FCAT Mathematics Content Matrix
Grade 4

Grades 3-5 Benchmark	Grade Level Expectations	Grade 4 Clarification Statement	Grade 4 Content Limits
MA.A.1.2.1 Names whole numbers combining 3-digit numeration (hundreds, tens, ones) and the use of number periods, such as ones, thousands, and millions and associates verbal names, written word names, and standard numerals with whole numbers, commonly used fractions, decimals, and percents.	· reads, writes, and identifies whole numbers through millions or more · reads, writes, and identifies fractions and mixed numbers with denominators including 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 100, and 1000 · reads, writes, and identifies decimals through hundredths	Assessed with A.1.2.4	Assessed with A.1.2.4
MA.A.1.2.2 Understands the relative size of whole numbers, commonly used fractions, decimals, and percents.	· uses language and symbols (>, <, =) to compare numbers in the same form and in two different forms such as 1/3 < 1 · compares and orders whole numbers through millions or more, using concrete materials, number · lines, drawings, and numerals compares and orders commonly used fractions and decimals to hundredths using concrete materials, drawings, and numerals · locates whole numbers, fractions, mixed numbers, and decimals on a number line	Students will compare relative size and order of whole numbers and fractions, and decimals. MC	Numbers being compared may be in the same form or in two different forms. In items comparing fractions with decimals, the denominator of the fraction should represent the same number of places as the decimal, and leading zeros should be used. (For example, 3/100 = 0.03 or 3/10 = 0.3 Number lines may include whole numbers, proper fractions, mixed numbers, or decimals.
MA.A.1.2.3 Understands concrete and symbolic representations of whole numbers, fractions, decimals, and percents in real-world situations.	· translates problem situations into diagrams and models using whole numbers, fractions, mixed numbers and decimals to hundredths including money notation	Assessed with A.1.2.4	Assessed with A.1.2.4
MA.A.1.2.4 Understands that numbers can be represented in a variety of equivalent forms using whole numbers, decimals, fractions, and percents. (Also assess A.1.2.1 and A.1.2.3)	· uses concrete materials to model equivalent forms of whole numbers, fractions, and decimals · identifies equivalent forms of numbers · knows that two numbers in different forms are equivalent or non-equivalent, using whole numbers, decimals, fractions, and mixed numbers	Students will identify equivalent forms of whole numbers, fractions, and decimals MC	(See General Content Limits) Whole number place values should range from ones through millions; decimal place values should range from tenths through thousandths; and fractions should have denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 100, or 1000.

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Grades 3-5 Benchmark	Grade Level Expectations	Grade 4 Clarification Statement	Grade 4 Content Limits
MA.A.2.2.2 Recognizes and compares the decimal number system to the structure of other numbers systems such as the Roman number system or basis other than ten.	· uses concrete materials and symbolic notation to represent numbers in bases other than base ten, such as base five · reads, writes, and compares the decimal number system to the Roman numeral system using the Roman numerals I, V, X, L, C, D, and M	Not assessed	Not assessed
MA.A.3.2.1 Understands and explains the effects of addition, subtraction, and multiplication on whole numbers, decimals, and fractions, including mixed numbers, and the effects of division on whole numbers, including the inverse relationship of multiplication and division.	· Recalls (from memory) basic multiplication facts and related division facts · Knows the inverse relationship of multiplication and division and demonstrates that relationship by writing related fact families · explains and demonstrates the multiplication and division of whole numbers using manipulatives, drawings, and algorithms · explains and demonstrates the addition and subtraction of common fractions using concrete materials, drawings, story problems, and algorithms · explains and demonstrates the addition and subtraction of decimals (to hundredths) using concrete materials, drawings, story problems, and algorithms · knows the properties of numbers including the following: - the identity, commutative, and associative properties of addition - the zero and identity properties of multiplication - the commutative, associative, and distributive properties of multiplication · predicts the relative size of solutions in the following: - addition, subtraction, multiplication, and division of whole numbers - addition and subtraction of common fractions - addition and subtraction of decimals to hundredths	Student will identify the appropriate operation for a stated effect, the effect of an operation, or the relationship between operations (including number properties). MC	Items will assess the effects of multiplication and division of whole numbers; addition and subtraction of fractions; addition and subtraction of decimals to hundredths; and the inverse relationship of multiplication and division using whole numbers. Numbers will be limited to denominators of 2, 4, and 10, and decimal fractions of 0.25, 0.50, and 0.75. Items will assess the use of the identity, commutative, and associative properties of addition; and the zero, identity, and commutative properties of multiplication and addition. Students should be asked to recognize examples of the properties, not name the properties.

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Grades 3-5 Benchmark	Grade Level Expectations	Grade 4 Clarification Statement	Grade 4 Content Limits
MA.A.3.2.2 Selects the appropriate operation to solve specific problems involving addition, subtraction, and multiplication of whole numbers, decimals, and fractions, and division of whole numbers.	· uses problem-solving strategies to determine the operation(s) needed to solve one- and two-step problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions	Student will identify the appropriate operation, expression, or number sentence to solve a problem. MC	Items should include addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions (with denominators of 2, 3, 4, 5, 8, or 10).
MA.A.3.2.3 Adds, subtracts, and multiplies whole numbers, decimals, and fractions, including mixed numbers, and divides whole numbers to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.	· solves real-world problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions using an appropriate method (for example, mental math, pencil and paper, calculator) · explains the reason for choosing a particular computing method for a particular problem · solves real-world multiplication problems with whole numbers (three digits by one digit) using concrete materials, drawings, and pencil and paper · solves real-world division problems having divisors of one digit and dividends of three digits, with or without remainders · solves real-world problems involving the addition or subtraction of decimals (to hundredths) or common fractions with like or unlike denominators	Students will solve real-world problems. MC	Items will present one-step problems only.
MA.A.4.2.1 Uses and justifies different estimation strategies in a real-world problem situation and determines the reasonableness of results of calculations in a given problem situation. (Also assesses B.3.2.1)	· chooses, describes and explains estimation strategies used to determine the reasonableness of solutions to real-world problems · estimates quantities of objects to 500 or more and justifies and explains the reasoning for the estimates (for example, using compatible numbers, benchmark numbers, unitizing)	Students will determine a reasonable estimate in a real-world problem situation.	Items may use estimates involving measurements as described in B.3.2.1.

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		MC	
Grades 3-5 Benchmark	**Grade Level Expectations**	**Grade 4 Clarification Statement**	**Grade 4 Content Limits**
MA.A.5.2.1 Understands and applies basic number theory concepts, including primes, composites, factors, and multiples.	· knows factors and multiples of numbers to 100 · multiplies by 10, 100, and 1,000 recognizing and demonstrating patterns · knows rules of divisibility for 2, 3, 5, 9, and 10 · uses models to identify perfect squares to 100	Students will recognize factors and multiples of whole numbers, their characteristics, and rules of divisibility. MC	Items will assess factors and multiples of numbers to 100 and rules of divisibility for 2, 3, 5, 9, and 10.
MA.B.1.2.1 Uses concrete and graphic models to develop procedures for solving problems related to measurement including length, weight, time, temperature, perimeter, area volume, and angles.	· knows measurement concepts and can use oral and written language to communicate them · uses a wide variety of models (for example, manipulatives, diagrams) and applies counting procedures to investigate measurements of length, area, volume, and perimeter · knows about varied time intervals, including decades, hours, minutes, and seconds · investigates angle measures using models and manipulatives for the common angles of 45°, 90°, and 180° (straight angle) and uses these angles as reference points for measures of other angles	Not assessed	Not assessed
MA.B.1.2.2 Solves real-world problems involving length, weight, perimeter, area, capacity, volume, time, temperature, and angles.	· solves real-world problems involving measurement of the following: - length (for example, millimeter, quarter-inch, foot, yard, meter) - weight (for example, pounds, ounces, kilograms, grams) - capacity (for example, cup, milliliters) - temperature (Fahrenheit and Celsius) - angles (right and straight) · solves real-world problems involving perimeter, area, and volume using concrete, graphic, or pictorial models · uses schedules, calendars, and elapsed time to solve real-world problems	Students will solve real-world measurement problems and/or identify angles or their measures.	Items will assess the measurements defined in grade 3 and the measurements of length (millimeter, quarter-inch, foot, yard, meter), weight (pound, ounce, kilogram, gram), time, capacity (cup, pint, quart, gallon, liter, milliliter), temperature (Fahrenheit and Celsius), and the measurement of right and straight angles. Items may assess perimeter or area. Elapsed time will be assessed In 1/4 and 1/2 hour intervals.

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		MC	
Grades 3-5 Benchmark	**Grade Level Expectations**	**Grade 4 Clarification Statement**	**Grade 4 Content Limits**
MA.B.2.2.1 Uses direct (measured) and indirect (not measured) measures to calculate and compare measurable characteristics.	· devises nonstandard, indirect ways to compare lengths (for example, compare the height of a cylinder to the distance around it) · uses customary and metric units to compare length, weight, and capacity or volume · uses multiplication or division to convert units of measure within either the customary or metric system (for example: 100 cm = 1 m)	Students will solve problems by calculating and/or comparing measurable characteristics, involving conversions within systems. MC	Items will assess comparison of length, weight, or capacity. Items may use nonstandard units, standard customary units, or standard metric units. Items should involve only one conversion.
MA.B.2.2.2 Selects and uses appropriate standard and nonstandard units of measurement, according to type and size. (Also assesses B.4.2.1)	· knows an appropriate unit of measure to determine the dimension(s) of a given object (for example, standard -student chooses feet or inches instead of yards to measure a classroom desk; nonstandard - student chooses a pencil or his or her hand to measure a classroom desk) · knows an appropriate unit of measure (standard or nonstandard) to measure weight and capacity	Students will identify and/or use appropriate units of measurement. MC	Items will involve determining appropriate measures of length, weight, or capacity for common objects. Customary and metric units may be used, but not in the same item. Items may include standard units of measurement in inches, feet, yards, or miles; ounces, pounds, or tons; cups, pints, quarts, or gallons; or metric units of measurement in centimeters, meters, kilometers, grams, kilograms, or liters
MA.B.4.2.1 Determines which units of measurements, such as seconds, square inches, and dollars per tankful, to use with answers to real-world problems.	· selects an appropriate measurement unit for labeling the solution to real-world problems	Assessed with B.2.2.2	Assesses with B.2.2.2
MA.B. 4.2.2 - selects and uses appropriate instruments and technology, including scales, rulers, thermometers, measuring cups, protractors, and gauges, to measure in real-world situations	· selects and uses the appropriate tool for situational measures (for example, measuring sticks, scales and balances, thermometers, measuring cups, gauges)	Students will identify appropriate tools or read measurements from tools.	Items will use the following measurement units: Length(1/4 inch, 1/2 inch, foot, yard, centimeter, meter) Weight (ounce, pound, gram, kilogram) Capacity (1/4 cup. Cup. Pint, quart, gallon, liter) Temperature to the nearest degree (Fahrenheit and Celsius)

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		MC	Time(one-, five-, and fifteen-minute intervals)
Grades 3-5 Benchmark	**Grade Level Expectations**	**Grade 4 Clarification Statement**	**Grade 4 Content Limits**
MA.C.1.2.1 Given a verbal description, draws and/or models two-and three-dimensional shapes and uses appropriate geometric vocabulary to write a description of a figure or a picture composed of geometric figures.	· Uses appropriate geometric vocabulary to describe properties and attributes of two- and three-dimensional figures (for example, faces, edges, vertices, diameter) · Draws and classifies two-dimensional figures having up to eight or more sides	Students will identify geometric figures using appropriate geometric vocabulary. MC	Items may assess regular or irregular polygons up to 8 sides; circles; diameter; acute, right, obtuse, and straight angles; sides, bases and vertices; points; lines and line segments; parallel and perpendicular lines; or rays and planes. Items should use only two-dimensional figures.
MA.C.2.2.1 Understands the concepts of spatial relationships, symmetry, reflections, congruency, and similarity. (Also assesses B.1.2.2, C.1.2.1, and C.3.2.1)	· uses manipulatives to solve problems requiring spatial visualization · knows symmetry, congruency, and reflections in geometric figures using drawings and concrete materials (for example, pattern blocks, mirrors) · knows and creates congruent and similar figures	Students will identify or classify figures and/or solve problems using the concepts of symmetry or congruency, or reflection. MC	Items should use only two-dimensional shapes.
MA.C.2.2.2 Predicts, illustrates, and verifies which figures could result from a flip, slide, or turn of a given figure.	· identifies and performs flips, slides, and turns (90˚ ,180˚) using concrete and graphic materials (for example, pattern · blocks, geoboards, grid paper) · knows the effect of a flip, slide, or turn (90˚, 180˚) on a geometric figure · explores tessellations	Students will identify the results of a single flip (reflection), slide (translation), or turn (rotation) of a given figure. MC	Items will assess flips, slides, and 90º and 180º turns and their results on a geometric figure.
MA.C.3.2.1 Represents and applies a variety of strategies and geometric properties and formulas for two-and tree-dimensional shapes to solve real-world and mathematical problems. (Also assesses C.2.2.1)	· compares the concepts of area and perimeter using concrete materials (for example, color tiles, grid paper) and real-world situations (for example, carpeting a floor, fencing a yard) · applies the concepts of area and perimeter to solve real-world and mathematical problems · knows how area and perimeter are affected when geometric figures are combined	Students will use geometric figures and/or solve geometric problems by applying properties, formulas, and/or coordinate geometry. MC	The concepts of area and perimeter of rectangles or composite figures made of rectangles will be assessed.
MA.C.3.2.2 Identifies and plots positive ordered pairs (whole numbers) in a rectangular coordinate system (graph).	· knows how to identify, locate, and plot ordered pairs of whole numbers on a graph or on the first quadrant of a coordinate	Students will identify ordered pairs or the location of coordinates on a grid.	Items will assess ordered pairs of whole numbers in the first quadrant of a coordinate grid system.

	system	MC	
Grades 3-5 Benchmark	**Grade Level Expectations**	**Grade 4 Clarification Statement**	**Grade 4 Content Limits**
MA.D.1.2.2 Generalizes a pattern, relation, or function to explain how a change in one quantity results in a change in another. (Also assesses D.1.2.1)	· knows mathematical relationships in patterns (for example, the second shape is the first shape turned 90 o) · analyzes number patterns and states rules for relationships (for example, 2, 4, 7, 9, 12, …; the rule is: +2, +3, +2, +3, …) · discusses, explains, and analyzes the rule that applies to the pattern · applies the appropriate rule to complete a table or a chart such as: input output 2 8 9 36 ? 16 7 28	Not assessed	Not assessed
MA.D. 2.2.1 Represents a given simple problem situation using diagrams, models, and symbolic expressions translated from verbal phrases, or verbal phrases translated from symbolic expressions, etc.	· solves problems involving equations or simple inequalities using manipulatives, diagrams, or models, symbolic expressions, or written phrases · uses a variable to represent a given verbal expression (for example, seven times a number is 7n) · translates problem-solving situations into expressions and equations using a variable for the unknown	Students will identify symbolic expressions translated from written phrases or identify written phrases from symbolic expressions.	Items should use only simple equations or inequalities (e.g., use $\leq$, $\geq$, =, or $\neq$) involving whole numbers less than or equal to 100, including decimal numbers presented as money. Variables used to represent numbers in problem situations should be simple symbols or lowercase italicized letters. Lowercase letters should characterize the name of an object (e.g., *f* = frog). In any given equation or expression, a maximum of one variable at a time should be presented for the student to consider. Problem situations involving multiplication should represent the operation using the symbol “x” (e.g., (e.g., 5 x ***n***, not 5***n***). Problem situations involving division

		MC	should represent the operations using the symbol"÷"(e. g., 5 ÷ ***n***, not 5/n).
Grades 3-5 Benchmark	**Grade Level Expectations**	**Grade 4 Clarification Statement**	**Grade 4 Content Limits**
MA.D. 2.2.2 Uses informal methods, such as physical models and graphs, to solve real-world problems involving equations and inequalities. (Also assesses D.2.2.1)	· uses physical or pictorial models and graphs (for example, cubes, number lines) to solve equations or inequalities · uses information from physical models, graphs, or tables to solve problems	Students will represent situations and/or solve problems involving equations or inequalities. MC	Problem situations should use only simple equations or inequalities (e.g., use $\leq$, $\geq$, =, or $\neq$). No compound inequalities should be used. Simple equations or inequalities may use whole numbers up to 100 or decimal numbers presented as money. Variables used to represent numbers in problem situations should be represented with geometric shapes or lowercase italicized letters. Lowercase letters should characterize the name of an object (e.g., *f* = frog). In any given equation or expression, a maximum of one variable at a time should be presented for the student to consider. Problem situations involving multiplication should represent the operation using the symbol "x" (e.g., (e.g., 5 x ***n***, not 5***n***). Problem situations involving division should represent the operations using the symbol "÷" (e. g., 5 ÷ ***n***, not) .
MA.E.1.2.3 Analyzes real-world data to recognize patterns and relationships of the measures of central tendency using tables, charts, histograms, bar graphs, line graphs, pictographs, and circle graphs generated by appropriate technology, including calculators and computers.	· uses a calculator to determine the range and mean of a set of data · uses computer applications to examine and evaluate data · uses computer applications to construct graphs	Assessed with E.1.2.1 and E.1.2.2	Assessed with E.1.2.1 and E.1.2.2

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Grades 3-5 Benchmark	Grade Level Expectations	Grade 4 Clarification Statement	Grade 4 Content Limits
MA.E.2.2.2 Predicts the likelihood of simple events occurring.	· identifies and records using common fractions, the possible outcomes of simple experiments using concrete materials (for example, spinners, number cubes, coin toss) · determines and predicts which outcomes are likely to occur and expresses those expected outcomes as fractions · conducts experiments to test predictions	Students will determine the probability or likelihood of a simple event occurring. MC	Items will assess the likelihood or probability of an outcome occurring. Probabilities should be expressed as common fractions only.
MA.E.3.2.1 Designs experiments to answer class or personal questions, collects information, and interprets the results using statistics (range, mean, median, and mode) and pictographs, charts, bar graphs, circle graphs, and line graphs. (Also assesses E.3.2.2)	· designs a class survey to collect data · creates an appropriate graph to display data (for example, pictographs, bar graphs, line graphs, circle graphs) · determines appropriate statistical measures for data (range, mean, median, mode) · explains the results using statistics (range and measures of central tendency)	Not assessed	Not assessed
MA.E.3.2.2 Uses statistical data about life situations to make predictions.	· uses statistical data to identify trends · applies statistical data to make generalizations · justifies and explains generalizations	Assessed with E.3.2.1	Assessed with E.3.2.1