

## Grade 6 Mathematics

The grade 6 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 tangrams, a protractor, a ruler with 1/16 inch and millimeter intervals, and a calculator (four-function calculator availability is required for most 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: 532 and above

At the beginning of sixth grade, students performing at the Advanced level communicate mathematical ideas using correct vocabulary and terminology, connect processes to real-world situations and analyze problems to obtain relevant information necessary for deriving solutions. Students analyze and solve multi-step problems involving whole numbers, simplify fractions and add fractions with unlike denominators. They identify equivalent fractions, decimals, and percents. Students identify types of angles, analyze and apply the concepts of symmetry, and determine the coordinates of missing vertices (corners) of geometric shapes. Students convert within a system of measurement and calculate elapsed time. They find the mean, median, mode and range from data displayed in graphs, charts and number sets, and determine the probability of the outcomes of an event, including those using spinners. They use reasoning and logic to find patterns, compare functional relationships, and extend numeric and geometric patterns up to the eighth term when given the first four terms. Students use the distributive property to solve two-step equations with a variable.

### **Proficient**

Score range: 485–531

At the beginning of sixth grade, students performing at the Proficient level explain mathematical strategies used to solve two-step problems and provide detailed explanations and justifications using mathematical terminology, numbers, and symbols. Students solve two- and three-digit multiplication and division problems and compare and order whole numbers, fractions, decimals, and percents. They describe angles, compare nets (flat patterns) to three-dimensional figures, and identify, locate, and name ordered pairs on the first quadrant of a coordinate grid. They measure objects to the nearest 1/8 inch or millimeter, convert minutes to seconds, and calculate area. Students determine median, mode, and range, make reasonable conclusions and

predictions from data displayed in bar graphs, circle graphs, tables, and number sets, and analyze the probability of a single event using fractions. Students describe rules used in functional relationships involving multiplication, solve two-step equations using two operations, and use the distributive property to solve problems.

**Basic**

Score range: 464–484

At the beginning of sixth grade, students performing at the Basic level explain mathematical ideas involved in single step problems. They recognize place values for whole numbers to the ten thousands place, use basic multiplication and division facts to solve problems without a calculator, and match fractions to illustrations of fractions. Students distinguish between different types of angles, identify geometric shapes with one line of symmetry, and locate and label ordered pairs on the first quadrant of a coordinate grid. They read simple scales to identify the weight of objects and convert liquid capacity within the U.S. customary system of measurement. Students draw simple conclusions from data displayed in bar graphs, tables, and number sets, identify mode and range of a limited set of numbers, and determine the probability of simple events. They identify missing terms in numeric patterns and solve equations using order of operations with parentheses.

**Minimal Performance**

Score range: 463 and below

At the beginning of sixth grade, students performing at the Minimal Performance level use some details to explain the mathematical ideas used to solve simple problems. Students express numbers in expanded notation, solve three- and four-digit addition and subtraction problems, and use basic facts to solve multiplication and division problems without a calculator. Students identify angles, polygons, lines of symmetry, and the x-axis and y-axis of a coordinate grid. Students convert within the US customary system of measurement using a conversion table. Students find simple information displayed in graphs, charts, and number sets. They may determine probable outcomes/likelihood. They may extend simple numeric or geometric patterns and solve equations with single digits using the commutative property of multiplication.