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. *The descriptions provide examples, rather than a complete list, of knowledge and skills students may demonstrate at each level.*

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
Advanced 573 and above	**At the beginning of the year, students at the Advanced level demonstrate in-depth understanding of academic knowledge and skills tested on the WKCE-CRT by:** • formulating and communicating mathematical representations used to solve mathematical problems. • clearly communicating justifications for solutions to problems. • selecting and communicating appropriate strategies to solve problems. • identifying equivalent forms of fractions, decimals and percents. • estimating the sum and difference of whole numbers and common fractions in problem solving situations. • calculating fractions and percents in the context of sales tax and discounts. • formulating and using number theory concepts of least common multiples. • identifying equivalent fractions and percents. • estimating the product of decimals by rounding to the nearest whole number . • naming three-dimensional figures using appropriate terminology (e.g. rectangular prism, square pyramid, cone, cylinder, and sphere). • determining the sum of angles of a polygon when the polygon is subdivided into triangles. • determining measurements of supplementary angles. • applying proportional reasoning to solve problems involving similar geometric figures (i.e. area, perimeter, length of sides). • identifying, locating or plotting coordinates of transformations of geometric figures on a four quadrant coordinate grid. • selecting appropriate units of measurement to estimate weight/mass. • converting units of measurement between US customary and metric systems of measurement. • measuring length to the nearest 1/16 inch or to the nearest millimeter. • measuring angles up to 360 degrees. • determining the volume and surface area of three dimensional figures such as rectangular prisms and cylinders in context. • finding the area of a circle. • calculating mean and median of a set of unordered data.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	• describing real-world situations represented in a graph. • extending a numerical pattern or functional relationship involving multiplication and exponents without a calculator. • representing a numerical pattern with an algebraic equation. • translating a phrase or real-world problem into an algebraic expression. • determining equivalence of equations using the distributive property.
Proficient 513 – 572	**At the beginning of the year, students at the Proficient level demonstrate competency in the academic knowledge and skills tested on the WKCE-CRT by:** • using the vocabulary of mathematics, numbers, symbols, graphs or diagrams to explain the reasonableness of mathematical strategies. • demonstrating an understanding of percents and fractions within context of discounts. • adding and subtracting mixed numbers and fractions with unlike denominators. • multiplying mixed numbers in problem solving situations. • solving for the third angle of a triangle when given two interior angles. • determining supplementary and complementary angles. • demonstrating an understanding of similarity by finding the relationship between the sides of figures. • locating or plotting coordinates of a transformation of a point, including transformations across either axis, in a four quadrant coordinate grid. • converting units of measurement within a system of measurement (US customary or metric). • measuring length to the nearest 1/8 inch or millimeter. • measuring angles up to 180 degrees with appropriate tools. • calculating the volume of a rectangular prism. • solving problems involving area, perimeter and circumference. • comparing and interpreting data contained in double bar graphs. • determining the likelihood and probability of an event based on one or two dependent or independent events. • extending a numerical pattern in a functional relationship without a calculator. • solving a two-step algebraic equation without a calculator • evaluating an algebraic expression containing exponents without the use of a calculator • solving an equation that contains like-variables without the use of a calculator. • comparing equivalent expressions using the distributive property without the use of a calculator.
Basic 483 –512	**At the beginning of the year, students at the Basic level demonstrate some academic knowledge and skills tested on the WKCE-CRT by:** • communicating mathematical ideas used to solve real-world mathematical problems. • recognizing and applying place value concepts to whole numbers less than 100,000,000. • estimating the sum and difference of whole numbers, common fractions, and mixed numbers in problem solving situations.

Performance Level	WKCE-CRT Performance Level Descriptions and Scale Score Ranges
	• determining the measurements of complementary angles. • differentiating between multiple like-figures to determine congruency. • selecting appropriate tools of measurement for measuring capacity/volume. • measuring length to the nearest ¼ inch or millimeter. • measuring angles up to 90º with the appropriate tools. • finding the area and perimeter of polygon. • reading, interpreting and analyzing data from bar graphs. • interpreting linear graphs. • determining the likelihood and probability of an event based on one independent event. • determining the number of combinations from a given set. • identifying missing terms or sequence of terms in a functional relationship without a calculator. • evaluating algebraic expressions containing two operations without a calculator. • using the commutative or associative properties to solve problems.
Minimal Performance 482 and below	**At the beginning of the year, students at the Minimal level demonstrate very limited academic knowledge and skills tested on the WKCE-CRT by:** • identifying mathematical problem solving strategies used to solve real-world mathematical problems. • identifying equivalent forms of fractions, decimals and percents without the use of a calculator. • estimating the sum and difference of whole numbers and common fractions in problem solving situations. • identifying right, acute and obtuse angels. • describing similar geometric figures. • identifying or locating coordinates of a point in a four quadrant coordinate grid. • identifying appropriate use of measurement to estimate length using US customary and metric units. • measuring with the appropriate tools to the nearest inch or centimeter. • measuring angles up to the nearest 5 degrees with appropriate tools. • estimating the distance between two points on a line segment using inches or centimeters. • determining circumference and diameter of a circle. • reading and interpreting a line graph. • listing the possible outcomes of an event. • extending numeric and geometric patterns. • solving simple one-step equations without a calculator. • evaluating algebraic expressions containing one operation without the use of a calculator. • identifying algebraic expressions using the commutative or associative properties.

