# *South Carolina*
# *Curricular Standards*
# *Mathematics - Grade 5*
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| *Benchmark Number* | *Benchmark*<br>• *Instructional Targets* | *Gourmet Resource* | *Taught* | *Tested* |
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| | **Number and Operations** | | | |
| | **I. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.** | | | |
| **A.** | **Understand the place-value structure of the base-ten numbers system and be able to represent and compare whole numbers and decimals.** | | | |
| **1** | • *Describe the place value structure of decimals.* | **Appetizers 1 B; Main Dish Objective 1 (Number Concepts) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Read and write decimals.* | **Appetizers 1 B; Main Dish Objective 1 (Number Concepts) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***3** | • *Order lists of three or more numbers that contain whole numbers, decimals, or both.* | **Appetizers 1 A & B; Main Dish Objective 1 (Number Concepts) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Recognize equivalent representations for the same number and generate them by decomposing and composing numbers.** | | | |
| **1** | • *Write decimals (ten thousandths) in standard form, in expanded form, and in words.* | **Appetizers 1 B; Main Dish Objective 1 (Number Concepts) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **C.** | **Develop understanding of fractions as parts of unit wholes, as parts of a collection, as locations on number lines, and as divisions of whole numbers.** | | | |
| **1** | • *Name and write mixed numbers and improper fractions shown in concrete and pictorial models.* | **Appetizers 1 C & D; Main Dish Objective 1 (Number Concepts) Lessons 3 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Locate points on a number line corresponding to mixed numbers and improper fractions.* | **Appetizers 2 C; Main Dish Objective 2 (Mathematical Relations) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **3** | • *Explain the relationship between fractions and division.* | **Appetizers 1 C; Main Dish Objective 1 (Number Concepts) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **D.** | **Use models, benchmarks, and equivalent forms to judge the size of fractions.** | | | |
| **1** | • *Relate the size of fractions to the benchmark fractions of 0, 1/4, 1/2, 3/4, and 1.* | **Appetizers 1 C & D; Main Dish Objective 1 (Number Concepts) Lessons 3 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Compare fractions using symbols (>, <, and =) and words (is greater than, is less than, and equals).* | **Appetizers 1 D; Main Dish Objective 1 (Number Concepts) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **E.** | **Recognize and generate equivalent forms of commonly used fractions, decimals, and percents.** | | | |
| **1** | • *Represent fractions as decimals and percents using concrete and pictorial models.* | **Appetizers 6 D; Main Dish Objective 6 (Addition) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Identify equivalent relationships among fractions, decimals, and percents such as 1/4 = .25 = 25%, 1/3 = .$\overline{33}$ = 33 1/3%, 2/5 = .40 = 40%, 1/2 = .50 = 50%, and 3/4 = .75 = 75%.* | **Appetizers 6 D & G; Main Dish Objective 6 (Addition) Lessons 4 & 7; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **F.** | **Explore numbers less than 0 by extending the number line and through familiar applications.** | | | |
| **1** | • *Describe numbers less than 0 using real word models.* | | | |
| **G.** | **Describe classes of numbers according to characteristics such as the nature of their factors.** | | | |
| **1** | • *Identify a number as prime, composite, or neither.* | **Appetizers 1 F; Main Dish Objective 1 (Number Concepts) Lesson 6; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Explain the characteristics of prime numbers and composite numbers.* | **Appetizers 1 F; Main Dish Objective 1 (Number Concepts) Lesson 6; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***3** | • *Determine the least common multiple of two whole numbers.* | **Appetizers 6 C; Main Dish Objective 6 (Addition) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| | **II. Understand meanings of operations and how they relate to one another.** | | | |
| **A.** | **Understand various meanings of multiplication and division.** | | | |
| ***1** | • *Solve problems using multiplication and division.* | **Appetizers 8 A, B, & D; 9 A; 11 A; Main Dish Objectives 8 (Multiplication) Lessons 1, 2, & 4; 9 (Division) Lesson 1; 11 (Problem Solving) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Understand the effects of multiplying and dividing whole numbers.** | | | |
| **1** | • *Describe and explain the effect on the product when both factors are changed.* | **Appetizers 8 A; Main Dish Objective 8 (Multiplication) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Describe and explain the effect on the quotient when the divisor is changed.* | **Appetizers 9 A; Main Dish Objective 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems.** | | | |
| ***1** | • *Describe the relationships among the four operations.* | **Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Solve multiplication problems such as rates and applications of the Fundamental Counting Principle.* | | | |

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| **D.** | **Understand and use properties of operations, such as the distributivity of multiplication over addition.** | | | |
| **1** | • *Apply the divisibility rules for 3, 6, and 9.* | | | |
| | **III. Compute fluently and make reasonable estimates.** | | | |
| **A.** | **Develop fluency with basic number combinations for multiplication and division and use these combinations to mentally compute related problems, such as 30 x 50.** | | | |
| **B.** | **Develop fluency in adding, subtracting, multiplying, and dividing whole numbers.** | | | |
| **1** | • *Find the quotient and a remainder given a dividend of four digits or less and a divisor of two digits or less.* | **Appetizers 9 A; Main Dish Objective 9 (Division) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Demonstrate fluency in the use of a division algorithm and explain the steps involved.* | **Appetizers 9 A; 11 A; 12 A; Main Dish Objectives 9 (Division) Lesson 1; 11 (Problem Solving) Lesson 1; 12 (Mathematical Representation) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **3** | • *Explain computational strategies used to solve mathematical problem situations.* | **Appetizers 11 A & B; Main Dish Objective 11 (Problem Solving) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results.** | | | |
| **1** | • *Use estimation as a tool for judging the reasonableness of calculator, mental, and paper-and-pencil computations.* | **Appetizers 10 A, B, C, D, E, F, & G; Main Dish Objective 10 (Estimation) Lessons 1, 2, 3, 4, 5, 6, & 7; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Apply a variety of computational estimation strategies to solve problems involving whole numbers.* | **Appetizers 10 A, B, C, D, E, F, & G; Main Dish Objective 10 (Estimation) Lessons 1, 2, 3, 4, 5, 6, & 7; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **D.** | **Develop and use strategies to estimate computations involving fractions and decimals in situations relevant to students' experiences.** | | | |
| **1** | • *Round decimals to the nearest tenth, hundredth, and thousandth.* | **Appetizers 1 E; Main Dish Objective 1 (Number Concepts) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Estimate the sum and difference of decimals through thousandths and determine the reasonableness of the results.* | | | |
| **E.** | **Use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals.** | | | |
| ***1** | • *Add and subtract commonly used fractions using concrete models, pictorial models, and equivalent forms.* | **Appetizers 6 F; 7 C; Main Dish Objectives 6 (Addition) Lesson 6; 7 (Subtraction) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Multiply commonly used fractions (including decimals) using area models.* | **Appetizers 8 E; Main Dish Objective 8 (Multiplication) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **3** | • *Relate connections between products of fractions and products of decimals using area models.* | | | |
| ***4** | • *Add and subtract decimals through thousandths.* | **Appetizers 6 C; 7 B; Main Dish Objectives 6 (Addition) Lesson 3; 7 (Subtraction) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **F.** | **Select appropriate methods and tools for computing with whole numbers from among mental computations, estimations, calculators, and paper and pencil according to the context and nature of the computation and use the selected method or tool.** | | | |
| ***1** | • *Create and solve problems involving addition, subtraction, multiplication, and division of whole numbers using appropriate methods and tools.* | **Journal Topics** | | |
| | **Algebra** | | | |
| | **I. Understand patterns, relations, and functions.** | | | |
| **A.** | **Describe, extend, and make generalizations about geometric and numeric patterns.** | | | |
| **1** | • *Using models and calculators, analyze and extend numeric and geometric patterns such as triangular numbers, perfect squares, and arithmetic sequences.* | | | |
| **2** | • *Find the missing elements in numeric and nonnumeric patterns.* | **Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Represent and analyze patterns and functions, using words, tables, and graphs.** | | | |
| ***1** | • *Represent and analyze patterns and functions using words, tables, and graphs.* | **Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Analyze, describe, and use function rules to make generalizations.* | | | |

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| | **II. Represent and analyze mathematical situations and structures using algebraic symbols.** | | | |
| **A.** | **Identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers.**<br>***For all three grade levels, refer to these concepts in the "Number and Operations" strand.*** | | | |
| **B.** | **Represent the idea of a variable as an unknown quantity using a letter or a symbol.** | | | |
| **1** | • *Use variables to write a mathematical expression in symbolic form.* | **Appetizers 2 B; Main Dish Objective 2 (Mathematical Relations) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Express mathematical relationships using equations.** | | | |
| ***1** | • *Use a variable to write an open sentence representing a given mathematical relationship.* | **Appetizers 2 A; Main Dish Objective 2 (Mathematical Relations) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| | **III. Use mathematical models to represent and understand quantative relationships.** | | | |
| **A.** | **Model problem situations with objects and use representations such as graphs, tables, and equations to draw conclusions.** | | | |
| **1** | • *Use a single variable to create a problem situation based on a given open sentence.* | **Appetizers 2 A & B; Main Dish Objective 2 (Mathematical Relations) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| | **IV. Analyze change in various contexts.** | | | |
| **A.** | **Investigate how a change in one variable relates to a change in a second variable.** | | | |
| **1** | • *Describe the relationship among distance, speed, and time.* | | | |

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| **B.** | **Identify and describe situations with constant or varying rates of change and compare them.** | | | |
| **1** | • *Create charts and graphs to show change over time.* | **Appetizers 5 B; 11 D; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 11 (Problem Solving) Lesson 4; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Represent situations with number tables, graphs, and verbal descriptions.* | **Appetizers 5 B; 11 D; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 11 (Problem Solving) Lesson 4; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***3** | • *Associate tables, graphs, and stories of the same event.* | **Appetizers 5 B; 11 D; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 11 (Problem Solving) Lesson 4; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| | **Geometry** | | | |
| | **I. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.** | | | |
| **A.** | **Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes.** | | | |
| **1** | • *Using models and appropriate vocabulary, compare and analyze attributes of polygons, attributes of polyhedra, and attributes of cones and cylinders.* | **Appetizers 3 A & B; Main Dish Objective 3 (Geometry) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Classify two- and three-dimensional shapes according to their properties and develop definitions of classes of shapes such as triangles and pyramids.** | | | |
| ***1** | • *Using models and appropriate vocabulary, classify quadrilaterals, polyhedra, cones, and cylinders according to their attributes.* | **Appetizers 3 A & B; Main Dish Objective 3 (Geometry) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Develop definitions for classes of two- and three-dimensional shapes.* | **Appetizers 3 A & B; Main Dish Objective 3 (Geometry) Lessons 1 & 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Investigate, describe, and reason about the results of subdividing, combining, and transforming shapes.** | | | |
| **D.** | **Explore congruence and similarity.** | | | |
| ***1** | • *Compare two-dimensional shapes to determine if they are similar by transformations of magnifying or shrinking.* | **Appetizers 3 C & D; Main Dish Objective 3 (Geometry) Lessons 3 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **E.** | **Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions.** | | | |
| ***1** | • *Make and test conjectures about geometric properties and relationships and then develop logical arguments to justify the conclusions.* | **Appetizers 3 C & D; Main Dish Objective 3 (Geometry) Lessons 3 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| | **II. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.** | | | |
| **A.** | **Describe location and movement using common language and geometric vocabulary.** | | | |
| **B.** | **Make and use coordinate systems to specify locations and to describe paths.** | | | |
| ***1** | • *Using ordered pairs of numbers, locate and name points in the first quadrant of a coordinate system.* | **Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Find the distance between points along horizontal and vertical lines of a coordinate system.** | | | |
| ***1** | • *Find the distance between points in the first quadrant of a coordinate system along horizontal and vertical lines.* | **Appetizers 2 D; Main Dish Objective 2 (Mathematical Relations) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| | **III. Apply transformations and use symmetry to analyze mathematical situations.** | | | |
| **A.** | **Predict and describe the results of sliding, flipping, and turning two-dimensional shapes.** | | | |
| ***1** | • *Predict the results of geometric motion of shapes including combinations of translations (slides), reflections (flips), and rotations (turns).* | **Appetizers 3 C; Main Dish Objective 3 (Geometry) Lesson 3; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Describe a motion or series of motions that will show that two shapes are congruent.** | | | |
| **1** | • *Describe series of motions that may be used to show that two shapes are congruent.* | **Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **C.** | **Identify and describe line and rotational symmetry in two- and three-dimensional shapes and designs.** | | | |
| ***1** | • *Determine whether given two-dimensional shapes and designs have rotational symmetry.* | **Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Investigate and describe symmetry and congruence of shapes drawn on a grid.* | **Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| | **IV. Use visualization, spatial reasoning, and geometric modeling to solve problems.** | | | |
| **A.** | **Build and draw geometric objects.** | | | |
| ***1** | • *Build and draw three-dimensional objects.* | **Appetizers 3; Main Dish Objective 3 (Geometry) Center Activities; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Create and describe mental images of objects, patterns, and paths.** | | | |
| ***1** | • *Sketch the front, top, and side views of a model of a three-dimensional shape built with cubes.* | | | |
| **C.** | **Identify and build a three-dimensional object from two-dimensional representations of that object.** | | | |
| **D.** | **Identify and build a two-dimensional representation of a three-dimensional object.** | | | |
| **E.** | **Use geometric models to solve problems in other areas of mathematics, such as number and measurement.**<br>***For all three grade levels, refer to these concepts in the "Number and Operations" and the "Measurement" strands.*** | | | |
| **F.** | **Recognize geometric ideas and relationships and apply them to other disciplines and to problems that arise in the classroom or in everyday life.** | | | |

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| | **Measurement** | | | |
| | **I. Understand measurable attributes of objects and the units, systems, and processes of measurement.** | | | |
| **A.** | **Understand such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute.** | | | |
| ***1** | • *Using models, investigate and describe the measure of circumference of a circle as length.* | **Appetizers 4 F; 11 B; Main Dish Objectives 4 (Measurement) Lesson 6; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Identify, describe, and draw right, acute, and obtuse angles.* | **Appetizers 4 E; Main Dish Objective 4 (Measurement) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **3** | • *Using models, create examples of polygons with a given area and explain.* | **Appetizers 4 D & E; 11 B; Main Dish Objectives 4 (Measurement) Lessons 4 & 5; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***4** | • *Using models, create examples of right prisms with a given volume and explain.* | **Appetizers 4 D & E; Main Dish Objective 4 (Measurement) Lessons 4 & 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **5** | • *Select units appropriate for the attributes being measured (length, area, and volume) and explain the basis for the selection.* | **Appetizers 4 A, D, & E; Main Dish Objective 4 (Measurement) Lessons 1, 4, & 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **B.** | **Understand the need for measuring with standard units and become familiar with standard units in the customary and metric systems.** | | | |
| **C.** | **Carry out simple unit conversions, such as from centimeters to meters, within a system of measurement.** | | | |
| **D.** | **Understand that measurements are approximations and understand how differences in units affect precision.** | | | |
| **1** | • *Describe factors that affect precision such as the limitations of the measuring tool, the scale on the measuring instrument, and the need for accuracy.* | **Appetizers 4 A; Main Dish Objective 4 (Measurement) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **E.** | **Explore what happens to measurements of a two-dimensional shapes such as its perimeter and area when the shape is changed in some way.** | | | |
| **1** | • *Compare changes in area and changes in total perimeter when shapes are combined or subdivided.* | **Appetizers 4 E; Main Dish Objective 4 (Measurement) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Construct models to demonstrate the effect of holding one variable constant while changing the value of another variable such as building rectangles with varying perimeters and constant areas.* | | | |
| | **II. Apply appropriate techniques, tools, and formulas to determine measurements.** | | | |
| **A.** | **Develop strategies for estimating the perimeters, areas, and volume of irregular shapes.** | | | |
| **1** | • *Compare and evaluate different strategies for estimating area and perimeter of irregular shapes.* | **Appetizers 4 D, E, & F; 11 B; Main Dish Objectives 4 (Measurement) Lessons 4, 5, & 6; 11 (Problem Solving) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Develop and describe strategies for estimating volumes of irregular shapes.* | **Appetizers 4 E; Main Dish Objective 4 (Measurement) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| **B.** | **Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles.** | | | |
| ***1** | • *Select and use appropriate tools and units to measure given items to an indicated precision (time in seconds through years; length in millimeters through kilometers, one-eighth of an inch through miles; liquid volume in milliliters through liters, ounces through gallons; mass/weight in milligrams through kilograms, ounces through pounds).* | **Appetizers 4 A, B, C, & D; Main Dish Objective 4 (Measurement) Lessons 1, 2, 3, & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Determine an amount of elapsed time in hours, minutes, and seconds within a 24-hour period.* | **Appetizers 4 A; Main Dish Objective 4 (Measurement) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***3** | • *Using a protractor, measure angles between 0 and 180 degrees inclusive.* | **Appetizers 3 D; Main Dish Objective 3 (Geometry) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Select and use benchmarks to estimate measurements.** | | | |
| **D.** | **Develop, understand, and use formulas to find the area of rectangles and related triangles and parallelograms.** | | | |
| **1** | • *Investigate and solve problems involving area, using concrete, graphic or pictorial models to identify patterns and develop formulas for determining area.* | **Appetizers 4 D; Main Dish Objective 4 (Measurement) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Describe and determine the area of rectangles and related triangles and parallelograms.* | **Appetizers 4 D & E; Main Dish Objective 4 (Measurement) Lessons 4 & 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **E.** | **Develop strategies to determine the surface areas and volumes of rectangular solids.** | | | |
| ***1** | • *Using models, develop and describe strategies for determining the volume and surface area of rectangular solids.* | **Appetizers 4 E; Main Dish Objective 4 (Measurement) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

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| | **Data Analysis and Probability** | | | |
| | **I. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.** | | | |
| **A.** | **Design investigations to address a question and consider how data-collection methods affect the nature of the data set.** | | | |
| **1** | • *Compare data sets collected in different ways to address a given question and then determine how the methods of collection affected the data sets.* | **Appetizers 5 B; Main Dish Objective 5 (Probability/Statistics) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **B.** | **Collect data using observations, surveys, and experiments.** | | | |
| **1** | • *Collect data using observations, surveys, and experiments.* | **Appetizers 5 B; 11 D; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 11 (Problem Solving) Lesson 4; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Represent data using tables and graphs such as line plots, bar graphs, and line graphs.** | | | |
| **1** | • *Determine appropriate horizontal and vertical scales for data sets and then how to represent zero on a graph.* | **Appetizers 5 B; Main Dish Objective 5 (Probability/Statistics) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| ***2** | • *Construct and interpret tables and line graphs for data sets from applied situations.* | **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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| **3** | • *Explain what type of graph may be appropriate for a given data set.* | **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** | | |
| **D.** | **Recognize the differences in representing categorical and numerical data.** | | | |
| ***1** | • *Compare the types of graphs that may be used for categorical data with the types that may be used for numerical data.* | **Appetizers 5 B; Main Dish Objective 5 (Probability/Statistics) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| | **II. Select and use appropriate statistical methods to analyze data.** | | | |
| **A.** | **Describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed.** | | | |
| ***1** | • *Describe the features of a data set, including measures of center, range, and outliers.* | | | |
| **B.** | **Use measures of center, focusing on the median, and understand what each does and does not indicate about the data set.** | | | |
| ***1** | • *Find the mean, median, and mode of a numerical data set and explain what each indicates about the data set.* | **Appetizers 5 E; Main Dish Objective 5 (Probability/Statistics) Lesson 5; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |

| *Benchmark Number* | *Benchmark*<br>• *Instructional Targets* | *Gourmet Resource* | *Taught* | *Tested* |
|---|---|---|---|---|
| **C.** | **Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.** | | | |
| ***1** | • *Compare the different types of graphs (bar, graph, line [dot] plot, line graph nd pictograph) to represent a given data set and explain the benefits of each.* | **Appetizers 5 B; 11 D; 12 B; Main Dish Objectives 5 (Probability/Statistics) Lesson 2; 11 (Problem Solving) Lesson 4; 12 (Mathematical Representation) Lesson 2; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| | **III. Develop and evaluate inferences and predictions that are based on data.** | | | |
| **A.** | **Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.** | | | |
| **1** | • *Make and justify predictions based on data from a variety of applied situations.* | **Appetizers 5 D; Main Dish Objective 5 (Probability/Statistics) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Consider alternative explanations to the conjectures formed on the basis of presentations of data and then design further studies to test the conjectures.* | | | |
| | **IV. Understand and apply basic concepts of probability.** | | | |
| **A.** | **Describe events as likely or unlikely and discuss the degree of likelihood using such words as certain, equally likely, and impossible.** | | | |

| *Benchmark Number* | *Benchmark*<br>• *Instructional Targets* | *Gourmet Resource* | *Taught* | *Tested* |
|---|---|---|---|---|
| **B.** | **Predict the probability of outcomes of simple experiments and test the predictions.** | | | |
| ***1** | • *Determine the probability of a simple single-stage and a two-stage event.* | **Appetizers 5 A & D; Main Dish Objective 5 (Probability/Statistics) Lessons 1 & 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Create a problem statement involving probability based on information from a given problem situation. (Students will not be required to solve the problem created).* | **Appetizers 11 D; Main Dish Objective 11 (Problem Solving) Lesson 4; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **C.** | **Understand that the measure of the likelihood of an event can be represented by a number from 0 to 1.** | | | |
| **1** | • *Understand when the probability of an event is 0 or 1 and give examples in each case.* | **Appetizers 5 A; Main Dish Objective 5 (Probability/Statistics) Lesson 1; Applications; Final Tests; Reasonableness Problems; Journal Topics** | | |
| **2** | • *Explain why the sum of the probabilities of the outcomes of an experiment must equal 1.* | | | |