

Kansas
Curricular Standards
Mathematics - Grade 4
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Benchmark Number	Benchmark • <i>Instructional Targets</i>	Gourmet Resource	Taught	Tested
1	Number and Computation (Standard) The student uses numerical and computational concepts and procedures in a variety of situations.			
1.1	Number Sense The student demonstrates number sense for whole numbers, simple fractions, money, and decimals in a variety of situations.			
	Knowledge Base Indicators			
1.1.1	<ul style="list-style-type: none"> Compares and orders whole numbers to 1,000,000, simple fractions (halves, fourths, eighths, sixteenths, thirds, tenths, hundredths), mixed numbers and decimals to the thousandths place. 	Appetizers 1 A, B, E, & G; Main Dish Objective 1 (Number Concepts) Lessons 1, 2, 5, & 7; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.1.2	<ul style="list-style-type: none"> N * Knows, explains, and uses addition, subtraction, multiplication, and division and other equivalent representations for whole numbers, decimals, time, and money, and addition, subtraction, and pictorial representations for simple fractions such as $122=4+2$ or $7¢=\\$.07=7/100$ of a dollar. 	Appetizers 1 E & G; 4 A & B; 6 B; 7 C; 9 D; Main Dish Objectives 1 (Number Concepts) Lessons 5 & 7; 4 (Measurement) Lessons 1 & 2; 6 (Addition) Lesson 2; 7 (Subtraction) Lesson 3; 9 (Division) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2	Number Systems and their Properties The student demonstrates an understanding of whole numbers with a special emphasis on place value, recognizes, uses, and explains their properties, and extends these properties to simple fractions, mixed numbers, decimals and money.			
	Knowledge Base Indicators			
1.2.1	<ul style="list-style-type: none"> Recognizes the need for whole numbers, simple fractions, mixed numbers, and decimals to thousandths. 	Appetizers 1 A, C, E, & G; Main Dish Objective 1 (Number Concepts) Lessons 1, 3, 5, & 7; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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1.2.2	<ul style="list-style-type: none"> Identifies, models, writes, and reads numbers using numerals, words, and expanded form from thousandths to millions such as four million sixty-two thousand two hundred eighty-four = $4,062,284 = 4 \times 1,000,000 + 6 \times 10,000 + 2 \times 1,000 + 2 \times 100 + 8 \times 10 + 4 \times 1$. 	Appetizers 1 A & C; Main Dish Objective 1 (Number Concepts) Lessons 1 & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2.3	<ul style="list-style-type: none"> Uses the concepts of the following whole number properties: commutative property of addition and multiplication; associative properties of addition and multiplication such as $4 + (2 + 3) = (4 + 2) + 3$ or $2 \times (3 \times 4) = (2 \times 3) \times 4$, additive and multiplicative identity properties (zero property of addition and multiplicative property of one); the distributive property; the symmetric property of addition and multiplication such as $100 = 20 + 80$ is the same as $20 + 80 = 100$; and the multiplicative property of zero with two factors such as $9 \times 0 = 0$ or $112 \times 0 = 0$. 	Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2.4	<ul style="list-style-type: none"> Identifies odd and even numbers. 	Appetizers 1 F; Main Dish Objective 1 (Number Concepts) Lesson 6; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.3	<p>Estimation</p> <p>The student uses numerical estimation with whole numbers, simple fractions, decimals, and money in a variety of situations.</p>			

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Knowledge Base Indicators				
1.3.1	<ul style="list-style-type: none"> Uses a variety of computational methods including mental mathematics, paper and pencil, concrete materials, and technological tools such as calculators and computers to estimate quantities involving whole numbers, simple fractions (halves, thirds, fourths) decimals (.1, .01, .001) and money. 	Appetizers 10 B, C, D, & E; Main Dish Objective 10 (Estimation) Lessons 2, 3, 4, & 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.3.2	<ul style="list-style-type: none"> Explains and uses various estimation techniques, such as: front-end with adjustment, rounding, special numbers, clustering, and compatible numbers to estimate quantities using whole numbers, decimals, money, and simple fractions (halves, thirds, fourths). 	Appetizers 1 D; 10 B, C, D, & E; Main Dish Objectives 1 (Number Concepts) Lesson 4; 10 (Estimation) Lessons 2, 3, 4, & 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.3.3	<ul style="list-style-type: none"> Recognizes and explains the difference between exact and approximate values. 	Appetizers 10 A; Main Dish Objective 10 (Estimation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4	<p>Computation The student explains, models and performs computation with two-digit whole numbers in a variety of situations.</p>			
Knowledge Base Indicators				
1.4.1	<ul style="list-style-type: none"> Uses a variety of computational methods including mental arithmetic (doubles and neighbors), paper and pencil, concrete materials, and technological tools such as calculators and computers. 	All Appetizers; All Main Dish Objectives; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4.2	<ul style="list-style-type: none"> States and uses multiplication and corresponding division facts for numbers up to twelve times twelve with efficiency and accuracy. 	Appetizers 8 A & B; Main Dish Objective 8 (Multiplication) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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1.4.3	<ul style="list-style-type: none"> • <i>Selects, explains and uses appropriate whole number operations</i> 	Appetizers 11 A & B; 12 A; Main Dish Objectives 11 (Problem Solving) Lessons 1 & 2; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4.4	<ul style="list-style-type: none"> • <i>N * Explains and performs computational procedures involving whole numbers, proper fractions with like denominators and money.</i> 	Appetizers 6 A, B, C, & D; 7 A, B, & C; 8 A & B; 9 A, B, C, & D; Main Dish Objectives 6 (Addition) Lessons 1, 2, 3, & 4; 7 (Subtraction) Lessons 1, 2, & 3; 8 (Multiplication) Lessons 1 & 2; 9 (Division) Lessons 1, 2, 3, & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4.5	<ul style="list-style-type: none"> • <i>N * Knows different ways to read and write the same addition, subtraction, multiplication or division expression such as: 6×4 is the same as 6×4 and 6 or $\frac{6}{1}$, 10 divided by 2 is the same as $10 \div 2$ or $\frac{10}{2}$.</i> 	Appetizers 2 A; 6 A; 7 A; 8 A; 9 A; Main Dish Objectives 2 (Mathematical Relations) Lesson 1; 6 (Addition) Lesson 1; 7 (Subtraction) Lesson 1; 8 (Multiplication) Lesson 1; 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4.6	<ul style="list-style-type: none"> • <i>Uses concrete materials to show the relationship between whole number addition and multiplication, and between whole number multiplication and division.</i> 	Appetizers 2 A; 6 A; 7 A; 8 A; 9 A; Main Dish Objectives 2 (Mathematical Relations) Lesson 1; 6 (Addition) Lesson 1; 7 (Subtraction) Lesson 1; 8 (Multiplication) Lesson 1; 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4.7	<ul style="list-style-type: none"> • <i>Finds multiples of whole numbers.</i> 	Appetizers 8 A; Main Dish Objective 8 (Multiplication) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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2	Algebra (Standard) The student uses algebraic concepts and procedures in a variety of situations.			
2.1	Patterns The student recognizes, describes, extends, develops, and explains relationships in patterns from a variety of situations.			
Knowledge Base Indicators				
2.1.1	<ul style="list-style-type: none"> <i>N * Identifies and continues patterns presented in a variety of formats: numeric, visual, oral, written, kinesthetic, pictorial, tabular, graphical, or listing.</i> 	Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.1.2	<ul style="list-style-type: none"> <i>Creates a pattern.</i> 	Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.2	Variables, Equations, and Inequalities The student uses symbols and whole numbers to solve simple equations and inequalities in a variety of situations.			
Knowledge Base Indicators				
2.2.1	<ul style="list-style-type: none"> <i>Solves one-step equations in one unknown with a whole number solution such as finding any missing number in a multiplication or division equation based on the multiplication and division facts for numbers up to 12 times 12, equations involving time and money such as 8 quarters + 10 dimes = $\text{\\$}$ dollars or 180 minutes = $\text{\\$}$ hours and $100 \times \text{\\$} = 600$.</i> 	Appetizers 4 A & B; 6 B; 8 A & B; 9 A & D; Main Dish Objectives 4 (Measurement) Lessons 1 & 2; 6 (Addition) Lesson 2; 8 (Multiplication) Lessons 1 & 2; 9 (Division) Lessons 1 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.2.2	<ul style="list-style-type: none"> <i>Reads and writes whole number equations and inequalities using correct mathematical vocabulary and notation such as $15=3 \times 5$, fifteen equals three times five; $4 < 6$, five is greater than three, $14,564 > 10,000$, or fourteen thousand is greater than thirteen thousand twenty-five.</i> 	Appetizers 1 A, B, & C; Main Dish Objectives 1 (Number Concepts) Lessons 1, 2, & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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2.3	Functions The student recognizes and describes relationships between whole numbers in a variety of situations.			
Knowledge Base Indicators				
2.3.1	<ul style="list-style-type: none"> • <i>Uses a variety of methods to recognize relationships between whole numbers including mental mathematics, paper and pencil, concrete materials, and graphing utilities or other technological tools</i> 	Appetizers 11 A & B; 12 A; Main Dish Objectives 11 (Problem Solving) Lessons 1 & 2; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.3.2	<ul style="list-style-type: none"> • <i>Uses a T-table to find ordered pairs in a relationship.</i> 	Appetizers 4 D; Main Dish Objective 4 (Measurement) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.3.3	<ul style="list-style-type: none"> • <i>N * Finds values and determines rules involving operations of whole numbers using input/output machines or T-tables.</i> 	Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.3.4	<ul style="list-style-type: none"> • <i>Identifies and graphs ordered pairs in the first quadrant.</i> 	Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.4	Models The student develops and uses models to represent and justify mathematical relationships found in a variety of situations.			
Knowledge Base Indicators				
2.4.1	<ul style="list-style-type: none"> • <i>N * Uses mathematical models to represent and explain mathematical concepts and procedures.</i> 	Appetizers 11 A & B; 12 A; Main Dish Objectives 11 (Problem Solving) Lessons 1 & 2; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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2.4.2	<ul style="list-style-type: none"> Creates mathematical models to show the relationship between two or more things. 	All Main Dish Objectives - Journal Topics		
3	Geometry (Standard) The student uses geometric concepts and procedures in a variety of situations.			
3.1	Geometric Figures and their Properties The student recognizes or investigates properties of simple geometric figures in a variety of situations.			
	Knowledge Base Indicators			
3.1.1	<ul style="list-style-type: none"> Uses appropriate technology, manipulatives, and drawings to recognize and investigate properties of simple geometric figures. 	Appetizers 3 A; Main Dish Objective 3 (Geometry) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.2	<ul style="list-style-type: none"> Recognizes and describes the following geometric figures and their basic properties: rhombus, octagon, pentagon, circle, square, rectangle, triangle, and ellipse (oval) 	Appetizers 3 A; Main Dish Objective 3 (Geometry) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.3	<ul style="list-style-type: none"> Recognizes and describes the following geometric solids: pyramid, triangular prism, rectangular prism, cylinder, cone, sphere and cube. 	Appetizers 3 A; Main Dish Objective 3 (Geometry) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.4	<ul style="list-style-type: none"> Identifies faces, edges, vertices (corners) and bases on three-dimensional objects. 	Appetizers 3 A; Main Dish Objective 3 (Geometry) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.5	<ul style="list-style-type: none"> Recognizes and describes similar and congruent figures. 	Appetizers 3 B; Main Dish Objective 3 (Geometry) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.6	<ul style="list-style-type: none"> Identifies the radius and diameter of a circle. 			

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3.2	Measurement and Estimation The student estimates and measures using standard and nonstandard units in a variety of situations.			
	Knowledge Base Indicators			
3.2.1	<ul style="list-style-type: none"> Uses appropriate estimation techniques to find whole number approximations of area, perimeter, length, width, distance, weight, temperature, capacity, or time. 	Appetizers 4 A, B, C, D, E, F, G, & H; Main Dish Objective 4 (Measurement) Lessons 1, 2, 3, 4, 5, 6, 7, & 8; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.2.2	<ul style="list-style-type: none"> Finds the perimeter of two-dimensional figures given the measure of all the sides. 	Appetizers 4 G; 11 E; Main Dish Objectives 4 (Measurement) Lesson 7; 11 (Problem Solving) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.2.3	<ul style="list-style-type: none"> Applies appropriate measurement techniques to find accurate representations for area, perimeter, length, width, distance, weight, volume, temperature and time. 	Appetizers 4 A, B, C, D, E, F, G, & H; Main Dish Objective 4 (Measurement) Lessons 1, 2, 3, 4, 5, 6, 7, & 8; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.4	<ul style="list-style-type: none"> N * Selects, explains the selection of, and uses measurement tools, units of measure, and degrees of accuracy appropriate to the given situation to measure length to the nearest fourth of an inch, nearest centimeter; volume to the nearest pint, cup, quart, gallon or liter and nonstandard units of measure to the nearest whole unit; weight to the nearest pound or ounce and nonstandard units of measure to the nearest whole unit; and temperature to the nearest degree; and units of time. 	Appetizers 10 A; 13 B; Main Dish Objectives 10 (Estimation) Lesson 1; 13 (Reasonableness) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.1.5	<ul style="list-style-type: none"> Performs conversions within the same measurement system such as inches to feet, feet to yards, inches to yards, quarts to gallons, pints to quarts, cups to pints, pounds to ounces, or centimeters to meters. 	Appetizers 4 D, E, & F; Main Dish Objective 4 (Measurement) Lessons 4, 5, & 6; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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3.3	Transformational Geometry The student recognizes and describes a single geometric transformation of simple shapes or objects in a variety of situations.			
Knowledge Base Indicators				
3.3.1	<ul style="list-style-type: none"> <i>N * Recognizes and performs up to two transformations (rotation/turn, reflection/flip, translation/slide) on simple two-dimensional shapes and uses cardinal or positional directions to describe translations such as move the triangle three units to the right and two units up.</i> 	Appetizers 3 C; Main Dish Objective 3 (Geometry) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.4	Geometry from an Algebraic Perspective The student identifies one or more points on a simple coordinate system (number line or grid) in a variety of situations.			
Knowledge Base Indicators				
3.4.1	<ul style="list-style-type: none"> <i>Uses the number line to represent the distance between two whole numbers.</i> 	Appetizers 3 C; Main Dish Objective 3 (Geometry) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.4.2	<ul style="list-style-type: none"> <i>Graphs and identifies points in the first quadrant of the coordinate plane.</i> 	Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.4.3	<ul style="list-style-type: none"> <i>Uses points on coordinate grids to identify locations.</i> 	Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
4	Data (Standard) The student uses concepts and procedures of data analysis in a variety of situations.			

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4.1	Probability The student uses probability to make predictions and decisions in a variety of situations.			
Knowledge Base Indicators				
4.1.1	<ul style="list-style-type: none"> <i>Lists the possible outcomes of a simple experiment.</i> 	Appetizers 5 A; Main Dish Objective 5 (Probability/Statistics) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
4.1.2	<ul style="list-style-type: none"> <i>Identifies the probability of a single event within a simple experiment such as three chances out of eight.</i> 	Appetizers 5 A; Main Dish Objective 5 (Probability/Statistics) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
4.2	Statistics The student generates, organizes, and interprets whole number and other data in a variety of situations.			
Knowledge Base Indicators				
4.2.1	<ul style="list-style-type: none"> <i>N * Organizes, displays and reads numerical (quantitative) and non-numerical (qualitative) data in a clear, organized and accurate manner including correct titles, labels, categories or whole number intervals.</i> 	Appetizers 5 C; Main Dish Objective 5 (Probability/Statistics) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
4.2.2	<ul style="list-style-type: none"> <i>Determines and conducts sampling techniques (observations, surveys, random sampling) for gathering data.</i> 	Appetizers 5 C; Main Dish Objective 5 (Probability/Statistics) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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4.2.3	<ul style="list-style-type: none"> • <i>N Identifies, explains or calculates the following statistical measures of a data set composed of whole number data values: maximum value, minimum value, range, mean (average) when the data set has a whole number mean, the median for a data set having an odd number of data points and the mode for any data set.</i> 	Appetizers 10 E; Main Dish Objective 10 (Estimation) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		

* This indicator will be assessed at the state level.

N The use of calculators, abacuses or computers will not be allowed during the assessment of this indicator at the state level.