

Grade 8 Mathematics

The grade 8 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 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: 573 and above

At the beginning of eighth grade, students performing at the Advanced level select appropriate strategies to solve problems and communicate and justify mathematical ideas clearly and concisely. Students calculate discounts and sales tax, find the least common multiple of numbers, identify equivalent forms for fractions, decimals, and percents; and estimate products of decimals to the nearest whole number. Students name three-dimensional figures, solve for the sum of the angles in a polygon, apply proportional reasoning, and solve problems involving transformational geometry and four quadrant coordinate planes. Students use and convert between the US customary and metric units of measurement, measure to the nearest 1/16 inch or millimeter; measure angles up to 360°; determine area of circles, and determine volume and surface area of rectangular prisms and cylinders. Students calculate the mean and median of a set of data and determine the number of combinations in a set. They extend numeric patterns using multiplication and exponents without a calculator, represent a numerical pattern with an algebraic expression, and apply the distributive property when solving problems.

Proficient

Score range: 513–572

At the beginning of eighth grade, students performing at the Proficient level explain ideas and reason using mathematical terminology, numbers, symbols, graphs or diagrams. Students add, subtract, and multiply mixed numbers and fractions with unlike denominators. Students determine supplementary and complimentary angles, solve problems involving similar figures, and locate and plot coordinates of a transformation on a four quadrant coordinate plane. They use appropriate tools of measurement to measure to the nearest 1/8 inch or millimeter, solve problems involving area, perimeter, and circumference of two-dimensional objects, and find the volume of rectangular prisms. They interpret and compare data contained in double bar graphs and determine the probability of one or two dependent or independent events. They extend functional

relationships, solve equations without a calculator, and evaluate algebraic expressions with exponents.

Basic

Score range: 483–512

At the beginning of eighth grade, students performing at the Basic level use some mathematical terminology, symbols or numbers to explain and support their problem solving strategies. Students recognize and apply place value concepts and estimate the sums and differences of whole numbers, common fractions, and mixed numbers without the use of a calculator. Students determine measurements of complementary angles, solve problems involving congruency of shapes, and identify, locate, and plot coordinates of a transformation of a point in a four quadrant coordinate grid. Students select appropriate tools to measure liquid capacity, angles up to 90° , and distances between two points. They interpret scales and measure accurately to the nearest $\frac{1}{4}$ inch or millimeter. Students read bar graphs, extract data from linear graphs, and determine the probability of events and the number of combinations given a set of data. Students find missing terms in sequences and functional relationships without a calculator, apply the rules for order of operations, evaluate algebraic expressions containing two operations, and use commutative and associative properties to solve problems.

Minimal Performance

Score range: 482 and below

At the beginning of eighth grade, students performing at the Minimal Performance level communicate mathematical processes used to solve simple problems. They identify equivalent forms of fractions, decimals, and percents and estimate sums and differences of whole numbers and common fractions. Students classify angles and describe the attributes of similar geometric figures, and locate coordinates in a four quadrant coordinate plane. They use appropriate US customary and metric tools of measurement to estimate distances to the nearest inch or centimeter and determine the diameter, radius, and area of a circle. They read and interpret line graphs and list all possible outcomes of an event. Students extend numeric and geometric patterns, apply the commutative and associate properties, and evaluate and solve one-step algebraic equations without a calculator.