

## Grade 4 Mathematics

The grade 4 mathematics assessment presents a variety of items representing the six strands of the Wisconsin Model Academic Standards for Mathematics: Mathematical Processes (*Reasoning, Communication, Connections, Representation, Problem Solving*), Number Operations and Relationships, Geometry, Measurement, Statistics and Probability, and Algebraic Relationships. Assessment items in each category may appear without context and within the context of real-world situations. All test items are either selected-response (multiple-choice) or constructed response format. Some items require the use of mathematical tools including a set of pattern blocks, a pentomino (one asymmetrical shape used for transformational geometry) and a ruler with 1/4 inch and millimeter intervals. Calculator use is prohibited for all sessions of the test. Students performing at each level draw on a broad range of mathematical knowledge while applying skills and strategies to solve real-world and nonroutine mathematical problems. Each proficiency level presumes mastery at previous levels.

### **Advanced**

Score range: 484 and above

At the beginning of the fourth grade, students performing at the Advanced level communicate mathematical ideas used to solve problems and provide detailed explanations that reveal their mathematical reasoning. Students identify number sentences that show how to use addition or subtraction to solve problems and apply operations of computation. Students solve problems involving single motion geometry (slide, flip or rotation) and locate, plot and connect points on the first quadrant of a coordinate grid. Students determine area and perimeter of two-dimensional shapes. They compare lengths and convert lengths between inches, feet and yards and differentiate between US customary and metric units of measurement. Students analyze information from pictographs using a key and determine the probability of events using coins or spinners. They extend a number pattern in a table by determining the addition or subtraction rule being used.

### **Proficient**

Score range: 438–483

At the beginning of fourth grade, students performing at the Proficient level communicate mathematical ideas used to solve problems using written, numerical, and symbolic reasoning. Students apply place value concepts to order four-digit numbers, use basic multiplication facts to solve one-step problems, and identify a fractional part of a set. Students compare the attributes of two-dimensional shapes, predict the results of single motion transformations (slide, flip, turn) involving two-dimensional shapes, and locate and plot points on a first quadrant coordinate grid. Students measure objects using US customary and metric systems of measurement and estimate measurement with non-standard units. Students identify bar graphs that display identical information from tally charts and compare data from tally charts and bar graphs. They recreate numeric patterns and find a missing variable to balance simple equations.

**Basic**

Score range: 421–437

At the beginning of fourth grade, students performing at the Basic level provide brief explanations for how they solve problems. Students represent and interpret numbers in word, numeric and expanded forms, identify odd and even numbers, and use computation and estimation to solve multi-digit addition and subtraction problems. Students identify three-dimensional figures from nets (flat patterns), manipulate two-dimensional figures using slides, flips and turns and determine the coordinates of a point on a first quadrant coordinate grid. Students measure and compare the weight and length of objects, find the area of simple shapes drawn on grids, and read, interpret, and compare analog and digital clocks to the nearest minute. Students compare similar information displayed in tally charts and bar graphs, and make comparisons in terms of simple probability using descriptions such as “most likely” and “least likely.” Students extend numeric or geometric patterns, find a missing piece of a pattern, determine the rule used in a pattern, determine a missing number in a subtraction equation, and find the missing addend in an equation with two-digit numbers.

**Minimal Performance**

Score range: 420 and below

At the beginning of fourth grade, students performing at the Minimal Performance level provide simple explanations of how they solve problems. Students apply basic knowledge of place value and solve two- and three-digit addition problems. Students identify two-dimensional shapes when given an attribute, match congruent figures using single motion geometry (slide), and locate an object on the first quadrant of a coordinate grid. Students measure objects to the nearest inch, compare objects using terms such as longer or shorter, read analog and digital clocks to the nearest hour, and read thermometers to the nearest five degrees. Students interpret data from simple bar graphs and distinguish between situations that give equal or unequal chances. Students extend simple numeric patterns and solve equations with one missing variable when the solution involves the addition of one to any number.