Correlation of *Core Knowledge® Sequence* & Colorado Grade Level Expectations

Core Knowledge® Content (Mathematics-Grade 4)	**Colorado Grade Level Expectations** (Grade 4-Mathematics)
I. Numbers and Number Sense	
▪	4.1.2.A read and write numerals from 0 to 1,000,000 in meaningful contexts 4.1.2.B read the number words for selected numbers from zero to one million 4.1.2.C write the number words for selected numbers from zero to one hundred thousand
▪	4.1.2.D order according to place value (for example, given 9 ones, 5 tens, 4 hundreds, 7 thousands, and 8 hundred thousands, the student can write the number 807, 459; given the number 807, 459, the student can show 8 hundred thousands, 7 thousands, 4 hundreds, 5 tens, and 9 ones) 4.1.2.E identify place value through hundred thousands (for example, in 807,459, '8' is in the hundred thousands place)
▪	4.1.1.B apply equalities and inequalities with whole numbers from 0 to 1,000,000 using the symbols =, <, > 4.1.3.B sequence selected whole numbers from 0 to 100,000
▪	4.1.2.F write six-digit numbers in expanded form (for example, 807,459 = 800,000 + 7,000 + 400 + 50 + 9)
▪	4.1.3.C locate and label ½'s and multiples of ¼'s and 1/3's between whole numbers on the number line
▪	4.1.5.A estimate sums and differences by rounding to the nearest ten, hundred, and thousand prior to performing the operation, and then using the estimate to determine the reasonableness of the solution 4.1.5.B estimate products first by rounding to the nearest ten and hundred prior to performing the operation and, then, using the estimate to determine the reasonableness of the solution
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▪	4.3.1.A select the appropriate type of graph to use in various problem-solving situations
▪	4.1.3.D locate and label a point in the first quadrant of the coordinate plane (for example, locates the point (27,15)) and on a city map (for example, (E23, 11)) 4.3.1.C use graph paper using the horizontal and vertical axes appropriately 4.5.1.J determine the distance between points on vertical and horizontal line segments on a coordinate plane 4.5.1.K given a distance, find pairs of points on the coordinate plane separated by that distance
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II. Fractions and Decimals	
A. Fractions	
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▪	4.1.1.C using concrete materials (for example, fraction strips), compare and order fractions with like and unlike denominators, such as halves, thirds, fourths, eighths, and tenths
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▪	4.6.2.A using concrete materials, demonstrate addition and subtraction of proper fractions with common denominators of ten or less
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B. Decimals	
▪	4.1.1.D using concrete materials (for example, base ten blocks), represent the decimal fractions of tenths and hundredths
▪	4.1.2.G relate decimals and fractions (that is, tenths and hundredths) to one another using objects and pictures 4.1.1.E using concrete materials, equate terminating decimals to their common fraction equivalents (for example, 0.25 = ¼)
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▪	4.6.2.C add and subtract decimals to the one-hundredths
III. Money	
▪	4.6.2.E determine change received for $10.00 or less 4.1.1.G using concrete materials, count change from the cost of the item, where the item costs no more than $10.00, up to the amount of the money received
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IV. Computation	
A. Multiplication	
Teachers: By this grade level, children should have mastered all basic whole number operations for addition and subtraction. Review and reinforce topics from previous grades as necessary.	4.6.3.C continue automatic recall of basic addition and subtraction facts
▪	4.6.3.A demonstrate understanding of basic multiplication and division facts through 100 4.6.3.B demonstrate automatic recall of basic multiplication and division facts through 100
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▪	4.6.4.B using paper-and-pencil, demonstrate the four basic operations of whole numbers including: a) multiplication of two digits by two digits and three digits by one digit with regrouping and b) division of two digits by a one-digit divisor
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▪	4.1.5.B estimate products first by rounding to the nearest ten and hundred prior to performing the operation and, then, using the estimate to determine the reasonableness of the solution 4.6.4.A use estimation techniques such as front-end rounding, rounding, compatible numbers (numbers whose sum is 10, 100, 1,000…) and clustering (for example, 27 + 28 + 30 + 31 equals approximately 4 x 30 = 120) before performing operations
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B. Division	
▪	4.6.1.B demonstrate the inverse relationship of multiplication and division of whole numbers
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▪	4.6.3.A demonstrate understanding of basic multiplication and division facts through 100 4.6.3.B demonstrate automatic recall of basic multiplication and division facts through 100
▪	4.1.4.A verify division of whole numbers is not commutative
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▪	4.6.4.B using paper-and-pencil, demonstrate the four basic operations of whole numbers including: a) multiplication of two digits by two digits and three digits by one digit with regrouping and b) division of two digits by a one-digit divisor
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C. Solving Problems and Equations	
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▪	4.2.3.A identify a rule using addition, subtraction, or multiplication, and solve a problem using the rule
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V. Measurement	
▪	4.4.3.A measure the sides and perimeters of geometric shapes to the nearest fourth inch and centimeter 4.5.1.D estimate the perimeters of similarly-sized figures (for example, trapezoids, parallelograms, and rectangles), measure the sides, and determine the perimeters 4.5.1.F measure the lengths of the sides of cubes and determine the volumes
▪	4.5.1.H estimate and weigh objects on a balance to the nearest ounce and gram
▪	4.5.1.G estimate and measure the capacity of containers
▪	4.5.1.L describe the units for measuring length, area, volume, capacity, and temperature in U.S. customary and metric units 4.5.1.M know the number of years in a decade and a century, feet in a mile, millimeters and centimeters in a meter, ounces in a pound, and pounds in a ton 4.5.2.A compare objects according to the measurable attributes of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units 4.5.2.B order objects according to the measurable attributes of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units 4.5.5.B select the appropriate units of measurement of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units
▪	4.5.1.L describe the units for measuring length, area, volume, capacity, and temperature in U.S. customary and metric units 4.5.1.M know the number of years in a decade and a century, feet in a mile, millimeters and centimeters in a meter, ounces in a pound, and pounds in a ton 4.5.2.A compare objects according to the measurable attributes of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units 4.5.2.B order objects according to the measurable attributes of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units 4.5.5.B select the appropriate units of measurement of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units

▪	4.5.2.C compare and order various times 4.5.5.A select the appropriate units of measurement of time
VI. Geometry	
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▪	4.4.2.A identify parallel, perpendicular, and intersecting lines
▪	4.4.2.G classify triangles by their angles (obtuse, acute, right) 4.4.4.B investigate and predict the changing of angles (for example, those made from the hands of a clock over time)
▪	4.4.2.C recognize and identify polygons including quadrilaterals such as trapezoids, parallelograms, and rhombuses 4.4.3.D draw geometric polygons including quadrilaterals such as trapezoids, parallelograms, and rhombuses 4.4.2.E describe squares as rectangles
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▪	4.4.2.B identify attributes of closed curves
▪	4.4.1.A define similarity and congruence 4.4.4.C investigate and predict what must occur for similar figures to become congruent figures
▪	4.4.3.B measure the area of geometric figures using standard units 4.5.1.E measure the lengths of the sides of squares and rectangles and determine the areas 4.5.5.B select the appropriate units of measurement of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units
▪	4.4.2.J identify rectangular prisms 4.5.1.F measure the lengths of the sides of cubes and determine the volumes 4.5.5.B select the appropriate units of measurement of length, area, volume, capacity, weight, and temperature in U.S. customary and metric units
Grade level or other area Grade Level Expectations are covered in the *Core Knowledge Sequence*	**Grade Level Expectations not directly covered in the *Core Knowledge Sequence*, but can be covered in other areas**
Grade 3: Mathematics: Numbers and Number Sense	4.1.1.A using objects and pictures, represent whole numbers including odds and evens from 0 to 1,000,000
Grade 2: Mathematics: Money	4.1.1.F demonstrate different combinations of currency and coins for change (for example, $2.39 = 2 dollar bills, 1 quarter, 1 dime, and 4 pennies)
Grade 3: Mathematics: Numbers and Number Sense	4.1.3.A count forward from any number by 2's, 3's, 5's, 10's, and 100's
Grade 1: Mathematics: Computation and Grade 5: Mathematics: Computation	4.1.4.B continue to verify number properties from previous grades
Grade 1: Mathematics: Patterns and Classification and Grade 2: Mathematics: Numbers and Number Sense	4.2.1.A reproduce, extend, create, and describe patterns, such as in common fractions, geometric shapes, measurement, addition, subtraction, multiplication, and division facts
Grade 1: Mathematics: Patterns and Classification and Grade 2: Mathematics: Numbers and Number Sense	4.2.1.B find missing elements of a complex repeating pattern (for example, 1,1,2,3,5,__,13,. . .)
This can be covered in many areas	4.2.2.A match tables, graphs, and open sentences that represent the same numerical pattern
This can be covered in many areas	4.2.4.A determine how the change in one variable affects the change in the other by addition, subtraction, or multiplication
Grade 6: Mathematics: Probability and Statistics	4.3.1.D explain the basic concepts of sample bias and sample size when designing a survey
Grade 6: Mathematics: Probability and Statistics	4.3.2.A choose between median and mode to best describe the "middle" of a data set
Grade 6: Mathematics: Probability and Statistics	4.3.2.B transfer the use of median and mode to other curricular areas
Grade 5: Mathematics: Probability and Statistics	4.3.2.C using various displays of data, formulate questions, interpret, and draw conclusions
Grade 5 and 6: Mathematics: Probability and Statistics	4.3.3.A uses survey data to make and justify real-world decisions

	Grade 3, 5 and 6: Mathematics: Probability and Statistics	4.3.3.B compare the outcomes of flipping a coin, spinning a spinner with four congruent sectors, and rolling a number cube
	Grade 3, 5 and 6: Mathematics: Probability and Statistics	4.3.3.C analyze and predict which outcome is more likely from several events such as obtaining "heads" when flipping a coin, the spinner landing in one of its sectors, or rolling a "1" on a number cube
	Grade 5 and 6: Mathematics: Probability and Statistics	4.3.3.D analyze the fairness of various chance devices
	Grade 3, 5 and 6: Mathematics: Probability and Statistics	4.3.4.A determine the number of outcomes obtained from a variety of chance devices
	Grade 6: Mathematics: Probability and Statistics	4.3.4.B using paper-and-pencil techniques (for example, tree diagrams), display the possible combinations of matching two sets of elements
	Grade 7: Mathematics: Geometry	4.4.1.B identify the transformation that occurs when a figure is translated, reflected, or rotated
	Grade 6: Mathematics: Geometry	4.4.1.C identify the lines of symmetry of an equilateral triangle, parallelogram, and rhombus
	Grade 5: Mathematics: Geometry	4.4.2.F describe a right angle as having a measure of 90E
	Grade 5: Mathematics: Geometry	4.4.2.H draw obtuse, acute, and right triangles on a coordinate plane and identify the vertices with coordinates
	Grade 7: Mathematics: Geometry	4.4.2.I compare what is the same and what is different between two-dimensional figures and three-dimensional figures
	Grade 7: Mathematics: Geometry	4.4.2.K recognize and identify in three-dimensional figures the vertices, edges, and faces
	Grade 7: Mathematics: Geometry	4.4.2.L build cubes, prisms, and pyramids (for example, using straws and string)
	Grade 3: Mathematics: Geometry	4.4.4.D investigate and predict the geometric figures that result from cutting along a line of symmetry
	This can be covered in many areas	4.4.4.C draw a picture of diagram to solve a problem (for example, uses triangular pattern blocks to create a star; uses pattern blocks to tile a plane)
	Grade 3: Mathematics: Measurement	4.5.1.A tell time to the nearest minute, using an analog and digital clock
	Grade 3: Mathematics: Measurement	4.5.1.B tell the number of minutes is a day, days in a year and when a leap year occurs
	Grade 3: Mathematics: Measurement	4.5.1.C describes the units for measuring time
	Grade 3: Mathematics: Measurement	4.5.1.I compare the relationship between the temperature in Fahrenheit and Celsius
	This can be covered in many areas	4.5.4.A use familiar objects as referents for measurement (for example, one paper clip equals one gram; the length of the arm span equals approximately one meter)
	This can be covered in many areas	4.6.1.A explain in writing what addition, subtraction, multiplication, and division of whole numbers means
	This can be covered in many areas	4.6.1.C demonstrate division of whole numbers as repeated subtraction
	Grade 5: Mathematics: Fractions and Decimals	4.6.2.B using concrete materials, demonstrate addition and subtraction of mixed numerals with common denominators of twelve or less
	Grade 3: Mathematics: Money	4.6.2.D compute the total cost of items to $10.00
	This can be covered in many areas	4.6.5.A given a real-world problem-solving situation, use the correct operation (addition, subtraction, multiplication, or division) and appropriate method (mental arithmetic, estimation, paper-and-pencil, calculator, or computer) to solve the problem
	This can be covered in many areas	4.6.5.B determine from real-world problems whether an estimated or exact sum, difference, product, or quotient is acceptable