integers to represent changes
	  • Ex: ascend/descend, loss/gain, increase/decrease, change in temperature, etc.
	• Real-life situations
	
	Note:
		7.2C	**Use models, such as concrete objects, pictorial models, and number lines, to add, subtract, multiply, and divide integers and connect the actions to algorithms.**
			
			Supporting Standard
			
			Use
			
			MODELS FOR INTEGER OPERATIONS
			
			Including, but not limited to:
			• Operation models
			  • Concrete objects
			  • Pictorial models
			  • Number lines (horizontal and vertical)
			
			Add, Subtract, Multiply, Divide
			
			INTEGERS
			
			Including, but not limited to:
			• Operation models
			  • Concrete objects		

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	• Grade 6 introduces representing integers in real-life situations.		• Pictorial models • Number lines (horizontal and vertical) • Multi-step problems • Operations in real-life problems Connect INTEGER OPERATIONS TO ALGORITHMS Including, but not limited to: • Operation models • Concrete objects • Pictorial models • Number lines (horizontal and vertical) • Actions of models to algorithms • Multi-step problems • Multiple operations within one problem situation • Verbal actions expressed symbolically and vice versa Note: • Grade 7 introduces integer computation transitioning from the concrete to the abstract. TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 7 only requires the		

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	GRADE 6		GRADE 7		GRADE 8
			students to perform computations with integers and positive rational numbers.)		
6.1D	**Write prime factorizations using exponents.** ***Supporting Standard*** Write, Represent, Use PRIME FACTORIZATION Including, but not limited to: • Positive integers • Prime and composite numbers • Factorization representations • Ex: factor trees, factor lists, arrays, prime factor tower division, etc. • Exponential notation Note: • Grade 5 introduces factor pairs. • Grade 6 introduces prime factorization. • Grade 6 uses exponents to represent numbers in prime factorization, but exponents are not used in computation with order of operations. An example would be $2^3 \times 5^2 = 2 \times 2 \times 2 \times 5 \times 5$ and not $4^2 - 1 + (17 - 6) = 26$.			**8.1D**	**Express numbers in scientific notation, including negative exponents, in appropriate problem situations.** ***Supporting Standard*** Express, Understand SCIENTIFIC NOTATION Including, but not limited to: • Scientific notation format • Standard form to scientific notation and vice versa • Powers of ten (both positive and negative integer exponents) • Real-life problems Note: • Grade 8 is the first and only time scientific notation is introduced and addressed in mathematics. • Grade 8 introduces negative exponents and is used only as powers of ten in scientific notation. TxCCRS Note: IX. Communication and Representation A1 – Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.
6.1E	**Identify factors of a positive integer,**				

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	common factors, and the greatest common factor of a set of positive integers.
	
	Supporting Standard
	
	Identify, Represent, Use
	
	FACTORS OF A POSITIVE INTEGER, COMMON FACTORS, AND THE GREATEST COMMON FACTOR (GCF)
	
	Including, but not limited to:
	• Factorization representations
	  • Ex: factor trees, factor lists, arrays, prime factor tower division, etc.
	• Factors of single numbers
	• Factors of sets of numbers
	• GCF of sets of positive integers
	• Multiple strategies to determine GCF
	  • Ex: factor list, Venn diagram, etc.
	
	Note:
	• Grade 5 introduces factor pairs.
	• Grade 6 introduces prime factorization.				

6.1F	**Identify multiples of a positive integer and common multiples and the least common multiple of a set of positive integers.** ***Supporting Standard*** Identify, Represent, Use				

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	MULTIPLES OF A POSITIVE INTEGER, COMMON MULTIPLES, AND THE LEAST COMMON MULTIPLE (LCM)
	
	Including, but not limited to:
	• Factorization representations
	  • Ex: factor trees, factor lists, arrays, prime factor tower division, etc.
	• Multiples of single numbers
	• Multiples of sets of numbers
	• LCM of sets of positive integers
	• Multiple strategies to determine LCM
	  • Ex: Venn diagram, factor grid, etc.
	
	Note:
	• Grade 5 finds common denominators to compare fractions.
	• Grade 6 introduces the concept of the least common denominator.				

6.2	***Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, and divides to solve problems and justify solutions. The student is expected to:***	***7.2***	***Number, operation, and quantitative reasoning. The student adds, subtracts, multiplies, or divides to solve problems and justify solutions. The student is expected to:***	***8.2***	***Number, operation, and quantitative reasoning. The student selects and uses appropriate operations to solve problems and justify solutions. The student is expected to:***
6.2A	**Model addition and subtraction situations involving fractions with objects, pictures, words, and numbers.** ***Supporting Standard*** Model ADDITION AND SUBTRACTION SITUATIONS INVOLVING FRACTIONS	**7.2A**	**Represent multiplication and division situations involving fractions and decimals with models, including concrete objects, pictures, words, and numbers.** ***Supporting Standard*** Represent		

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	GRADE 6		GRADE 7		GRADE 8
	Including, but not limited to: • Model using objects, pictures, words, and numbers • Addition and subtraction of fractions with like and unlike denominators • Verbal description of mathematical process • Proper fractions, improper fractions, and mixed numbers • LCM to find common denominators • GCF to simplify • Answers in simplest form • Place value • Single and multi-step expressions Solve, Justify PROBLEM SITUATIONS INVOLVING FRACTIONS WITH ADDITION AND SUBTRACTION Including, but not limited to: • Model using objects, pictures, words, and numbers • Addition and subtraction of fractions with like and unlike denominators • Verbal description of mathematical process • Proper fractions, improper fractions, and mixed numbers • LCM to find common denominators		MULTIPLICATION AND DIVISION SITUATIONS INVOLVING FRACTIONS AND DECIMALS Including, but not limited to: • Model using concrete objects, pictures, words, and numbers • Multiplication and division of fractions and decimals • Verbal description of mathematical process • Inverse relationship between multiplication and division • Multiplicative inverse and reciprocal • Proper fractions, improper fractions, and mixed numbers • GCF to simplify • Answers in simplest form • Place value • Single and multi-step expressions Solve, Justify PROBLEM SITUATIONS INVOLVING FRACTIONS AND DECIMALS WITH MULTIPLICATION AND DIVISION Including, but not limited to: • Model using concrete objects, pictures, words, and numbers • Multiplication and division of fractions and decimals • Verbal description of mathematical		

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	GRADE 6		GRADE 7		GRADE 8
	• GCF to simplify • Answers in simplest form • Single and multi-step expressions Note: • Grade 5 adds and subtracts fractions with like denominators transitioning from the concrete to the abstract. • Grade 5 finds common denominators to compare fractions. • Grade 6 introduces the concept of the least common denominator. TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 6 only requires the students to perform computations with non-negative rational numbers.)		process • Multiplicative inverse and reciprocal • Proper fractions, improper fractions, and mixed numbers • GCF to simplify • Answers in simplest form • Single and multi-step expressions Note: • Grade 7 introduces multiplication and division of fractions and decimals. TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 7 only requires the students to perform computations with integers and positive rational numbers.)		
6.2B	**Use addition and subtraction to solve problems involving fractions and decimals.** ***Readiness Standard*** Use ADDITION AND SUBTRACTION IN PROBLEMS INVOLVING FRACTIONS AND DECIMALS Including, but not limited to: • Addition and subtraction of whole numbers, decimals, fractions (like and unlike denominators), and mixed	**7.2B**	**Use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals.** ***Readiness Standard*** Use ADDITION, SUBTRACTION, MULTIPLICATION, AND DIVISION IN PROBLEMS INVOLVING FRACTIONS AND DECIMALS Including, but not limited to: • Addition, subtraction, multiplication, and division of whole numbers,	**8.2B**	**Use appropriate operations to solve problems involving rational numbers in problem situations.** ***Readiness Standard*** Use APPROPRIATE OPERATIONS IN PROBLEM SITUATIONS INVOLVING RATIONAL NUMBERS Including, but not limited to: • Addition, subtraction, multiplication, and division of rational numbers

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	GRADE 6		GRADE 7		GRADE 8
	numbers • Place value • Order of operations (excluding exponents) • Answers in simplest form • Real-life problems • Emphasis of units of measure Solve, Justify PROBLEMS INVOLVING FRACTIONS AND DECIMALS WITH ADDITION AND SUBTRACTION Including, but not limited to: • Addition and subtraction of whole numbers, decimals, fractions (like and unlike denominators), and mixed numbers • Multi-step problems • Multiple operations within one problem situation • Order of operations (excluding exponents) • Answers in simplest form • Real-life problems • Emphasis of units of measure Note: • Grade 5 adds and subtracts fractions with like denominators transitioning from the concrete to the abstract. • Grade 6 introduces adding and		decimals, fractions, and mixed numbers • Place value • Order of operations • Answers in simplest form • Real-life problems • Emphasis of units of measure Solve, Justify PROBLEMS INVOLVING FRACTIONS AND DECIMALS WITH ADDITION, SUBTRACTION, MULTIPLICATION, AND DIVISION Including, but not limited to: • Addition, subtraction, multiplication, and division of whole numbers, decimals, fractions, and mixed numbers • Multi-step problems • Multiple operations within one problem situation • Order of operations • Answers in simplest form • Real-life problems • Emphasis of units of measure Note: • Grade 7 introduces multiplication and division of fractions and decimals. • Grade 7 introduces exponents in order of operations.		• Place value • Order of operations • Various representations of rational numbers within one problem • Answers in simplest form • Real-life problems • Emphasis of units of measure Solve, Justify PROBLEM SITUATIONS INVOLVING RATIONAL NUMBERS Including, but not limited to: • Addition, subtraction, multiplication, and division of rational numbers • Multi-step problems • Multiple operations within one problem situation • Order of operations • Various representations of rational numbers within one problem • Answers in simplest form • Real-life problems • Emphasis of units of measure TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 8 only requires the students to perform computations with rational numbers.)

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	subtracting with unlike denominators transitioning from the concrete to the abstract. TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 6 only requires the students to perform computations with non-negative rational numbers.)		TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 7 only requires the students to perform computations with integers and positive rational numbers.)		
6.2C	**Use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates.** ***Readiness Standard*** Use MULTIPLICATION AND DIVISION IN PROBLEM SITUATIONS Including, but not limited to: • Whole numbers • Interpretation of remainder in situations • Equivalent ratios • Real-life problems • Emphasis of units of measure Solve, Justify PROBLEM SITUATIONS WITH MULTIPLICATION AND DIVISION	**7.2D**	**Use division to find unit rates and ratios in proportional relationships such as speed, density, price, recipes, and student-teacher ratio.** ***Supporting Standard*** Use, Find, Justify UNIT RATES AND RATIOS IN PROPORTIONAL RELATIONSHIPS WITH DIVISION Including, but not limited to: • Whole numbers, fractions, decimals • Inverse relationship between multiplication and division • Division/multiplication by unit rate • Various representations of ratios • Ratio tables • Verbal descriptions • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$, eggs to cartons	**8.2D**	**Use multiplication by a given constant factor (including unit rate) to represent and solve problems involving proportional relationships, including conversions between measurement systems.** ***Supporting Standard*** Use MULTIPLICATION BY A CONSTANT FACTOR IN PROBLEMS INVOLVING PROPORTIONAL RELATIONSHIPS Including, but not limited to: • Multiplication by a constant factor including unit rate • Solutions as expressions and equations • Representation of equivalent ratios using constant of proportionality: $(k = \frac{y}{x})$ • Conversions within measurement

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	GRADE 6		GRADE 7		GRADE 8

	Including, but not limited to:
	• Whole numbers
	• Interpretation of remainder in situations
	• Equivalent ratios and rates
	• Multi-step problems
	• Multiple operations within one problem situation
	• Real-life problems
	• Emphasis of units of measure
	
	TxCCRS Note:
	I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 6 only requires the students to perform computations with non-negative rational numbers.)
			• Symbolic descriptions
			  • Ex: 12:1, $\frac{12}{1}$, 12 to 1
			• Equivalent ratios in simplest form
			• Representation of equivalent ratios using constant of proportionality: $(k = \frac{y}{x})$
			• Conversions within measurement systems
			  • Ex: inches to feet, pounds to ounces, cups to gallons, meters to kilometers, grams to kilograms, milliliter to liters, etc.
			• Dimensional analysis
			• Real-life problems
			• Emphasis of units of measure
			
			TxCCRS Note:
			I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 7 only requires the students to perform computations with integers and positive rational numbers.)
					systems
					  • Ex: inches to feet, pounds to ounces, cups to gallons, meters to kilometers, grams to kilograms, milliliter to liters, etc.
					• Conversions between measurement systems
					  • Customary to metric
					  • Ex: inches to centimeters, yards to meters, pounds to kilograms, quarts to liters, etc.
					  • Metric to customary
					  • Ex: centimeters to inches, meters to yards, kilograms to pounds, liters to quarts, etc.
					• Dimensional analysis
					• Real-life problems
					• Emphasis of units of measure
					
					Represent, Solve, Justify
					
					PROBLEMS INVOLVING PROPORTIONAL RELATIONSHIPS WITH MULTIPLICATION BY A CONSTANT FACTOR
					
					Including, but not limited to:
					• Multiplication by a constant factor including unit rate
					• Solutions as expressions and equations
					• Representation of equivalent ratios using constant of proportionality:

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	GRADE 6		GRADE 7		GRADE 8

					($k = \frac{y}{x}$)
					• Conversions within measurement systems
					  • Ex: inches to feet, pounds to ounces, cups to gallons, meters to kilometers, grams to kilograms, milliliter to liters, etc.
					• Conversions between measurement systems
					• Customary to metric
					  • Ex: inches to centimeters, yards to meters, pounds to kilograms, quarts to liters, etc.
					  • Metric to customary
					  • Ex: centimeters to inches, meters to yards, kilograms to pounds, liters to quarts, etc.
					• Dimensional analysis
					• Real-life problems
					• Emphasis of units of measure
					
					TxCCRS Note:
					I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 8 only requires the students to perform computations with rational numbers.)
					IV. Measurement Reasoning B1 – Convert from one measurement system to another.

6.2E	**Use order of operations to simplify whole number expressions (without exponents) in problem solving**	**7.2E**	**Simplify numerical expressions involving order of operations and exponents.**		

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	GRADE 6		GRADE 7		GRADE 8

	situations.
	
	Readiness Standard
	
	Use, Simplify
	
	ORDER OF OPERATIONS WITH WHOLE NUMBER EXPRESSIONS (WITHOUT EXPONENTS)
	
	Including, but not limited to:
	• Order of operations
	  • Parentheses (with and without)
	  • Multiplication/division
	  • Addition/subtraction
	• Different symbols to represent operations
	  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
	  • Division: $n \div 3$; $\frac{n}{3}$
	
	Solve, Justify
	
	PROBLEM SITUATIONS WITH ORDER OF OPERATIONS
	
	Including, but not limited to:
	• Expressions without exponents
	• Order of operations
	  • Parentheses (with and without)
	  • Multiplication/division
	  • Addition/subtraction
	• Different symbols to represent
			Supporting Standard
			
			Simplify
			
			NUMERICAL EXPRESSIONS
			
			Including, but not limited to:
			• Numerical expressions with squares and other positive integer exponents, whole numbers, positive rational numbers, and integers
			• Order of operations
			  • Parentheses (with and without)
			  • Exponents
			  • Multiplication/division
			  • Addition/subtraction
			• Different symbols to represent operations
			  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
			  • Division: $n \div 3$; $\frac{n}{3}$
			
			Note:
			• Grade 7 introduces exponents in order of operations.
			
			TxCCRS Note:
			I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 7 only requires the students to perform computations with integers and positive rational numbers.)		

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	GRADE 6		GRADE 7		GRADE 8
	operations • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$ • Division: $n \div 3$; $\frac{n}{3}$ Note: • Grade 6 introduces order of operations (without exponents). Although exponents are not included in order of operations, estimating the area of circles and finding the area of a square and volume of a cube requires an understanding of how to square and/or cube a number. TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 6 only requires the students to perform computations with non-negative rational numbers.)				
		7.2F	**Select and use appropriate operations to solve problems and justify the selections.** ***Readiness Standard*** Select, Use APPROPRIATE OPERATIONS FOR PROBLEMS Including, but not limited to: • Addition, subtraction, multiplication, and division	**8.2A**	**Select appropriate operations to solve problems involving rational numbers and justify the selections.** ***Supporting Standard*** Select, Use APPROPRIATE OPERATIONS FOR PROBLEMS Including, but not limited to: • Addition, subtraction, multiplication, and division of rational numbers

	GRADE 6		GRADE 7		GRADE 8

			• Multi-step problems
			• Multiple operations within one problem situation
			• Different symbols to represent operations
			  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
			  • Division: $n \div 3$; $\frac{n}{3}$
			• Order of operations
			• Appropriate expression or equation to represent a given problem situation
			• Real-life problems
			
			Solve, Justify
			
			PROBLEMS WITH APPROPRIATE OPERATIONS
			
			Including, but not limited to:
			• Addition, subtraction, multiplication, and division
			• Multi-step problems
			• Multiple operations within one problem situation
			• Different symbols to represent operations
			  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
			  • Division: $n \div 3$; $\frac{n}{3}$
			• Order of operations
			• Appropriate expression or equation to
					• Multi-step problems
					• Multiple operations within one problem situation
					• Different symbols to represent operations
					  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
					  • Division: $n \div 3$; $\frac{n}{3}$
					• Order of operations
					• Appropriate expression or equation to represent a given problem situation
					• Real-life problems
					
					Solve, Justify
					
					PROBLEMS WITH APPROPRIATE OPERATIONS
					
					Including, but not limited to:
					• Addition, subtraction, multiplication, and division of rational numbers
					• Multi-step problems
					• Multiple operations within one problem situation
					• Different symbols to represent operations
					  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
					  • Division: $n \div 3$; $\frac{n}{3}$
					• Order of operations
					• Appropriate expression or equation to

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	GRADE 6		GRADE 7		GRADE 8
			represent a given problem situation • Real-life problems TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 7 only requires the students to perform computations with integers and positive rational numbers.)		represent given problem situation • Real-life problems TxCCRS Note: I. Numeric Reasoning B1 – Perform computations with real and complex numbers. (Grade 8 only requires the students to perform computations with rational numbers.)

6.2D	**Estimate and round to approximate reasonable results and to solve problems where exact answers are not required.**
	
	Supporting Standard
	
	Estimate, Round, Approximate
	
	NON-NEGATIVE RATIONAL NUMBERS FOR REASONABLE RESULTS IN PROBLEMS
	
	Including, but not limited to:
	• Types of numbers
	  • Whole numbers
	  • Decimals
	  • Fractions
	• Estimation strategies
	  • Rounding
	  • Compatible numbers (numbers easy to compute mentally)
	• Estimation prior to computation
	• Real-life problems
		7.2G	**Determine the reasonableness of a solution to a problem.**
			
			Supporting Standard
			
			Determine, Justify
			
			REASONABLENESS OF A SOLUTION TO A PROBLEM
			
			Including, but not limited to:
			• Addition, subtraction, multiplication, and division problem situations
			• Problems that have information expressed as ranges of numbers in the problem itself or ranges of numbers in its solution
			• Justification of reasonableness in terms of the numerical answer and in context of the problem
			• Emphasis of units of measure
			• Real-life problems
			
			TxCCRS Note:
			I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of
				8.2C	**Evaluate a solution for reasonableness.**
					
					Supporting Standard
					
					Evaluate, Justify
					
					REASONABLENESS OF A SOLUTION
					
					Including, but not limited to:
					• Addition, subtraction, multiplication, and division problem situations
					• Problems that have information expressed as ranges of numbers in the problem itself or ranges of numbers in its solution
					• Justification of reasonableness in terms of the numerical answer and in context of the problem
					• Emphasis of units of measure
					• Real-life problems
					
					TxCCRS Note:
					I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions.

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	GRADE 6		GRADE 7		GRADE 8

	Solve, Justify
	
	PROBLEMS FOR REASONABLE RESULTS
	
	Including, but not limited to:
	• Addition, subtraction, multiplication, and division problem situations
	• Strategies for estimation
	  • Compatible numbers (numbers easy to compute mentally)
	  • Rounding
	• Problems that have information expressed as ranges of numbers in the problem itself or ranges of numbers in its solution
	• Emphasis of units of measure
	• Real-life problems
	
	TxCCRS Note:
	I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions.
			solutions.		

6.3	***Patterns, relationships, and algebraic thinking. The student solves problems involving direct proportional relationships. The student is expected to:***	***7.3***	***Patterns, relationships, and algebraic thinking. The student solves problems involving direct proportional relationships. The student is expected to:***	***8.3***	***Patterns, relationships, and algebraic thinking. The student identifies proportional or non-proportional linear relationships in problem situations and solves problems. The student is expected to:***
6.3A	**Use ratios to describe proportional situations.** ***Supporting Standard***				

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	GRADE 6		GRADE 7		GRADE 8

	Use, Describe
	
	RATIOS IN PROPORTIONAL SITUATIONS
	
	Including, but not limited to:
	• Direct proportional situations
	• Various forms of ratios
	  • Verbal descriptions
	  • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$, eggs to cartons
	  • Symbolic descriptions
	  • Ex: 12:1, $\frac{12}{1}$, 12 to 1
	• Emphasis on order in which the ratio is stated
	• Emphasis of units of measure
	• Equivalent ratios in simplest form
	• Real-life problems
	
	Solve
	
	PROBLEMS INVOLVING DIRECT PROPORTIONAL RELATIONSHIPS
	
	Including, but not limited to:
	• Various forms of ratios
	  • Verbal descriptions
	  • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$,				

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	GRADE 6		GRADE 7		GRADE 8
	eggs to cartons • Symbolic descriptions • Ex: 12:1, $\frac{12}{1}$, 12 to 1 • Emphasis on order in which the ratio is stated • Emphasis of units of measure • Equivalent ratios • Real-life problems Note: • Grade 6 introduces ratios and proportions.				
6.3B	**Represent ratios and percents with concrete models, fractions, and decimals.** ***Supporting Standard*** Represent RATIOS AND PERCENTS Including, but not limited to: • Whole numbers, fractions, and decimals • Various representations of ratios • Concrete and pictorial models • Ratio tables • Verbal descriptions • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$,	**7.3A**	**Estimate and find solutions to application problems involving percent.** ***Readiness Standard*** Estimate, Find SOLUTIONS TO APPLICATION PROBLEMS INVOLVING PERCENT Including, but not limited to: • Estimation of percentages before computation • Various representations of percents • Models (e.g., percent bars, hundredths grid, etc.) • Tables to bridge to algebraic notation • Ex: 20% of any given amount *x*		

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	GRADE 6		GRADE 7		GRADE 8
	eggs to cartons • Symbolic descriptions • Ex: 12:1, $\frac{12}{1}$, 12 to 1 • Equivalent ratios in simplest form • Various representations of percents • Concrete and pictorial models (e.g., percent bars, hundredths grid, etc.) • Numeric forms • Ex: 20%, $\frac{20}{100}$, $\frac{1}{5}$, 0.2 • Emphasis of units of measure • Real-life problems		equals 0.2•*x* • Numeric forms • Ex: 20%, $\frac{20}{100}$, $\frac{1}{5}$, 0.2 • Multiple methods for solving problems involving percent • Models (e.g., percent bars, hundredths grid, etc.) • Decimal method (algebraic) • Proportion method: $\frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100}$ • Scale factors and equivalent ratios • Cross products • Emphasis of units of measure • Real-life problems with/without models • Ex: tax, tip, mark-up, discount, percent of change, etc.		
6.3C	**Use ratios to make predictions in proportional situations.** ***Readiness Standard*** Use RATIOS FOR PREDICTIONS IN PROPORTIONAL SITUATIONS Including, but not limited to: • Various representations of ratios	**7.3B**	**Estimate and find solutions to application problems involving proportional relationships such as similarity, scaling, unit costs, and related measurement units.** ***Readiness Standard*** Estimate, Find SOLUTIONS TO APPLICATION PROBLEMS INVOLVING PROPORTIONAL RELATIONSHIPS	**8.3B**	**Estimate and find solutions to application problems involving percents and other proportional relationships such as similarity and rates.** ***Readiness Standard*** Estimate, Find SOLUTIONS TO APPLICATION PROBLEMS INVOLVING PROPORTIONAL RELATIONSHIPS

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	GRADE 6		GRADE 7		GRADE 8

	• Concrete and pictorial models
	• Ratio tables
	• Verbal descriptions
	  • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$, eggs to cartons
	• Symbolic descriptions
	  • Ex: 12:1, $\frac{12}{1}$, 12 to 1
	• Equivalent ratios in simplest form
	• Multiple methods for solving problems
	  • Concrete and pictorial models
	  • Equivalent ratios
	  • Ratio tables
	  • Cross products
	• Real-life problems
	• Emphasis of units of measure
	• Information missing in a proportional situation
	
	Make
	
	PREDICTIONS IN PROPORTIONAL SITUATIONS
	
	Including, but not limited to:
	• Estimation of proportions before computation
	• Multiple methods for solving problems
	  • Concrete and pictorial models
			Including, but not limited to:
			• Proportional relationships such as similarity, scaling, unit costs, and related measurement units
			• Various representations of ratios
			  • Ratio tables
			  • Verbal descriptions
			  • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$, eggs to cartons
			  • Symbolic descriptions
			  • Ex: 12:1, $\frac{12}{1}$, 12 to 1
			  • Equivalent ratios in simplest form
			• Estimation of proportions before computation
			• Multiple methods for solving direct proportional problems
			  • Scale factors and equivalent ratios
			  • Cross products
			• Characteristics of direct proportional situations
			  • Linear
			  • Contains the origin (0, 0)
			  • Written in the form $y = kx$
			  • Has a constant of proportionality: $(k = \frac{y}{x})$
			• Real-life problems (proportional relationships involving similarity,
					Including, but not limited to:
					• Percents and other proportional relationships such as similarity and rates
					• Various representations of ratios
					  • Verbal descriptions
					  • Ex: eggs:cartons, $\frac{\text{eggs}}{\text{cartons}}$, eggs to cartons
					  • Symbolic descriptions
					  • Ex: 12:1, $\frac{12}{1}$, 12 to 1
					  • Equivalent ratios in simplest form
					• Estimation of proportions before computation
					• Various representations of percents
					  • Models (e.g., percent bars, hundredths grid, etc.)
					  • Tables to bridge to algebraic notation
					  • Ex: 20% of any given amount x equals $0.2 \bullet x$
					  • Numeric forms
					  • Ex: 20%, $\frac{20}{100}$, $\frac{1}{5}$, 0.2
					• Multiple methods for solving problems involving percent
					  • Decimal method (algebraic)
					  • Proportion method:

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	GRADE 6		GRADE 7		GRADE 8
	• Equivalent ratios • Ratio tables • Real-life problems • Emphasis on units in the problem situation		scaling, unit costs, and related measurement units) • Emphasis of units of measure Note: • Grade 6 introduces ratios and proportions. • Grade 7 introduces unit cost and scale factors. TxCCRS Note: IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Grade 7 is only responsible for similarity and scaling.)		$\frac{\text{part}}{\text{whole}} = \frac{\text{percent}}{100}$ • Scale factors and equivalent ratios • Cross products • Multiple methods for solving problems involving proportions • Corresponding parts of each ratio in respective positions in the proportion • Ex: The recipe to make 24 cupcakes calls for 2 eggs. How many eggs would be required to make 48 cupcakes? $\frac{24 \text{ cupcakes}}{2 \text{ eggs}} = \frac{48 \text{ cupcakes}}{x \text{ eggs}}$ $\frac{2 \text{ eggs}}{24 \text{ cupcakes}} = \frac{x \text{ eggs}}{48 \text{ cupcakes}}$ $\frac{x \text{ eggs}}{2 \text{ eggs}} = \frac{48 \text{ cupcakes}}{24 \text{ cupcakes}}$ $\frac{2 \text{ eggs}}{x \text{ eggs}} = \frac{24 \text{ cupcakes}}{48 \text{ cupcakes}}$ • Real-life problems with/without models • Ex: tax, tip, mark-up, discount, percent of change, scale drawing, similarity, rate, unit price, etc. • Emphasis of units of measure
				8.3A	**Compare and contrast proportional and non-proportional linear relationships.** ***Supporting Standard***

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	GRADE 6		GRADE 7		GRADE 8

					Compare, Contrast, Identify
					
					PROPORTIONAL AND NON-PROPORTIONAL LINEAR RELATIONSHIPS
					
					Including, but not limited to:
					• Various representations
					  • Tables
					  • Graphs
					  • Verbal descriptions
					  • Algebraic representations
					• Characteristics of direct proportional situations
					  • Linear
					  • Contains the origin (0, 0)
					  • Written in the form $y = kx$
					  • Has a constant of proportionality: $(k = \frac{y}{x})$
					• Real-life problems
					  • Proportional relationships (e.g., average speed, unit costs, and related measurement units, etc.)
					  • Non-proportional linear relationships
					
					Solve
					
					PROBLEMS INVOLVING PROPORTIONAL AND NON-PROPORTIONAL LINEAR RELATIONSHIPS

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	GRADE 6		GRADE 7		GRADE 8

					Including, but not limited to:
					• Various representations
					  • Tables (horizontal and vertical)
					  • Graphs
					  • Verbal descriptions
					  • Algebraic representations
					• Real-life problems
					  • Proportional relationships (e.g., average speed, unit costs, and related measurement units, etc.)
					  • Non-proportional linear relationships
					• Emphasis of units of measure
					
					Note:
					• Grade 8 introduces non-proportional relationships.

6.4	***Patterns, relationships, and algebraic thinking. The student uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. The student is expected to:***	***7.4***	***Patterns, relationships, and algebraic thinking. The student represents a relationship in numerical, geometric, verbal, and symbolic form. The student is expected to:***	***8.4***	***Patterns, relationships, and algebraic thinking. The student makes connections among various representations of a numerical relationship. The student is expected to:***
6.4B	**Use tables of data to generate formulas representing relationships involving perimeter, area, volume of a rectangular prism, etc.** ***Supporting Standard*** Use, Describe, Generate FORMULAS	**7.4A**	**Generate formulas involving unit conversions within the same system (customary and metric), perimeter, area, circumference, volume, and scaling.** ***Supporting Standard*** Generate, Represent FORMULAS		

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	GRADE 6		GRADE 7		GRADE 8

	Including, but not limited to:
	• Data tables to derive formulas
	• Patterns
	  • Proportional relationships
	  • Non-proportional relationships
	  • Geometric relationships
	• Formulas
	  • Perimeter (square and rectangle)
	  • Circumference (circle)
	  • Area (square, rectangle, parallelogram, trapezoid, triangle, and circle)
	  • Volume (cube and rectangular prism)
	• Approximation for Pi: $\pi = 3$
	• Representative equations and expressions
	• Rewriting formulas on STAAR Grade 6 Mathematics Reference Materials to find indicated variables
	  • Ex: $P = 4s$, $s = \frac{P}{4}$
	
	TxCCRS Note:
	III. Geometric Reasoning C1 – Make connections between geometry and algebra.
	IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures.
	VII. Functions C1 – Apply known function models.
			Including, but not limited to:
			• Data collection from models
			• Formulas from a variety of representations
			• Formulas representing
			  • Unit conversions within the same system
			  • Customary
			  • Ex: feet to inches, pounds to ounces, cups to gallons, etc.
			  • Metric
			  • Ex: meters to kilometers, grams to kilograms, milliliters to liters, etc.
			  • Perimeter (square, rectangle)
			  • Circumference (circle)
			  • Area (square, rectangle, parallelogram, trapezoid, triangle, circle)
			  • Volume (cube, rectangular prism, triangular prism, and cylinder)
			  • Scaling
			• Patterns within geometric relationships
			• Proportional relationships
			  • Constant of proportionality: k, if $y = kx$
			• Formulas as expressions or equations
			• Rewriting formulas on STAAR Grade 7 Mathematics Reference Materials to find indicated variables		

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	GRADE 6		GRADE 7		GRADE 8
	IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		• Ex: $C = 2\pi r$, $r = \frac{C}{2\pi}$ TxCCRS Note: II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships. III. Geometric Reasoning C1 – Make connections between geometry and algebra. IV. Measurement Reasoning B2 – Convert within a single measurement system. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures. VII. Functions C1 – Apply known function models. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		
		7.4B	**Graph data to demonstrate relationships in familiar concepts such as conversions, perimeter, area, circumference, volume, and scaling.** ***Supporting Standard*** Graph, Demonstrate, Represent RELATIONSHIPS IN MATHEMATICAL CONCEPTS Including, but not limited to:	**8.4**	**Generate a different representation of data given another representation of data (such as table, graph, equation, or verbal description).** ***Readiness Standard*** Generate, Connect DIFFERENT REPRESENTATIONS OF DATA Including, but not limited to:

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	GRADE 6		GRADE 7		GRADE 8

			• Data sets from geometric concepts and measurement
			  • Unit conversion relationships within the same system
			  • Customary (e.g., feet to inches, pounds to ounces, cups to gallons, etc.)
			  • Ex: $y = 12x$, where x is feet and y is inches, and $y = \frac{x}{12}$, where x is inches and y is feet.
			  • Metric (e.g., meters to kilometers, grams to kilograms, milliliters to liters, etc.)
			  • Ex: $y = 1000x$, where x is kilometers and y is meters, and $y = \frac{x}{1000}$, where x is meters and y is kilometers.
			  • Perimeter relationships (square, rectangle)
			  • Circumference relationships (circle)
			  • Area relationships (square, rectangle, parallelogram, trapezoid, triangle, circle)
			  • Volume relationships (cube, rectangular prism, triangular prism, and cylinder)
			  • Scaling relationships
			• Various representations of data within a single context of a problem
			  • Tables (numerical)
					• Various representations of data within a single context of a problem
					  • Tables (horizontal and vertical)
					  • Graphs (all quadrants)
					  • Verbal descriptions
					  • Algebraic representations
					• Comparisons between representations
					• Real-life problems
					
					Make
					
					CONNECTIONS BETWEEN DIFFERENT REPRESENTATIONS OF DATA
					
					Including, but not limited to:
					• Representations of data
					  • Tables (horizontal and vertical)
					  • Graphs (all quadrants)
					  • Verbal descriptions
					  • Algebraic representations
					• Comparisons between representations
					• Real-life problems
					
					TxCCRS Note:
					II. Algebraic Reasoning D1 – Interpret multiple representations of equations and relationships.
					II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships.
					VI. Statistical Reasoning B2 – Select and apply appropriate visual representations of data.

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	GRADE 6		GRADE 7		GRADE 8
			• Graphs (geometric) • Verbal descriptions • Algebraic representations (symbolic) • Real-life problems TxCCRS Note: II. Algebraic Reasoning D1 – Interpret multiple representations of equations and relationships. II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships. III. Geometric Reasoning C1 – Make connections between geometry and algebra. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.
6.4	***Patterns, relationships, and algebraic thinking. The student uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes. The student is expected to:***	***7.4***	***Patterns, relationships, and algebraic thinking. The student represents a relationship in numerical, geometric, verbal, and symbolic form. The student is expected to:***	***8.5***	***Patterns, relationships, and algebraic thinking. The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to:***
6.4A	**Use tables and symbols to represent and describe proportional and other relationships such as those involving conversions, arithmetic sequences (with a constant rate of change), perimeter and area.** ***Readiness Standard***	**7.4C**	**Use words and symbols to describe the relationship between the terms in an arithmetic sequence (with a constant rate of change) and their positions in the sequence.** ***Supporting Standard***	**8.5B**	**Find and evaluate an algebraic expression to determine any term in an arithmetic sequence (with a constant rate of change).** ***Supporting Standard*** Find, Evaluate, Determine, Use

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GRADE 6	GRADE 7	GRADE 8

Use, Represent, Describe
 	
PROPORTIONAL AND OTHER RELATIONSHIPS
 	
Including, but not limited to:
• Various representations
  • Concrete and pictorial models
  • Tables
  • Graphs
  • Verbal descriptions
  • Algebraic representations
• Various situations
  • Unit conversion relationships within the same system
  • Customary (e.g., feet to inches, pounds to ounces, cups to gallons, etc.)
  • Ex: $y = 12x$, where x is feet and y is inches, and $y = \frac{x}{12}$, where x is inches and y is feet.
  • Metric (e.g., meters to kilometers, grams to kilograms, milliliters to liters, etc.)
  • Ex: $y = 1000x$, where x is kilometers and y is meters, and $y = \frac{x}{1000}$, where x is meters and y is kilometers.
  • Relationships with arithmetic
	Use, Describe, Represent
	
	RELATIONSHIPS BETWEEN TERMS IN ARITHMETIC SEQUENCES
	
	Including, but not limited to:
	• Constant rate of change
	• Various representations
	  • Concrete and pictorial models
	  • Tables
	  • Graphs
	  • Verbal descriptions
	  • Algebraic representations
	• Relationship between term and position using words and symbols
	• Positions in a sequence and the “nth” term in sequence
	• Real-life problems
	
	Note:
	• Grade 7 introduces the concept of the “nth” term.
	
	TxCCRS Note:
	II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships.
	VII. Functions B2 – Algebraically construct and analyze new functions.
	IX. Communication and Representation A1 – Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.
	IX. Communication and Representation C2
		ALGEBRAIC EXPRESSIONS OF ARITHMETIC SEQUENCES
		
		Including, but not limited to:
		• Constant rate of change (proportional and non-proportional linear sequences)
		• Various representations
		  • Concrete and pictorial models
		  • Tables
		  • Graphs
		  • Verbal descriptions
		  • Algebraic representations
		• Relationship between term and position using words and symbols
		• Algebraic expressions to determine positions in a sequence and the “nth” term in a sequence
		• Predictions relating to terms in a sequence
		• Real-life problems
		
		Make
		
		PREDICTIONS OF ARITHMETIC SEQUENCES
		
		Including, but not limited to:
		• Algebraic expressions
		• Constant rate of change (proportional and non-proportional linear sequences)
		• Various representations

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	GRADE 6		GRADE 7		GRADE 8
	sequences with constant rate of change • Perimeter relationships (square, rectangle) • Circumference relationships (circle) • Area relationships (square, rectangle, parallelogram, trapezoid, triangle, circle) • Emphasis of units of measure • Representative expressions • Real-life problems TxCCRS Note: II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures. VII. Functions B2 – Algebraically construct and analyze new functions. IX. Communication and Representation A1 – Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.		– Create and use representations to organize, record, and communicate mathematical ideas.		• Concrete and pictorial models • Tables • Graphs • Verbal descriptions • Algebraic representations • Relationship between term and position using words and symbols • Algebraic expressions to determine positions in a sequence and the "nth" term in a sequence • Predictions relating to terms in a sequence • Real-life problems TxCCRS Note: II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships. VII. Functions B2 – Algebraically construct and analyze new functions. IX. Communication and Representation A1 – Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.
6.5	***Patterns, relationships, and algebraic thinking. The student uses letters to represent an unknown in an equation. The student is expected to:***	***7.5***	***Patterns, relationships, and algebraic thinking. The student uses equations to solve problems. The student is expected to:***	***8.5***	***Patterns, relationships, and algebraic thinking. The student uses graphs, tables, and algebraic representations to make predictions and solve problems. The student is expected to:***

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	GRADE 6		GRADE 7		GRADE 8
		7.5A	**Use concrete and pictorial models to solve equations and use symbols to record the actions.** ***Supporting Standard*** Use, Solve EQUATION MODELS Including, but not limited to: • Distinction between expressions and equations and the difference between simplifying and solving (TxCCRS) • Concrete and pictorial models to represent solving equations • Integers only • One-step and two-step equations • Variables on both sides of the equal sign • Strategic choice of procedures to solve equations efficiently • Connections to order of operations • Reasonableness of solutions Record ACTIONS SYMBOLICALLY Including, but not limited to: • Symbolic representation to record actions while solving by models • Verbal representation to record actions while solving by models		

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	GRADE 6		GRADE 7		GRADE 8
			• One-step and two-step equations • Variables on both sides of the equal sign • Strategic choice of procedures to solve equations efficiently Note: • Grade 7 introduces solving equations and uses symbols to record the actions. TxCCRS Note: II. Algebraic Reasoning A1 – Explain and differentiate between expressions and equations using words such as "solve", "evaluate", and "simplify". II. Algebraic Reasoning C1 – Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, inequalities, and systems of linear equations. (Grade 7 is only responsible for solving equations.) II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships.		
6.5	**Formulate equations from problem situations described by linear relationships.** ***Readiness Standard*** Formulate, Use, Represent EQUATIONS FROM PROBLEM SITUATIONS INVOLVING LINEAR RELATIONSHIPS	**7.5B**	**Formulate problem situations when given a simple equation and formulate an equation when given a problem situation.** ***Readiness Standard*** Formulate, Solve EQUATIONS AND PROBLEM SITUATIONS	**8.5A**	**Predict, find and justify solutions to application problems using appropriate tables, graphs, and algebraic equations.** ***Readiness Standard*** Predict, Find, Justify, Solve APPLICATION PROBLEMS Including, but not limited to:

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	GRADE 6		GRADE 7		GRADE 8

	Including, but not limited to:
	• Equations from problem situations
	• Linear relationships only
	• Variable(s) to represent unknown
	• Various representations
	  • Tables
	  • Graphs
	  • Verbal descriptions
	  • Algebraic representations
	• Different symbols to represent operations
	  • Multiplication: $3n$, $3(n)$, $3[n]$, $3 \bullet n$
	  • Division: $n \div 3$; $\frac{n}{3}$
	• Connections to order of operations
	• Real-life problems
	
	Note:
	• Grade 5 introduces variables.
	
	TxCCRS Note:
	IX. Communication and Representation A1 – Use mathematical symbols, terminology, and notation to represent given and unknown information in a problem.
			Including, but not limited to:
			• Problem situations from equations
			• Equations from problem situations
			• Variable(s) to represent unknown(s)
			• Various representations
			  • Tables
			  • Graphs
			  • Verbal descriptions
			  • Algebraic representations
			• Connections to order of operations
			• Real-life problems
					• Variable(s) to represent unknown(s)
					• Various representations
					  • Tables
					  • Graphs
					  • Verbal descriptions
					  • Algebraic representations
					• Distinction between expressions and equations and the difference between simplifying and solving (TxCCRS)
					• Equations from problem situations
					• Connections to order of operations
					• Real-life problems including $d = rt$
					• Reasonableness of solutions
					
					TxCCRS Note:
					II. Algebraic Reasoning A1 – Explain and differentiate between expressions and equations using words such as “solve”, “evaluate”, and “simplify”.
					II. Algebraic Reasoning C1 – Recognize and use algebraic (field) properties, concepts, procedures, and algorithms to solve equations, inequalities, and systems of linear equations. (Grade 8 is only responsible for similarity and scaling.)
					II. Algebraic Reasoning D1 – Interpret multiple representations of equations and relationships.
					II. Algebraic Reasoning D2 – Translate among multiple representations of equations and relationships.

6.6	***Geometry and spatial reasoning. The student uses geometric vocabulary to***	***7.6***	***Geometry and spatial reasoning. The student compares and classifies two-***	***8.6***	***Geometry and spatial reasoning. The student uses transformational geometry***

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	GRADE 6		GRADE 7		GRADE 8
	describe angles, polygons, and circles. The student is expected to:		***and three-dimensional figures using geometric vocabulary and properties. The student is expected to:***		***to develop spatial sense. The student is expected to:***

6.6A	**Use angle measurements to classify angles as acute, obtuse, or right.**
	
	Supporting Standard
	
	Use, Classify, Describe
	
	ANGLE MEASUREMENTS
	
	Including, but not limited to:
	• Measurement of angles with a protractor
	• Measurement to classify angles
	  • Acute angles (between 0 and 90 degrees)
	  • Obtuse angles (between 90 and 180 degrees)
	  • Right angles (90 degrees)
	  • Straight angles (180 degrees)
	• Angles in objects and polygons
	• Angles embedded within angles
	• Angle labels
	  • Angle with one letter
	  • Ex: angle *A*
	  • Angle with three letters
	  • Ex: angle *ABC*
	  • Angle with a number
	  • Ex: angle 1
		7.6A	**Use angle measurements to classify pairs of angles as complementary or supplementary.**
			
			Supporting Standard
			
			Use, Classify, Compare
			
			ANGLE MEASUREMENTS
			
			Including, but not limited to:
			• Measurement of angles with a protractor
			• Measurement to classify angles
			  • Acute angles (between 0 and 90 degrees)
			  • Obtuse angles (between 90 and 180 degrees)
			  • Right angles(90 degrees)
			  • Straight angles (180 degrees)
			• Pairs of angles
			  • Complementary angles (total 90 degrees)
			  • Supplementary angles (total 180 degrees)
			  • Angles in objects and polygons
			  • Angles embedded within angles
			  • Consecutive angles
			• Angle labels		

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	GRADE 6		GRADE 7		GRADE 8

	• Angle symbol with one letter
	  • Ex: ∠*A*
	• Angle symbol with three letters
	  • Ex:∠*ABC*
	• Angle symbol with a number
	  • Ex: ∠1
	• Measurement or "*m*" notation indicates the measure of the angle in degrees, $m\angle 1 = 50^{\circ}$
	• Unit measurement labels
	  • 50 degrees or 50°
	• Box to represent 90° angle in figure
	
	Note:
	• Grade 6 introduces using a protractor to measure angles.
	
	TxCCRS Note:
	III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.
	III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.
			• Angle with one letter
			  • Ex: angle *A*
			• Angle with three letters
			  • Ex: angle *ABC*
			• Angle with a number
			  • Ex: angle 1
			• Angle symbol with one letter
			  • Ex: ∠*A*
			• Angle symbol with three letters
			  • Ex:∠*ABC*
			• Angle symbol with a number
			  • Ex: ∠1
			• Measurement or "*m*" notation indicates the measure of the angle in degrees, $m\angle 1 = 50^{\circ}$
			• Unit measurement labels
			  • 50 degrees or 50°
			• Box to represent 90° angle in figure
			
			Note:
			• Grade 7 introduces complementary and supplementary angles.
			
			TxCCRS Note:
			III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.
			III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.		

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	GRADE 6		GRADE 7		GRADE 8

6.6B	**Identify relationships involving angles in triangles and quadrilaterals.**
	
	Supporting Standard
	
	Identify, Use, Describe
	
	RELATIONSHIPS INVOLVING ANGLES OF TRIANGLES AND QUADRILATERALS
	
	Including, but not limited to:
	• Regular and irregular triangles and quadrilaterals
	• Relationships involving angles in triangles
	  • Sum of all angles in any triangle measures 180°
	  • Congruency of angles is related to the congruency of sides
	  • Finding unknown angle measures in a triangles when given one or two angle measures
	• Type of triangles (angle measures only)
	  • Right triangle, one angle measures 90°
	  • Obtuse triangle, one angle measure is greater than 90°
	  • Acute triangle, all angles measure less than 90°
	  • Equiangular triangle, all angles congruent, all angles measure 60°
	• Relationships involving angles in quadrilaterals
		7.6B	**Use properties to classify triangles and quadrilaterals.**
			
			Supporting Standard
			
			Use, Classify, Compare
			
			PROPERTIES OF TRIANGLES AND QUADRILATERALS
			
			Including, but not limited to:
			• Regular and irregular triangles and quadrilaterals
			• Angle sum properties
			  • Triangles
			  • Quadrilaterals
			• Properties of triangles (angle measures and side lengths)
			  • Congruency of sides is related to the congruency of angles
			  • Side classifications
			  • Isosceles triangle, at least two sides congruent
			  • Scalene triangle, no sides congruent
			  • Equilateral triangle, all sides congruent
			  • Angle classifications
			  • Right triangle, one angle measures 90°
			  • Obtuse triangle, one angle measure is greater than 90°
			  • Acute triangle, all angles measure		

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	GRADE 6		GRADE 7		GRADE 8
	• Sum of all angles in any quadrilateral measures 360° • Opposite angles are congruent in a parallelogram, rhombus, rectangle, and square • All angles are congruent in a rectangle and square • All angles measure 90° in a rectangle and square • Congruency of angles is related to the congruency of sides • Finding unknown angle measures in a quadrilateral when given one or more angle measures Note: • Grade 6 introduces congruency marks on triangles and quadrilaterals. TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.		less than 90° • Equiangular triangle, all angles congruent, all angles measure 60° • Side-angle classifications (e.g., isosceles, right triangle, etc.) • Properties of quadrilaterals • Congruency of sides is related to the congruency of angles • Trapezoid • Exactly one pair of opposite sides parallel • Exactly two pairs of consecutive angles supplementary • Parallelogram • Both pairs of opposite sides parallel • Both pairs of opposite sides congruent • Both pairs of opposite angles congruent • Consecutive angles supplementary • Rectangle, parallelogram in which • All pairs of adjacent sides perpendicular • All angles right angles • Rhombus, parallelogram in which • All sides congruent • Square, rectangle in which • All sides congruent		

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	GRADE 6		GRADE 7		GRADE 8
			Note: • Grade 6 introduces congruency marks on triangles and quadrilaterals. • Grade 7 introduces classifying triangles by both side and angle attributes (e.g., right, scalene or obtuse, isosceles triangle, etc.). TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning A3 – Recognize and apply right triangle relationships including basic trigonometry. (Basic trigonometry is not addressed until high school geometry.)		
	Note: • Grade 5 addresses attributes of three-dimensional figures (SE 5.7). • Grade 6 does not specifically address attributes of three-dimensional figures. However, students at this grade level are expected to solve problems involving three-dimensional figures (SE 6.8B).	**7.6C**	**Use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders.** ***Supporting Standard*** Use, Classify, Compare PROPERTIES OF THREE-DIMENSIONAL FIGURES Including, but not limited to: • Three-dimensional figures • Pyramids		

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	GRADE 6		GRADE 7		GRADE 8

			• Cones
			• Prisms
			• Cylinders
			• Attributes of three-dimensional figures
			  • Edges, faces, vertices, and bases
			• Properties of three-dimensional figures
			  • Number of edges, faces, vertices, and bases
			  • Shape of faces and bases
			  • Parallel bases
			  • Congruency of edges, faces, and bases
			• Properties of two-dimensional figures that comprise the three-dimensional figures
			  • Polygons
			  • Circles
			• Models and drawings of three-dimensional figures
			
			Note:
			• Grade 5 addresses attributes of three-dimensional figures.
			• Grade 6 does not specifically address attributes of three-dimensional figures. However, students at this grade level are expected to solve problems involving three-dimensional figures.
			
			TxCCRS Note:
			III. Geometric Reasoning A1 – Identify and represent the features of plane and space		

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	GRADE 6		GRADE 7		GRADE 8
			figures. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.		
		7.6D	**Use critical attributes to define similarity.** ***Readiness Standard*** Use, Define, Compare CRITICAL ATTRIBUTES OF SIMILAR FIGURES Including, but not limited to: • Notation for similar figures aligning corresponding angles and sides: $\Delta ABC \sim \Delta LMN$ • Corresponding parts of similar figures (alignment as indicated in similarity statement) • Corresponding angles are congruent: $\angle A \cong \angle L,\ \angle B \cong \angle M,\ \angle C \cong \angle N$ • Corresponding sides are related proportionally: $\frac{AB}{LM} = \frac{BC}{MN} = \frac{AC}{LN}$ TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their	**8.6A**	**Generate similar figures using dilations including enlargements and reductions.** ***Readiness Standard*** Generate, Use, Develop SIMILAR FIGURES Including, but not limited to: • Dilations • Enlargements (scale factor > 1) • Reductions (0 < scale factor < 1) • Congruent (scale factor = 1) • Comparison of original figure versus image • Determination of scale factor between two similar figures • Enlargement or reduction of a figure given a scale factor • Corresponding parts of similar figures • Corresponding angles are congruent • Corresponding sides are related proportionally • Notation for similar figures aligning corresponding angles and sides: $\Delta ABC \sim \Delta LMN$

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	GRADE 6		GRADE 7		GRADE 8

			properties.		• Corresponding parts of similar figures (alignment as indicated in similarity statement)
					  • Corresponding angles are congruent: $\angle A \cong \angle L$, $\angle B \cong \angle M$, $\angle C \cong \angle N$
					  • Corresponding sides are related proportionally: $\frac{AB}{LM} = \frac{BC}{MN} = \frac{AC}{LN}$
					• Proportions to find missing sides of similar figures
					• Models on coordinate grids
					
					TxCCRS Note:
					III. Geometric Reasoning B1 – Identify and apply transformations to figures.
					III. Geometric Reasoning B3 – Use congruence transformations and dilations to investigate congruence, similarity, and symmetries of plane figures.
					IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Basic trigonometry is not addressed until high school geometry.)

6.6C	**Describe the relationship between radius, diameter, and circumference of a circle.** ***Readiness Standard*** Describe, Use CIRCLE RELATIONSHIPS				

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	GRADE 6		GRADE 7		GRADE 8

	Including, but not limited to:
	• Models
	• Data collection and analysis
	  • Diameter versus radius
	  • Circumference versus diameter
	  • Circumference versus radius
	• Representations of the relationships between radius, diameter, circumference, and Pi
	  • Tables (horizontal and vertical)
	  • Graphs
	  • Verbal descriptions
	  • Algebraic representations
	
	Note:
	• Grade 6 introduces parts of a circle and relationships of a circle.
	
	TxCCRS Note:
	III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.
	III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.
	VII. Functions C1 – Apply known function models.				

6.7	***Geometry and spatial reasoning. The student uses coordinate geometry to identify location in two dimensions. The student is expected to:***	***7.7***	***Geometry and spatial reasoning. The student uses coordinate geometry to describe location on a plane. The student is expected to:***	***8.7***	***Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to:***

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	GRADE 6		GRADE 7		GRADE 8

6.7	**Locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers.**
	
	Supporting Standard
	
	Locate, Name, Use, Identify
	
	ORDERED PAIRS
	
	Including, but not limited to:
	• Coordinate plane (Quadrant I only)
	• Coordinates represented by a variety of non-negative rational numbers
	  • Whole numbers
	  • Fractions (e.g., $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc.)
	  • Decimals (e.g., 0.25, 1.5, 6.3, etc.)
	• Labels
	  • Points
	  • Letter label: *A*
	  • Ordered Pair: (1, $\frac{1}{2}$)
	  • Coordinate Plane
	  • Quadrant I
	  • *x*-axis and *y*-axis
	• Coordinate graphs with different incremental units
	• Objects and real-life situations
	• Attributes of two-dimensional figures to determine missing points
		7.7A	**Locate and name points on a coordinate plane using ordered pairs of integers.**
			
			Supporting Standard
			
			Locate, Name, Use, Describe
			
			ORDERED PAIRS
			
			Including, but not limited to:
			• Coordinate plane (all quadrants)
			• Coordinates represented by a variety of integers
			  • Whole numbers
			  • Integers (e.g., -2, 0, 5, etc.)
			• Labels
			  • Points
			  • Letter label: *A*
			  • Ordered Pair: (2, -3)
			  • Coordinate Plane
			  • Quadrant I, II, III, IV
			  • *x*-axis and *y*-axis
			• Coordinate graphs with different incremental units
			• Objects and real-life situations
			
			Note:
			• Grade 6 introduces graphing non-negative rational ordered pairs in Quadrant I only.
			• Grade 7 introduces graphing of ordered pairs of integers Quadrants II,
				8.7D	**Locate and name points on a coordinate plane using ordered pairs of rational numbers.**
					
					Supporting Standard
					
					Locate, Name, Use, Model, Describe
					
					ORDERED PAIRS
					
					Including, but not limited to:
					• Coordinate plane (all quadrants)
					• Coordinates represented by a variety of rational numbers
					• Labels
					  • Points
					  • Letter label: *A*
					  • Ordered Pair: ($\frac{1}{2}$, -3)
					  • Coordinate Plane
					  • Quadrant I, II, III, IV
					  • *x*-axis and *y*-axis
					• Coordinate graphs with different incremental units
					• Inequality statements with *x* and *y* coordinates
					  • Ex: $x < -2$ and $y > 3$ which point meets or does not meet the requirements
					• Objects and real-life situations
					
					Note:

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	GRADE 6		GRADE 7		GRADE 8
	• Transformations (translations and reflections in Quadrant I only) to determine missing points Note: • Grade 5 introduces graphing whole number ordered pairs in Quadrant I only. • Grade 5 sketches and identifies transformations, including translations, rotations, and reflections in Quadrant I only. • Grade 6 introduces graphing non-negative rational ordered pairs in Quadrant I only. • Grade 6 does not specifically address transformations, however transformations (translations and reflections in Quadrant I only) can be assessed under SE 6.7. TxCCRS Note: III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C1 – Make connections between geometry and algebra. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		III, IV. • Grade 7 continues the graphing of order pairs of positive rational numbers in Quadrant I from Grade 6 to bridge to graphing ordered pairs of rational numbers in Grade 8. TxCCRS Note: III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C1 – Make connections between geometry and algebra. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		• Grade 6 introduces graphing non-negative rational coordinate points in Quadrant I only. • Grade 7 introduces graphing ordered pairs of integers on the coordinate plane and continues non-negative rational numbers from Grade 6. • Grade 8 introduces graphing ordered pairs of rational numbers in the coordinate plane. TxCCRS Note: III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C1 – Make connections between geometry and algebra. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
		7.7	***Geometry and spatial reasoning. The student uses coordinate geometry to describe location on a plane. The student is expected to:***	***8.6***	***Geometry and spatial reasoning. The student uses transformational geometry to develop spatial sense. The student is expected to:***

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	GRADE 6		GRADE 7		GRADE 8

	Note:
	• Grade 4 introduces translations, reflections, and rotations with concrete models only (SE 4.9A).
	• Grade 5 sketches and identifies translations, rotations, and reflections in Quadrant I only (SE 5.8A, 5.8B).
	• Grade 6 does not specifically address transformations. However transformations (translations and reflections in Quadrant I only) can be assessed under SE 6.7.
	• Grades 6, 7 and 8 do not address rotations in the TEKS. Geometry introduces specified angle rotation.
		7.7B	**Graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane.**
			
			Readiness Standard
			
			Graph, Use, Describe
			
			REFLECTIONS
			
			Including, but not limited to:
			• Line of reflection
			  • Horizontal axis
			  • Vertical axis
			• Coordinate plane (all quadrants)
			• Symmetry
			• Prime notation of image points
			• Coordinates of image points
			• Comparison of original figure versus image (congruent)
			
			Graph, Use, Describe
			
			TRANSLATIONS
			
			Including, but not limited to:
			• Coordinate plane (all quadrants)
			• Verbal description of effects of translation on points
			• Prime notation of image points
			• Coordinates of image points
			• Comparison of original figure versus image (congruent)
				8.6B	**Graph dilations, reflections, and translations on a coordinate plane.**
					
					Supporting Standard
					
					Graph, Use, Develop
					
					DILATIONS
					
					Including, but not limited to:
					• Coordinate plane (all quadrants)
					• Enlargements (scale factor > 1)
					• Reductions (0 < scale factor < 1)
					• Congruent (scale factor = 1)
					• Prime notation of image points
					• Coordinates of image points
					• Comparison of original figure versus image (congruent)
					
					Graph, Use, Develop
					
					REFLECTIONS
					
					Including, but not limited to:
					• Line of reflection
					  • Horizontal axis
					  • Vertical axis
					  • Other lines of reflection
					• Coordinate plane (all quadrants)
					• Symmetry
					• Prime notation of image points
					• Coordinates of image points

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	GRADE 6		GRADE 7		GRADE 8
			Note: • Grade 5 sketches and identifies translations, rotations, and reflections in Quadrant I only. • Grades 6, 7 and 8 do not address rotations in the TEKS. Geometry introduces specified angle rotation. TxCCRS Note: III. Geometric Reasoning B1 – Identify and apply transformations to figures. (Grade 7 only addresses translations and reflections across the horizontal or vertical axis.) III. Geometric Reasoning B2 – Identify symmetries of a plane figure. III. Geometric Reasoning B3 – Use congruence transformations and dilations to investigate congruence, similarity, and symmetries of plane figures. (Grade 7 only addresses the congruence transformations of translations and reflections across the horizontal or vertical axis.)		• Comparison of original figure versus image (congruent) Graph, Use, Develop TRANSLATIONS Including, but not limited to: • Coordinate plane (all quadrants) • Verbal description of effects of translation on points • Prime notation of image points • Coordinates of image points • Comparison of original figure versus image (congruent) Note: • Grade 5 sketches and identifies translations, rotations, and reflections in Quadrant I only. • Grade 7 graphs reflections across horizontal and vertical axis, and translations on coordinate grid. • Grade 8 introduces dilations. • Grades 6, 7 and 8 do not address rotations in the TEKS. Geometry introduces specified angle rotation. TxCCRS Note: III. Geometric Reasoning B1 – Identify and apply transformations to figures. (Grade 8 only addresses translations, reflections, and dilations across the horizontal or vertical axis.)

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	GRADE 6		GRADE 7		GRADE 8
					III. Geometric Reasoning B2 – Identify symmetries of a plane figure. III. Geometric Reasoning B3 – Use congruence transformations and dilations to investigate congruence, similarity, and symmetries of plane figures. (Grade 8 only addresses dilations and the congruence transformations of translations and reflections.)
		7.8	***Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to:***	***8.7***	***Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to:***

		7.8A	**Sketch three-dimensional figures when given the top, side, and front views.**
			
			Supporting Standard
			
			Sketch, Use, Model, Describe
			
			VIEWS OF THREE-DIMENSIONAL FIGURES
			
			Including, but not limited to:
			• Concrete models
			  • Ex: blocks, geometric solids, real-life figures, etc.
			• Abstract representations
			  • Isometric view (three-dimensional)
			  • Perspective view (two- dimensional, top, side, front)
			  • Mat view (grid)
			• Connections between abstract representations
				8.7A	**Draw three-dimensional figures from different perspectives.**
					
					Supporting Standard
					
					Draw, Use, Model, Describe
					
					VIEWS OF THREE-DIMENSIONAL FIGURES
					
					Including, but not limited to:
					• Concrete models
					  • Ex: blocks, geometric solids, real-life figures, etc.
					• Abstract representations
					  • Isometric view (three-dimensional)
					  • Perspective view (two-dimensional, top, side, front)
					  • Mat view (grid)
					• Connections between abstract representations

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	GRADE 6		GRADE 7		GRADE 8
			TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.		TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.
		7.8	***Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to:***	***8.7***	***Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to:***

		7.8C	**Use geometric concepts and properties to solve problems in fields such as art and architecture.**
			
			Supporting Standard
			
			Use, Model, Describe
			
			GEOMETRIC CONCEPTS AND PROPERTIES IN PROBLEMS
			
			Including, but not limited to:
			• Two-dimensional figures
			  • Perimeter (polygons)
			  • Circumference (circles)
			  • Area (polygons and circles)
			• Three-dimensional figures
			  • Volume (triangular and rectangular prisms and cylinders)
			• Measurement with ruler using customary and SI (metric) units
			• Composite figures
			• Measurement conversions, including conversions within the same system
				8.7B	**Use geometric concepts and properties to solve problems in fields such as art and architecture.**
					
					Supporting Standard
					
					Use, Model, Describe
					
					GEOMETRIC CONCEPTS AND PROPERTIES IN PROBLEMS
					
					Including, but not limited to:
					• Two-dimensional figures
					  • Perimeter (polygons)
					  • Circumference (circles)
					  • Area (polygons and circles)
					• Three-dimensional figures
					  • Lateral and total surface area (prisms, pyramids, cylinders)
					  • Volume (prisms, cylinders, pyramids, spheres, and cones)
					• Measurement with ruler using customary and SI (metric) units
					• Composite figures

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	GRADE 6		GRADE 7		GRADE 8

			• Real-life problems in art and architecture
			
			Solve
			
			PROBLEMS INVOLVING GEOMETRIC CONCEPTS AND PROPERTIES
			
			Including, but not limited to:
			• Two-dimensional figures
			  • Perimeter (polygons)
			  • Circumference (circles)
			  • Area (polygons and circles)
			• Three-dimensional figures
			  • Volume (triangular and rectangular prisms and cylinders)
			• Measurement with ruler using customary and SI (metric) units
			• Composite figures
			• Measurement conversions, including conversions within the same system
			• Real-life problems in art and architecture
			
			TxCCRS Note:
			III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.
			III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.
					• Measurement conversions, including conversions within the same system and measurement conversions between systems
					• Pythagorean Theorem
					• Proportional relationships to find missing measures, including scale drawings to determine distances on a map
					• Dimensional changes effecting perimeter, area, and volume
					• Real-life problems including art and architecture
					
					Solve
					
					PROBLEMS INVOLVING GEOMETRIC CONCEPTS AND PROPERTIES
					
					Including, but not limited to:
					• Two-dimensional figures
					  • Perimeter (polygons)
					  • Circumference (circles)
					  • Area (polygons and circles)
					• Three-dimensional figures
					  • Lateral and total surface area (prisms, pyramids, cylinders)
					  • Volume (prisms, cylinders, pyramids, spheres, and cones)
					• Measurement with ruler using customary and SI (metric) units
					• Composite figures
					• Measurement conversions, including

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	GRADE 6		GRADE 7		GRADE 8
					conversions within the same system and measurement conversions between systems • Pythagorean Theorem • Proportional relationships to find missing measures • Dimensional changes affecting perimeter, area, and volume • Real-life problems including art and architecture TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.
				8.7C	**Use pictures or models to demonstrate the Pythagorean Theorem.** ***Supporting Standard*** Use, Demonstrate, Describe MODELS OF THE PYTHAGOREAN THEOREM Including, but not limited to: • Examples and non-examples of Pythagorean Theorem • Concrete and pictorial models of triangle sides squared • Concrete and pictorial models to solve

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	GRADE 6		GRADE 7		GRADE 8

					for missing leg or hypotenuse
					• Connections between the verbal Pythagorean Theorem and the formula
					  • Verbal: sum of the squares of the legs equals the square of the hypotenuse
					  • Formula: $a^2 + b^2 = c^2$, where *a* and *b* represent the legs and *c* represents the hypotenuse
					• Real-life problems
					
					Note:
					• Grade 8 introduces the Pythagorean Theorem.
					
					TxCCRS Note:
					III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.
					III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties.
					III. Geometric Reasoning A3 – Recognize and apply right triangle relationships including basic trigonometry. (Basic trigonometry is not addressed until high school geometry.)
					III. Geometric Reasoning C1 – Make connections between geometry and algebra.
					IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Basic trigonometry is not

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	GRADE 6		GRADE 7		GRADE 8
					addressed until high school geometry.) X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
6.8	***Measurement. The student solves application problems involving estimation and measurement of length, area, time, temperature, volume, weight, and angles. The student is expected to:***	***7.9***	***Measurement. The student solves application problems involving estimation and measurement. The student is expected to:***		

6.8A	**Estimate measurements (including circumference) and evaluate reasonableness of results.**
	
	Supporting Standard
	
	Estimate
	
	MEASUREMENTS
	
	Including, but not limited to:
	• Time
	• Temperature
	• Weight
	• Angles
	• Length (including perimeter and circumference) and area
	  • Polygons and other shapes
	  • Square
	  • Rectangle
	  • Parallelogram
	  • Triangle
	  • Trapezoid
		7.9A	**Estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes.**
			
			Readiness Standard
			
			Estimate
			
			MEASUREMENTS
			
			Including, but not limited to:
			• Length (including perimeter and circumference) and area
			  • Polygons and other shapes
			  • Square
			  • Rectangle
			  • Parallelogram
			  • Triangle
			  • Trapezoid
			  • Circles
			  • Composite figures
			  • Numerical approximation for Pi:		

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GRADE 6	GRADE 7	GRADE 8
• Circles • Composite figures • Numerical approximation for Pi: $\pi \approx 3$ • Volume • Three-dimensional figures • Cube • Rectangular prism • Customary and SI (metric) units • Measurement conversions, including conversions within the same system • Emphasis of units of measure • Appropriate labels • Ex: perimeter (e.g., feet, ft) • Ex: area (e.g., square feet, ft^2) • Ex: volume (e.g., cubic feet, ft^3) • Multi-step problems • Multiple operations within one problem situation • Justification of solutions for reasonableness • Real-life problems Evaluate REASONABLENESS OF RESULTS Including, but not limited to: • Measurement involving real-life problems • Justification of reasonableness in terms of the numerical answer and in	$\pi \approx 3.14$ or $\frac{22}{7}$ • Customary and SI (metric) units • Measurement conversions, including conversions within the same system • Emphasis of units of measure • Appropriate labels • Ex: perimeter (e.g., feet, ft) • Ex: area (e.g., square feet, ft^2) • Multi-step problems • Multiple operations within one problem situation • Justification of solutions for reasonableness • Real-life problems Solve APPLICATION PROBLEMS INVOLVING LENGTH AND AREA Including, but not limited to: • Polygons and other shapes • Square • Rectangle • Parallelogram • Triangle • Trapezoid • Circles • Composite figures	

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	GRADE 6		GRADE 7		GRADE 8

	context of the problem
	• Justification of reasonableness in terms of units of measure used in the problem situation
	
	Note:
	• STAAR Grade 5 Mathematics Reference Materials uses the perimeter formula, P = 4 x s, and the area formula, A = s x s, for a square. Grade 6 transitions to the perimeter formula as P = 4s and the area formula as $A = s^2$, for a square.
	• STAAR Grade 5 Mathematics Reference Materials uses the perimeter formula, P = (2 x l) + (2 x w), and the area formula, $A = l \times w$, for a rectangle. Grade 6 transitions to the perimeter formula as $P = 2l + 2w$ and the area formula as both $A = lw$ and $A = bh$ for a rectangle without the use the multiplication symbol.
	• Grade 6 introduces circumference.
	• Grade 6 introduces area of a triangle, parallelogram, and trapezoid as well as the use of h in the formulas for each.
	• Grade 6 uses both area formulas, $A = \frac{bh}{2}$ and $A = \frac{1}{2}bh$, for a triangle and both area formulas, $A = \frac{(b_1 + b_2)h}{2}$ and $A = \frac{1}{2}(b_1 + b_2)h$, for a trapezoid. These formulas develop the understanding that dividing by 2 is the
			• Numerical approximation for Pi:
			$\pi \approx 3.14$ or $\frac{22}{7}$
			• Measurement conversions, including conversions within the same system
			• Emphasis of units of measure
			• Appropriate labels
			  • Ex: perimeter (e.g., feet, ft)
			  • Ex: area (e.g., square feet, ft^2)
			• Multi-step problems
			• Multiple operations within one problem situation
			• Justification of solutions for reasonableness
			• Real-life problems
			
			Note:
			• STAAR Grade 5 Mathematics Reference Materials uses the perimeter formula, P = 4 x s, and the area formula, A = s x s, for a square. Grade 6 transitions to the perimeter formula as P = 4s and the area formula as $A = s^2$, for a square.
			• STAAR Grade 5 Mathematics Reference Materials uses the perimeter formula, P = (2 x l) + (2 x w), and the area formula, $A = l \times w$, for a rectangle. Grade 6 transitions to the perimeter formula as $P = 2l + 2w$ and the area formula as both $A = lw$ and $A = bh$ for a rectangle without the use the		

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	GRADE 6		GRADE 7		GRADE 8
	same as multiplying by $\frac{1}{2}$. • Grade 6 introduces area of a circle and volume of a cube. Although exponents are not included in order of operations, estimating the area of circles and finding the area of a square and the volume of a cube requires an understanding of how to square and/or cube a number. TxCCRS Note: I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning A1 – Select or use the appropriate type of unit for the attribute being measured. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		multiplication symbol. • STAAR Grade 7 Mathematics Reference Materials do not specifically reference the perimeter or area of a square; however, students are expected to classify a square as a special kind of rectangle and utilize the perimeter formula, $P = 2l + 2w$, and the area formula, $A = bh$, for a rectangle. • Grade 7 only uses the area formula $A = \frac{1}{2}bh$ for a triangle and the area formula $A = \frac{1}{2}(b_1 + b_2)h$ for a trapezoid. These formulas require the understanding that dividing by 2 is the same as multiplying by $\frac{1}{2}$. TxCCRS Note: I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions. III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning A1 – Select or use the appropriate type of unit for the attribute being measured. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures.		

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	GRADE 6		GRADE 7		GRADE 8
			X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		
		7.8	***Geometry and spatial reasoning. The student uses geometry to model and describe the physical world. The student is expected to:***	***8.8***	***Measurement. The student uses procedures to determine measures of three-dimensional figures. The student is expected to:***

		7.8B	**Make a net (two-dimensional model) of the surface area of a three-dimensional figure.**
			
			Supporting Standard
			
			Make, Use, Model, Describe
			
			NETS
			
			Including, but not limited to:
			• Two-dimensional model (net) of a three-dimensional figure
			  • Pyramids
			  • Prisms
			  • Cylinders
			• Two- and three-dimensional figure properties
			• Real-life problems
			
			Note:
			• Grade 7 does not calculate surface area.
			• Grade 7 introduces nets of geometric figures.
			• Grade 8 introduces determining lateral and total surface area.
				8.8A	**Find lateral and total surface area of prisms, pyramids, and cylinders using concrete models and nets (two-dimensional models).**
					
					Supporting Standard
					
					Find, Use, Determine
					
					LATERAL AND TOTAL SURFACE AREA
					
					Including, but not limited to:
					• Three-dimensional concrete model and two-dimensional model (net) of a three-dimensional figure
					  • Pyramids
					  • Prisms
					  • Cylinders
					• Two- and three-dimensional figure properties
					• Emphasis of units of measure
					• Appropriate labels
					  • Ex: area (e.g., square feet, ft^2)
					• Real-life problems
					
					Note:

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	GRADE 6		GRADE 7		GRADE 8
			TxCCRS Note: III. Geometric Reasoning A1 – Identify and represent the features of plane and space figures.		• Grade 7 introduces nets of geometric figures. • Grade 8 introduces determining lateral and total surface area. TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures. IV. Measurement Reasoning C2 – Determine the surface area and volume of three-dimensional figure. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
6.8	***Measurement. The student solves application problems involving estimation and measurement of length, area, time, temperature, volume, weight, and angles. The student is expected to:***	***7.9***	***Measurement. The student solves application problems involving estimation and measurement. The student is expected to:***	***8.8***	***Measurement. The student uses procedures to determine measures of three-dimensional figures. The student is expected to:***
		7.9B	**Connect models for volume of prisms (triangular and rectangular) and cylinders to formulas of prisms (triangular and rectangular) and cylinders.** ***Supporting Standard*** Connect MODELS FOR VOLUME Including, but not limited to:	**8.8B**	**Connect models of prisms, cylinders, pyramids, spheres, and cones to formulas for volume of these objects.** ***Supporting Standard*** Connect MODELS FOR VOLUME Including, but not limited to: • Prisms (triangular and rectangular) to formulas of prisms

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	GRADE 6		GRADE 7		GRADE 8

			• Prisms (triangular and rectangular) to formulas of prisms
			• Cylinders to formulas of cylinders
			• Models to formulas through patterns
			• Relationship between volume of prisms and volume of cylinders
			• Notation for area of the base as "*B*"
			• Emphasis of units of measure
			• Appropriate labels
			  • Ex: volume (e.g., cubic feet, ft^3)
			• Real-life problems
			
			Note:
			• Grade 6 is a transitional year for volume formulas with the use of both $V = lwh$ and $V = Bh$ for rectangular prisms as well as without the use the multiplication symbol, according to the STAAR Grade 6 Mathematics Reference Materials.
			• Grade 7 introduces the volume formula for triangular prisms as $V = Bh$ according to the STAAR Grade 7 Mathematics Reference Materials.
			• Grade 7 introduces the volume formulas for cylinders as $V = \pi r^2 h$ and transitions to $V = Bh$ according to the STAAR Grade 7 Mathematics Reference Materials.
			• Grade 8 volume formulas only use "*B*" as the Area of the Base of a three-dimensional figure according to the STAAR Grade 8 Mathematics
					• Cylinders to formulas of cylinders
					• Pyramids to formulas of pyramids
					• Cones to formulas of cones
					• Spheres to formulas of spheres
					• Formulas through patterns
					• Relationship between volume of prisms and cylinders, and volume of cones and pyramids
					• Notation for area of the base as "*B*"
					• Emphasis of units of measure
					• Appropriate labels
					  • Ex: volume (e.g., cubic feet, ft^3)
					• Real-life problems
					
					Note:
					• Grade 6 is a transitional year for volume formulas with the use of both $V = lwh$ and $V = Bh$ for rectangular prisms as well as without the use the multiplication symbol, according to the STAAR Grade 6 Mathematics Reference Materials.
					• Grade 7 introduces the volume formula for triangular prisms as $V = Bh$ according to the STAAR Grade 7 Mathematics Reference Materials.
					• Grade 7 introduces the volume formulas for cylinders as $V = \pi r^2 h$ and transitions to $V = Bh$ according to the STAAR Grade 7 Mathematics Reference Materials.
					• Grade 8 volume formulas only use "*B*"

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	GRADE 6		GRADE 7		GRADE 8
			Reference Materials. TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning C2 – Determine the surface area and volume of three-dimensional figure. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		as the Area of the Base of a three-dimensional figure according to the STAAR Grade 8 Mathematics Reference Materials. • Grade 8 introduces the volume formulas for pyramid, cone, and sphere. STAAR Note: • 8.8B will be tested in STAAR even though it was not tested in TAKS. TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning C2 – Determine the surface area and volume of three-dimensional figure. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
6.8B	**Select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight.** ***Readiness Standard*** Select, Use MEASUREMENT UNITS, TOOLS, OR FORMULAS Including, but not limited to:	**7.9C**	**Estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders.** ***Readiness Standard*** Estimate MEASUREMENTS Including, but not limited to: • Customary and SI (metric) units • Measurement conversions, including	**8.8C**	**Estimate measurements and use formulas to solve application problems involving lateral and total surface area and volume.** ***Readiness Standard*** Estimate, Determine MEASUREMENTS Including, but not limited to: • Customary and SI (metric) units • Measurement conversions, including

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	GRADE 6		GRADE 7		GRADE 8

	• Appropriate tools to measure
	• Numerical approximation for Pi: $\pi \approx 3$
	• Calendar and clock time
	• Degrees Celsius and Fahrenheit
	• Customary and SI (metric) units
	• Measurement conversions, including conversions within the same system
	• Formulas on STAAR Grade 6 Mathematics Reference Materials
	
	Measure
	
	LENGTH, AREA, TIME, TEMPERATURE, VOLUME, OR WEIGHT
	
	Including, but not limited to:
	• Two-dimensional figures
	  • Circles
	  • Polygons
	  • Composite figures
	• Three-dimensional figures
	  • Cube
	  • Rectangular prism
	• Calendar and clock time
	• Degrees Celsius and Fahrenheit
	• Customary and SI (metric) units
	• Measurement conversions, including conversions within the same system
	• Emphasis of units of measure
	• Appropriate labels for volume (e.g.,
			conversions within the same system
			• Emphasis of units of measure
			• Appropriate labels
			  • Ex: volume (e.g., cubic feet, ft^3)
			• Real-life problems
			
			Solve
			
			APPLICATION PROBLEMS INVOLVING VOLUME
			
			Including, but not limited to:
			• Three-dimensional figures
			  • Rectangular prism
			  • Triangular prism
			  • Cylinder
			• Numerical approximation for Pi:
			  $\pi \approx 3.14$ or $\frac{22}{7}$
			• Measurement conversions, including conversions within the same system
			• Emphasis of units of measure
			• Appropriate labels
			  • Ex: Volume (e.g., cubic feet, ft^3)
			• Multi-step problems
			• Multiple operations within one problem situation
			• Formulas on STAAR Grade 7 Mathematics Reference Materials
			• Notation for area of the base as "*B*"
			• Justification of solutions for
					conversions within the same system and measurement conversions between systems
					• Emphasis of units of measure
					• Appropriate labels
					  • Ex: area (e.g., square feet, ft^2)
					  • Ex: volume (e.g., cubic feet, ft^3)
					• Real-life problems
					
					Use
					
					FORMULAS
					
					Including, but not limited to:
					• Numerical approximation for Pi:
					  $\pi \approx 3.14$ or $\frac{22}{7}$
					• Customary and SI (metric) units
					• Measurement conversions, including conversions within the same system and measurement conversions between systems
					• Emphasis of units of measure
					• Appropriate labels
					  • Ex: area (e.g., square feet, ft^2)
					  • Ex: volume (e.g., cubic feet, ft^3)
					• Multi-step problems
					• Multiple operations within one problem situation
					• Formulas on the STAAR Grade 8 Mathematics Reference Materials

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	GRADE 6		GRADE 7		GRADE 8

	cubic feet, ft^3)
	• Multi-step problems
	• Multiple operations within one problem situation
	• Appropriate tools to measure
	• Real-life problems
	
	Solve
	
	PROBLEMS INVOLVING LENGTH, AREA, TIME, TEMPERATURE, VOLUME, OR WEIGHT
	
	Including, but not limited to:
	• Two-dimensional figures
	  • Circles
	  • Polygons
	  • Composite figures
	• Three-dimensional figures
	  • Cube
	  • Rectangular prism
	• Numerical approximation for Pi: $\pi \approx 3$
	• Calendar and clock time
	• Degrees Celsius and Fahrenheit
	• Customary and SI (metric) units
	• Measurement conversions, including conversions within the same system
	• Emphasis of units of measure
	• Appropriate labels
	  • Ex: perimeter (e.g., feet, ft)
			reasonableness
			• Real-life problems
			
			TxCCRS Note:
			III. Geometric Reasoning C3 – Make connections between geometry and measurement.
			IV. Measurement Reasoning C2 – Determine the surface area and volume of three-dimensional figure.
			X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
					• Notation for area of the base as "*B*"
					• Notation for Perimeter of the Base as "*P*"
					• Justification of solutions for reasonableness
					• Real-life problems
					
					Solve
					
					APPLICATION PROBLEMS INVOLVING LATERAL AND TOTAL SURFACE AREA AND VOLUME
					
					Including, but not limited to:
					• Measurement conversions, including conversions within the same system and measurement conversions between systems
					• Nets for surface areas
					• Emphasis of units of measure
					• Appropriate labels
					  • Ex: area (e.g., square feet, ft^2)
					  • Ex: volume (e.g., cubic feet, ft^3)
					• Multi-step problems
					• Multiple operations within one problem situation
					• Formulas on the STAAR Grade 8 Mathematics Reference Materials
					• Notation for area of the base as "*B*"
					• Notation for Perimeter of the Base as "*P*"
					• Justification of solutions for

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	GRADE 6		GRADE 7		GRADE 8
	• Ex: area (e.g., square feet, ft^2) • Ex: volume (e.g., cubic feet, ft^3) • Multi-step problems • Multiple operations within one problem situation • Formulas on STAAR Grade 6 Mathematics Reference Materials • Appropriate tools to measure • Justification of solutions for reasonableness • Real-life problems Note: • STAAR Grade 5 Mathematics Reference Materials uses the perimeter formula, $P = 4 \times s$, and the area formula, $A = s \times s$, for a square. Grade 6 transitions to the perimeter formula as $P = 4s$ and the area formula as $A = s^2$, for a square. • STAAR Grade 5 Mathematics Reference Materials uses the perimeter formula, $P = (2 \times l) + (2 \times w)$, and the area formula, $A = l \times w$, for a rectangle. Grade 6 transitions to the perimeter formula as $P = 2l + 2w$ and the area formula as both $A = lw$ and $A = bh$ for a rectangle without the use the multiplication symbol. • Grade 6 introduces circumference. • Grade 6 introduces area of a triangle, parallelogram, and trapezoid as well as the use of h in the formulas for each.				reasonableness • Real-life problems Note: • Grade 8 introduces determining lateral and total surface area. • Grade 8 introduces "P" as the Perimeter of the Base of a three-dimensional figure according to the STAAR Grade 8 Mathematics Reference Materials. TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures. IV. Measurement Reasoning C2 – Determine the surface area and volume of three-dimensional figures. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.

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	GRADE 6		GRADE 7		GRADE 8
	• Grade 6 uses both area formulas, $A = \frac{bh}{2}$ and $A = \frac{1}{2}bh$, for a triangle and both area formulas, $A = \frac{(b_1 + b_2)h}{2}$ and $A = \frac{1}{2}(b_1 + b_2)h$, for a trapezoid. These formulas develop the understanding that dividing by 2 is the same as multiplying by $\frac{1}{2}$. • Grade 6 is a transitional year for volume formulas with the use of both $V = lwh$ and $V = Bh$ for rectangular prisms as well as without the use the multiplication symbol, according to the STAAR Grade 6 Mathematics Reference Materials. • Grade 6 introduces area of a circle and volume of a cube. Although exponents are not included in order of operations, estimating the area of circles and finding the area of a square and the volume of a cube requires an understanding of how to square and/or cube a number. TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning A1 – Select or use the appropriate type of unit for the attribute being measured. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional				

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	GRADE 6		GRADE 7		GRADE 8
	figures. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.				
6.8C	**Measure angles.** ***Supporting Standard*** Measure ANGLES Including, but not limited to: • Angles to the nearest degree with a protractor • Angles to the nearest degree with a pictorial representation of a protractor • Angles where the rays do not lie on zero degrees • Concrete and pictorial models of angles (e.g., corner of paper and shapes, etc.) • Angles in shapes, figures, and real-life objects Note: • Grade 6 introduces measuring angles. TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.				

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	GRADE 6		GRADE 7		GRADE 8

6.8D	**Convert measures within the same measurement system (customary and metric) based on relationships between units.**
	
	Supporting Standard
	
	Convert
	
	MEASURES
	
	Including, but not limited to:
	• Measures within the same measurement system
	  • Metric
	  • Length (kilometers, meters, centimeters, millimeters)
	  • Capacity and volume (liters, milliliters)
	  • Mass (kilograms, grams, milligrams)
	  • Customary
	  • Length (miles, yards, feet, inches)
	  • Capacity and volume (gallons, quarts, pints, cups, fluid ounces)
	  • Weight (tons, pounds, ounces)
	  • Time (years, months, weeks, days, hours, minutes, seconds)
	• Relationships between units
	  • Proportional reasoning
	  • Proportional relationships				

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	GRADE 6		GRADE 7		GRADE 8
	• Ex: 1ft = $\frac{1}{3}$ yd • Real-life problems TxCCRS Note: IV. Measurement Reasoning A1 – Select or use the appropriate type of unit for the attribute being measured. IV. Measurement Reasoning B2 – Convert within a single measurement system.				
				8.9	***Measurement. The student uses indirect measurement to solve problems. The student is expected to:***
				8.9A	**Use the Pythagorean Theorem to solve real-life problems.** ***Readiness Standard*** Use, Solve PYTHAGOREAN THEOREM IN PROBLEMS Including, but not limited to: • Real-life problems involving right triangles with missing leg or hypotenuse • Squares and square roots • Estimation prior to solving • Properties of geometric figures • Determination of perimeter of a figure after finding a missing side measurement (TxCCRS) • Decomposition of a rectangle or

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	GRADE 6		GRADE 7		GRADE 8

					square using a diagonal as the hypotenuse
					• Connections between the verbal Pythagorean Theorem and the formula
					  • Verbal: sum of the squares of the legs equals the square of the hypotenuse
					  • Formula: $a^2 + b^2 = c^2$, where a and b represent the legs and c represents the hypotenuse
					• Real-life problems
					
					Note:
					• Grade 8 introduces the Pythagorean Theorem.
					
					TxCCRS Note:
					III. Geometric Reasoning A3 – Recognize and apply right triangle relationships including basic trigonometry. (Basic trigonometry is not addressed until high school geometry.)
					III. Geometric Reasoning C3 – Make connections between geometry and measurement.
					IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures.
					IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Basic trigonometry is not addressed until high school geometry.)
					X. Connections A1 – Connect and use multiple strands of mathematics in

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	GRADE 6		GRADE 7		GRADE 8
					situations and problems.
				8.9B	**Use proportional relationships in similar two-dimensional figures or similar three-dimensional figures to find missing measurements.** ***Readiness Standard*** Use, Find, Solve PROPORTIONAL RELATIONSHIPS IN SIMILAR FIGURES Including, but not limited to: • Corresponding parts • Proportions to find missing measures in both two- and three-dimensional figures • Scale factors to find missing measures in both two- and three-dimensional figures • Missing measures in figures where one similar figure is repositioned • Determination of perimeter of a figure after finding a missing side measurement (TxCCRS) • Real-life problems TxCCRS Note: III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning C1 – Find the perimeter and area of two-dimensional figures.

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	GRADE 6		GRADE 7		GRADE 8
					IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Basic trigonometry is not addressed until high school geometry.) X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
				8.10	***Measurement. The student describes how changes in dimensions affect linear, area, and volume measures. The student is expected to:***

				8.10A	**Describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally.**
					
					Supporting Standard
					
					Describe
					
					EFFECTS OF PROPORTIONAL DIMENSIONAL CHANGE
					
					Including, but not limited to:
					• Perimeter of similar shapes
					• Area of similar shapes
					• Perimeter changed proportionally
					• Scale factor to change dimensions
					  • Scale factor times perimeter
					  • Scale factor squared times area
					• Proportions to find missing dimensions
					• Patterns to generalize effects on perimeter and area if the dimensions

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	GRADE 6		GRADE 7		GRADE 8
					are changed proportionally • Tables (horizontal and vertical) • Graphs • Verbal descriptions • Algebraic representations • Real-life problems Note: • Grade 8 introduces dimensional change. • Grade 8 uses dimensional changes that are proportional (including all dimensions), whereas in high school geometry, dimensional change is not always proportional (may or may not include all dimensions). TxCCRS Note: III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning B2 – Convert within a single measurement system. IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Basic trigonometry is not addressed until high school geometry.) X. Connections A1 – Connect and use multiple strands of mathematics in

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	GRADE 6		GRADE 7		GRADE 8
					situations and problems.

				8.10B	**Describe the resulting effect on volume when dimensions of a solid are changed proportionally.**
					
					Supporting Standard
					
					Describe
					
					EFFECTS OF PROPORTIONAL DIMENSIONAL CHANGE
					
					Including, but not limited to:
					• Volume of similar figures
					• Scale factor to change dimensions
					  • Volume times scale factor cubed
					• Proportions to find missing dimensions
					• Patterns to generalize effects on volume if the dimensions are changed proportionally
					  • Tables (horizontal and vertical)
					  • Graphs
					  • Verbal descriptions
					  • Algebraic representations
					• Real-life problems
					
					Note:
					• Grade 8 introduces dimensional change.
					• Grade 8 uses dimensional changes that are proportional (including all dimensions), whereas in high school geometry, dimensional change is not

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	GRADE 6		GRADE 7		GRADE 8
					always proportional (may or may not include all dimensions). TxCCRS Note: III. Geometric Reasoning A2 – Make, test, and use conjectures about one-, two- and three-dimensional figures and their properties. III. Geometric Reasoning C3 – Make connections between geometry and measurement. IV. Measurement Reasoning B2 – Convert within a single measurement system. IV. Measurement Reasoning C3 – Determine indirect measurements of figures using scale drawings, similar figures, Pythagorean Theorem, and basic trigonometry. (Basic trigonometry is not addressed until high school geometry.) X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
6.9	***Probability and statistics. The student uses experimental and theoretical probability to make predictions. The student is expected to:***	***7.10***	***Probability and statistics. The student recognizes that a physical or mathematical model (including geometric) can be used to describe the experimental and theoretical probability of real-life events. The student is expected to:***	***8.11***	***Probability and statistics. The student applies concepts of theoretical and experimental probability to make predictions. The student is expected to:***
6.9A	**Construct sample spaces using lists and tree diagrams.** ***Supporting Standard*** Construct, Use SAMPLE SPACES	**7.10A**	**Construct sample spaces for simple or composite experiments.** ***Supporting Standard*** Construct, Describe SAMPLE SPACES		

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	GRADE 6		GRADE 7		GRADE 8

	Including, but not limited to:
	• Experimental and theoretical probabilities
	• Combinations
	• Sample spaces using data
	  • Lists
	  • Tree diagrams
	  • Tables
	  • Fundamental Counting Principle
	• Models
	  • Concrete
	  • Pictorial
	  • Area models (geometric)
	
	TxCCRS Note:
	III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability.
	V. Probabilistic Reasoning A1 – Determine the nature and the number of elements in a finite sample space.
	X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
			Including, but not limited to:
			• Experimental and theoretical probabilities
			• Combinations
			• Sample spaces using data
			  • Lists
			  • Tree diagrams
			  • Tables
			  • Fundamental Counting Principle
			• Simple or composite experiments
			• Models
			  • Concrete
			  • Pictorial
			  • Area models (geometric)
			• Events with replacement
			
			Note:
			• Grade 7 introduces independent composite experiments.
			
			TxCCRS Note:
			III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability.
			V. Probabilistic Reasoning A1 – Determine the nature and the number of elements in a finite sample space.
			V. Probabilistic Reasoning B2 – Compute and interpret the probability of conditional and compound events. (Grade 7 only addresses non-conditional, compound		

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	GRADE 6		GRADE 7		GRADE 8
			events.) X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.		

6.9B	**Find the probabilities of a simple event and its complement and describe the relationship between the two.**
	
	Supporting Standard
	
	Find, Use, Describe
	
	PROBABILITIES OF A SIMPLE EVENT AND ITS COMPLEMENT
	
	Including, but not limited to:
	• Sample space
	  • Lists
	  • Tree diagrams
	  • Tables
	  • Fundamental Counting Principle
	• Experimental and theoretical probabilities
	• Variety of experiments
	  • Ex: coins, drawing objects out of box without looking, spinners, choosing a random card, marbles, cubes, etc.
	• Representation of probability as a fraction or decimal
	• Relationship between a simple event and its complement expressed as a ratio and a numerical expression
	
	Make
		7.10B	**Find the probability of independent events.**
			
			Supporting Standard
			
			Find, Use, Recognize, Describe
			
			PROBABILITY OF INDEPENDENT EVENTS
			
			Including, but not limited to:
			• Sample space
			  • Lists
			  • Tree diagrams
			  • Tables
			  • Fundamental Counting Principle
			• Experimental and theoretical probabilities
			• Variety of experiments
			  • Ex: coins, drawing objects out of box without looking, spinners, choosing a random card, marbles, cubes, etc.
			• Representation of probability as a fraction, decimal, or percent
			• Simple events and complements of simple events
			• Events with replacement
			• Probability of simple and compound events
				8.11A	**Find the probabilities of dependent and independent events.**
					
					Readiness Standard
					
					Find, Apply
					
					PROBABILITIES OF DEPENDENT AND INDEPENDENT EVENTS
					
					Including, but not limited to:
					• Sample space
					  • Lists
					  • Tree diagrams
					  • Tables
					  • Fundamental Counting Principle
					• Experimental and theoretical probabilities
					• Variety of experiments
					  • Ex: coins, drawing objects out of box without looking, spinners, choosing a random card, marbles, cubes, etc.
					• Representation of probability as a fraction, decimal, or percent
					• Simple events and complements of simple events
					• Events with and without replacement
					• Probability of simple and compound events

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	GRADE 6		GRADE 7		GRADE 8

	PREDICTIONS IN PROBLEMS WITH PROBABILITY
	
	Including, but not limited to:
	• Sample space
	  • Lists
	  • Tree diagrams
	  • Tables
	  • Fundamental Counting Principle
	• Experimental and theoretical probabilities
	• Variety of experiments
	  • Ex: coins, drawing objects out of box without looking, spinners, choosing a random card, marbles, cubes, etc.
	• Representation of probability as a fraction or decimal
	• Simple events and complements of simple events
	• Relationship between a simple event and its complement expressed as a ratio and a numerical expression
	
	Note:
	• Grade 6 introduces the complement of a simple event.
	
	TxCCRS Note:
	III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability.
	IV. Measurement Reasoning D2 – Apply
			STAAR Note:
			• 7.10B will be tested in STAAR even though it was not tested in TAKS.
			
			TxCCRS Note:
			III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability.
			IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision.
			V. Probabilistic Reasoning B1 – Compute and interpret the probability of an event and its complement.
			V. Probabilistic Reasoning B2 – Compute and interpret the probability of conditional and compound events. (Grade 7 only addresses non-conditional, compound events.)
			X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
					• Predictions of probability in problem situations
					
					Note:
					• Grade 8 introduces dependent events.
					
					TxCCRS Note:
					III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability.
					IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision.
					V. Probabilistic Reasoning B1 – Compute and interpret the probability of an event and its complement.
					V. Probabilistic Reasoning B2 – Compute and interpret the probability of conditional and compound events.
					X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.

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	GRADE 6		GRADE 7		GRADE 8
	probabilistic measures to practical situations to make an informed decision. V. Probabilistic Reasoning B1 – Compute and interpret the probability of an event and its complement. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.				

				8.11B	**Use theoretical probabilities and experimental results to make predictions and decisions.**
					
					Supporting Standard
					
					Make
					
					PREDICTIONS AND DECISIONS WITH THEORETICAL PROBABILITIES AND EXPERIMENTAL RESULTS
					
					Including, but not limited to:
					• Sample space
					  • Lists
					  • Tree diagrams
					  • Tables
					  • Fundamental Counting Principle
					• Experimental and theoretical probability of independent and dependent events
					• Variety of experiments
					  • Ex: coins, drawing objects out of box without looking, spinners, choosing a random card, marbles, cubes, etc.
					• Representation of probability as a

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	GRADE 6		GRADE 7		GRADE 8

					fraction, decimal, or percent
					• Application of proportional reasoning to make predictions with probability
					
					Use, Apply
					
					THEORETICAL PROBABILITIES AND EXPERIMENTAL RESULTS
					
					Including, but not limited to:
					• Sample space
					  • Lists
					  • Tree diagrams
					  • Tables
					  • Fundamental Counting Principle
					• Models
					  • Concrete
					  • Pictorial
					  • Area models (geometric)
					• Experimental and theoretical probability of independent and dependent events
					• Variety of experiments
					  • Ex: coins, drawing objects out of box without looking, spinners, choosing a random card, marbles, cubes, etc.
					• Representation of probability as a fraction, decimal, or percent
					• Application of proportional reasoning to make predictions with probability
					• Predictions and decisions concerning probability in problem situations

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					TxCCRS Note: III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability. IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision. V. Probabilistic Reasoning B1 – Compute and interpret the probability of an event and its complement. V. Probabilistic Reasoning B2 – Compute and interpret the probability of conditional and compound events. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
				8.11C	**Select and use different models to simulate an event.** Select, Use, Simulate MODELS OF PROBABILITY Including, but not limited to: • Sample space • Experimental and theoretical probability of independent and dependent events • Hands-on and technology to model and simulate events • Appropriate methods to reconstruct an event • Ex: flip coins, spinners, cards, number cubes, graphing calculator,

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	GRADE 6		GRADE 7		GRADE 8
					etc. STAAR Note: • 8.11C is not tested in STAAR. However, this student expectation is foundational for supporting and readiness standards tested in this grade level and/or other grade levels. TxCCRS Note: III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.
6.10	***Probability and statistics. The student uses statistical representations to analyze data. The student is expected to:***	***7.11***	***Probability and statistics. The student understands that the way a set of data is displayed influences its interpretation. The student is expected to:***	***8.12***	***Probability and statistics. The student uses statistical procedures to describe data. The student is expected to:***
6.10A	**Select and use an appropriate representation for presenting and displaying different graphical representations of the same data including line plot, line graph, bar graph, and stem and leaf plot.** ***Supporting Standard*** Select GRAPHICAL REPRESENTATIONS OF DATA Including, but not limited to: • Categorical data representations	**7.11A**	**Select and use an appropriate representation for presenting and displaying relationships among collected data, including line plot, line graph, bar graph, stem and leaf plot, circle graph, and Venn diagrams, and justify the selection.** ***Supporting Standard*** Select GRAPHICAL REPRESENTATIONS OF DATA Including, but not limited to:	**8.12C**	**Select and use an appropriate representation for presenting and displaying relationships among collected data, including line plots, line graphs, stem and leaf plots, circle graphs, bar graphs, box and whisker plots, histograms, and Venn diagrams, with and without the use of technology.** ***Supporting Standard*** Select GRAPHICAL REPRESENTATIONS OF DATA

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	GRADE 6		GRADE 7		GRADE 8
	• Pictograph • Bar graph (horizontal, vertical, single bar, and double bar) • Numerical data representations • Line plot • Line graph • Stem and leaf plot (single and double) • Presentation and display of data relationships • Various appropriate representations of the same data • Technology • Ex: computers, data collection devices, and calculators • Analysis and justification of data representation • Real-life problems Use, Analyze GRAPHICAL REPRESENTATIONS OF DATA Including, but not limited to: • Categorical data representations (including constructions of representation) • Pictograph • Bar graph (horizontal, vertical, single bar, and double bar) • Numerical data representations		• Categorical data representations • Pictograph • Bar graph (horizontal, vertical, single bar, and double bar) • Circle graph • Venn diagram • Numerical data representations • Line plot • Line graph • Stem and leaf plot (single and double) • Presentation and display of data relationships • Various appropriate representations of the same data • Technology • Ex: computers, data collection devices, and calculators • Analysis and justification of data representation • Real-life problems Use, Justify, Understand GRAPHICAL REPRESENTATIONS OF DATA Including, but not limited to: • Categorical data representations (including constructions of representation)		Including, but not limited to: • Categorical data representations • Pictograph • Bar graph (horizontal, vertical, single bar, and double bar) • Circle graph • Venn diagram • Numerical data representations • Line plot • Line graph • Stem and leaf plot (single and double) • Histogram • Box and whisker plot • Presentation and display of data relationships • Various appropriate representations of the same data • Technology • Ex: computers, data collection devices, and calculators • Analysis and justification of data representation • Real-life problems Use, Describe GRAPHICAL REPRESENTATIONS OF DATA Including, but not limited to:

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	GRADE 6		GRADE 7		GRADE 8
	(including constructions of representation) • Line plot • Line graph • Stem and leaf plot (single and double) • Presentation and display of data relationships • Various appropriate representations of the same data • Technology • Ex: computers, data collection devices, and calculators • Analysis and justification of predictions and conclusions from data • Real-life problems Note: • Grade 6 introduces stem and leaf plots and line plots. TxCCRS Note: III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability. IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision. VI. Statistical Reasoning A1 – Plan a study. VI. Statistical Reasoning B1 – Determine types of data. VI. Statistical Reasoning B2 – Select and apply appropriate visual representations of data.		• Pictograph • Bar graph (horizontal, vertical, single bar, and double bar) • Circle graph • Venn diagram • Numerical data representations (including constructions of representation) • Line plot • Line graph • Stem and leaf plot (single and double) • Presentation and display of data relationships • Various appropriate representations of the same data • Technology • Ex: computers, data collection devices, and calculators • Analysis and justification of predictions and conclusions from data • Real-life problems Note: • Grade 6 introduces sketches of circle graphs. • Grade 7 uses circle graphs as data representation and construction of circle graphs are expected. • Grade 7 introduces Venn diagrams.		• Categorical data representations (including constructions of representation) • Pictograph • Bar graph (horizontal, vertical, single bar, and double bar) • Circle graph • Venn diagram • Numerical data representations (including constructions of representation) • Line plot • Line graph • Stem and leaf plot (single and double) • Histogram • Box and whisker plot • Five number summary • Minimum • Q1 (median of lower 50% of data) • Median • Q3 (median of upper 50% of data) • Maximum • Interquartile range: (IQR = Q3 – Q1)

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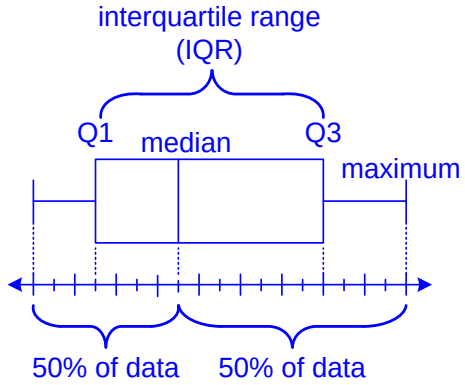
	GRADE 6		GRADE 7		GRADE 8
	VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. VI. Statistical Reasoning C3 – Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software. IX. Communication and Representation B1 – Model and interpret mathematical ideas and concepts using multiple representations. IX. Communication and Representation B2 – Summarize and interpret mathematical information provided orally, visually, or in written form within the given context. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems. X. Connections B1 – Use multiple representations to demonstrate links between mathematical and real-world situations.		TxCCRS Note: III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability. IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision. VI. Statistical Reasoning A1 – Plan a study. VI. Statistical Reasoning B1 – Determine types of data. VI. Statistical Reasoning B2 – Select and apply appropriate visual representations of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. VI. Statistical Reasoning C3 – Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software. IX. Communication and Representation B1 – Model and interpret mathematical ideas and concepts using multiple representations. IX. Communication and Representation B2 – Summarize and interpret mathematical information provided orally, visually, or in written form within the given context. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems. X. Connections B1 – Use multiple representations to demonstrate links between mathematical and real-world situations.		 • Presentation and display of data relationships • Various appropriate representations of the same data • Technology • Ex: computers, data collection devices, and calculators • Analysis and justification of predictions and conclusions from data • Real-life problems Note: • Grade 8 introduces box and whisker plots and histograms. TxCCRS Note: III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability. IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision.

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	GRADE 6		GRADE 7		GRADE 8
					VI. Statistical Reasoning A1 – Plan a study. VI. Statistical Reasoning B1 – Determine types of data. VI. Statistical Reasoning B2 – Select and apply appropriate visual representations of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. VI. Statistical Reasoning C3 – Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software. IX. Communication and Representation B1 – Model and interpret mathematical ideas and concepts using multiple representations. IX. Communication and Representation B2 – Summarize and interpret mathematical information provided orally, visually, or in written form within the given context. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems. X. Connections B1 – Use multiple representations to demonstrate links between mathematical and real-world situations.
		7.11B	**Make inferences and convincing arguments based on an analysis of given or collected data.** ***Readiness Standard*** Make, Understand	**8.12B**	**Draw conclusions and make predictions by analyzing trends in scatterplots.** ***Supporting Standard*** Draw, Describe

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			INFERENCES AND ARGUMENTS FROM DATA
			
			Including, but not limited to:
			• Given or collected data
			• Analysis of multiple forms of data
			• Analysis of parts of data representation
			  • Titles
			  • Labels
			  • Scales
			  • Graphed data
			• Appropriateness of representation
			• Analysis and justification of predictions and conclusions from data
			• Real-life problems
			
			TxCCRS Note:
			IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision.
			VI. Statistical Reasoning A1 – Plan a study.
			VI. Statistical Reasoning C1 – Make predictions and draw inferences using summary statistics.
			VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics.
			VI. Statistical Reasoning C3 – Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software.
					CONCLUSIONS FROM DATA
					
					Including, but not limited to:
					• Given or collected data
					• Analysis of multiple forms of data
					• Analysis of parts of data representation
					  • Titles
					  • Labels
					  • Scales
					  • Graphed data
					• Correlation trends in scatterplots
					  • Positive
					  • Negative
					  • No correlation
					• Appropriateness of representation
					• Analysis and justification of conclusions from data
					• Real-life problems
					
					Make, Describe
					
					PREDICTIONS FROM DATA
					
					Including, but not limited to:
					• Given or collected data
					• Analysis of multiple forms of data
					• Analysis of parts of data representation
					  • Titles
					  • Labels
					  • Scales

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					• Graphed data
					• Correlation trends in scatterplots
					  • Positive
					  • Negative
					  • No correlation
					• Appropriateness of representation
					• Analysis and justification of predictions from data
					• Real-life problems
					
					TxCCRS Note:
					IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations to make an informed decision.
					VI. Statistical Reasoning A1 – Plan a study.
					VI. Statistical Reasoning C1 – Make predictions and draw inferences using summary statistics.
					VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics.
					VI. Statistical Reasoning C3 – Analyze relationships between paired data using spreadsheets, graphing calculators, or statistical software.

6.10C	**Sketch circle graphs to display data.** ***Supporting Standard*** Sketch, Display, Analyze CIRCLE GRAPHS Including, but not limited to: • Data sets				

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	GRADE 6		GRADE 7		GRADE 8
	• Tables • Graphs • Verbal • Relationship between percents, fractions, and decimals in sections of a circle graph • Real-life problems Note: • Grade 6 introduces sketches of circle graphs. TxCCRS Note: III. Geometric Reasoning C2 – Make connections between geometry, statistics, and probability. VI. Statistical Reasoning B2 – Select and apply appropriate visual representations of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. X. Connections A1 – Connect and use multiple strands of mathematics in situations and problems.				
6.10D	**Solve problems by collecting, organizing, displaying, and interpreting data.** ***Readiness Standard*** Solve, Analyze PROBLEMS WITH DATA Including, but not limited to:				

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	GRADE 6		GRADE 7		GRADE 8

	• Categorical data representations
	  • Pictograph
	  • Bar graph (horizontal, vertical, single bar, and double bar)
	• Numerical data representations
	  • Line plot
	  • Line graph
	  • Stem and leaf plot (single and double)
	• Display of data
	• Collection and organization of data
	• Interpretation of data
	• Analysis of multiple forms of data
	• Analysis of parts of data representation
	  • Titles
	  • Labels
	  • Scales
	  • Graphed data
	• Analysis and justification of predictions and conclusions from data
	• Various appropriate representations of the same data
	• Technology
	  • Ex: computers, data collection devices, and calculators
	• Real-life problems
	
	TxCCRS Note:
	IV. Measurement Reasoning D2 – Apply probabilistic measures to practical situations				

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	GRADE 6		GRADE 7		GRADE 8
	to make an informed decision. VI. Statistical Reasoning A1 – Plan a study. VI. Statistical Reasoning B1 – Determine types of data. VI. Statistical Reasoning B2 – Select and apply appropriate visual representations of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics.				
6.10	***Probability and statistics. The student uses statistical representations to analyze data. The student is expected to:***	***7.12***	***Probability and statistics. The student uses measures of central tendency and variability to describe a set of data. The student is expected to:***	***8.12***	***Probability and statistics. The student uses statistical procedures to describe data. The student is expected to:***

6.10B	**Identify mean (using concrete objects and pictorial models), median, mode, and range of a set of data.**
	
	Supporting Standard
	
	Identify, Use, Analyze
	
	CENTRAL TENDENCY AND RANGE OF A SET OF DATA
	
	Including, but not limited to:
	• Numerical analysis for a set of data
	  • Mean (using concrete objects and pictorial models)
	  • Median
	  • Mode
	  • Range
	• Data given in tables, graphs, lists, or models
	• Real-life problems
		7.12A	**Describe a set of data using mean, median, mode, and range.**
			
			Supporting Standard
			
			Describe, Use
			
			CENTRAL TENDENCY AND RANGE OF A SET OF DATA
			
			Including, but not limited to:
			• Numerical analysis for a set of data
			  • Mean
			  • Median
			  • Mode
			  • Range
			• Data given in tables, graphs, lists, or models
			• Real-life problems
			
			Note:		

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	GRADE 6		GRADE 7		GRADE 8
	Note: • Grade 6 introduces mean using concrete objects and pictorial models. TxCCRS Note: IV. Measurement Reasoning D1 – Compute and use measures of center and spread to describe data. (In Grade 6 the mean is not computed as a measure of center.) VI. Statistical Reasoning B3 – Compute and describe summary statistics of data. (In Grade 6 the mean is not computed as a measure of center.) VI. Statistical Reasoning B4 – Describe patterns and departure from patterns in a set of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.		• Grade 7 introduces the calculation of mean. TxCCRS Note: IV. Measurement Reasoning D1 – Compute and use measures of center and spread to describe data. VI. Statistical Reasoning B3 – Compute and describe summary statistics of data. VI. Statistical Reasoning B4 – Describe patterns and departure from patterns in a set of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.		
		7.12B	**Choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation.** ***Readiness Standard*** Choose, Describe, Justify, Use CENTRAL TENDENCY AND RANGE OF A SET OF DATA Including, but not limited to: • Appropriate numerical analysis for a	**8.12A**	**Use variability (range, including interquartile range (IQR)) and select the appropriate measure of central tendency to describe a set of data and justify the choice for a particular situation.** ***Supporting Standard*** Use, Select, Describe, Justify CENTRAL TENDENCY AND VARIABILITY OF A SET OF DATA Including, but not limited to:

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	GRADE 6		GRADE 7		GRADE 8
			set of data and justification • Mean • Median • Mode • Range • Data given in models, tables, graphs or situations • Effects of changes in original data to all measurements of central tendency and/or range • Real-life problems Note: • Grade 7 introduces the calculation of mean. TxCCRS Note: IV. Measurement Reasoning D1 – Compute and use measures of center and spread to describe data. VI. Statistical Reasoning B3 – Compute and describe summary statistics of data. VI. Statistical Reasoning B4 – Describe patterns and departure from patterns in a set of data. VI. Statistical Reasoning C1 – Make predictions and draw inferences using summary statistics. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.		• Appropriate numerical analysis for a set of data and justification • Central tendency • Mean • Median • Mode • Variability • Range • Interquartile range (IQR) • Data given in models, tables, graphs or situations • Effects of outliers on measures of central tendency and variability • Effects of changes in original data to all measurements of central tendency and/or variability • Real-life problems Note: • Grade 8 introduces calculation of outliers. • Grade 8 introduces using outliers to determine the IQR and parameters of the box and whisker plot. TxCCRS Note: IV. Measurement Reasoning D1 – Compute and use measures of center and spread to describe data. VI. Statistical Reasoning B3 – Compute and describe summary statistics of data. VI. Statistical Reasoning B4 – Describe patterns and departure from patterns in a

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	GRADE 6		GRADE 7		GRADE 8
					set of data. VI. Statistical Reasoning C1 – Make predictions and draw inferences using summary statistics. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.
				8.13	***Probability and statistics. The student evaluates predictions and conclusions based on statistical data. The student is expected to:***
				8.13A	**Evaluate methods of sampling to determine validity of an inference made from a set of data.** ***Supporting Standard*** Evaluate, Determine METHODS OF SAMPLING AND VALIDITY OF STATISTICAL ANALYSIS Including, but not limited to: • Data in various representations • Predictions and conclusions in problem situations • Sampling methods for data collection • Ex: convenience, random, systematic, voluntary, etc. • Bias in sampling • Real-life problems

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	GRADE 6		GRADE 7		GRADE 8
					TxCCRS Note: VI. Statistical Reasoning B4 – Describe patterns and departure from patterns in a set of data. VI. Statistical Reasoning C1 – Make predictions and draw inferences using summary statistics. VI. Statistical Reasoning C4 – Recognize reliability of statistical results.

				8.13B	**Recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis.**
					
					Readiness Standard
					
					Recognize, Evaluate
					
					MISUSES OF GRAPHICAL OR NUMERICAL DATA
					
					Including, but not limited to:
					• Data in various representations
					  • Ex: line plots, line graphs, stem and leaf plots, circle graphs, bar graphs, box and whisker plots, histograms, Venn diagrams, and scatterplots
					• Analysis of given representations
					  • Titles
					  • Labels
					  • Scales
					  • Graphed data
					• Predictions and conclusions based on graphical and numerical data analysis

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	GRADE 6		GRADE 7		GRADE 8
					• Sampling methods for data collection • Ex: convenience, random, systematic, voluntary • Bias in sampling • Misleading information • Real-life problems TxCCRS Note: VI. Statistical Reasoning A1 – Plan a study. VI. Statistical Reasoning B4 – Describe patterns and departure from patterns in a set of data. VI. Statistical Reasoning C2 – Analyze data sets using graphs and summary statistics. VI. Statistical Reasoning C4 – Recognize reliability of statistical results.
6.11	***Underlying processes and mathematical tools. The student applies Grade 6 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to:***	***7.13***	***Underlying processes and mathematical tools. The student applies Grade 7 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to:***	***8.14***	***Underlying processes and mathematical tools. The student applies Grade 8 mathematics to solve problems connected to everyday experiences, investigations in other disciplines, and activities in and outside of school. The student is expected to:***
6.11A	**Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.** Identify, Apply, Solve MATHEMATICS IN EVERYDAY PROBLEM SITUATIONS Including, but not limited to:	**7.13A**	**Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.** Identify, Apply, Solve MATHEMATICS IN EVERYDAY PROBLEM SITUATIONS Including, but not limited to:	**8.14A**	**Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.** Identify, Apply, Solve MATHEMATICS IN EVERYDAY PROBLEM SITUATIONS Including, but not limited to:

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	GRADE 6		GRADE 7		GRADE 8
	• Activities in and outside of school • Other disciplines • Other mathematical topics STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: VIII. Problem Solving and Reasoning C1 – Formulate a solution to a real world situation based on the solution to a mathematical problem. X. Connections A2 – Connect mathematics to the study of other disciplines. X. Connections B1 – Use multiple representations to demonstrate links between mathematical and real-world situations. X. Connections B3 – Know and understand the use of mathematics in a variety of careers and professions.		• Activities in and outside of school • Other disciplines • Other mathematical topics STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: VIII. Problem Solving and Reasoning C1 – Formulate a solution to a real world situation based on the solution to a mathematical problem. X. Connections A2 – Connect mathematics to the study of other disciplines. X. Connections B1 – Use multiple representations to demonstrate links between mathematical and real-world situations. X. Connections B3 – Know and understand the use of mathematics in a variety of careers and professions.		• Activities in and outside of school • Other disciplines • Other mathematical topics STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. **TxCCRS Note:** **VIII. Problem Solving and Reasoning C1 – Formulate a solution to a real world situation based on the solution to a mathematical problem.** **X. Connections A2 – Connect mathematics to the study of other disciplines.** **X. Connections B1 – Use multiple representations to demonstrate links between mathematical and real-world situations.** **X. Connections B3 – Know and understand the use of mathematics in a variety of careers and professions.**
6.11B	**Use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness.** Use PROBLEM-SOLVING MODEL Including, but not limited to:	**7.13B**	**Use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness.** Use PROBLEM-SOLVING MODEL Including, but not limited to:	**8.14B**	**Use a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness.** Use PROBLEM-SOLVING MODEL Including, but not limited to:

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	GRADE 6		GRADE 7		GRADE 8
	• Understanding the problem • Making a plan • Carrying out the plan • Evaluating a solution for reasonableness STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions. VI. Statistical Reasoning A1 – Plan a study. VIII. Problem Solving and Reasoning A1 – Analyze given information. VIII. Problem Solving and Reasoning A2 – Formulate a plan or strategy. VIII. Problem Solving and Reasoning A3 – Determine a solution. VIII. Problem Solving and Reasoning A4 – Justify the solution. VIII. Problem Solving and Reasoning A5 – Evaluate the problem-solving process. VIII. Problem Solving and Reasoning B2 – Use various types of reasoning. VIII. Problem Solving and Reasoning C3 – Evaluate the problem-solving process.		• Understanding the problem • Making a plan • Carrying out the plan • Evaluating a solution for reasonableness STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions. VI. Statistical Reasoning A1 – Plan a study. VIII. Problem Solving and Reasoning A1 – Analyze given information. VIII. Problem Solving and Reasoning A2 – Formulate a plan or strategy. VIII. Problem Solving and Reasoning A3 – Determine a solution. VIII. Problem Solving and Reasoning A4 – Justify the solution. VIII. Problem Solving and Reasoning A5 – Evaluate the problem-solving process. VIII. Problem Solving and Reasoning B2 – Use various types of reasoning. VIII. Problem Solving and Reasoning C3 – Evaluate the problem-solving process.		• Understanding the problem • Making a plan • Carrying out the plan • Evaluating a solution for reasonableness STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: I. Numeric Reasoning C1 – Use estimation to check for errors and reasonableness of solutions. VI. Statistical Reasoning A1 – Plan a study. VIII. Problem Solving and Reasoning A1 – Analyze given information. VIII. Problem Solving and Reasoning A2 – Formulate a plan or strategy. VIII. Problem Solving and Reasoning A3 – Determine a solution. VIII. Problem Solving and Reasoning A4 – Justify the solution. VIII. Problem Solving and Reasoning A5 – Evaluate the problem-solving process. VIII. Problem Solving and Reasoning B2 – Use various types of reasoning. VIII. Problem Solving and Reasoning C3 – Evaluate the problem-solving process.
6.11C	**Select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out,**	**7.13C**	**Select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out,**	**8.14C**	**Select or develop an appropriate problem-solving strategy from a variety of different types, including drawing a picture, looking for a pattern, systematic guessing and checking, acting it out,**

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	GRADE 6		GRADE 7		GRADE 8
	making a table, working a simpler problem, or working backwards to solve a problem. Select, Develop PROBLEM-SOLVING STRATEGY Including, but not limited to: • Drawing a picture • Looking for a pattern • Systematic guessing and checking • Acting it out • Making a table • Working a simpler problem • Working backwards Solve MATHEMATICS IN PROBLEM SITUATIONS Including, but not limited to: • Appropriate problem-solving strategy STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: II. Algebraic Reasoning D2 – Translate among multiple representations of		**making a table, working a simpler problem, or working backwards to solve a problem.** Select, Develop PROBLEM-SOLVING STRATEGY Including, but not limited to: • Drawing a picture • Looking for a pattern • Systematic guessing and checking • Acting it out • Making a table • Working a simpler problem • Working backwards Solve MATHEMATICS IN PROBLEM SITUATIONS Including, but not limited to: • Appropriate problem-solving strategy STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: II. Algebraic Reasoning D2 – Translate among multiple representations of		**making a table, working a simpler problem, or working backwards to solve a problem.** Select, Develop PROBLEM-SOLVING STRATEGY Including, but not limited to: • Drawing a picture • Looking for a pattern • Systematic guessing and checking • Acting it out • Making a table • Working a simpler problem • Working backwards Solve MATHEMATICS IN PROBLEM SITUATIONS Including, but not limited to: • Appropriate problem-solving strategy STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: II. Algebraic Reasoning D2 – Translate among multiple representations of

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	GRADE 6		GRADE 7		GRADE 8
	equations and relationships. VIII. Problem Solving and Reasoning A1 – Analyze given information. VIII. Problem Solving and Reasoning A2 – Formulate a plan or strategy. VIII. Problem Solving and Reasoning A3 – Determine a solution. VIII. Problem Solving and Reasoning A4 – Justify the solution. VIII. Problem Solving and Reasoning A5 – Evaluate the problem-solving process. VIII. Problem Solving and Reasoning B2 – Use various types of reasoning. VIII. Problem Solving and Reasoning C3 – Evaluate the problem-solving process.		equations and relationships. VIII. Problem Solving and Reasoning A1 – Analyze given information. VIII. Problem Solving and Reasoning A2 – Formulate a plan or strategy. VIII. Problem Solving and Reasoning A3 – Determine a solution. VIII. Problem Solving and Reasoning A4 – Justify the solution. VIII. Problem Solving and Reasoning A5 – Evaluate the problem-solving process. VIII. Problem Solving and Reasoning B2 – Use various types of reasoning. VIII. Problem Solving and Reasoning C3 – Evaluate the problem-solving process.		equations and relationships. VIII. Problem Solving and Reasoning A1 – Analyze given information. VIII. Problem Solving and Reasoning A2 – Formulate a plan or strategy. VIII. Problem Solving and Reasoning A3 – Determine a solution. VIII. Problem Solving and Reasoning A4 – Justify the solution. VIII. Problem Solving and Reasoning A5 – Evaluate the problem-solving process. VIII. Problem Solving and Reasoning B2 – Use various types of reasoning. VIII. Problem Solving and Reasoning C3 – Evaluate the problem-solving process.
6.11D	**Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.** Select TOOLS OR TECHNIQUES Including, but not limited to: • Real objects • Manipulatives • Paper/pencil • Technology • Mental math • Estimation • Number sense Solve	**7.13D**	**Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.** Select TOOLS OR TECHNIQUES Including, but not limited to: • Real objects • Manipulatives • Paper/pencil • Technology • Mental math • Estimation • Number sense Solve	**8.14D**	**Select tools such as real objects, manipulatives, paper/pencil, and technology or techniques such as mental math, estimation, and number sense to solve problems.** Select TOOLS OR TECHNIQUES Including, but not limited to: • Real objects • Manipulatives • Paper/pencil • Technology • Mental math • Estimation • Number sense Solve

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	GRADE 6		GRADE 7		GRADE 8
	MATHEMATICS IN PROBLEM SITUATIONS Including, but not limited to: • Tools • Technology or techniques STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards.		MATHEMATICS IN PROBLEM SITUATIONS Including, but not limited to: • Tools • Technology or techniques STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards.		MATHEMATICS IN PROBLEM SITUATIONS Including, but not limited to: • Tools • Technology or techniques STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards.
6.12	***Underlying processes and mathematical tools. The student communicates about Grade 6 mathematics through informal and mathematical language, representations, and models. The student is expected to:***	***7.14***	***Underlying processes and mathematical tools. The student communicates about Grade 7 mathematics through informal and mathematical language, representations, and models. The student is expected to:***	***8.15***	***Underlying processes and mathematical tools. The student communicates about Grade 8 mathematics through informal and mathematical language, representations, and models. The student is expected to:***

6.12A	**Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.**
	
	Communicate
	
	MATHEMATICAL IDEAS
	
	Including, but not limited to:
	• Mathematical language
	• Efficient tools
	• Appropriate units
	• Mathematical models
	  • Graphical
		7.14A	**Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.**
			
			Communicate
			
			MATHEMATICAL IDEAS
			
			Including, but not limited to:
			• Mathematical language
			• Efficient tools
			• Appropriate units
			• Mathematical models
			  • Graphical
				8.15A	**Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.**
					
					Communicate
					
					MATHEMATICAL IDEAS
					
					Including, but not limited to:
					• Mathematical language
					• Efficient tools
					• Appropriate units
					• Mathematical models
					  • Graphical

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GRADE 6	GRADE 7	GRADE 8
• Numerical • Physical • Algebraic STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: II. Algebraic Reasoning D1 – Interpret multiple representations of equations and relationships. IX. Communication and Representation A2 – Use mathematical language to represent and communicate the mathematical concepts in a problem. IX. Communication and Representation A3 – Use mathematics as a language for reasoning, problem solving, making connections, and generalizing. IX. Communication and Representation B1 – Model and interpret mathematical ideas and concepts using multiple representations. IX. Communication and Representation B2 – Summarize and interpret mathematical information provided orally, visually, or in written form within the given context. IX. Communication and Representation C1 – Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, graphs, and words. IX. Communication and Representation C3 – Explain, display, or justify mathematical ideas and arguments using precise	• Numerical • Physical • Algebraic STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: II. Algebraic Reasoning D1 – Interpret multiple representations of equations and relationships. IX. Communication and Representation A2 – Use mathematical language to represent and communicate the mathematical concepts in a problem. IX. Communication and Representation A3 – Use mathematics as a language for reasoning, problem solving, making connections, and generalizing. IX. Communication and Representation B1 – Model and interpret mathematical ideas and concepts using multiple representations. IX. Communication and Representation B2 – Summarize and interpret mathematical information provided orally, visually, or in written form within the given context. IX. Communication and Representation C1 – Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, graphs, and words. IX. Communication and Representation C3 – Explain, display, or justify mathematical ideas and arguments using precise	• Numerical • Physical • Algebraic STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: II. Algebraic Reasoning D1 – Interpret multiple representations of equations and relationships. IX. Communication and Representation A2 – Use mathematical language to represent and communicate the mathematical concepts in a problem. IX. Communication and Representation A3 – Use mathematics as a language for reasoning, problem solving, making connections, and generalizing. IX. Communication and Representation B1 – Model and interpret mathematical ideas and concepts using multiple representations. IX. Communication and Representation B2 – Summarize and interpret mathematical information provided orally, visually, or in written form within the given context. IX. Communication and Representation C1 – Communicate mathematical ideas, reasoning, and their implications using symbols, diagrams, graphs, and words. IX. Communication and Representation C3 – Explain, display, or justify mathematical ideas and arguments using precise

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	GRADE 6		GRADE 7		GRADE 8
	mathematical language in written or oral communications.		mathematical language in written or oral communications.		mathematical language in written or oral communications.
6.12B	**Evaluate the effectiveness of different representations to communicate ideas.** Evaluate EFFECTIVENESS OF MATHEMATICAL REPRESENTATIONS Including, but not limited to: • Different representations to communicate ideas TxCCRS Note: IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.	**7.14B**	**Evaluate the effectiveness of different representations to communicate ideas.** Evaluate EFFECTIVENESS OF MATHEMATICAL REPRESENTATIONS Including, but not limited to: • Different representations to communicate ideas TxCCRS Note: IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.	**8.15B**	**Evaluate the effectiveness of different representations to communicate ideas.** Evaluate EFFECTIVENESS OF MATHEMATICAL REPRESENTATIONS Including, but not limited to: • Different representations to communicate ideas TxCCRS Note: IX. Communication and Representation C2 – Create and use representations to organize, record, and communicate mathematical ideas.
6.13	***Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to:***	***7.15***	***Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to:***	***8.16***	***Underlying processes and mathematical tools. The student uses logical reasoning to make conjectures and verify conclusions. The student is expected to:***
6.13A	**Make conjectures from patterns or sets of examples and nonexamples.** Make, Verify CONJECTURES AND CONCLUSIONS BY LOGICAL REASONING Including, but not limited to: • Patterns • Sets of examples and nonexamples	**7.15A**	**Make conjectures from patterns or sets of examples and nonexamples.** Make, Verify CONJECTURES AND CONCLUSIONS BY LOGICAL REASONING Including, but not limited to: • Patterns • Sets of examples and nonexamples	**8.16A**	**Make conjectures from patterns or sets of examples and nonexamples.** Make, Verify CONJECTURES AND CONCLUSIONS BY LOGICAL REASONING Including, but not limited to: • Patterns • Sets of examples and nonexamples

***Bold, italic black: Knowledge and Skills Statement (TEKS);* Bold black: Student Expectation (TEKS)**
Bold, italic red: Student Expectation identified by TEA as a ***Readiness Standard*** for STAAR.
Bold, italic green: Student Expectation identified by TEA as a ***Supporting Standard*** for STAAR.
Blue: Supporting Information / Clarifications from CSCOPE (Specificity)
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	GRADE 6		GRADE 7		GRADE 8
	STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: III. Geometric Reasoning D1 – Make and validate geometric conjectures.		STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: III. Geometric Reasoning D1 – Make and validate geometric conjectures.		STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: III. Geometric Reasoning D1 – Make and validate geometric conjectures.
6.13B	**Validate his/her conclusions using mathematical properties and relationships.** Validate, Verify CONCLUSIONS Including, but not limited to: • Mathematical properties • Mathematical relationships STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: VIII. Problem Solving and Reasoning B1 – Develop and evaluate convincing arguments.	**7.15B**	**Validate his/her conclusions using mathematical properties and relationships.** Validate, Verify CONCLUSIONS Including, but not limited to: • Mathematical properties • Mathematical relationships STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: VIII. Problem Solving and Reasoning B1 – Develop and evaluate convincing arguments.	**8.16B**	**Validate his/her conclusions using mathematical properties and relationships.** Validate, Verify CONCLUSIONS Including, but not limited to: • Mathematical properties • Mathematical relationships STAAR Note: • The process skills will be incorporated into at least 75% of the test questions and will be identified along with content standards. TxCCRS Note: VIII. Problem Solving and Reasoning B1 – Develop and evaluate convincing arguments.

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