

Math, Grades 6 - 8 TEKS and TAKS Alignment

§ 111.22 Mathematics, Grade Six	§ 111.23 Mathematics, Grade Seven	§ 111.24 Mathematics, Grade Eight
(a) Introduction		
(1) Within a well-balanced mathematics curriculum, the primary focal points are:		
Using ratios to describe proportional relationships involving number, geometry, measurement, and probability and adding and subtracting decimals and fractions.	Using 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.	Using basic principles of algebra to analyze and represent proportional and non-proportional relationships and using probability to describe data and make predictions.
(2) Throughout mathematics in Grades 6- Grade 8, students build a foundation of basic understandings in		
Number, Operation, and Quantitative Reasoning:		
<ul style="list-style-type: none"> • <i>Use concepts, algorithms for addition, subtraction, multiplication, and division as generalizations connected to concrete experiences; and they concretely develop basic concepts of fractions and decimals.</i> 		
Patterns, Relationships, and Algebraic Thinking:		
<ul style="list-style-type: none"> • <i>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.</i> 		
Geometry and Spatial Reasoning		
<ul style="list-style-type: none"> • <i>Use geometric properties and relationships, as well as spatial reasoning, to model and analyze situations and solve problems.</i> 		
Measurement:		
<ul style="list-style-type: none"> • <i>Communicate information about objects or situations by quantifying attributes, generalize procedures from measurement experiences, and use the procedures to solve problems.</i> 		
Probability and Statistics:		
<ul style="list-style-type: none"> • <i>Use appropriate statistics, representations of data, reasoning, and concepts of probability to draw conclusions, evaluate arguments, and make recommendations.</i> 		
(3) Problem solving, language and communication, connections within and outside mathematics, and formal and informal reasoning underlie all content areas in mathematics. Through mathematics in Grades 4 through Grade 6, students		
USE THESE PROCESSES TOGETHER WITH TECHNOLOGY (AT LEAST 4-FUNCTION CALCULATORS FOR WHOLE NUMBERS, DECIMALS, AND FRACTIONS) AND OTHER MATHEMATICAL TOOLS SUCH AS MANIPULATIVE MATERIALS TO DEVELOP CONCEPTUAL UNDERSTANDING AND SOLVE PROBLEMS AS THEY DO MATHEMATICS.		

Key:

Purple highlight:	MISD Objective
Yellow highlight:	Focus for grade level
Underlined:	Knowledge and skills statement
<i>Red Italics:</i>	Student performance expectation—what students will do to show proficiency of the math TEKS
BLUE ALL CAPS:	Process skills
Turquoise highlight:	TEKS that support TAKS objectives
Black *:	Grade 9 Math TAKS objective
Red +	Grade 10 Math TAKS objectives
Blue ^	Grade 11 Exit Level Math TAKS objectives
[Brackets]:	Not specifically tested on TAKS

Source: The provisions of this § 111.22-24 adopted to be effective September 1, 1998, 22TexReg 7623

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(b) Knowledge and Skills.

<p>(6.1) Number, operation, and quantitative reasoning. The student <u>represents and uses rational numbers in a variety of equivalent forms</u></p>	<p>(7.1) Number, operation, and quantitative reasoning.</p>	<p>(8.1) Number, operation, and quantitative reasoning. The student <u>understands that different forms of numbers are appropriate for different situations</u></p>
<p>(A) <i>compare and order non-negative rational numbers</i></p>	<p>(A) <i>compare and order integers and positive rational numbers</i></p>	<p>(A) <i>*compare and order rational numbers in various forms including integers, percents, and positive and negative fractions and decimals</i></p>
<p>(B) <i>generate equivalent forms of rational numbers including whole numbers, fractions, and decimals</i></p>	<p>(B) <i>convert between fractions, decimals, whole numbers, and percents mentally, on paper, or with a calculator</i></p>	<p>(B) <i>select and use appropriate forms of rational numbers to solve real-life problems including those involving proportional relationships;</i></p>
<p>(C) <i>generate equivalent forms of common percents, i.e. fourths, halves, tenths, fifths (I)</i></p>		
<p>(D) <i>multiply/divide by form of one (I, D, M)</i></p>		
<p>(C) <i>use integers to represent real-life situations</i></p>	<p>(C) <i>represent squares and square roots using geometric models</i></p>	<p>(C) <i>approximate (mentally and with calculators) the value of irrational numbers as they arise from problem situations (pi, square root of 2)</i></p>
<p>(D) <i>write prime factorizations using exponents</i></p>		<p>(D) <i>express numbers in scientific notation, including negative exponents, in appropriate problem situations using a calculator</i></p>
<p>(E) <i>identify factors and multiples including common factors and common multiples</i></p>		

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<p>(6.2) Number, operation, and quantitative reasoning. The student <u>adds, subtracts, multiplies, or divides</u> to solve problems and <u>justify solutions</u></p>	<p>(7.2) Number, operation, and quantitative reasoning.</p>	<p>(8.2) Number, operation, and quantitative reasoning. The student <u>selects and uses appropriate operations to solve problems and justify solutions</u></p>
<p>(A) <i>model addition and subtraction situations involving fractions with [objects,] pictures, words, and numbers</i></p>	<p>(A) <i>represent multiplication and division situations involving fractions and decimals with concrete models, pictures, words, and numbers</i></p>	<p>(A) <i>select and use appropriate operations to solve problems and justify the selections</i></p>
<p>(B) <i>use addition and subtraction to solve problems involving fractions and decimals</i></p>	<p>(B) <i>use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals</i></p>	<p>(B) <i>add, subtract, multiply, and divide rational numbers in problem situations</i></p> <p>(C) <i>Express products and quotients of exponents (I, D)</i></p>
<p>(E) Use multiplication with decimals and division of a decimal by a whole number resulting in a fraction or decimal remainder.</p>	<p>(C) <i>use models to add, subtract, multiply, and divide integers and connect the actions to algorithms, using zero pairs and absolute value as distance on the number line</i></p>	<p>(D) <i>use multiplication by a constant factor (unit rate) to represent proportional relationships; for example, the arm span of a gibbon is about 1.4 times its height, $a = 1.4h$.</i></p>
<p>(C) <i>use multiplication and division of whole numbers to solve problems including situations involving equivalent ratios and rates</i></p>	<p>(D) <i>use division to find unit rates and ratios in proportional relationships such as speed, density, price, recipes, and student-teacher ratio</i></p> <p>(E) <i>simplify numerical expressions involving order of operations and exponents</i></p> <p>(H) <i>evaluate algebraic expressions as relating to geometric formulas</i></p> <p>(F) <i>select and use appropriate operations to solve problems and justify the selections</i></p>	
<p>(D) <i>Estimate and round to approximate reasonable results and to solve problems where exact answers are not required</i></p>	<p>(G) <i>determine the reasonableness of a solution to a problem</i></p>	<p>(C) <i>evaluate a solution for reasonableness</i></p>

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<p>(6.3) Patterns, relationships, and algebraic thinking. The student <u>solves problems involving proportional relationships</u></p>	<p>(7.3) Patterns, relationships, and algebraic thinking.</p>	<p>(8.3) Patterns, relationships, and algebraic thinking. The student <u>identifies proportional relationships in problem situations and solves problems.</u></p>
<p>(A) <i>use ratios to describe proportional situations</i></p>	<p>(A) <i>estimate and find solutions to application problems involving percent</i></p>	<p>(A) <i>compare and contrast proportional and non-proportional relationships</i></p>
<p>(B) <i>represent ratios and percents with concrete models, fractions, and decimals</i></p>	<p>(B) <i>estimate and find solutions to application problems involving proportional relationships</i> such as similarity, scaling, unit costs, and related measurement units</p>	<p>(B) ^{*, ^} <i>estimate and find solutions to application problems involving percents and proportional relationships such as similarity and rates.</i></p>
<p>(C) <i>use ratios to make predictions in proportional situations</i></p>		
<p>(6.4) Patterns, relationships, and algebraic thinking. The student <u>uses letters as variables in mathematical expressions to describe how one quantity changes when a related quantity changes</u></p>	<p>(7.4) Patterns, relationships, and algebraic thinking. The student <u>represents a relationship in numerical, geometric, verbal, and symbolic form</u></p>	<p>(8.4) Patterns, relationships, and algebraic thinking. The student <u>makes connections among various representations of a numerical relationship</u></p>
<p>(A) <i>Use tables and symbols to represent and describe proportional and other relationships involving conversions, sequences, perimeter, area, etc</i></p>	<p>(B) <i>graph data to demonstrate relationships in familiar concepts</i> such as conversions, perimeter, area, circumference, volume, and scaling</p>	<p>(A) <i>generate a different representation given one representation of data</i> such as a table, graph, function, or verbal description</p>
<p>(B) <i>generate formulas to represent relationships involving perimeter, area, volume of a rectangular prism, etc., from a table of data</i></p>	<p>(A) <i>generate formulas involving conversions, perimeter, area, circumference, volume, and scaling</i></p>	
	<p>(C) <i>describe the relationship between the terms in a sequence and their positions in the sequence</i></p>	

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<p>(6.5) Patterns, relationships, and algebraic thinking. The student <u>uses letters to represent an unknown in an equation</u></p>	<p>(7.5) Patterns, relationships, and algebraic thinking. The student <u>uses equations to solve problems</u></p>	<p>(8.5) Patterns, relationships, and algebraic thinking. The student <u>uses graphs, tables, and algebraic representations to make predictions and solve problems</u></p>
	<p>(A) use concrete models to solve equations and use symbols to record the actions</p>	<p>(A) estimate, find, and justify solutions to application problems using appropriate tables, graphs, and algebraic equations</p>
	<p>(C) solve one and two step equations with whole numbers, decimals, fractions, and integers (manipulatives, pictorial, and symbolic) (I, D, M)</p>	<p>(B) solve one-two step equations with rational numbers (M) (C) solve equations involving distributive property, variables on both sides, and combining like terms (I, D)</p>
<p>(A) formulate an equation from a problem situation</p>	<p>(B) formulate a possible problem situation when given a simple equation</p>	<p>(B) use an algebraic expression to find any term in a sequence.</p>
<p>(B) solve one-step equations using manipulatives, pictorial, and symbolic representations involving whole numbers and decimals (I, D, M)</p>		
<p>(C) solve addition and subtraction equations with fractions (I, D)</p>		

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<p>(6.6) Geometry and spatial reasoning. The student <u>uses geometric vocabulary to describe angles, polygons, and circles</u></p>	<p>(7.6) Geometry and spatial reasoning. The student <u>compares and classifies shapes and solids using geometric vocabulary and properties</u></p>	<p>(8.6) Geometry and spatial reasoning. The student <u>uses transformational geometry to develop spatial sense</u></p>
<p>(A) use angle measurements to classify angles as acute, obtuse or right</p>	<p>(A) use angle measurements to classify pairs of angles as complementary or supplementary</p>	<p>(A)⁺⁺ generate similar shapes using dilations including enlargements and reductions</p>
<p>(B) identify relationships involving angles in triangles and quadrilaterals</p>	<p>(E) analyze and determine angle relationships in parallel lines cut by a transversal (I, D, M)</p>	<p>(B)⁺⁺ analyze from an algebraic approach the angle relationships in parallel lines cut by a transversal and polygons (I, D, M)</p>
<p>(C) describe the relationship between radius, diameter, and circumference of a circle</p>	<p>(B) use properties to classify shapes including triangles, quadrilaterals, pentagons, and circle</p>	<p>(B)⁺⁺ graph dilations, reflections, and translations on a coordinate plane.</p>
<p>(C) describe the relationship between radius, diameter, and circumference of a circle</p>	<p>(C) use properties to classify solids, including pyramids, cones, prisms, and cylinders</p>	
	<p>(D) use critical attributes to define similarity</p>	
<p>(6.7) Geometry and spatial reasoning. The student <u>uses coordinate geometry to identify location in two dimensions</u></p>	<p>(7.7) Geometry and spatial reasoning. The student <u>uses coordinate geometry to describe location on a plane</u></p>	
<p>(A) locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers</p>	<p>(A) locate and name points on a coordinate plane using ordered pairs of integers</p>	
	<p>(B) graph translations on a coordinate plane</p>	
	<p>(7.8) Geometry and spatial reasoning The student <u>uses geometry to model and describe the physical world</u></p>	<p>(8.7) Geometry and spatial reasoning.</p>
	<p>(A) sketch a solid when given the top, side, and front views</p>	<p>(A)⁺⁺ draw solids from different perspectives</p>
	<p>(B) make a net (two-dimensional model) of the surface area of a solid</p>	<p>(C)⁺⁺ use pictures or models to demonstrate the Pythagorean Theorem</p>
	<p>(C) use geometric concepts and properties to solve problems in fields such as art and architecture</p>	<p>(B)⁺⁺ use geometric concepts and properties to solve problems in fields such as art and architecture</p>
		<p>(D)⁺⁺ locate and name points on a coordinate plane using ordered pairs of rational numbers</p>

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<p>(6.8) Measurement. The student <u>solves application problems involving estimation and measurement of length, area, time, temperature, capacity, weight, and angles</u></p>	<p>(7.9) Measurement. The student <u>solves application problems involving estimation and measurement</u></p>	<p>(8.8) Measurement. The student <u>uses procedures to determine measures of solids</u></p>
<p>(A) <i>estimate measurements and evaluate reasonableness of results</i></p>	<p>(A) <i>estimate measurements and solve application problems involving length (including perimeter and circumference), area, and volume</i></p>	<p>(C) <i>*+ estimate answers and use formulas to solve application problems involving surface area and volume</i></p>
<p>(B) <i>select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter and circumference), area, time, temperature, capacity, and weight</i></p>	<p>(B) <i>estimate answers and use formulas to solve application problems involving surface area (I, D, M)</i></p>	<p>(A) <i>*+ find surface area of prisms and cylinders using concrete models and nets (two-dimensional models)</i></p>
<p>(C) <i>measure to the nearest 1/16 of an inch and nearest millimeter</i></p>	<p>(C) <i>measure to the nearest 1/16 of an inch and nearest millimeter</i></p>	<p>(A) <i>*+ find surface area of prisms and cylinders using concrete models and nets (two-dimensional models)</i></p>
<p>(C) <i>measure angles</i></p>	<p>(C) <i>measure to the nearest 1/16 of an inch and nearest millimeter</i></p>	<p>(B) <i>*+connect models to formulas for volume of prisms, cylinders, pyramids, and cones</i></p>
<p>(D) <i>convert measures within the same measurement system (customary and metric) based on relationships between units</i></p>	<p>(C) <i>measure to the nearest 1/16 of an inch and nearest millimeter</i></p>	<p>(C) <i>measure to the nearest 1/16 of an inch and nearest millimeter</i></p>

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		<p>(8.9) Measurement. The student uses indirect measurement to solve problems</p> <p>(A) *+ <i>use the Pythagorean Theorem to solve real-life problems</i></p> <p>(B) *+ <i>use proportional relationships in similar shapes to find missing measurements</i></p>
		<p>(8.10) Measurement. The student <u>describes how changes in dimensions affect linear, area, and volume measures</u></p> <p>(A) *+ <i>describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally</i></p> <p>(B) *+ <i>describe the resulting effect on volume when dimensions of a solid are changed proportionally</i></p>
<p>(6.9) Probability and statistics. The student <u>uses experimental and theoretical probability to make predictions</u></p>	<p>(7.10) Probability and statistics. The student <u>recognizes that a physical or mathematical model can be used to describe the probability of real-life events</u></p>	<p>(8.11) Probability and statistics. The student <u>applies concepts of theoretical and experimental probability to make predictions</u></p>
<p>(A) <i>construct sample spaces using lists, tree diagrams, and combinations</i></p>	<p>(A) <i>construct sample spaces for compound events (dependent and independent)</i></p>	<p>(A) *+ ^ <i>find the probabilities of compound events (dependent and independent);</i></p>
<p>(B) <i>find the probabilities of a simple event and its complement and describe the relationship between the two.</i></p>	<p>(B) <i>find the approximate probability of a compound event through experimentation</i></p>	<p>(B) *+ ^ <i>use theoretical probabilities and experimental results to make predictions and decisions</i></p>
	<p>(C) <i>find the probability of independent events</i></p>	
		<p>(C) <i>select and use different models to simulate an event</i></p>

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<p>(6.10) Probability and Statistics. The student <u>uses statistical representations to analyze data.</u></p>	<p>(7.11) Probability and statistics. The student <u>understands that the way a set of data is displayed influences its interpretation</u></p>	<p>(8.12) Probability and statistics. The student <u>uses statistical procedures to describe data</u></p>
<p>(A) draw and compare different graphical representations of the same data</p>	<p>(A) select and use an appropriate representation for presenting collected data and justify the selection</p>	<p>(A) *+ ^ select the appropriate measure of central tendency to describe a set of data for a particular purpose</p>
<p>(B) use mean, median, mode, and range to describe data</p>	<p>(C) sketch circle graphs using percentages</p>	<p>(D) *+ ^ determine the changes in the measures of central tendency when a data set is modified.</p>
<p>(C) sketch circle graphs to display data</p>	<p>(B) make inferences and convincing arguments based on an analysis of given or collected data</p>	<p>(C) *+ ^ construct circle graphs, bar graphs, and histograms, with and without technology</p>
<p>(D) solve problems by collecting, organizing, displaying, and interpreting data</p>	<p>(7.12) Probability and statistics. The student <u>uses measures of central tendency and range to describe a set of data</u></p>	<p>(B) draw conclusions and make predictions by analyzing trends in scatterplots</p>
	<p>(A) describe a set of data using mean, median, mode, and range</p>	<p>(8.13) Probability and statistics. The student <u>evaluates predictions and conclusions based on statistical data</u></p>
	<p>(B) choose among mean, median, mode, or range to describe a set of data and justify the choice for a particular situation</p>	<p>(A) evaluate methods of sampling to determine validity of an inference made from a set of data</p> <p>(B) *+ ^ recognize misuses of graphical or numerical information and evaluate predictions and conclusions based on data analysis</p>

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(6.11) Underlying Processes and Mathematical Tools	(7.13) Underlying Processes and Mathematical Tools	(8.14) Underlying Processes and Mathematical Tools
The student <u>APPLIES MATHEMATICS TO SOLVE PROBLEMS CONNECTED TO EVERYDAY EXPERIENCES, INVESTIGATIONS IN OTHER DISCIPLINES, AND ACTIVITIES IN AND OUTSIDE OF SCHOOL.</u>		
(A) *+ ^IDENTIFY AND APPLY MATHEMATICS TO EVERYDAY EXPERIENCES, TO ACTIVITIES IN AND OUTSIDE OF SCHOOL, WITH OTHER DISCIPLINES, AND WITH OTHER MATHEMATICAL TOPICS		
(B) *+ ^USE A PROBLEM-SOLVING MODEL THAT INCORPORATES UNDERSTANDING THE PROBLEM, MAKING A PLAN, CARRYING OUT THE PLAN, AND EVALUATING THE SOLUTION FOR REASONABLENESS		
(C) *+ ^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, MAKING A TABLE, WORKING A SIMPLER PROBLEM, OR WORKING BACKWARDS TO SOLVE A PROBLEM		
(D) <u>SELECT TOOLS</u> such as real objects, manipulatives, paper/pencil, <u>AND TECHNOLOGY OR TECHNIQUES</u> such as mental math, estimation, and number sense <u>TO SOLVE PROBLEMS</u>		
(6.12) Underlying Processes and Mathematical Tools	(7.14) Underlying Processes and Mathematical Tools	(8.15) Underlying Processes and Mathematical Tools
The student <u>COMMUNICATES ABOUT MATHEMATICS THROUGH INFORMAL AND MATHEMATICAL LANGUAGE, REPRESENTATIONS, AND MODELS.</u>		
(A) *+ ^COMMUNICATE MATHEMATICAL IDEAS USING LANGUAGE, EFFICIENT TOOLS, APPROPRIATE UNITS, AND GRAPHICAL, NUMERICAL, PHYSICAL, OR ALGEBRAIC MATHEMATICAL MODELS.		
(B) <u>EVALUATE THE EFFECTIVENESS OF DIFFERENT REPRESENTATIONS TO COMMUNICATE IDEAS</u>		
(6.13) Underlying Processes and Mathematical Tools	(7.15) Underlying Processes and Mathematical Tools	(8.16) Underlying Processes and Mathematical Tools
The student <u>USES LOGICAL REASONING TO MAKE CONJECTURES AND VERIFY CONCLUSIONS.</u>		
(A) *+ ^MAKE CONJECTURES FROM PATTERNS OR SETS OF EXAMPLES AND NON-EXAMPLES		
(B) *+ ^VALIDATE HIS/HER CONCLUSIONS USING MATHEMATICAL PROPERTIES AND RELATIONSHIPS		