

California
Curricular Standards
Mathematics - Grade 4
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Benchmark Number	Benchmark • Teaching Targets	Gourmet Resource	Taught	Tested
	By the end of grade four, students understand large numbers and addition, subtraction, multiplication, and division of whole numbers. They describe and compare simple fractions and decimals. They understand the properties of, and the relationships between, plane geometric figures. They collect, represent, and analyze data to answer questions.			
	Number Sense			
1.0	Students understand the place value of whole numbers and decimals to two decimal places and how whole numbers and decimals relate to simple fractions. Students use the concepts of negative numbers:			
1.1	• <i>Read and write whole numbers in the millions.</i>	Appetizers 1 A; Main Dish Objective 1 (Number Concepts) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2	• <i>Order and compare whole numbers and decimals to two decimal places.</i>	Appetizers 1 B & E; Main Dish Objective 1 (Number Concepts) Lessons 2 & 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.3	• <i>Round whole numbers through the millions to the nearest ten, hundred, thousand, ten thousand, or hundred thousand.</i>	Appetizers 1 D; 10 B & D; Main Dish Objectives 1 (Number Concepts) Lesson 4; 10 (Estimation) Lessons 2 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4	• <i>Decide when a rounded solution is called for and explain why such a solution may be appropriate.</i>	Appetizers 10 A & B; 13 B; Main Dish Objectives 10 (Estimation) Lessons 1 & 2; 13 (Reasonableness) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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1.5	<ul style="list-style-type: none"> Explain different interpretations of fractions, for example, parts of a whole, parts of a set, and division of whole numbers by whole numbers; explain equivalents of fractions (see Standard 4.0). 	Appetizers 1 G & H; Main Dish Objective 1 (Number Concepts) Lessons 7 & 8; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.6	<ul style="list-style-type: none"> Write tenths and hundredths in decimal and fraction notations and know the fraction and decimal equivalents for halves and fourths (e.g., $1/2 = 0.5$ or $.50$; $7/4 = 1\ 3/4 = 1.75$). 	Appetizers 1 E & G; Main Dish Objective 1 (Number Concepts) Lessons 5 & 7; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.7	<ul style="list-style-type: none"> Write the fraction represented by a drawing of parts of a figure; represent a given fraction by using drawings; and relate a fraction to a simple decimal on a number line. 	Appetizers 1 G; 2 C; Main Dish Objectives 1 (Number Concepts) Lesson 7; 2 (Mathematical Relations) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.8	<ul style="list-style-type: none"> Use concepts of negative numbers (e.g., on a number line, in counting, in temperature, in "owing"). 			
1.9	<ul style="list-style-type: none"> Identify on a number line the relative position of positive fractions, positive mixed numbers, and positive decimals to two decimal places. 	Appetizers 2 C; Main Dish Objective 2 (Mathematical Relations) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.0	Students extend their use and understanding of whole numbers to the addition and subtraction of simple decimals:			
2.1	<ul style="list-style-type: none"> Estimate and compute the sum or difference of whole numbers and positive decimals to two places. 	Appetizers 10 B, C, & D; Main Dish Objective 10 (Estimation) Lessons 2, 3, & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.2	<ul style="list-style-type: none"> Round two-place decimals to one decimal or the nearest whole number and judge the reasonableness of the rounded answer. 			

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3.0	Students solve problems involving addition, subtraction, multiplication, and division of whole numbers and understand the relationships among the operations:			
3.1	<ul style="list-style-type: none"> • <i>Demonstrate an understanding of, and the ability to use, standard algorithms for the addition and subtraction of multidigit numbers.</i> 	Appetizers 6; 7; Main Dish Objectives 6 (Addition) All Lessons; 7 (Subtraction) All Lessons; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.2	<ul style="list-style-type: none"> • <i>Demonstrate an understanding of, and the ability to use, standard algorithms for multiplying a multidigit number by a two-digit number and for dividing a multidigit number by a one-digit number; use relationships between them to simplify computations and to check results.</i> 	Appetizers 8 B; 9 B, C, & D; 10 D; Main Dish Objectives 8 (Multiplication) Lesson 2; 9 (Division) Lessons 2, 3, & 4; 10 (Estimation) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.3	<ul style="list-style-type: none"> • <i>Solve problems involving multiplication of multidigit numbers by two-digit numbers.</i> 	Appetizers 8 B; Main Dish Objective 8 (Multiplication) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.4	<ul style="list-style-type: none"> • <i>Solve problems involving division of multidigit numbers by one-digit numbers.</i> 	Appetizers 9 C & D; Main Dish Objective 9 (Division) Lessons 3 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
4.0	Students know how to factor small whole numbers:			
4.1	<ul style="list-style-type: none"> • <i>Understand that many whole numbers break down in different ways (e.g., $12 = 4 \times 3 = 2 \times 6 = 2 \times 2 \times 3$).</i> 	Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
4.2	<ul style="list-style-type: none"> • <i>Know that numbers such as 2, 3, 5, 7, and 11 do not have any factors except 1 and themselves and that such numbers are called prime numbers.</i> 			

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	<i>Algebra and Functions</i>			
1.0	Students use and interpret variables, mathematical symbols, and properties to write and simplify expressions and sentences:			
1.1	<ul style="list-style-type: none"> • <i>Use letters, boxes, or other symbols to stand for any number in simple expressions or equations (e.g., demonstrate an understanding and the use of the concept of a variable).</i> 	Appetizers 2 A; 12 A; Main Dish Objectives 2 (Mathematical Relations) Lesson 1; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2	<ul style="list-style-type: none"> • <i>Interpret and evaluate mathematical expressions that now use parentheses.</i> 	Appetizers 2 A; 12 A; Main Dish Objectives 2 (Mathematical Relations) Lesson 1; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.3	<ul style="list-style-type: none"> • <i>Use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations.</i> 	Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4	<ul style="list-style-type: none"> • <i>Use and interpret formulas (e.g., area = length x width or $A = lw$) to answer questions about quantities and their relationships.</i> 	Appetizers 4 H; 11 E; Main Dish Objectives 4 (Measurement) Lesson 8; 11 (Problem Solving) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.5	<ul style="list-style-type: none"> • <i>Understand that an equation such as $y = 3x + 5$ is a prescription for determining a second number when a first number is given.</i> 	Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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2.0	Students know how to manipulate equations:			
2.1	• <i>Know and understand that equals added to equals are equal.</i>			
2.2	• <i>Know and understand that equals multiplied by equals are equal.</i>			
Measurement and Geometry				
1.0	Students understand perimeter and area:			
1.1	• <i>Measure the area of rectangular shapes by using appropriate units, such as square centimeter (cm²), square meter (m²), square kilometer (km²), square inch (in²), square yard (yd²), or square mile (mi²).</i>	Appetizers 4 H; 11 E; Main Dish Objective 4 (Measurement) Lesson 8; 11 (Problem Solving) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2	• <i>Recognize that rectangles that have the same area can have different perimeters.</i>	Appetizers 4 G & H; 11 E; Main Dish Objective 4 (Measurement) Lessons 7 & 8; 11 (Problem Solving) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.3	• <i>Understand that rectangles that have the same perimeter can have different areas.</i>	Appetizers 4 G & H; 11 E; Main Dish Objective 4 (Measurement) Lessons 7 & 8; 11 (Problem Solving) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.4	• <i>Understand and use formulas to solve problems involving perimeters and areas of rectangles and squares. Use those formulas to find the areas of more complex figures by dividing the figures into basic shapes.</i>	Appetizers 4 G & H; 11 E; Main Dish Objective 4 (Measurement) Lessons 7 & 8; 11 (Problem Solving) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.0	Students use two-dimensional coordinate grids to represent points and graph lines and simple figures:			
2.1	• <i>Draw the points corresponding to linear relationships on graph paper (e.g., draw 10 points on the graph of the equation $y = 3x$ and connect them by using a straight line).</i>			

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2.2	<ul style="list-style-type: none"> Understand that the length of a horizontal line segment equals the difference of the x-coordinates. 	Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.3	<ul style="list-style-type: none"> Understand that the length of a vertical line segment equals the difference of the y-coordinates. 	Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.0	Students demonstrate an understanding of plane and solid geometric objects and use this knowledge to show relationships and solve problems:			
3.1	<ul style="list-style-type: none"> Identify lines that are parallel and perpendicular. 	Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.2	<ul style="list-style-type: none"> Identify the radius and diameter of a circle. 			
3.3	<ul style="list-style-type: none"> Identify congruent figures. 	Appetizers 3 B; Main Dish Objective 3 (Geometry) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.4	<ul style="list-style-type: none"> Identify figures that have bilateral and rotational symmetry. 	Appetizers 3 C; Main Dish Objective 3 (Geometry) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.5	<ul style="list-style-type: none"> Know the definitions of a right angle, an acute angle, and an obtuse angle. Understand that 90°, 180°, 270°, and 360° are associated, respectively, with $1/4$, $1/2$, $3/4$, and full turns. 	Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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3.6	<ul style="list-style-type: none"> Visualize, describe, and make models of geometric solids (e.g., prisms, pyramids) in terms of the number and shape of faces, edges, and vertices; interpret two-dimensional representations of three-dimensional objects; and draw patterns (of faces) for a solid that, when cut and folded, will make a model of the solid. 	Appetizers 3 A; Main Dish Objective 3 (Geometry) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.7	<ul style="list-style-type: none"> Know the definitions of different triangles (e.g., equilateral, isosceles, scalene) and identify their attributes. 	Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.8	<ul style="list-style-type: none"> Know the definition of different quadrilaterals (e.g., rhombus, square, rectangle, parallelogram, trapezoid). 	Appetizers 3 A; Main Dish Objective 3 (Geometry) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
Statistics, Data Analysis, and Probability				
1.0	Students organize, represent, and interpret numerical and categorical data and clearly communicate their findings:			
1.1	<ul style="list-style-type: none"> Formulate survey questions; systematically collect and represent data on a number line; and coordinate graphs, tables, and charts. 	Appetizers 5 B; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2	<ul style="list-style-type: none"> Identify the mode(s) for sets of categorical data and the mode(s), median, and any apparent outliers for numerical data sets. 			
1.3	<ul style="list-style-type: none"> Interpret one-and two-variable data graphs to answer questions about a situation. 	Appetizers 5 B; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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2.0	Students make predictions for simple probability situations:			
2.1	<ul style="list-style-type: none"> • <i>Represent all possible outcomes for a simple probability situation in an organized way (e.g., tables, grids, tree diagrams).</i> 	Appetizers 5 A & B; Main Dish Objective 5 (Probability/Statistics) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.2	<ul style="list-style-type: none"> • <i>Express outcomes of experimental probability situations verbally and numerically (e.g., 3 out of 4; 3/4).</i> 	Appetizers 5 A; Main Dish Objective 5 (Probability/Statistics) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
Mathematical Reasoning				
1.0	Students make decisions about how to approach problems:			
1.1	<ul style="list-style-type: none"> • <i>Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.</i> 	Appetizers 11 C, D, & F; 12 A; Main Dish Objectives 11 (Problem Solving) Lessons 3, 4, & 6; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		
1.2	<ul style="list-style-type: none"> • <i>Determine when and how to break a problem into simpler parts.</i> 	Appetizers 11 A, B, & F; Main Dish Objective 11 (Problem Solving) Lessons 1, 2, & 6; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.0	Students use strategies, skills, and concepts in finding solutions:			
2.1	<ul style="list-style-type: none"> • <i>Use estimation to verify the reasonableness of calculated results.</i> 	Appetizers 10; 13; Main Dish Objectives 10 (Estimation) All Lessons; 13 (Reasonableness) All Lessons; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.2	<ul style="list-style-type: none"> • <i>Apply strategies and results from simpler problems to more complex problems.</i> 	Appetizers 11 A, B, & F; 12 A; Main Dish Objectives 11 (Problem Solving) Lessons 1, 2, & 6; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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2.3	<ul style="list-style-type: none"> Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning. 	Appetizers 1 A & B; 5 A & B; 12 A & B; 13 A, B, & C; Main Dish Objectives 1 (Number Concepts) Lessons 1 & 2; 5 (Probability/Statistics) Lessons 1 & 2; 12 (Mathematical Representation) Lessons 1 & 2; 13 (Reasonableness) Lessons 1, 2, & 3; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.4	<ul style="list-style-type: none"> Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work. 	Appetizers and Appetizers II; Journal Topics in All Objectives		
2.5	<ul style="list-style-type: none"> Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy. 	Appetizers 10; 13; Main Dish Objectives 10 (Estimation) All Lessons; 13 (Reasonableness) All Lessons; Applications; Final Tests; Reasonableness Problems; Journal Topics		
2.6	<ul style="list-style-type: none"> Make precise calculations and check the validity of the results from the context of the problem. 	Appetizers and Appetizers II; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.0	Students move beyond a particular problem by generalizing to other situations:			
3.1	<ul style="list-style-type: none"> Evaluate the reasonableness of the solution in the context of the original situation. 	Appetizers 13; Main Dish Objective 13 (Reasonableness) All Lessons; Applications; Final Tests; Reasonableness Problems; Journal Topics		
3.2	<ul style="list-style-type: none"> Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems. 	Appetizers 11 F; 12 A; Main Dish Objectives 11 (Problem Solving) Lesson 6; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics		

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3.3	<ul style="list-style-type: none"> Develop generalizations of the results obtained and apply them in other circumstances. 	Appetizers 11; 12; Main Dish Objectives 11 (Problem Solving) All Lessons; 12 (Mathematical Representation) All Lessons; Applications; Final Tests; Reasonableness Problems; Journal Topics		